Impact of Integrity and Internal Audit Transparency on Audit Quality: The Moderating Role of Blockchain

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ABSTRACT

In today's corporate environment, the success of external auditors for producing quality reports depends on internal audit functions. Hence, ensuring internal audit quality is a must. Auditors' integrity and the presence of a transparent internal auditing process may all help to ensure internal audit quality. In this regard, with its irreversible nature, evolving blockchain technology (BT) is playing a critical role in offering a triple entry accounting system. Thus, the purpose of this article is to describe how integrity (INTI) and internal audit transparency (TRPY) affect internal audit quality (AQLY). It also assesses the potential of blockchain technology as a moderating function in influencing AQLY. The Partial Least Square Structural Equation Model (PLS-SEM) was used to describe the causal connection in this research. A self-administrated questionnaire was used to obtain primary data from Bangladeshi accounts and audit practitioners. According to the results, integrity and internal audit transparency substantially influence AQLY. The potential application of blockchain (APBN) has been discovered to moderate the relation between INTI and AQLY. TRPY and AQLY have a similar relationship, which APBN moderates. Thus, this research established a unique model employing INTI, TRPY, and APBN as the determinants, which provided a novel outlook in explaining the factors that can help in improving audit quality.

Keywords: Audit Quality; Blockchain; Integrity; Transparency; PLS-SEM

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INTRODUCTION

Internal audit functions are becoming increasingly important, necessitating a greater focus on internal audit quality (AQLY) (Abbott et al., 2016). AQLY is a major concern for internal and external auditors (Gramling & Vandervelde, 2006). Audit quality refers to the combined likelihood that an existing substantial misrepresentation would be identified and disclosed by an auditor, according to the audit objectives (DeAngelo, 1981). The capacity of an audit to eliminate distortion and prejudice while increasing the integrity of accounting data determines AQLY (Watkins et al., 2004). Internal audit is one of the four foundations of corporate governance, according to Gramling et al. (2004). Internal auditing has been stressed and acknowledged as having a crucial role in enhancing the quality of financial reporting (Cohen et al., 2002).

In recent times, the audit quality in Bangladesh has seriously been criticized, and internal audit functions are recommended to be strengthened (Kabir et al., 2021c). Hence, there is a concern about ensuring audit quality which motivated the researchers to initiate this research. It was found that most of the earlier research focused on factors that influence audit quality from the standpoint of external auditing like auditor's independence, client priority, audit firm's age, rotating auditors, and auditing fees (Carey & Simnett, 2006; Nurdiono & Gamayuni, 2018; Xinyuan & Lijun, 2006). Another body of research looked at various aspects of auditors and audit companies, such as the demographics of auditors and the images of audit firms (Cheng et al., 2009; Gong et al., 2016; Gul et al., 2013; He et al., 2018; Jun-xiong, 2011). As timely and accurate outputs are required to ensure a quality audit, internal audit transparency and efficiency are also critical elements influencing audit quality though not many studies are found in this regard (Knechel et al., 2009). However, some studies on internal audit quality determinants have been conducted mainly highlighting internal audit function and audit quality (Yassin & Nelson, 2012). Unlike previous research, this article extends the audit literature by including integrity and internal audit transparency as predictors of audit quality. Since the purpose of internal auditing procedures is to discover and assess the possibility of material misstatement in financial recording, integrity (INTI) and internal audit transparency (TRPY) are critical in ensuring audit quality (Hanim et al., 2017).

INTI refers to a person's commitment to ethical conduct, such as morality and honesty. INTI may also be defined as the degree to which people or groups of persons conform to the environment's legitimate ideas and assumptions (Lobnikar & Meko, 2015). Thus, while carrying out internal audit functions, internal auditors are expected to commit to their ethical code of conduct while ensuring utmost honesty and integrity (Yassin & Nelson, 2012).

With the rapid advancement of technology, blockchain technology (BT) has emerged for various applications. BT offers realistic innovation for businesses to develop a value proposition and distinctive data sharing protocols and enterprise applications, as well as an innovative organizational framework (Chin et al., 2021, Kabir et al., 2021a; Kabir et al., 2021b). Bonsón and Bednárová (2019) provided an in-depth analysis of blockchain and its influence on accounts and audit regimes. Their claim is that using blockchain in audit can ensure significant benefits. According to Kabir (2021), the implementation of blockchain can offer transparency to operations. Similarly, transparency may help risk mitigation and enhance reporting quality (Kabir et al., 2019).

The significance of INTI and TRPY for quality auditing is well established in previous research (Arens et al., 2014; Bell et al., 2005; Carcello et al., 2020). Likewise, studies have shown that BT may be used in accountancy, audit, and taxing (Bonsón & Bednárová, 2019; Kabir, 2021). If an auditor fails to notice or report a substantial fault in documentation, AQLY suffers (Alsughayer, 2021). Again, the auditor's capacity to conduct the audit functions reasonably to improve the integrity of financial records and ensure audit quality is determined by particular characteristics of auditors (DeAngelo, 1982; Johnson et al., 2002; Sulaiman, 2018). AQLY is shaped by combining these characteristics (DeAngelo, 1981). Thus, because of the priority on internal audit quality, there is a growing body of research on this topic in recent years (Alsughayer, 2021).

