# The Impact of Blockchain Technology on the Accounting Information System Efficiency and Business Performance: the Case of Businesses Owning E-Commerce Platforms in Vietnam

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## Abstract

The adoption of blockchain technology represents a contemporary and innovative managerial approach embraced by businesses. The consequential impact of blockchain on business performance necessitates thorough examination. This study endeavours to evaluate the influence of blockchain technology on the efficacy of Accounting Information Systems and operational outcomes within businesses operating E-commerce platforms in Vietnam. The research framework, derived from a comprehensive literature review on blockchain technology, encompasses dimensions such as Information Transparency, Information Immutability, and Smart Contracts. Business performance is gauged through assessments of production outcomes, cost control results, and profitability. The metrics for evaluating the Accounting Information System's effectiveness and the factors in the model are meticulously defined. A survey was conducted, encompassing managers at various levels and accounting department employees in 139 businesses owning E-commerce platforms in Vietnam. Quantitative analysis involved processing data through a linear structural model within Structural Equation Modelling (SEM). The findings indicate a positive correlation between blockchain technology and the efficiency of the Accounting Information System. Moreover, the heightened effectiveness of the Accounting Information System positively influences the business performance of Vietnamese companies

that own E-commerce platforms. Drawing from the research outcomes, practical and policy recommendations are proposed for the government and businesses to enhance the integration of blockchain in Accounting Information Systems and improve business performance.

**Keywords:** Accounting Information System, Blockchain Technology, Business Performance, E-commerce, Vietnam.

## 1. Introduction

In the realm of cryptocurrency trading and the execution of smart contracts, blockchain serves as the fundamental infrastructure. It operates as a public ledger wherein transactions are rendered nearly impervious to modification (Nakamoto & Bitcoin, 2008). Termed as a decentralized database, blockchain functions as a transparent platform for business operations devoid of intermediary involvement. The anticipated ramifications of blockchain extend to diverse domains such as cybersecurity, the Internet of Things, supply chain management, governance, information management, financial transactions, and various other sectors in prospective contexts (Miah, Miah, & Venkatraman, 2021). Blockchain exerts a substantial influence on the domain of accounting, marking significant advancements in the processing of data and the provision of accounting information when juxtaposed with traditional manual accounting procedures (Yu et al., 2018). Blockchain is anticipated to emerge as a pivotal strategy facilitating a paradigm shift within the accounting domain (ICAEW, 2017). Blockchain technology harbours substantial potential and exerts a profound impact on financial accounting. Its transparent nature forms the basis for voluntary information disclosure by companies, thereby reducing errors in acquisition, elevating the efficacy of information disclosure, augmenting the quality of accounting information, and alleviating information asymmetry. Consequently, this has the potential to enhance the efficiency of accounting information systems within companies (Inghirami, 2019). Moreover, Blockchain Technology contributes to heightened operational performance in businesses (Rehman Khan et al., 2022), amplifies efficiency in supply chain management (Sheel & Nath, 2019), and bolsters financial capacity (Bag & Rahman, 2023). The implementation of blockchain enhances the security of online financial

transactions, delivering substantial benefits to both buyers and sellers. Additionally, blockchain yields multifaceted advantages such as reduced transaction costs, streamlined business processes, expedited transaction execution, and an improved overall customer experience (Angraal, Krumholz, & Schulz, 2017).

Within the context of implementing Blockchain Technology, the efficacy of an accounting information system (AIS) plays a pivotal role in enhancing the business performance of companies. This assertion finds substantiation through both theoretical and empirical research endeavours (Beg, 2018; Gofwan, 2022). The efficiency of the AIS demonstrates a positive correlation with profitability (Patel et al., 2015), cost reduction and control measures (Albashabsheh et al., 2018), as well as oversight of production and goods management within manufacturing enterprises. This assertion is exemplified through a case study of the Sumber Indah Perkasa Factory in Indonesia (Arif et al., 2020). These implications extend uniformly across diverse business scales, encompassing both large enterprises and small to medium-sized enterprises, particularly in the context of information technology adoption in developing countries (Osakwe, Okeke, & Kwarteng, 2021), including instances in Nigeria (Fagbemi & Olaoye, 2016), the UAE (Al-Najjar & Al-Najjar, 2017), and Jordan (Ahmad & Shah, 2019).

