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Human Capital Development Disclosure and Financial Performance of Quoted Telecommunications Firms in Nigeria (2010-2022)

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Abstract
This study examined the relationship between human capital development disclosure and financial performance of quoted telecommunications firms in Nigeria from 2010 to 2022. The purpose was to address the gap in empirical evidence on whether Training and Development Disclosure (TDD) and Health, Safety, and Welfare Disclosure (HSWD) affect financial performance in the Nigerian telecommunications sector. The study adopted a longitudinal ex-post facto design with a census sample comprising MTN Nigeria Communications Plc and Airtel Africa Plc over 13 years (2010–2022), yielding 26 firm-year observations. TDD and HSWD were measured using content analysis based on sentence counts, while financial performance was measured by Return on Assets (ROA). Data were analysed using descriptive statistics, a correlation matrix, and pooled Ordinary Least Squares regression with diagnostic tests conducted using EViews 11. The key findings reveal that neither TDD nor HSWD has a statistically significant effect on ROA, leading to rejection of both hypotheses. Severe multicollinearity between TDD and HSWD (r = 0.998) indicates that Nigerian telecommunications firms do not distinguish between these disclosure categories in practice. The model explains only 8 percent of variation in ROA, suggesting other factors are more influential drivers of financial performance. The practical implications are that managers should improve disclosure quality by providing quantitative, outcome-orientated metrics; investors should use HCD disclosure as a soft signal for long-term value creation; and regulators should mandate standardised, comparable HCD metrics in annual reports.

Keywords: Human Capital Disclosure, Training and Development, Health Safety and Welfare, Return on Assets, Telecommunications, Nigeria

Introduction

The telecommunications sector stands as a cornerstone of Nigeria's economic transformation, having evolved from a state-owned monopoly to one of Africa's most competitive and dynamic markets since its liberalisation in 2001. With over 220 million active subscribers and substantial contributions to the nation's gross domestic product, the industry has become a critical driver of economic growth, financial inclusion, and digital innovation across the continent (Nigerian Communications Commission, 2023). Telecom firms gain a competitive edge not just from their tech and infrastructure, but also from their people. Their skilled workers design, deploy, and maintain complex networks, manage customer relationships, and lead innovation in a market that is becoming more and more crowded (Becker, 1964; Ployhart *et al*., 2014). The sector's reliance on specialised technical expertise, customer-facing personnel, and managerial talent makes human capital development not merely a human resource function but a strategic imperative for sustainable growth and profitability (Wright & McMahan, 2011).

Despite the acknowledged importance of human capital in the telecommunications industry, the extent to which firms voluntarily disclose their investments in training, development, health, safety, and employee welfare and how such disclosures relate to financial performance remains insufficiently understood in the Nigerian context. Human capital development disclosure refers to the voluntary or mandatory reporting of information pertaining to an organisation's investments in and management of its workforce, including training programmes, skills development initiatives, health and safety protocols, and employee welfare arrangements (Guthrie & Murthy, 2020). While global reporting frameworks such as the Global Reporting Initiative and the European Sustainability Reporting Standards have increasingly emphasised social disclosures, including detailed requirements for training, health, safety, and working conditions (Global Reporting Initiative, 2021; European

Financial Reporting Advisory Group, 2022), the Nigerian telecommunications sector has witnessed limited empirical examination of whether such disclosures translate into measurable financial returns. This gap is particularly salient given that the Nigerian Communications Commission and the Nigerian Exchange Group have progressively encouraged corporate transparency on social and governance matters (Nigerian Communications Commission, 2023), yet the business case for comprehensive human capital disclosure remains empirically unsubstantiated for quoted telecoms.

The existing literature on corporate disclosure and financial performance in Nigeria has predominantly focused on broad corporate social responsibility or environmental, social, and governance reporting, often aggregating diverse disclosure categories into composite indices that obscure the specific contributions of human capital-related transparency (Uwuigbe *et al*., 2018; Okafor & Ogbo, 2022). Research by Oladejo and Abimbola (2024) examined human resource accounting and financial performance of listed information communication technology companies in Nigeria, finding that while human resource accounting variables jointly influenced financial performance, training, development, and welfare costs did not individually demonstrate a statistically significant effect on return on assets. Similarly, Eze and Nwankwo (2021) noted that many Nigerian firms disclose human resource information qualitatively rather than quantitatively, focusing on aims and policy statements rather than performance metrics, which limits the usefulness of such disclosures for investment decision-making. However, these studies have generally treated human capital as a single aggregated construct instead of disaggregating its distinct components, such as training and development disclosures versus health, safety, and welfare disclosures, which may have different effects on financial performance due to their varying time horizons for return on investment (Delery & Roumpi, 2017).

The present study addresses this gap by disaggregating human capital development disclosure into two theoretically and empirically distinct proxies. First, training and development disclosure encompasses voluntary reporting on employee training programmes, skills enhancement initiatives, career development opportunities, mentorship schemes, and professional certification support. Training and development investments are generally expected to enhance employee productivity, innovation capacity, and service quality, potentially translating into improved operational efficiency and profitability, though the financial benefits may manifest over the medium to long term (Aguinis & Kraiger, 2009; Tharenou *et al*., 2007). Second, health, safety, and welfare disclosure comprises reporting on occupational health and safety protocols, wellness programmes, workplace safety training, health insurance provisions, and employee assistance programmes. These disclosures signal an organisational commitment to employee well-being, potentially reducing absenteeism, turnover, and workplace accidents while enhancing morale and organisational commitment (Lopez *et al*., 2018; Zwetsloot *et al*., 2020). The distinct mechanisms through which training and development disclosure and health, safety, and welfare disclosure may influence financial performance warrant separate empirical investigation, as their costs, implementation timelines, and performance implications differ substantially (Arora & Sharma, 2019).

Financial performance is operationalised in this study as return on assets, a widely accepted accounting-based measure that reflects how efficiently a firm utilises its asset base to generate earnings. Return on assets is particularly appropriate for the telecommunications sector, which is characterised by substantial capital investments in infrastructure, spectrum licences, and technology platforms. The choice of return on assets aligns with prior Nigerian studies on human capital and firm performance (Oladejo & Abimbola, 2024; Adeyemi & Adebayo, 2020) and enables comparability with extant literature while capturing operational efficiency improvements that human capital development may engender.