Consequently, the goal of this article is to give empirical proof of the influence of an auditor's unique traits, such as integrity and internal audit transparency, on audit quality, as seen through the eyes of internal auditors and accountants participating in the internal audit process. A few external auditors' opinions were also considered to strengthen our

arguments. Internal auditors' perceptions of audit quality and variables impacting audit quality in Bangladesh were the focus of this research as there are limited studies that combined the impacts of INTI, TRPY, and technology use on internal AQLY. This research, thus, is distinctive in that it looked at the function of blockchain in moderating the relationship between transparency, integrity, and audit quality (Kabir et al., 2021c). This study fills a vacuum in the auditing literature by exploring the significance of quality auditing and contributing to research on the issue. The findings will be valuable to Bangladesh and other nations with comparable social, cultural, and financial realities, offering policymakers a means to improve the sector.

The remainder of the paper is divided into four parts. The first segment includes a literature survey on the issues relevant to the study and establishes the research hypotheses. The study methodology, data collection, and sampling procedures are presented in the second part. The results are discussed in part three, and the study conclusion is outlined in segment four.

LITERATURE AND RESEARCH FRAMEWORK

Literature on INTI and TRPY

INTI is currently being argued, and several concepts have been proposed. The term "integrity" comes from the Latin word "integrate," which means "complete" (Irianto et al., 2012). The term "complete" refers that the audit procedure is completed without faults. As per Githui (2014), people with low levels of integrity are more prone to commit fraud because people with integrity are seen as trustworthy, knowledgeable, competent, and self-assured.

Consequently, these qualities will make it difficult for people to engage in deceitful behaviour. Since fraud and intentional financial recording errors are critical issues against audit quality, integrity has a vital role to play in this regard. Hence, it is reasonable to argue that integrity positively relates to the quality of internal auditing. As per Chen et al. (2013), internal auditors who lack INTI are more prone to violate rules and standards to get personal gain at the cost of others. Thus, internal auditors without integrity are thought to commit a breach of professional ethics leading to poor audit quality.

As per Ningrum and Wedari (2017), the INTI criterion requires auditors to be honest, bold, competent, and accountable to foster the credibility of the audit process. When an internal audit team performs an audit in this manner, external auditors' trust can be developed, allowing for more responsible decision-making (Ningrum & Wedari, 2017; Wardayati, 2016). Auditor's integrity is a vital aspect of the audit process, and it has a favourable impact on audit quality (Kamil & Fathonah, 2020; Kertarajasa et al., 2019; Octaviani & Ekasari, 2021; Prabowo & Suhartini, 2021). Internal audit (IA) must exhibit exceptional efficiency and effectiveness to take advantage of this potential. IAs are critical for an organization which differs from external audits (Deloitte, 2006; Rezaee, 2008). IA is typically the first line of protection against errors by identifying both unintentional faults caused by weaknesses in a company's financial records and deliberate discrepancies by deceit.

Consequently, companies with a solid and transparent IA department may have better auditing quality. IA should demonstrate its quality through an evaluation process connected to its stakeholders' goals (Feizizadeh, 2010). Hanskamp-Sebregts et al. (2019) claimed that transparency in the internal audit process reduces the burden of external auditors/supervisors in producing quality audit reports both internally and externally in their study in hospitals in the Netherlands. Thus, it is of prime importance to study the role of internal audit transparency to ensure the quality of internal audits in Bangladesh (Kabir et al., 2021c).

Literature on Blockchain Application (APBN) for Accounting and Auditing

Blockchain is a distributed public ledger for storing and exchanging data across a peer-to-peer network (Ducas & Wilner, 2017). Members of the blockchain network collaborate to maintain and validate a precise copy of the data, with components added in ledgers connected with a continuous chain of previously validated ledgers by a distinct identity. In 2017 Deloitte conducted a blockchain-based auditing that examined a blockchain system using existing audit standards (Das, 2017). In spite of the potential of BT in the accounts and audits disciplines, there is a paucity of studies in these sectors. A quick summary of how blockchain enables real-time accounting and auditing is worth recognizing from recent academic studies (Yermack,

2017). The advantages of a blockchain-based auditing procedure have been outlined by Fanning and Centers (2016). With the application of BT, Kiviat (2015) developed the notion of "triple-entry accounting." The application of blockchain was also demonstrated by Peters and Panay (2016) in processing financial transactions in banks. The influence of blockchain in accounting has already been examined by Kokina et al. (2017) and O'Leary (2017) when they discussed the underlying principles and the actions performed in this area.