Companies with E-commerce platforms operate websites facilitating trade activities for traders, businesses, and individuals. Vietnam's E-commerce market is growing, with 139 businesses owning platforms by the end of Q3 2023—41 for goods and 98 for services. Turnover exceeded $10 billion in 2019, $11.8 billion in 2020, $13.7 billion in 2021, and $16.4 billion in 2022. Projected revenue for 2023 is $20.5 billion, constituting approximately 7.8-8.0% of the total nationwide retail sales of goods and consumer services, as per the Ministry of Industry and Trade (2022).

In addition to their achievements, businesses with E-commerce platforms in Vietnam encounter challenges. Regulatory policies for the E-commerce sector, particularly regarding consumer protection and information transparency, remain incomplete. Concerns persist over the digital infrastructure, network security, delivery networks, and warehousing limitations. Issues such as counterfeit goods, poor quality,

and financial crimes still prevail (Vu, Ghadge, & Bourlakis, 2023). To address these challenges, businesses must innovate management methods, leverage information technology for faster processing, and ensure security and transparency. In this context, Blockchain Technology emerges as a crucial strategic management tool.

The objective of this research is to assess the influence of Blockchain Technology on the efficiency of AIS and the Business Performance of enterprises possessing E-commerce platforms in Vietnam. Employing a mixed-methods approach combining qualitative and quantitative research, the study encompasses a sample of 300 accounting department personnel and managerial staff across 139 companies engaged in E-commerce activities in Vietnam. The outcomes derived from the linear structural model indicate a positive correlation between information transparency, information immutability, smart contracts, and the AIS efficiency within businesses operating E-commerce platforms in Vietnam. Subsequently, the authors provide recommendations concerning the application of Blockchain Technology to enhance AIS efficiency and the Business Performance of these enterprises.

The research holds significance for Vietnamese E-commerce platform businesses by elucidating the relevance of implementing Blockchain technology. It guides the optimization of Blockchain application in accounting, augmenting both the efficiency of accounting information systems and overall Business Performance. Additionally, the findings provide reference value for government and policymakers in refining E-commerce legal frameworks, fostering conducive conditions for robust business development.

This manuscript has been systematically structured, comprising four key sections: Theoretical Framework, Methodology, Results, and Discussion.

## 2. Literature Review and Theoretical Basis

### 2.1. Blockchain Technology

Blockchain Technology originated from the cryptographic design of a secure block chain, initially devised for document protection, commonly referred to as digital

document sealing (Haber & Stornetta, 1991). Subsequently, Bitcoin was introduced to oversee and authenticate digital money transfers, recording electronic transactions. Essentially, blockchain represents the application of digital ledger technology, serving as the cornerstone for cryptocurrency transactions and the execution of smart contracts. It functions as a public ledger, rendering transactions nearly impervious to modification (Nakamoto & Bitcoin, 2008).

Initially influential in the technology sector, Blockchain Technology gained widespread recognition across manufacturing and service industries during the Fourth Industrial Revolution (Javaid et al., 2021). Its applications extended to various sectors, including healthcare (Angraal et al., 2017), energy and electricity distribution (Adeyemi et al., 2020), finance (Javaid et al., 2022), banking (Gupta, Raychaudhuri, & Haldar, 2018), transportation booking technologies, pharmaceuticals (Alshahrani et al., 2021), education (Atienza-Mendez & Bayyou, 2019), commerce (Wahab, Loo, & Say, 2020), construction (Kim, Lee, & Kim, 2020), E-government (Hou, 2017), and the maritime industry (Czachorowski, Solesvik, & Kondratenko, 2019).