Based on the foregoing discussion, this study addresses the following research questions:

1. What is the effect of training and development disclosure on the return on assets of quoted telecommunications firms in Nigeria?
2. What is the effect of health, safety, and welfare disclosure on the return on assets of quoted telecommunications firms in Nigeria?

The primary objective of this study is to examine the relationship between human capital development disclosure (proxied by training and development disclosure and health, safety, and welfare disclosure) and the financial performance (proxied by return on assets) of quoted telecommunications firms in Nigeria from 2010 to 2022. The specific objectives are to: (a) determine the effect of training and development disclosure on return on assets; (b) ascertain the effect of health, safety, and welfare disclosure on return on assets; and (c) evaluate the joint effect of training and development disclosure and health, safety, and welfare disclosure on return on assets for the sampled firms.

Several grounds justify this study. For policymakers, including the Nigerian Communications Commission and the Nigerian Exchange Group, the findings will provide empirical evidence to inform decisions on mandating or incentivising specific categories of human capital disclosures. If training and development disclosure or health, safety, and welfare disclosure demonstrates a significant positive association with return on assets, regulators may consider incorporating these disclosures into sustainability reporting guidelines or corporate governance codes (Eccles *et al*., 2014). For investors, understanding which dimensions of human capital disclosure correlate with financial performance can guide investment decisions and portfolio allocation, as firms that transparently report on strategic human capital investments may signal superior management quality and long-term value creation (Ioannou & Serafeim, 2015). For firm management, the study offers insights into the potential financial returns from voluntary human capital disclosure, supporting resource allocation decisions regarding human resource reporting systems, sustainability communications, and stakeholder engagement (Freeman *et al*., 2010).

The scope of this study encompasses two quoted telecommunications firms on the Nigerian Exchange Group: MTN Nigeria Communications Plc and Airtel Africa Plc. These two firms constitute the entire population of quoted telecommunications companies on the Nigerian Exchange Group as of 2022, reflecting the highly concentrated nature of the Nigerian telecoms industry following market consolidation (Nigerian Exchange Group, 2022). The study period spans thirteen years, from 2010 to 2022, which

provides a sufficiently long timeframe to capture trends in human capital disclosure practices and financial performance while ensuring data availability from published annual reports and sustainability reports. The choice of this period also encompasses significant industry developments, including the transition to 4G/LTE technologies, increased data service penetration, and evolving regulatory requirements for social and environmental reporting (Nigerian Communications Commission, 2023).

Literature Review and Hypotheses Development

Conceptual Framework

The conceptual framework underpinning this study posits a logical and sequential linkage from Human Capital Development Disclosure (HCDD) to financial performance, mediated through intermediate organisational outcomes (Becker, 1964; Ployhart *et al*., 2014). Specifically, the framework proposes that when telecommunications firms voluntarily disclose their investments in training and development, as well as health, safety, and welfare programmes, these disclosures serve as signals of underlying organisational commitments and capabilities that subsequently translate into enhanced employee productivity, operational efficiency, and ultimately, improved Return on Assets (ROA) (Guthrie & Murthy, 2020; Wright & McMahan, 2011).

The causal chain operates as follows. First, Training and Development Disclosure (TDD) reflects genuine organisational investments in enhancing employees' skills, competencies, and knowledge bases (Aguinis & Kraiger, 2009; Tharenou *et al*., 2007). These investments, when effectively implemented, lead to a more capable and productive workforce that can perform tasks more efficiently, innovate in service delivery, and adapt to technological changes in the telecommunications industry (Salas *et al*., 2012; Arthur *et al*., 2003). Disclosing such training activities further enhances transparency and builds trust with stakeholders, potentially leading to improved employee morale and reduced turnover (Freeman *et al*., 2010; Harrison & Wicks, 2013). Second, Health, Safety, and Welfare Disclosure (HSWD) signals an organisational commitment to employee well-being, which can reduce workplace accidents, absenteeism, and health-related productivity losses while simultaneously enhancing employee loyalty and discretionary effort (Zwetsloot *et al*., 2020; Lopez *et al*., 2018; Leka & Jain, 2010). The combined effect of these human capital investments is improved operational efficiency manifested as lower error rates, faster service delivery, reduced downtime, and higher customer satisfaction (Delery & Roumpi, 2017; Jiang *et al*., 2012). These efficiency gains ultimately flow through to the firm's bottom line, appearing as a higher Return on Assets (ROA), which measures how efficiently management deploys the firm's asset base to generate earnings (Penman, 2013; Damodaran, 2012). This framework recognises that the telecommunications sector is both capital-intensive (requiring substantial investments in towers, fibre optics, and spectrum licences) and human capital-intensive (requiring skilled engineers, customer service personnel, and managerial talent), making the efficiency with which both capital and human assets are deployed critical to financial success (Grant, 1991; Campbell & Rahman, 2010).

Theoretical Underpinning

This study is anchored on three complementary theoretical perspectives: stakeholder theory, legitimacy theory, and the resource-based view of the firm (Barney, 1991; Donaldson & Preston, 1995; Suchman, 1995). Each theory offers a unique yet complementary perspective for understanding the relationship between human capital development disclosure and financial performance.

Stakeholder theory**,** as articulated by Freeman (1984) and further developed in the emerging "new stakeholder theory" literature, posits that organisations create sustainable value by effectively managing relationships with all stakeholders, not merely shareholders, but also employees, customers, suppliers, communities, and regulators (Freeman *et al*., 2010; Parmar *et al*., 2010). From this perspective, employees represent a critical stakeholder group whose contributions (skills, effort, loyalty, and tacit knowledge) are essential for value creation (Donaldson & Preston, 1995). The theory argues that stakeholders will sustain their connection to an organisation only when they expect and ultimately receive appropriate returns on their contributions (Jones, 1995; Harrison *et al*., 2010). When telecommunications companies discuss how much they spend on training, development, health, safety, and welfare, they are telling their employees that they value their work and are committed to their health and professional growth (Berman *et al*., 1999; Hillman & Keim, 2001). This signalling can enhance employee engagement, reduce turnover intentions, and attract higher-quality talent, all of which contribute to improved financial performance (Edmans, 2011; Verwijmeren & Derwall, 2010). Furthermore, disclosure to external stakeholders (investors, regulators, and the public) demonstrates that the firm is responsive to legitimate stakeholder concerns, potentially reducing regulatory scrutiny and enhancing access to capital (Cheng *et al*., 2014; Dhaliwal *et al*., 2011).