Literature on AQLY

Due to its ambiguity, audit quality has no formal definition in the literature (Knechel et al., 2013). According to Van Raak and Thürheimer (2016), despite the significance of audit quality and the availability of procedures developed to measure it, there is no specification of audit quality and there is a scarcity of research on what might impact it. However, different authors have given significant definitions of it. For example, DeAngelo (1981) described it as the likelihood of identifying and disclosing significant factual errors by an auditor and it is a frequently referred definition in the scholarly literature. Internal audit quality (AQLY) is defined by Nurdiono and Gamayuni (2018) as the capacity to comply with internal auditing standards, plan audits, implement audit results, and disseminate audit reports (Mihret & Yismaw, 2007; Moeller, 2004; Spraakman, 1997). Chen et al. (2008) agreed with the prior assertion about audit quality, stating that the number of audit findings demonstrates audit quality. According to previous studies, audit quality is linked to specific characteristics of audit professionals (Alsughayer, 2021; Van et al., 2013), and hence internal audit quality depends on the characteristics of internal auditors. Thus, auditors' integrity, morality, and transparency are significant factors influencing AQLY (Asmara, 2019; Hardiningsih et al., 2019). Therefore, internal auditors with expertise, abilities, and experiences can conduct a high-quality audit while adhering to professional conduct, rules, and audit protocols. Hence, internal auditors should conduct their work to detect flaws that might jeopardize audit quality (Sanusi et al., 2014). In brief, AQLY depends on specific characteristics of the audit process (Sutton & Lampe, 1991; Brown et al., 2016).

Research Gap

It is necessary to take early prevention against misrepresentation and fraud by ensuring AQLY (Kabir et al., 2021c). Internal auditors' capacity to uncover financial misstatements, as well as their willingness to disclose those findings to the audit committee or external auditors, determines AQLY. Previous audit quality studies have focused on the external auditors' dependence on internal audit activities to ensure quality reporting, which created the necessity of ensuring quality internal audit (Abbott et al., 2016). For the past couple of decades, audit quality parameters have been a productive study ground (Alsughayer, 2021). Many such studies have looked at various audit quality key indicators, some of which are related to external factors (e.g., Al-Ajmi, 2009; Krishnan & Schauer, 2000; Lawrence et al., 2011), and several others have utilized precise measurements that depend on statistical models related to internal issues (e.g., Al-Ajmi, 2009; Krishnan & Schauer, 2000; Lawrence et al., 2011; Xiao et al., 2020). A few earlier studies have shown the importance of internal audit transparency and integrity in ensuring audit quality (Arens et al., 2014; Bell et al., 2005; Carcello et al., 2020; Kabir et al., 2021c). Internal audit transparency and efficiency are essential components impacting audit quality since timely and correct outputs are necessary to achieve a quality audit. However, less research exists in this area (Knechel et al., 2009).

Though some studies (Bonsón & Bednárová, 2019; Kabir, 2021) have emphasized applying blockchain technology in accounting, auditing, and taxation, not many studies have looked at how integrity, internal audit transparency, and technology innovation affect quality. Previous studies have offered only a limited amount of information on the elements that influence the quality of internal audits. Likewise, Abbott et al. (2016) found that many AQLY indicators have yet to be related to internal audit quality. Thus, there is a clear gap in the body of internal audit research to examine the factors impacting AQLY. Hence, in this study, the authors investigated the influence of auditor's integrity and internal audit transparency on audit quality from internal auditors' perspectives while considering the moderating role of blockchain technology. To be more precise, this study is a one-of-a-kind effort to explain the impact of integrity and internal audit transparency when the moderating impact of blockchain application in the audit process is taken into account, all of which may play a significant role in ensuring audit quality.

Conceptual Framework

The following conceptual model in Figure 1 was developed based on the literature discussed above. The model shows the influence of INTI and TRPY while evaluating the moderating influence of blockchain applications.

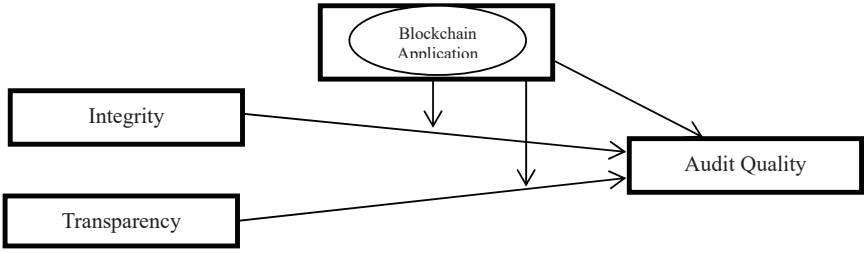

Figure 1: Conceptual Framework

HYPOTHESES DEVELOPMENT

INTI and AQLY Hypothesis

Integrity does not tolerate deception or the abandonment of convictions. The stronger the internal auditors' integrity is, the better the audit quality. This demonstrates that internal auditors with high integrity may enhance AQLY (Kertarajasa et al., 2019). Alsughayer's study (2021) discovered that integrity impacts AQLY. The impact of auditors' integrity on AQLY indicates that if the auditors conduct internal audit in an ethical, brave, cautious, and sensible way, AQLY will be assured (Wardayati, 2017). The Louis (2004) inquiry confirmed that there would be no fraudulent conduct provided that the accounting and auditing staff are honest. Again, if fraudulent conduct is eliminated, internal audit quality can significantly increase. According to previous studies, integrity has a statistically significant impact on AQLY (Alsughayer, 2021; Wardayati, 2016). Hence, considering the above mentioned literature, we came up with the following hypothesis:

H_1: INTI positively influences AQLY.