Notable attributes frequently emphasized in studies on Blockchain Technology encompass the dispersion and synchronization of data or transaction details, the shift from a centralized to a peer-to-peer (P2P) network, the implementation of smart contracts, and the support for data immutability (Cole, Stevenson, & Aitken, 2019). The evaluation of Blockchain Technology often revolves around three fundamental characteristics: Transparent information, Immutable information, and Smart contracts (Lee et al., 2022; Rejeb et al., 2021).

Numerous investigations have scrutinized these attributes both in isolation and in conjunction, consistently affirming their pivotal role in the efficacy of Blockchain Technology applications. Within this study, the author posits three fundamental attributes of Blockchain Technology: (1) Transparency of Information; (2) Immutability of Information; and (3) Smart Contracts (Kim & Gim, 2017; Rejeb et al., 2021). These attributes are proposed for consideration in assessing their impact on the efficiency of AIS and the Business Performance of companies (Carrara et al., 2020).

### 2.1.1. Information Transparency

Blockchain's transparency feature is evident as it makes data universally accessible to all software users. It allows anyone within the system to access others' items. When a transaction is initiated, the data is introduced into the network, and algorithms assess its authenticity. Validated transactions are linked to previous ones, forming a chain of transactions called the blockchain (Carrara et al., 2020). Each block includes transaction data, a cryptographic hash for the block's current value, a hash of the previous block, proof of work, signature, and timestamp (Al-asmari, Aloufi, & Alotaibi, 2021). Blockchain's P2P networks maintain transparent and irreversible historical records (Islam et al., 2020). In healthcare, blockchain aids in overcoming interoperability challenges by establishing a comprehensive mechanism for linking electronic health records. For the pharmaceutical supply chain, blockchain acts as a ledger, ensuring transparency and combating counterfeit products. In health insurance, blockchain streamlines claims management and calculates medical benefits. In genomics, blockchain provides a secure avenue for sharing genomic data, connecting buyers and data owners for enhanced data availability (Velmovitsky et al., 2021). Consequently, the adoption of Blockchain Technology contributes to the augmentation of Information Transparency, a critical element in fostering robust partnerships (Javaid et al., 2022; Kim et al., 2020). Enterprises displaying a willingness to allocate additional resources for the enhancement of information transparency aim to streamline communication with their partner entities (Kim et al., 2020; Tan & Sundarakani, 2021). This raises the question of whether Information Transparency technology holds significant applicability and potential as an alternative to existing contractual relationships with partners (Kim et al., 2020; Nugent, Upton, & Cimpoesu, 2016).

### 2.1.2. Information Immutability

Blockchain Technology, a collaborative online database ensuring transaction monitoring and data integrity (Wang & Kogan, 2018), operates under decentralized governance, preventing retroactive alterations. Its inherent immutability guarantees unchanged, time-stamped information accessible to all participants, making it a logical

choice for businesses (Sarmah, 2018). A study on the online journal "Istoriya" affirmed the validation of blockchain's inalterability in online scientific publishing for six months (Tarkhanov, Fomin-Nilov, & Fomin, 2019). This immutability is crucial in maintaining strong partnerships, ensuring changes comply with agreements and requirements (Alshahrani & Alshahrani, 2021). Companies leveraging Blockchain Technology rely on partner sincerity due to data immutability, raising considerations for its potential as an alternative to current contractual relationships (Atienza-Mendez & Bayyou, 2019).

### 2.1.3. Smart Contracts

Smart contracts represent the third distinctive characteristic within Blockchain Technology applications. The presence of smart contract scripts on the blockchain enables process automation, eliminating human judgment from transactions and necessitating adherence to predefined conditions, inclusive of rules and penalties established and agreed upon by the involved parties (Christidis & Devetsikiotis, 2016). By creating a three-sided accounting system, smart contracts address limitations inherent in dual-system bookkeeping, particularly in confirming transactions by involved parties, thereby proposing a systematic solution through blockchain-based accounting information (Mohanta, Panda, & Jena, 2018). Despite existing risks when employing smart contracts in blockchain applications (Staples et al., 2017), a consensus in the majority of studies affirms their significance. The application of smart contracts in Blockchain manifests in three aspects: (1) Digital contracts, in the form of smart contracts, extricate human judgment from transactions, adhering to predetermined conditions, including mutually agreed-upon rules and penalties by involved parties (Cong & He, 2019; Mohanta et al., 2018); (2) Smart contracts assume a pivotal role in upholding resilient partnerships; (3) The substantial applicability of smart contract technology in businesses prompts consideration as a potential substitute for prevailing contractual relationships with partners (Cong & He, 2019; Mohanta et al., 2018).