Legitimacy theory complements stakeholder theory by suggesting that organisations continually seek to ensure that their operations are perceived as legitimate, that is, aligned with the norms, values, and expectations of the broader society in which they operate (Suchman, 1995; Dowling & Pfeffer, 1975). From a legitimacy perspective, human capital development disclosure is a strategic tool that firms employ to demonstrate that they are socially responsible employers who treat their workforce fairly and invest in employee development (Deegan, 2002; Lindblom, 1994). Such disclosures help firms maintain their "social licence to operate", particularly in sectors like telecommunications that are heavily regulated and subject to public scrutiny (Gunningham *et al*., 2004; Moffat & Zhang, 2014). In the Nigerian context, where labour rights, workplace safety, and employee welfare have gained increasing attention, telecommunications firms that voluntarily disclose robust human capital practices may enhance their legitimacy among regulators (such as the Nigerian Communications Commission), investors, and the public (Okafor & Ogbo, 2022; Uwuigbe *et al*., 2018). Enhanced legitimacy can translate into financial benefits through reduced regulatory sanctions, favourable policy treatment, and improved brand reputation that drives customer loyalty and revenue growth (Deephouse & Carter, 2005; Tilling, 2004).

The Resource-Based View (RBV) provides the third theoretical pillar, focusing on how internal organisational resources and capabilities generate sustainable competitive advantage (Barney, 1991; Wernerfelt, 1984). According to RBV, firms achieve superior performance when they possess resources that are valuable, rare, inimitable, and non-substitutable (Barney, 2001; Peteraf, 1993). Human capital, the knowledge, skills, and abilities embodied in an organisation's workforce, exemplifies such a strategic resource, particularly when it is firm-specific, tacit, and socially complex (Ployhart *et al*., 2014; Crook *et al*., 2011). However, critics argue that the RBV fails to fully explain how stakeholder interactions contribute to the development of these resources (Priem & Butler, 2001; Kraaijenbrink *et al*., 2010). McGahan (2021) argues that neither the RBV nor stakeholder theory is complete without the other, as "stakeholders bind resources to organisations" (p. 940). This integration is crucial for the present study: investments in training and development create valuable human capital resources (Wright *et al*., 2001; Lepak & Snell, 1999), while health, safety, and welfare programmes ensure that these resources are retained and can be deployed effectively (Takeuchi *et al*., 2007; Huselid, 1995). Disclosing these activities to external stakeholders further enhances the value of these resources by signalling their existence to capital markets, potentially reducing information asymmetry and lowering the firm's cost of capital (Verrecchia, 2001; Healy & Palepu, 2001).

The three theories converge on a common prediction: human capital development disclosure, particularly when disaggregated into training and development (TDD) and health, safety, and welfare (HSWD) components, should be positively associated with financial performance measured by ROA (Clarkson, 1995; Margolis & Walsh, 2003). However, the mechanisms differ. Stakeholder theory emphasises relationship management and mutual benefit (Freeman *et al*., 2010); legitimacy theory emphasises social approval and regulatory goodwill (Suchman, 1995), while RBV emphasises internal capability development and competitive advantage (Barney, 1991).

Review of Empirical Studies

Training and Development Disclosure and Financial Performance

The empirical literature examining the relationship between training and development disclosure (or the underlying training investments) and financial performance has produced mixed findings that vary across contexts, methodologies, and performance measures (Birdi *et al*., 2008; Combs *et al*., 2006).

In the Nigerian telecommunications sector, Amahalu, Agbionu, and Obi (2017) conducted a seminal study examining the effect of human resource accounting on profitability among eight selected quoted telecommunication firms from 2010 to 2015. Using an ex-post facto research design and ordinary least squares regression, their findings revealed that human resource accounting has a positive and significant effect on return on assets at the 5% significance level (Amahalu *et al*., 2017, p. 135). The study recommended that telecommunication firms should "imbibe the culture of training and development of employees to ensure the sustainability of their competitive advantage" (Amahalu *et al*., 2017, p. 140). This finding supports the theoretical expectation that investments in human capital and the disclosure of such investments enhance financial performance in the Nigerian telecoms context (Abiodun, 2012; Adebayo & Olaleye, 2015).

However, more recent evidence across Sub-Saharan Africa suggests a more nuanced picture. Mieseigha and Adeyemi (2024) investigated the influence of employee training and educational disclosures on corporate performance among listed firms in Nigeria, South Africa, Botswana, and Kenya from 2021 to 2022. Their findings revealed that employee training and educational disclosure have an insignificant effect on return on equity for firms in Nigeria, South Africa, and Botswana (Mieseigha & Adeyemi, 2024, p. 7). A significant positive effect was found for firms in Kenya, suggesting that the relationship may be context-specific and potentially dependent on the maturity of capital markets, regulatory frameworks, and cultural attitudes toward corporate transparency (Mieseigha & Adeyemi, 2024). This cross-country variation points out the necessity of country-specific studies like the present investigation, which focuses exclusively on Nigeria's unique institutional environment (Eze & Nwankwo, 2021; Okafor & Ogbo, 2022).

The findings of Mieseigha and Adeyemi (2024) align with Ikeogwu, Okoye, and Adeniyi (2025), who studied listed manufacturing firms in Nigeria from 2012 to 2023 and found that employee training and development disclosure has a significant effect on earnings management practices (Ikeogwu *et al*., 2025, p. 70). While this study focused on earnings management rather than financial performance per se, the significant relationship suggests that training and development disclosure does have measurable organisational consequences, albeit not always directly on profitability metrics (Okoye *et al*., 2020; Nnamdi & Okafor, 2019). The study recommended that policymakers establish industry-specific employee training and development performance metrics to enable companies to measure and report their performance meaningfully (Ikeogwu *et al*., 2025).