TRPY and AQLY Hypothesis

Detecting, correcting, and reporting significant misrepresentations and attaining audit quality may be described as the process of achieving AQLY. Internal auditors must understand and align their activities with the goals of their major stakeholders, management, and supervisory board to be effective (Mallin, 2011). Hence, internal audit transparency must satisfy all the relevant parties with a quality internal audit (Kabir et al., 2021c). This concordance ensures that internal auditors and the stakeholders are in the same line for allocating resources to ensure AQLY. Bushman et al. (2004) described operational transparency as the access and breadth of regulatory information. According to Aghghaleh et al. (2014), ineffective, less transparent internal audit positively impacts fraud in many firms because internal auditors' lack of monitoring allows employees to commit fraudulent activities, which in turn hamper AQLY. According to Dye (1993) and Hillegeist (1999), efficient auditors, in a transparent environment, are more likely to identify inflated income or wrong recording during the internal audit process. As a result, having TRPY of the audit process is critical to reducing the risk of audit fraud and ensuring audit quality (Kabir et al., 2021c). Internal audit information may be more effectively used through a transparent approach, which can dramatically improve AQLY and minimize external audit work (Shaw et al., 2010). External auditors' workload might be lightened by communicating internal audit results with them transparently. Internal audits of high quality and careful application of audit findings may be ensured if the internal audit process is transparent (Hanskamp-Sebregts et al., 2020). Thus, the following hypothesis was formed.

H_2: TRPY positively influences AQLY.

APBN and AQLY Hypotheses

As per Cai and Zhu (2016), Blockchain-based records of transactions are subject to minor error since it ensures automated actions and surveillance. Several researchers claim that blockchain can help to reduce fraudulent actions and distortions in auditing (Swan, 2015) and increase AQLY (Kshetri, 2017) as encoded data are not possible to be altered. Records are maintained in multiple locations on the blockchain, and each record is available to every node. This blockchain phenomenon increases transparency, traceability, and

efficiency while decreasing the danger of fraud (Palfreyman, 2015; Tapscott and Tapscott, 2016; Swan, 2015; Underwood, 2016). In their study, Kabir et al. (2021c) examined the role of transparency and integrity on audit risk mitigation, where they established the moderating effect of blockchain in promoting quality audit outcomes. Based on the above discussion, the following hypotheses were developed.

H_3: APBN positively influences AQLY.
H_4: The relation between INTI and AQLY is moderated by APBN.
H_5: The relation between TRPY and AQLY is moderated by APBN.

RESEARCH METHODOLOGY

Constructs and Items of Questionnaire

Three direct and two moderating relations were included in this study. The direct influences of two factors, INTI and TRPY, on AQLY and the direct impact of APBN implementation, were studied. The significance of APBN in moderating the connection between INTI and AQLY, TRPY, and AQLY was also investigated. INTI was constructed based on elements such as the accounting and auditing divisions' workers' honesty and fairness (Alsughayer, 2021; Wardayati, 2017), their respect for the organization's norms and practices (Chen *et al*., 2013), and the culture of ethical practices (Feizizadeh, 2010). Internal audit efficiency (Hillegeist, 1999), transparency in the audit process, and transparent communication of internal audit findings (Hanskamp-Sebregts et al., 2020) are all reflected in TRPY. The capacity of blockchain to ensure reliable recording and auditing procedures (Kokina et al., 2017) and irreversible properties guaranteeing no tampering in accounting and auditing through transparency and integrity (Tapscott & Tapscott, 2016; Swan, 2015; Underwood, 2016) and the potential role of APBN in moderating the relationship between i) INTI & AQLY and ii) TRPY & AQLY (Kabir et al., 2021c) were addressed in APBN. Lastly, three items related to a number of internal audit findings regarding misrepresentations and fraud (Chen *et al*. 2004; DeAngelo, 1981), the level of compliance with internal auditing standards (Nurdiono & Gamayuni, 2018) and transparent communication of audit findings (Mihret & Yismaw, 2007; Moeller, 2005; Spraakman, 1997) were used to determine AQLY.

Respondents and Sampling

Experts from the accounts division and internal auditors working in different Bangladeshi organizations were the respondents of this research. Primary data is helpful for this sort of study where the problem is new, as secondary sources are usually not enough to explore a situation like this. The appropriate sample size for SEM is suggested to be 150 or more as per the earlier research (Bentler & Chou, 1987). Thus, the research sample size is representative, with 210 participants and 5000 bootstraps. Since the study required the opinions of accountants and auditors related to internal audit functions having good ideas on the application of technology for auditing, random sampling could bring wrong responses. Hence, we adopted a convenient sampling approach to reach the right people with the necessary knowledge to fulfill the research purpose.