## 2.2. The Accounting Information System Efficiency

The AIS is a coherent system composed of interrelated components, grounded in accounting principles and methodologies, tasked with the collection, processing,

and provision of accounting information tailored to the requirements of users to achieve specified objectives (Laudon et al., 2022). When the AIS functions effectively and attains its objectives, the accounting information furnished by the system aligns with quality objectives and meets the satisfaction of information users (Wilkinson, Wilkinson, & Durden, 2000). A proficient AIS yields high-quality accounting information conducive to sound decision-making (Laudon et al., 2022). The absence of functional efficacy in the accounting information system precludes the generation of quality accounting information (Mamić Sačer, Žager, & Tušek, 2006; Susanto & Meiryani, 2019).

To assess AIS effectiveness, it becomes imperative to ascertain whether the system supports and incentivizes administrators in the pursuit of the company's strategic goals, in addition to evaluating factors such as timeliness and accuracy (Atkinson & Shaffir, 1998). Numerous researchers have devised and tested scales to gauge AIS efficiency across various industries. In the context of researching AIS effectiveness in businesses within the ASEAN region, a proposed model considers factors such as software, hardware, and the quality of accounting information for evaluation (Pham, 2015). Other studies, based on system theory, have introduced scales encompassing effective data backup, information collection, prompt information provision, meeting administrators' needs, and factors pertaining to system operation and coordination between its components (Atkinson & Shaffir, 1998; Ilham et al., 2019).

In the present study, the author consolidates and delineates measures pertaining to AIS efficiency, encompassing: (1) Effective data backup; (2) Expedited information provisioning; (3) Interconnectedness of departments and processes; (4) Centralized comprehensive data management enhancing data accuracy and managerial information; (5) Diverse forms of information provision catering to various user needs; (6) Abundance of information functions and filtering processes within the system for information collection, processing, and dissemination; (7) Provision of pertinent information facilitating decision-making (Atkinson & Shaffir, 1998; Ilham et al., 2019).

### 2.3. Business Performance

Business Performance outcomes encompass a spectrum of dimensions, spanning financial indicators such as profit, ROA, ROE, ROI, alongside non-financial metrics like the effectiveness of cost control, production efficiency, market share, and customer satisfaction (Neely, 2005). Measurement methodologies for Business Performance may incorporate tools such as the balanced scorecard (Banker, Potter, & Srinivasan, 2000; Kaplan & Norton, 1996), return on investment, customer satisfaction, customer retention, new product development, business growth, profitability, and sales growth (Tippins & Sohi, 2003). While the pursuit of profit maximization remains a primary corporate objective, companies grapple with the challenge of escalating operating costs, prompting the evaluation of operational outcomes through achievements in cost control (Akeem, 2017).

In order to comprehensively assess multifaceted aspects of operational outcomes, this study incorporates the following measurement scales drawn from prior research: (1) Performance in production, encompassing expedited time for new product development, enhanced efficiency in production processes, improved reliability in delivery, and heightened satisfaction of customer needs concerning product features (Anh & Thu, 2023; Banker et al., 2000); (2) Cost control outcomes, entailing the augmentation of savings in direct material costs, direct labour costs, overall production costs, and out-of-production costs (Akeem, 2017; Anh & Thu, 2023); and (3) Profit outcomes, inclusive of increased market share, elevated return on sales (ROS), augmented asset turnover (TOA), and heightened return on assets (ROA) (Anh & Thu, 2023; Kaplan & Norton, 1996).