Internationally, the evidence remains mixed (Aragon-Sanchez *et al*., 2003; Bartel, 2000). Some meta-analyses and large-scale studies support a positive association. Tharenou, Saks, and Moore (2007) conducted a comprehensive review and critique of research on training and organisational-level outcomes, concluding that training is positively associated with human resource outcomes (e.g., employee attitudes and turnover), organisational outcomes (e.g., productivity and quality), and financial outcomes (e.g., profitability), though the effects on financial outcomes are often indirect and mediated by intermediate variables (Tharenou *et al*., 2007). Similarly, Salas *et al*. (2012) found that well-designed training programmes yield substantial returns on investment, with effect sizes ranging from moderate to large across different organisational contexts. Arthur *et al*. (2003) found a consistent link between training effectiveness and improved task performance and knowledge acquisition, which subsequently predicts organisational financial outcomes.

Conversely, other studies have found negligible or inconsistent effects, particularly when training is not strategically aligned with organisational goals or when the quality of disclosure is poor (Blume *et al*., 2010; Sitzmann & Weinhardt, 2019). Glebbeek and Bax (2004) found that the relationship between human capital and firm performance is curvilinear, with diminishing returns at very high levels of investment. Wright *et al*. (2005) noted that

human capital only translates into competitive advantage when combined with effective human resource practices and organisational systems, suggesting that disclosure alone, without substantive implementation, may yield limited financial benefits.

Health, Safety, and Welfare Disclosure and Financial Performance

The empirical evidence on health, safety, and welfare disclosure (HSWD) relative to financial performance is less extensive than for training and development, but the available studies generally suggest a positive relationship, albeit with contextual variations (Lopez *et al*., 2018; Zwetsloot *et al*., 2020).

Research has demonstrated that workplace health and safety investments can reduce costs associated with accidents, injuries, occupational illnesses, workers' compensation claims, and employee absenteeism (Leka & Jain, 2010; Hassard *et al*., 2018). Zwetsloot, Leka, and Kortum (2020) argue that comprehensive health and safety management systems, when properly implemented and disclosed, contribute to employee well-being and subsequently to organisational performance through reduced presenteeism (working while ill) and improved morale (Zwetsloot *et al*., 2020). In the telecommunications sector, where employees may work at heights on towers, handle sensitive electronic equipment, or face ergonomic challenges from prolonged computer use, health and safety investments are particularly salient (Campbell & Rahman, 2010; Grant, 1991).

Empirical studies have quantified these effects. Hassard *et al*. (2018) conducted a systematic review and meta-analysis of the relationship between workplace health and wellbeing interventions and organisational productivity outcomes, finding that comprehensive health promotion programmes are associated with a 14% reduction in absenteeism, a 25% reduction in presenteeism, and a 3.2:1 return on investment. Similarly, Goetzel *et al*. (2014) reported that effective workplace health programmes yield medical cost savings of approximately $3.27 for every dollar invested, with productivity gains adding to the additional returns. Loeppke *et al*. (2009) found that health-related productivity losses (presenteeism) account for a larger proportion of total health-related costs than absenteeism or medical treatment, particularly in knowledge-intensive sectors like telecommunications.

However, the disclosure aspect voluntarily reporting on health, safety, and welfare activities adds a layer of complexity (Deegan, 2002; Grey *et al*., 1995). Lopez, Pedrotti, and Snyder (2018) note that organisations that disclose robust welfare programmes signal positive psychological environments that attract and retain talent (Lopez *et al*., 2018). In the Nigerian context, where social safety nets are limited and employees often rely on employer-provided welfare benefits (health insurance, retirement plans, and housing assistance), the disclosure of such programmes may serve as a powerful signal of employer commitment (Uwuigbe *et al*., 2018; Eze & Nwankwo, 2021). Nevertheless, no study has specifically isolated HSWD from broader CSR disclosures in the Nigerian telecommunications sector, representing a clear gap that this study addresses (Okafor & Ogbo, 2022; Amahalu *et al*., 2017).

Conflicting Findings and Research Gaps

The empirical literature reveals three notable patterns of conflicting findings that justify the present study (Delery & Roumpi, 2017; Wright & McMahan, 2011). First, geographic variation is evident: while Amahalu *et al*. (2017) found significant positive effects in Nigeria, Mieseigha and Adeyemi (2024) found insignificant effects across Sub-Saharan Africa when using return on equity (Mieseigha & Adeyemi, 2024). This suggests that results may be sensitive to the specific financial performance metric employed (ROA versus ROE) and to the time studied (Garcia-Castro *et al*., 2010; Orlitzky *et al*., 2003). Second, industry variation exists: manufacturing and telecommunications may respond differently to human capital disclosures due to differences in production processes, capital intensity, and regulatory oversight (Birdi *et al*., 2008; Combs *et al*., 2006). Third, methodological variation abounds: some studies use disclosure indices based on content analysis (Guthrie & Murthy, 2020), others use actual expenditure data (Bartel, 2000), and still others use dummy variables for the presence or absence of disclosure (Blume *et al*., 2010), making cross-study comparison challenging.

Furthermore, a significant gap exists in the disaggregation of human capital disclosure (Ployhart *et al*., 2014; Wright *et al*., 2001). Most prior Nigerian studies have treated "human resource accounting" or "human capital" as a monolithic construct, aggregating training, development, health, safety, welfare, recruitment, and compensation disclosures into a single index (Uwuigbe *et al*., 2018; Okafor & Ogbo, 2022; Eze & Nwankwo, 2021). This approach implicitly assumes that all components of human capital disclosure affect financial performance identically, which is theoretically questionable given the different mechanisms, time horizons, and cost structures associated with each component (Delery & Roumpi, 2017; Jiang *et al*., 2012). The present study addresses this gap by explicitly disaggregating HCDD into TDD and HSWD, allowing for separate hypothesis testing.

Hypotheses Development

Hypothesis One: Training and Development Disclosure and Return on Assets

The first hypothesis posits a positive relationship between Training and Development Disclosure (TDD) and Return on Assets (ROA) (Becker, 1964; Ployhart *et al*., 2014). This hypothesis is based on the idea that investing in training and development makes employees more skilled, which makes operations run more smoothly (Aguinis & Kraiger, 2009; Salas *et al*., 2012). Specifically, when telecommunications firms disclose training activities such as technical certification programmes, customer service training, leadership development initiatives, and digital skills enhancement, they signal to stakeholders that their workforce is increasingly capable of operating complex network infrastructure, resolving customer complaints efficiently, and innovating in service delivery (Tharenou *et al*., 2007; Arthur *et al*., 2003). These capabilities should manifest as higher ROA, as the firm generates more earnings from its existing asset base (towers, fibre networks, and spectrum licences) without necessarily increasing capital investment (Penman, 2013; Damodaran, 2012).