Data Collection Process and Time

A self-administrated questionnaire was designed to explain the impact of exogenous constructs on AQLY. Online data collection technique was used to conduct the survey. During the COVID 19 situation, a face-to-face survey would be cumbersome; that is why the online survey was initiated. It allowed respondents from across Bangladesh to participate. In addition, telephone consultations with two academicians, two accountants, and two auditors were conducted to ensure the correctness of the questionnaire. The link to the online survey was sent to the intended participants through email and social media. The survey was conducted from 25 June 2021 to 15 July 2021. The hypotheses were tested using data collected on a five point Likert scale. The scale contains responses, with 1 indicating "complete disagreement" and 5 indicating "complete agreement."

RESULT AND DISCUSSION

Demographic Statistics

Table 1 shows the cohort's reply frequency distributions throughout the study's demographic characteristics. Results in Table 1 show that 100 per cent of respondents had finished at least their graduation, 69 per cent of the cases held a masters or a doctorate degree. Thus, the participants were

well placed academically. Over 97 per cent of participants are business graduates, with over 76 per cent specializing in accounting and finance. Around 14 per cent of the overall participants occupied the roles of chief accountant or CFO, with 76 respondents having top executive positions. Therefore, a good portion of the responders were in decision-making positions. More than 76 per cent of participants have worked for three years or longer. Approximately 76 per cent of those surveyed were either professional accountants or held appropriate accounting degrees. ACCA, CA, CIMA, and CMA were among the professional affiliations of 38 per cent of the respondents.

Table 1: Demographic Characteristics

Area		Occurrence	%
Academic Qualification	HSC	0	0
	Graduate Degree	65	31.0
	Master Degree	141	67.1
	Doctorate Degree	4	1.9
	Total	210	100
Study Discipline	Accounting	115	54.8
	Banking & Finance	45	21.4
	Management	21	10.0
	Other Business Discipline	24	11.4
	Non-Business Discipline	5	2.4
	Total	210	100
Official Designation	Accounts Executive	65	31.0
	Accounts Manager	32	15.2
	Chief of Accounts	16	7.6
	Audit' Executive	69	32.9
	Audit Manager	15	7.1
	CFO	13	6.2
	Total	210	100
Experiences	< 3 years	61	29.0
	3–6 years	67	31.9
	6–10 years	42	20.0
	>10 years	40	19.1
	Total	210	100
Professional Degree	CA	36	17.2
	CMA	33	15.7
	ACCA	7	3.3
	CIMA	4	1.9
	Post graduate Diploma in Accounting and Auditing	79	37.6
	Without any professional certification	51	24.3
	Total	210	100

Assessment of Measurement Model (MM)

As per Hair et al. (2016), the MM in PLS-SEM is a constituent of a path model that comprises the measurements and their connections to the latent variables. The MM must be evaluated using internal reliability, convergent validity, and discriminant validity. Figure 2 and Table 2 depict the outcomes of the measurement model.

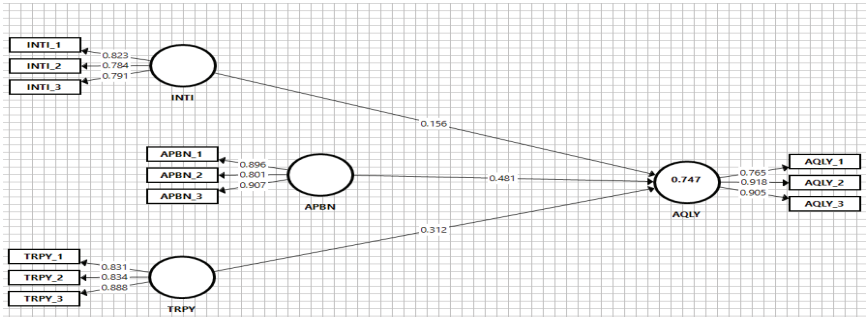

Figure 2: MM without Moderator

Reliability Measures

The size of the outer-loadings (OL) is commonly referred to as data reliability (Hair et al., 2016). To evaluate the loadings, SmartPLS 3.0 was used. Higher OLs indicate that the items in a construct are common (Henseler et al., 2015). As per Vinzi et al. (2010), the appropriate threshold for OL is 0.5, provided that the average variance extracted (AVE) is larger than 0.5. Hair et al. (2016) suggested eliminating items with OLs less than 0.5 if their removal generates a rise in AVE beyond the 0.5 thresholds. Hence, as indicated in Table 2, all items assured reliability.