### 2.3. Research Model and Hypothesis

*2.3.1. Impact of Blockchain Technology on the Accounting Information System Efficiency*

Blockchain Technology holds considerable potential and significance for financial accounting, establishing a public mechanism that encourages companies to voluntarily disclose information. This not only aids in minimizing errors during acquisition but also enhances effective information disclosure, elevates the quality of

accounting information, and reduces information asymmetry. Consequently, companies can enhance the efficiency of their AIS (Inghirami, 2019).

The application of Blockchain Technology in accounting and auditing processes, as well as the design and effectiveness of AIS, has been investigated (AlSaqa, Hussein, & Mahmood, 2019). The development of an AIS based on Blockchain Technology addresses limitations inherent in traditional systems, particularly improving privacy protection and execution time (Mingming, 2020). Research and application of Blockchain Technology in China have explored its integration into both Management Accounting and Financial Accounting within businesses (Wu et al., 2020).

Examining the correlation between Blockchain Technology, Enterprise Resource Planning (ERP), and AIS within the E-commerce sector reveals positive outcomes. Blockchain demonstrates the capacity to enhance integration across different levels, fulfilling diverse purposes such as compliance testing. The applications of Distributed Ledger Technology (DLT) and FinTech facilitate the harmonization of AIS and ERP, offering substantial benefits in terms of efficiency, productivity, and ensuring the security of accounting information (Faccia & Petratos, 2021).

Blockchain Technology has the potential to notably reduce transaction errors and improve reporting quality. Utilizing smart ledgers, which are computer algorithms based on Blockchain Technology, as a replacement for traditional accounting information recording systems, this hybrid protocol integrates accounting information recording principles with the immutability of Blockchain. Widespread adoption could significantly impact accounting practices and the accounting profession (Zhang, Daim, & Zhang, 2021). The utilization of Blockchain Technology among companies holding Class A shares listed on the Chinese stock exchange during the period from 2007 to 2019 has yielded substantial enhancements in the quality of accounting information. This adoption has concurrently reinforced corporate governance structures and facilitated collaboration with major auditing firms. The application of blockchain is demonstrated to be advantageous not only to the financial performance but also

to the overall value of these companies (Fang et al., 2023). In the banking sector, the integration of Blockchain Technology, involving the collection of data from analysts, auditors, and bank managers, has proven instrumental in elevating the quality of accounting information within banks in Jordan (Al Shanti & Elessa, 2023). The prevailing consensus in the literature asserts that the incorporation of Blockchain Technology generally enhances the efficiency of AIS. Nevertheless, divergent findings also exist, notably in studies examining the impact of Blockchain Technology on Business Performance. For instance, research on Chinese stock market-listed companies suggests a negative influence of Blockchain Technology on the Business Performance of such entities (Li, Wu, & Sun, 2021). Disparities in the speed and degree of business performance improvement are observed across different countries; notably, large businesses in the United States exhibit a more pronounced enhancement in business results post-Blockchain Technology adoption compared to their counterparts in China (Tseng, Liang, & Nguyen, 2023). The literature review predominantly employs quantitative methodologies in exploring the relationship between Blockchain Technology and AIS efficiency. Research outcomes are derived through established research models, surveying subjects directly involved in Blockchain technology applications to scrutinize the contemplated relationship. In this study, the author proposes a hypothesis concerning businesses owning E-commerce platforms in Vietnam, aiming to investigate whether the integration of Blockchain Technology will yield a positive impact on the efficacy of their AIS.