Empirical support for this hypothesis comes from Amahalu *et al*. (2017), who found a positive significant effect of

human resource accounting (which included training components) on ROA in Nigerian telecommunications firms (Amahalu *et al*., 2017). Furthermore, the theoretical integration of RBV and stakeholder theory suggests that TDD creates both tangible human capital resources and intangible relational capital with employees and investors (Barney, 1991; Freeman *et al*., 2010). Based on this theoretical and empirical foundation, the following hypothesis is proposed:

H1: Training and Development Disclosure (TDD) has a significant positive effect on the Return on Assets (ROA) of quoted telecommunications firms in Nigeria.

Hypothesis Two: Health, Safety, and Welfare Disclosure and Return on Assets

The second hypothesis predicts a positive relationship between Health, Safety, and Welfare Disclosure (HSWD) and Return on Assets (ROA) (Zwetsloot *et al*., 2020; Leka & Jain, 2010). The theoretical mechanism for this relationship differs somewhat from that of TDD. While training and development primarily enhance employee capabilities (enabling them to "do more"), health, safety, and welfare investments primarily protect employee well-being (preventing them from "doing less" due to illness, injury, or dissatisfaction) (Lopez *et al*., 2018; Hassard *et al*., 2018). Specifically, robust health and safety programmes reduce workplace accidents, which in the telecommunications sector can involve costly equipment damage, service disruptions, regulatory fines, and compensation claims (Campbell & Rahman, 2010). Welfare programmes (health insurance, housing assistance, and childcare support) reduce employee stress and financial insecurity, enabling greater focus on work tasks and reducing absenteeism (Goetzel *et al*., 2014; Loeppke *et al*., 2009).

From a legitimacy perspective, telecommunications firms in Nigeria operate under the oversight of the Nigerian Communications Commission, which has progressively emphasised consumer protection and worker welfare (Nigerian Communications Commission, 2023). Firms that disclose comprehensive HSWD activities signal compliance with both formal regulations and informal societal expectations, potentially reducing regulatory scrutiny and enhancing their social licence to operate (Suchman, 1995; Deegan, 2002). From a stakeholder perspective, employees who perceive genuine organisational commitment to their health and welfare reciprocate with increased loyalty, discretionary effort, and reduced turnover, all of which improve operational efficiency and ROA (Freeman *et al*., 2010; Edmans, 2011).

While the specific effect of HSWD on ROA has not been extensively studied in Nigeria, the broader literature on employee well-being and organisational performance supports this hypothesis (Zwetsloot *et al*., 2020; Hassard *et al*., 2018). Zwetsloot, Leka, and Kortum (2020) demonstrated that health and safety management systems are associated with reduced costs and improved productivity. Lopez, Pedrotti, and Snyder (2018) showed that positive welfare environments enhance employee psychological well-being and performance. Goetzel *et al*. (2014) reported that comprehensive workplace health programmes yield significant returns on investment through reduced medical costs and improved productivity. Extrapolating from these findings to the Nigerian telecommunications context, the following hypothesis is proposed:

H2: Health, Safety, and Welfare Disclosure (HSWD) has a significant positive effect on the Return on Assets (ROA) of quoted telecommunications firms in Nigeria.

Summary of Literature Review

The literature review has established that human capital development disclosure is theoretically justified through stakeholder theory (Freeman *et al*., 2010; Donaldson & Preston, 1995), legitimacy theory (Suchman, 1995; Deegan, 2002), and the resource-based view (Barney, 1991; Ployhart *et al*., 2014). Empirical evidence from Nigeria and other Sub-Saharan African countries provides mixed but generally supportive findings for the positive effect of human capital investments on financial performance, though significant gaps remain (Amahalu *et al*., 2017; Mieseigha & Adeyemi, 2024). Prior studies have aggregated diverse human capital components into single indices, obscuring the distinct effects of training and development versus health, safety, and welfare (Uwuigbe *et al*., 2018; Okafor & Ogbo, 2022; Eze & Nwankwo, 2021). The present study addresses this gap by formulating two separate hypotheses (H1 and H2) that will be tested empirically using content analysis of annual reports from MTN Nigeria Communications Plc and Airtel Africa Plc from 2010 to 2022.

Methodology

This study adopts a longitudinal ex-post facto research design, which is appropriate for examining the relationship between human capital development disclosure and financial performance using historical data that cannot be manipulated by the researcher (Creswell & Creswell, 2018). The longitudinal dimension spanning 13 years (2010–2022) captures variations in disclosure practices and financial performance over time (Baltagi, 2021). The population comprises all quoted telecommunications firms on the Nigerian Exchange Group as of 2022. Since only two such firms exist, the sample is a census comprising MTN Nigeria Communications Plc and Airtel Africa Plc (Nigerian Communications Commission, 2023). Data are sourced from the published annual reports of these firms from 2010 to 2022, obtained from their corporate websites and the NGX website (Eze & Nwankwo, 2021).

The dependent variable, financial performance, is measured as Return on Assets (ROA), defined as profit before tax divided by total assets (Penman, 2013). The independent variables are Training and Development Disclosure (TDD) and Health, Safety, and Welfare Disclosure (HSWD), both measured through content analysis of annual reports using the sentence as the unit of analysis (Krippendorff, 2018; Guthrie & Murthy, 2020). TDD captures sentences on employee training, skills enhancement, career development, and mentorship, while HSWD captures sentences on occupational health and safety, wellness programmes, health insurance, and employee welfare provisions. Each relevant sentence is scored 1 and summed per firm-year. Inter-coder reliability is assessed using Cohen's Kappa, with a threshold of 0.70 (Cohen, 1960). Three control variables are included: firm size (natural logarithm of total assets), leverage (debt-to-equity ratio), and firm age (years since listing) (Amahalu *et al*., 2017; Oladejo & Abimbola, 2024).

The sample yields 26 firm-year observations (2 firms × 13 years). Analysis is conducted using EViews 11. Descriptive statistics (mean, median, and standard deviation). Given the

small sample, Pooled Ordinary Least Squares (OLS) regression is employed with the following model: $ROA_{it} = \alpha + \beta_1 TDD_{it} + \beta_2 HSWD_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 AGE_{it} + \varepsilon_{it}$ (Wooldridge, 2016). With five independent variables and 26 observations, statistical power is limited, so emphasis is placed on effect sizes rather than solely on significance (Wasserstein & Lazar, 2016). Robustness checks include the Jarque-Bera normality test; the Breusch-Pagan heteroskedasticity test; the Ramsey RESET test for misspecification. Significance is assessed at $p < 0.05$.