Table 2: Consistency and Reliability Statistics

Constructs	Items	OL	CA	Rho_A	CRI	AVE
Audit Quality	AQLY1	0.765				
	AQLY2	0.918	0.830	0.847	0.899	0.749
	AQLY3	0.905				
Blockchain Application	APBN1	0.896				
	APBN2	0.801	0.837	0.842	0.903	0.756
	APBN3	0.907				

Integrity	INTI1	0.823				
	INTI2	0.784	0.724	0.741	0.842	0.639
	INTI3	0.791				
Transparency	TRPY1	0.831				
	TRPY2	0.834	0.810	0.817	0.888	0.725
	TRPY3	0.888				

Internal Consistency and Convergent Validity

Internal consistency is a form of reliability used to see if the items of the questionnaire used to test a notion are consistent (Hair et al., 2014). Relying on Nunnally and Bernstein's (1994) consistency criteria, Hair et al. (2016) suggest a composite reliability (CRI) value of greater than 0.70 as the acceptable threshold in causal research. The CRIs (see Table 2) for all latent components in this study are more than 0.7, above the lowest cutoff value suggested by other researches (Hair et al., 2016). Cronbach's alpha (CA) is also used to determine internal reliability, which is based on the correlation matrix of the items of the assessed constructs. Liouville and Bayad (1998) and Hair et al. (1998) regard CA of 0.7 as acceptable, but CA of 0.80 indicates outstanding reliability of models. Nunnally and Bernstein (1994) suggested that CA values of 0.7 or above indicate high consistency. Each CA value in this research was more than 0.7, suggesting that it fulfilled the criterion (see Table 2). Convergent validity (CV) refers to the degree of consistency among the items used to evaluate a particular concept. As per Hair et al. (2016), Fornell and Larcker (1981) criteria and AVE are frequently used to assess convergent validity. CV is obtained if each item has a factor loading greater than 0.5 and all other latent constructs have loadings smaller than the one being examined (Hair et al., 2016).Thus, as shown in Table 2 the statistics achieved the convergent validity standard.

Discriminant Validity

The extent to which a particular construct is distinct from other constructs is described by discriminant validity (DV) (Hair et al., 2014). Generally, there are two commonly used DV measures. The first process includes determining cross-loadings. The factor loading on the underpinning construct of an indicator should be bigger than the cross loadings (Hair et al., 2016). The Fornell-Larcker Criteria (FLC) is the second technique of assessing DV which refers that a construct's square root of AVE should be

greater than the construct with which has the highest correlation (Hair et al. 2016). Since no indicator exhibited larger loading in any other construct than its mother constructs, the cross loadings as in Table 3 and the FLC values as in Table 4 met the required conditions.

Table 3: Cross-loadings

	APBN	AQLY	INTI	TRPY
APBN	0.896	0.743	0.589	0.699
APBN	0.801	0.668	0.473	0.635
APBN	0.907	0.734	0.662	0.665
AQLY	0.584	0.765	0.522	0.618
AQLY	0.763	0.918	0.604	0.714
AQLY	0.776	0.905	0.641	0.701
INTI1	0.607	0.643	0.823	0.579
INTI2	0.390	0.427	0.784	0.437
INTI3	0.557	0.529	0.791	0.557
TRPY1	0.616	0.658	0.482	0.831
TRPY2	0.578	0.614	0.620	0.834
TRPY3	0.753	0.725	0.601	0.888

Table 4: Fornell-Larcker Criterion

	APBN	AQLY	INTI	TRPY
APBN	0.869			
AQLY	0.823	0.866		
INTI	0.664	0.683	0.800	
TRPU	0.767	0.784	0.665	0.852

Even though the FLC is a valid test of DV, it might not provide a conjectural justification. Consequently, researchers suggested the Heterotrait-Monotrait Ratio (HTMT) as an additional assessment for evaluating DV (Henseler et al., 2015). This approach includes evaluating the correlations between the constructions to a specified threshold value. Teo et al. (2008) presented a minimum threshold of 0.90 for determining a suitable HTMT for DV. Since each HTMT ratio as shown in Table 5 was below 0.90, it can be concluded that every construct of this research was distinct and displayed the necessary DV.

Table 5: HTMT Ratio

	APBN	AQLY	INTI	TRPY
APBN				
AQLY	0.883			
INTI	0.827	0.856		
TRPU	0.857	0.894	0.855	

Assessment of Structural Model

By integrating latent constructs and their route linkages, PLS-SEM displays the critical principles of the structural model (Hair et al., 2016). Measures for absence of collinearity, coefficient of determination (R^2), the effect size (f^2), prediction relevance (Q2), and path coefficients are the main criteria for assessing the structural model in PLS-SEM (Hair et al., 2016). The R^2 assesses the change in the target variable (Chin, 1998). Moreover, Cohen's (1988) criteria were used to compute and analyze the effect sizes indicated by f^2 for each exogenous construct. The blindfolding method was used to analyze Q^2 (Henseler et al., 2015). Lastly, the path coefficients show the anticipated links between the factors (Hair et al., 2016).

Multicollinearity Assessment

We must check for any multicollinearity while assessing the structural model (Hair et al., 2016). We looked at the collinearity of the constructs to see whether any relationships between the elements were abnormal. The variance inflation factors (VIFs) were used to measure collinearity, and VIFs must be less than 3.3 to claim that there is no collinearity (Henseler et al., 2015). The VIFs were then evaluated using the bootstrapping approach. As demonstrated by the VIF values in Table 6, no multicollinearity problem existed in this study.