**Hypothesis H1** *posits that the application of Blockchain Technology positively influences the efficiency of Accounting Information Systems (AIS) for companies that own E-commerce platforms in Vietnam.*

### 2.3.2. The Influence of the Efficiency of Accounting Information Systems on Business Performance Within the Framework of Applying Blockchain Technology

In the application of Blockchain Technology, the efficacy of the AIS is posited to significantly contribute to enhanced Business Performance, a hypothesis substantiated through both theoretical and practical investigations (Beg, 2018;

Gofwan, 2022). The efficiency of AIS demonstrates positive implications for profits (Patel et al., 2015), cost reduction and control (Albashabsheh et al., 2018), and extends to production and inventory management within manufacturing enterprises, exemplified by the case study of Sumber Indah Perkasa Factory in Indonesia (Ari et al., 2020). This phenomenon holds true across diverse enterprises, encompassing large corporations, small and medium-sized enterprises, particularly within the context of information technology application in developing countries, such as Nigeria (Fagbemi & Olaoye, 2016), UAE (Al-Najjar & Al-Najjar, 2017), Jordan (Ahmad, Bin Mohammad, & Bt Nordan, 2019), and Spain (Grande, Madsen, & Borch, 2011). The effective functioning of AIS further enhances the quality of information presented in financial reports, better aligning with the information needs of managers (Al-Dmour, Abbod, & Al-Balqa, 2018). A positive correlation is observed between the attention dedicated to building AIS and its operational effectiveness, facilitating expedited goal attainment within technology businesses in Thailand (Thapayom & Ussahawanitchakit, 2015). Numerous studies corroborate that AIS effectiveness aligns consistently with enhanced Business Performance. While most research adopts quantitative methodologies and establishes models, relying on surveys of subjects directly involved in AIS and business performance, some studies incorporate case studies to substantiate this relationship. Nevertheless, there is a gap in existing research, as no prior studies have proposed a model specifically examining the relationship between AIS and Business Performance in the context of Blockchain technology application, constituting the novelty of the present research.

The conjecture posited for businesses possessing E-commerce platforms in Vietnam revolves around the inquiry into whether the efficacy of the AIS, particularly in the context of Blockchain Technology implementation, will yield improvements in Business Performance.

**Hypothesis H2** *proposes that the efficiency of Accounting Information Systems positively affects the Business Performance of companies that own E-commerce platforms in Vietnam.*

Grounded in the theoretical framework, the authors present a research model featuring two hypotheses, denoted as H1 and H2. Blockchain Technology is

operationalized through the assessment of three components: 1) Information Transparency; 2) Information Immutability; and 3) Smart Contracts. The measurement of Business Performance encompasses three components: 1) Production Performance; 2) Cost Control Results; and 3) Profit Results.

**Hypothesis H1:** *Blockchain Technology application has a positive impact on the AIS efficiency of companies owning E-commerce platforms in Vietnam.*

**Hypothesis H2:** *The AIS efficiency has a positive impact on the Business Performance of companies owning E-commerce platforms in Vietnam.*

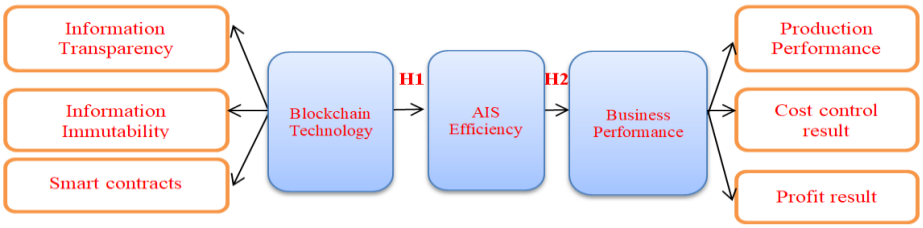


Figure 1: Research Framework

(Source: Al-Dmour et al. (2018); Al Shanti and Elessa (2023); Fang et al. (2023); Li et al. (2021); Thapayom and Ussahawanitchakit (2015); Tseng et al. (2023))

## 3. Research Methodology

The research methodology unfolds in two sequential steps: qualitative research and quantitative research. Qualitative research involves a sample of 12 managers and accountants from businesses owning E-commerce platforms, aimed at assessing the suitability of the measurement scales for the identified factors. The insights garnered from qualitative research aid the author in formulating quantitative measurement scales. Subsequently, quantitative research is implemented in two distinct phases. The initial phase comprises a pilot study conducted with a small group to identify and rectify any errors in the questionnaire. The second phase constitutes the formal study, utilizing a revised questionnaire derived from the pilot study. The survey, conducted in November 2023, represents the culmination of the research process.