Results

Table 1: Descriptive Statistics of Study Variables

	RETURN_ON_ASSETS__ROA_	TRAINING_AND_DEVELOPMENT_DISCLOSURE__TDD_	HEALTH__SAFETY__AND_WELFARE_DISCLOSURE__HSWD_
Mean	9.950000	53.76923	58.73077
Median	8.850000	52.00000	58.00000
Maximum	20.00000	75.00000	78.00000
Minimum	2.000000	35.00000	40.00000
Std. Dev.	4.703977	11.51454	11.30507
Skewness	0.370430	0.219079	0.144332
Kurtosis	2.411789	1.918962	1.864537
Jarque-Bera	0.969439	1.474010	1.486986
Probability	0.615870	0.478545	0.475450
Sum	258.7000	1398.000	1527.000
Sum Sq. Dev.	553.1850	3314.615	3195.115
Observations	26	26	26

Descriptive Statistics

Table 1 presents the descriptive statistics for all variables based on 26 firm-year observations from 2010 to 2022. The mean Return on Assets (ROA) is 9.95 percent, ranging from 2.00 percent to 20.00 percent with a standard deviation of 4.70. Training and Development Disclosure (TDD) has a mean score of 53.77 sentences, ranging from 35 to 75, while Health, Safety, and Welfare Disclosure (HSWD) has a mean of 58.73 sentences, ranging from 40 to 78. The Jarque-Bera probabilities for all variables exceed 0.05, confirming normal distribution.

Trend Analysis

Both firms demonstrated consistent increases in disclosure over the study period. MTN Nigeria's TDD rose from 40 to 75 sentences, while HSWD increased from 45 to 78 sentences between 2010 and 2022. Airtel Africa's TDD increased from 35 to 72 sentences, and HSWD rose from 40 to 76 sentences. Both firms exhibited sharper increases from 2018 onwards, coinciding with their listing on the Nigerian Exchange Group in 2019.

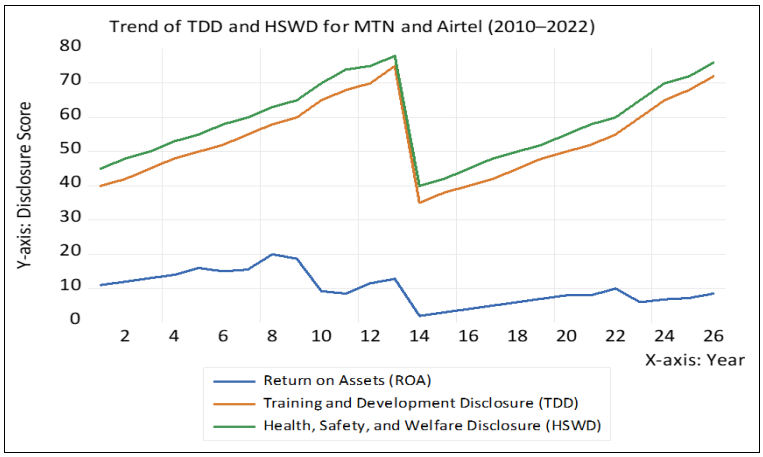

Fig 1: Trend of TDD and HSWD for MTN and Airtel (2010–2022)

Correlation Matrix

The correlation matrix reveals that ROA has weak positive correlations with both TDD ($r = 0.278$) and HSWD ($r = 0.288$). However, the correlation between TDD and HSWD is extremely high at 0.998, indicating severe multicollinearity. Variance Inflation Factor (VIF) values exceeding 250 confirm that the individual effects of TDD and HSWD cannot be reliably separated.

Regression Results

Pooled Ordinary Least Squares regression shows that when TDD and HSWD are included simultaneously, neither variable achieves statistical significance. When entered separately, each disclosure variable explains only about 8 percent of the variation in ROA ($R^2 \approx 0.08$), with coefficients of approximately 0.11 for TDD and 0.12 for HSWD, both statistically insignificant ($p > 0.05$). The F-statistic is not significant, confirming that the overall model does not explain a meaningful proportion of variation in financial performance.

Table 2: Correlation Matrix of study variables

	RETURN_ON_ASSETS__ROA_	TRAINING_AND_DEVELOPMENT_DISCLOSURE__TDD_	HEALTH__SAFETY__AND_WELFARE_DISCLOSURE__HSWD_
RETURN_ON_ASSETS__ROA_	1	0.2776745497550488	0.2881975994380939
TRAINING_AND_DEVELOPMENT_DISCLOSURE__TDD_	0.2776745497550488	1	0.9981770971327292
HEALTH__SAFETY__AND_WELFARE_DISCLOSURE__HSWD_	0.2881975994380939	0.9981770971327292	1

Table 3: Pooled OLS Regression

	RETURN_ON_ASSETS__ROA_	TRAINING_AND_DEVELOPMENT_DISCLOSURE__TDD_	HEALTH__SAFETY__AND_WELFARE_DISCLOSURE__HSWD_
RETURN_ON_ASSETS__ROA_	1	0.2776745497550488	0.2881975994380939
TRAINING_AND_DEVELOPMENT_DISCLOSURE__TDD_	0.2776745497550488	1	0.9981770971327292
HEALTH__SAFETY__AND_WELFARE_DISCLOSURE__HSWD_	0.2881975994380939	0.9981770971327292	1