Table 6: VIFs

	VIF
APBN_1	2.573
APBN_2	1.553
APBN_3	2.720
AQLY_1	1.466
AQLY_2	2.979
AQLY_3	2.792

INTY_1	1.337
INTY_2	1.547
INTY_3	1.451
TRPY_1	1.655
TRPY_2	1.773
TRPY_3	2.026

Coefficient of Determination (R^2)

R2 is a measure that indicates the precision of a model's predictions. It represents the cumulative impact of the independent variables on the dependent variable. According to Falk and Miller (1992), R^2 value more than 15% is acceptable. Cohen (1988) and Chin (1998a) recommended three levels of explanatory power called low (less than 0.13), medium (0.13 to 0.33), and large (more than 0.33). The R^2 values, with and without moderating effects, were large in this study.

Table 7: R^2 and Adjusted R^2

	R^2 Square	Adjusted R^2
AQLY (No Moderating Effect)	0.747	0.742
AQLY (Considering Moderating Effect)	0.781	0.774

Effect Size (f^2)

The f^2 measures the changes in R^2 as a result of removing a specific independent variable from the model. It indicates whether or not the deleted indicator has a significant statistical impact on the dependent variable (Hair et al., 2016). If the value of f^2 is 0.350, the effect is large whereas for the f^2 value of 0.150, the effect size is medium and f^2 Value of 0.020 indicates small effect (Cohen, 1988). Table 8 guarantees that APBN and TRPY had medium impacts on AQLY, according to Cohen's (1988) criteria. The moderating impact of APBN on TRPY and AQLY was similar, with a moderate effect size. On the other side, the direct impact of INTI and the moderating impact of APBN on INTI and AQLY had a small effect size. Cohen (1988) argued that a small impact size is acceptable if the other statistics fulfil the essential criteria.

Table 8: f-square

	AQLY (f2)	Effect Size
AQLY		
APBN	0.192	Medium
INTI	0.080	Small
TRPY	0.267	Medium
Moderating Effect of APBN on INTI and AQLY	0.070	Small
Moderating Effect of APBN on TRPY and AQLY	0.155	Medium

Direct Hypotheses Results

This study examined five hypotheses, three of which were direct and two, moderating. P values were calculated with 5000 bootstrapping samples using Smart-PLS 3.0 at a 5% level of significance as per the standard practices in such studies (Cox & Hinley, 1979; Tacq & Tacq, 1997). Every direct hypothesis was accepted at a 95% confidence interval, according to the figures in Table 11. INTI had a positive effect on AQLY, as indicated by the beta value (β=0.156). TRPY, which had a β of 0.312, also had a positive influence on AQLY. Hypotheses 1 (H1) and 2 (H2) were therefore accepted. Similarly, APBN positively impacted AQLY, with a β of 0.481. Hence, hypothesis 3(H3) was confirmed.

Table 9: Coefficients for Direct Relations

Hypothesis	Study Sample	Sample Mean	SD	T Statistics	P Statistics	Decisions
INTI -> AQLY	0.156	0.154	0.067	2.318	0.020	Supported
TRPY -> AQLY	0.312	0.331	0.110	2.843	0.004	Supported
APBN -> AQLY	0.481	0.464	0.087	5.504	0.000	Supported

Hypotheses Results for Moderation

Chin et al. (2003) presented a two-fold approach for determining the role of a moderator. Hence, we adopted a two-stage method in our investigation. Thus, at a 95% confidence level, hypotheses 4 (H4) and 5 (H5) were supported, according to the data in Table 12. As a result, we can infer that blockchain application (APBN) can significantly regulate the relation between INTI and AQLY. Similarly, APBN moderated the relation between TRPY and AQLY in a favorable way. The path model is shown in Figure 3.

Table 10: Coefficients with Moderators

Hypothesis	Study Sample	Sample Average	SD	T Statistics	P Statistics	Decisions
INTI -> AQLY	0.190	0.185	0.053	3.570	0.000	Supported
TRPY -> AQLY	0.426	0.437	0.072	5.920	0.000	Supported
APBN -> AQLY	0.367	0.363	0.065	5.652	0.000	Supported
INTI -> AQLY Moderated by APBN	0.161	0.149	0.050	3.034	0.002	Supported
TRPY -> AQLY Moderated by APBN	0.232	0.220	0.050	4.647	0.000	Supported