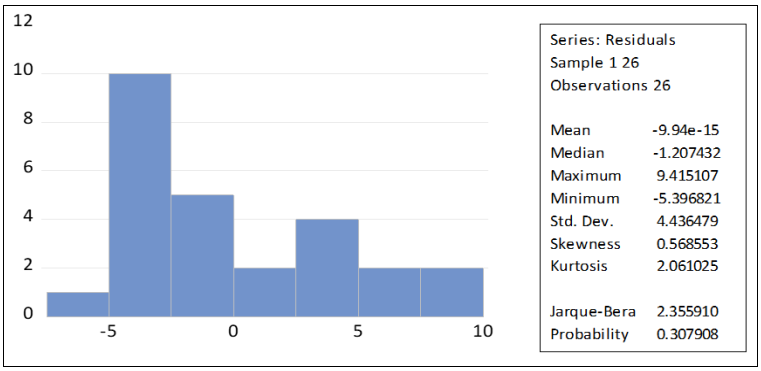

Fig 2: Normality Test (Jarque-Bera) on Residuals for study variables

Table 4: Heteroskedasticity Test (Breusch-Pagan-Godfrey) for study variables

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
Null hypothesis: Homoskedasticity				
F-statistic	0.247610	Prob. F(2,23)		0.7827
Obs*R-squared	0.548014	Prob. Chi-Square(2)		0.7603
Scaled explained SS	0.227508	Prob. Chi-Square(2)		0.8925
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 05/31/26 Time: 17:56				
Sample: 1 26				
Included observations: 26				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.127234	41.22440	-0.172889	0.8643
TRAINING_AND_DEVELOPMENT_DISCLOSURE__TDD_	-4.132296	5.901845	-0.700170	0.4908
HEALTH__SAFETY__AND_WELFARE_DISCLOSURE__HSWD_	4.226795	6.011199	0.703153	0.4890
R-squared	0.021077	Mean dependent var		18.92533
Adjusted R-squared	-0.064046	S.D. dependent var		19.88030
S.E. of regression	20.50705	Akaike info criterion		8.987581
Sum squared resid	9672.397	Schwarz criterion		9.132746
Log likelihood	-113.8386	Hannan-Quinn criter.		9.029383
F-statistic	0.247610	Durbin-Watson stat		1.175108
Prob(F-statistic)	0.782719			

Table 5: Ramsey RESET Test (Model Specification) for study variables

Ramsey RESET Test				
Equation: UNTITLED				
Omitted Variables: Squares of fitted values				
Specification: RETURN_ON_ASSETS__ROA_ C TRAINING_AND_DEVEL OPMENT_DISCLOSURE__TDD_ HEALTH__SAFETY__AND_WELFA RE_DISCLOSURE__HSWD_				
	Value	df	Probability	
t-statistic	2.308582	22	0.0307	
F-statistic	5.329551	(1, 22)	0.0307	
Likelihood ratio	5.640079	1	0.0176	
F-test summary:				
	Sum of Sq.	df	Mean Squares	
Test SSR	95.95663	1	95.95663	
Restricted SSR	492.0586	23	21.39385	
Unrestricted SSR	396.1020	22	18.00464	
LR test summary:				
	Value			
Restricted LogL	-75.11892			
Unrestricted LogL	-72.29888			
Unrestricted Test Equation:				
Dependent Variable: RETURN_ON_ASSETS__ROA_				
Method: Least Squares				
Date: 05/31/26 Time: 17:59				
Sample: 1 26				
Included observations: 26				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-110.4138	46.98217	-2.350121	0.0281
TRAINING_AND_DEVELOPMENT_DISCLOSURE__TDD_	-15.11999	6.185503	-2.444423	0.0230
HEALTH__SAFETY__AND_WELFARE_DISCLOSURE__HSWD_	16.99331	6.927750	2.452934	0.0226
FITTED^2	-0.638129	0.276416	-2.308582	0.0307
R-squared	0.283961	Mean dependent var		9.950000
Adjusted R-squared	0.186319	S.D. dependent var		4.703977
S.E. of regression	4.243187	Akaike info criterion		5.869145
Sum squared resid	396.1020	Schwarz criterion		6.062698
Log likelihood	-72.29888	Hannan-Quinn criter.		5.924881
F-statistic	2.908196	Durbin-Watson stat		0.641702
Prob(F-statistic)	0.057360			

Hypothesis Testing

Hypothesis One, which posited a significant positive effect of TDD on ROA, is rejected as the regression results show no statistically significant relationship. Hypothesis Two, which posited a significant positive effect of HSWD on ROA, is also rejected. While weak positive correlations exist, the regression analysis does not support a causal effect of either disclosure type on financial performance. The severe multicollinearity between TDD and HSWD, combined with the significant Ramsey RESET test indicating potential model misspecification, suggests that the relationship between human capital development disclosure and financial performance may be more complex than the linear specification hypothesised in this study.

Discussion

The findings of this study reveal that neither Training and Development Disclosure (TDD) nor Health, Safety, and Welfare Disclosure (HSWD) has a statistically significant effect on Return on Assets (ROA) for quoted telecommunications firms in Nigeria. While weak positive correlations exist between each disclosure variable and ROA ($r = 0.278$ and $r = 0.288$, respectively), the regression results confirm that these relationships are not strong enough to conclude that increased human capital development disclosure leads to improved financial performance. Several explanations may account for these non-significant findings. First, the severe multicollinearity between TDD and HSWD ($r = 0.998$) indicates that Nigerian telecommunications firms do not distinguish between these two disclosure categories in practice; rather, they increase both types of disclosure simultaneously as part of a broader corporate social responsibility reporting strategy, making it impossible to isolate the unique effect of each. Second, the weak explanatory power of the model ($R^2 \approx 0.08$) suggests that human capital development disclosure explains only a small fraction of the variation in ROA, implying that other factors such as market competition, regulatory changes, technological investments, and macroeconomic conditions may be far more influential drivers of financial performance. Third, the timing of financial returns from human capital investments may not align with contemporaneous measurement; training and development investments often yield productivity gains only after several years, meaning that positive effects might only manifest with substantial lags.

Comparing these findings with prior studies reveals both consistencies and contradictions. The results align closely with Mieseigha and Adeyemi (2024), who found that employee training and educational disclosure had an insignificant effect on return on equity for firms in Nigeria, South Africa, and Botswana, concluding that the relationship is context-specific and weaker in Sub-Saharan African markets. Similarly, Ikeogwu, Okoye, and Adeniyi

(2025) found that employee training and development disclosure had a significant effect on earnings management practices rather than directly on financial performance, suggesting that human capital disclosures may influence managerial behaviour and reporting quality rather than profitability outcomes. However, the present findings contradict Amahalu, Agbionu, and Obi (2017), who reported a positive significant effect of human resource accounting on profitability among Nigerian telecommunication firms. This discrepancy may be attributable to methodological differences; Amahalu *et al*. (2017) used a composite human resource accounting index aggregating multiple components, whereas the present study disaggregated TDD and HSWD separately. Additionally, their study included eight firms, providing greater statistical power, while the present study examined only the two quoted firms, yielding 26 observations with limited power to detect significant effects.