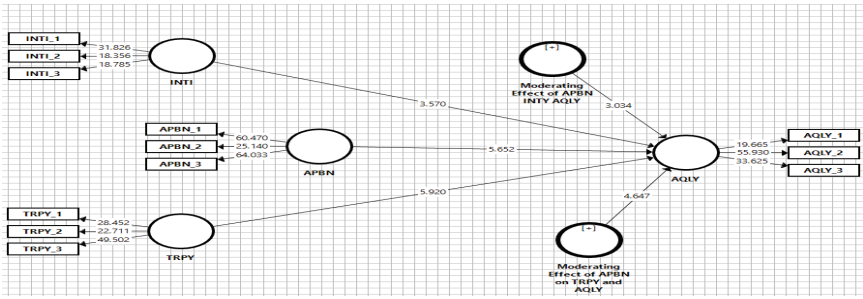

Figure 3: Path Model with Moderating Effect

RESEARCH IMPLICATIONS

Theoretically, the study presented a unique model for assuring audit quality (AQLY). Firstly, the effects of INTI and TRPY in improving audit quality were examined. According to the results, INTI appears to play a significant role in AQLY improvement. TRPY is also a significant determinant of AQLY. Our findings are supported by previous research results in the sense that INTI and TRPY can explain AQLY independently (Aghghaleh et al., 2014; Bushman, 2004; Chang et al., 2008; Colbert, 1996; Githui, 2014; Malin, 2011; Razak et al., 2018). Secondly, the moderating role of APBN was assessed in this research. The significance of APBN in moderating the relation between INTI and AQLY is a unique addition to audit quality research. Similarly, APBN moderates the relation between TRPY and AQLY favourably. APBN has been discovered to contribute to accounting and auditing in previous research (Bonsón & Bednárová, 2019; Chin et al., 2021; Kabir, 2021). However, this research is one of the few studies which examined its moderating influence. Hence, we established a unique model employing INTI, TRPY, and APBN as the determinants,

which provided a novel outlook in explaining the factors that can help in improving audit quality. Thus, by establishing a new structural framework, our work addressed the literature gap.

CONCLUSION AND SCOPE FOR FURTHER STUDY

The main goal of the research was to determine the influence of INTI and TRPY on AQLY. Considering the application of blockchain (APBN) as a predictor of AQLY is the most distinctive aspect of this study. The study results demonstrated solid empirical validation of all of our hypotheses when using the moderating influence of APBN. TRPY had the most significant impact on AQLY. Similarly, both APBN and INTI had a positive effect on AQLY. The role of APBN in moderating the relationship between INTI and AQLY and TRPY and AQLY was significant. Most notably, when the moderating impact of APBN was taken into account, the exogenous components could explain 78.1% variation in AQLY. The results of this study are supported by previous studies conducted by Bonsón and Bednárová, 2019; Chin et al., 2021; Dye, 1993; Hillegeist, 1999; Kabir et al., 2021a; and Kabir et al., 2021b. Similarly, the prominence of APBN's moderating role demonstrated the similarities with previous studies (Chang et al., 2008; Colbert, 1996; Razak et al., 2018), where APBN was considered as a significant contributor in carrying out accounting and auditing functions. However, our study differs from the research mentioned above since we developed a new model that incorporated the moderating function of blockchain.

This research adds to the existing AQLY literature in many ways. First, this research is among the few studies to identify AQLY attributes as independent, distinct entities that work together to provide internal audit quality. Thus, this research provides a deeper understanding of the AQLY and the factors that influence it. Second, our findings imply that three audit attributes influence internal audit quality, which can assist ensure excellent external auditing and financial reporting. Prior AQLY research, on the other hand, has relied chiefly on a bipolar, solitary independent measurement that implicitly overlooks other possible factors (Abbott et al., 2016). Furthermore, confirmatory factor analysis revealed that our AQLY drivers are unrelated or poorly connected. This finding is similar to the earlier

findings that AQLY depends on different internal audit attributes (Asmara, 2019; Hardiningsih et al., 2019), and each attribute is a distinct construct. Although there is a great deal of research on external audits, historical material on the possible factors of AQLY is scarce (Abbott et al., 2016). A supplementary comprehensive understanding of the elements that impact AQLY would be of attention to academics, policymakers, watchdogs, and specialists in their exertions to acknowledge the role of INTI and TRPY as the determinants of AQLY (Darmawan et al., 2017; Schroeder et al., 1986; Carcello & Neal, 2000; Chen et al., 2001).

Third, our research adds to the body of knowledge on the possible influence of BT on AQLY. Earlier research have explained the influence of blockchain implementation on accounts and audit functions (Cai & Zhu, 2016; Kshetri, 2017; Swan, 2015). Similarly, the impact of blockchain on audit risk mitigation and its moderating role has been revealed in the earlier research, which is similar to our findings (Kabir et al., 2021c). A few features of this study limit its scope, which gives has left an opportunity for additional research. Since this study was conducted solely in Bangladesh, it cannot accurately depict other developing countries. As a result, it is suggested that a comparative study be undertaken. It is also feasible to make a comparison between developing and developed countries. Because blockchain is a new technology, its use and understanding are typically confined. Although we included details on how blockchain works for accounting and audit functions in our questionnaire for each participant, in-depth interview-based research with blockchain users and specialists might be conducted. Furthermore, using SEM to investigate unobserved variation in the impact of INTI and TRPY on AQLY would be intriguing.

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