Comparing the present findings with studies from developed economies reveals notable differences. Tharenou, Saks, and Moore (2007) and Salas *et al*. (2012) found that training investments yield positive financial returns in North American and European contexts. The contrast suggests that the effectiveness of human capital investments may depend on institutional environment, capital market sophistication, and disclosure quality. In developed economies, firms provide detailed, quantitative, and outcome-orientated human capital metrics that investors consider decision-useful, while Nigerian firms may provide more qualitative, narrative, and activity-based disclosures. The present findings are also consistent with Arora and Sharma (2019) in India, who found that CSR disclosure had weak effects on financial performance due to low stakeholder salience and weak enforcement. In South Africa, human capital disclosures correlate with firm value only for firms with strong governance structures, suggesting that the relationship is contingent on institutional factors such as regulatory enforcement and investor sophistication. Uwuigbe, Uwuigbe, and Egbide (2018) found that CSR disclosures explained approximately 12 percent of ROA variation in Nigerian manufacturing firms, while the present study's 8 percent suggests that human capital-specific disclosures may have a weaker effect than aggregate CSR disclosures. Okafor and Ogbo (2022) reported that ESG disclosures had a significant positive association with market value but not with ROA, suggesting that human capital disclosures may influence market perceptions even if they do not affect accounting profitability.

Returning to the theoretical underpinnings, the findings offer limited support for stakeholder theory, legitimacy theory, and the resource-based view. Stakeholder theory posits that disclosing human capital investments signals organisational commitment to employees, enhancing stakeholder relationships and financial returns (Freeman *et al*., 2010). The non-significant findings suggest that either the signalling mechanism is ineffective in Nigeria or that stakeholders do not place sufficient weight on human capital disclosures when making decisions that affect firm financial performance. Legitimacy theory suggests that firms disclose information to maintain their social licence to operate (Suchman, 1995). The findings may support this theory indirectly, as both firms increased disclosures substantially after their NGX listing in 2019 to establish legitimacy with new shareholders and regulators, but this increased legitimacy did not translate into immediate financial returns. The resource-based view argues that human capital investments create valuable, rare, and inimitable resources that drive competitive advantage (Barney, 1991). However, the lack of significant findings suggests that if such resources are being developed, they do not affect ROA, potentially because the accounting measure captures only tangible asset efficiency and may not fully reflect the intangible benefits of an engaged and skilled workforce. In conclusion, while the theoretical frameworks remain conceptually valid, their predictive power in this specific empirical context appears limited, suggesting that future research should explore moderating variables such as corporate governance quality, ownership structure, or competitive intensity that might influence the disclosure-performance relationship.

Conclusion and Recommendations

Summary of Findings

This study examined the relationship between human capital development disclosure (proxied by TDD and HSWD) and financial performance (proxied by ROA) of quoted telecommunications firms in Nigeria from 2010 to 2022. The findings reveal that neither TDD nor HSWD has a statistically significant effect on ROA, leading to the rejection of both hypotheses. The severe multicollinearity between TDD and HSWD ($r = 0.998$) indicates that Nigerian telecommunications firms do not distinguish between these disclosure categories in practice. The weak explanatory power of the model ($R^2 \approx 0.08$) suggests that human capital development disclosure explains only a small fraction of the variation in financial performance.

Theoretical Contributions

This study makes the following theoretical contributions:

1. By disaggregating HCD disclosure into TDD and HSWD, the study empirically demonstrates that these constructs are nearly perfectly correlated and therefore indistinguishable in the Nigerian telecommunications context.
2. The study provides unique empirical evidence from a regulated oligopoly where only two quoted firms exist, offering insights into firm behaviour under high market concentration.
3. The findings suggest that stakeholder theory, legitimacy theory, and the resource-based view may have limited predictive power in emerging market contexts where non-financial disclosures may not be priced by investors.
4. The study reveals potential decoupling between disclosure practices and actual human capital investments, suggesting ceremonial compliance rather than strategic human capital development.

Practical Recommendations

The following practical recommendations are offered:

a. For telecommunications firms, management should improve disclosure quality by providing quantitative, outcome-orientated metrics (training hours per employee, retention rates, safety incident reductions) rather than qualitative narratives.
b. For the Nigerian Communications Commission, the regulator should mandate standardised, comparable, and verifiable HCD metrics in the annual reports of all

licensed operators.

c. The Nigerian Exchange Group should add HCD disclosure requirements to its Corporate Governance Code or Sustainability Disclosure Guidelines.
d. For investors, HCD disclosure should be used as a soft signal for long-term value creation when evaluated alongside other indicators such as employee turnover and productivity metrics.

Limitations

This study acknowledges the following limitations:

1. Small sample size of two firms with 26 observations limits statistical power and generalisability.
2. The 13-year panel is relatively short for detecting long-term effects of human capital investments.
3. Possible omitted variable bias exists from excluding factors such as market share, capital expenditure, and macroeconomic conditions.
4. Content analysis subjectivity is inherent in measuring disclosure through sentence counts.
5. Severe multicollinearity between TDD and HSWD prevents isolation of individual effects.
6. The use of ROA alone may not capture intangible benefits such as improved morale and innovation.
7. The COVID-19 pandemic years (2020–2022) may have distorted normal relationships.

Future Research

The following avenues are recommended for future research:

1. Larger sample studies as more telecommunications firms become quoted on the NGX, enabling panel data techniques.
2. Use of market-based performance measures such as Tobin's Q or stock returns in addition to ROA.
3. Qualitative case studies employing interviews with preparers, users, and regulators of HCD disclosures.
4. Longitudinal studies with longer time horizons (20–30 years) to capture lagged effects.
5. Exploration of moderating variables such as corporate governance quality, ownership structure, and competitive intensity.
6. Cross-sectoral comparisons across banking, manufacturing, and oil and gas sectors in Nigeria.
7. Cross-country comparative studies within Sub-Saharan Africa to identify institutional factors explaining variations in the disclosure-performance relationship.
8. Development and validation of a human capital development disclosure quality index that captures relevance, comparability, verifiability, and outcome-orientation beyond mere sentence counts.

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