The determination of the sample size required to fulfil research objectives is contingent upon various factors, including the chosen data analysis method and specific statistical indicators. Contemporary researchers advocate for the use of empirical formulas based on selected data processing methods to ascertain a sample

size that meets analytical requirements. In this study, the selection of the sample size adheres to the prerequisites for conducting Exploratory Factor Analysis (EFA) and Multiple Regression Analysis. Specifically, for EFA analysis, the minimum sample size is recommended to be at least five times the total number of observed variables in the proposed model. Employing this formula, the study establishes that an appropriate sample size is 125, as substantiated by existing literature (Hair et al., 2012).

In meeting the criteria for sample size, a quantitative research methodology was deployed, encompassing the dissemination of 300 surveys to evaluate the measurement levels of concepts within the research model. This sample size aligns with the specifications for an analytical sample, as elaborated earlier. Respondents were tasked with furnishing responses on a 5-point Likert scale, spanning from 1 (strongly disagree) to 5 (strongly agree), with the questionnaire serving as the principal instrument for data collection.

To undertake data processing and statistical analysis, SPSS 20.0 and AMOS 20.0 software were employed. The author utilized Cronbach's Alpha coefficient to assess the reliability of the scales incorporated in the proposed research model. In evaluating scale reliability, the total variable correlation coefficient was also employed. If a measured variable exhibited a total variable correlation coefficient of ≥ 0.3, it was deemed to meet the requirements. Confirmatory factor analysis (CFA) was then employed to refine the measurement scale of the concepts. Subsequently, SEM was applied to scrutinize the research hypotheses and formulate the SEM regression model.

- Scale of Research Concepts: The study encompasses a total of 29 observed variables, which align with three independent factors and two groups of dependent factors.

- Sample Statistics: Out of 300 survey questionnaires distributed, 285 valid responses were considered for analysis. The survey targeted managers at all levels and accountants from businesses with E-commerce platforms in Vietnam. Participants were well-informed about the study's purpose, benefits, and risks before choosing to participate or decline. The author, who possesses knowledge of participants' identities, maintains confidentiality by anonymizing personally identifiable data, ensuring it remains unlinked to other information for privacy preservation.

## 4. Research Results

### 4.1. Research Sample Statistics

An overview of the general information and demographic characteristics of the respondents:

**Gender:** The majority of respondents, approximately 64.9%, are male, with females comprising 35.1% of the total. This distribution correlates with the occupational positions and titles represented in the survey sample, where managerial roles predominate, contributing to the higher proportion of male respondents.

**Age:** A significant portion of survey participants falls within the age bracket of 36 to 50 years old, accounting for approximately 50.8%. The subsequent age group, encompassing individuals below 35 years old, constitutes around 38.9%, while the smallest percentage is represented by those aged 50 and above, accounting for approximately 10.2%. This demographic distribution aligns with the prevalent age structure observed among managerial roles.

**Education:** A predominant portion of respondents, comprising 55.1%, holds master's degrees or higher qualifications, while the remaining 44.9% possess bachelor's degrees. This indicates that the respondents possess substantial knowledge and aptitude, enabling them to comprehend and respond effectively to the questionnaire.

Table 1: Table of Demographic Characteristics (Source: Processing by SPSS software).

| **Characteristic** | **Quantity** *N = 285* | |
|---|---|---|
| | **n** | **%** |
| Gender | | |
| Female | 185 | 64,9 |
| Male | 100 | 35,1 |
| Age | | |
| >49 | 29 | 10,2 |
| 36-49 | 145 | 50,8 |
| <36 | 111 | 38,9 |
| Education | | |
| Master's degrees or higher | 157 | 55,1 |
| Bachelor degree | 128 | 44,9 |
| Other | - | - |
| Department | | |
| Board of Directors | 71 | 24,9 |
| Accounting and Finance Department | 131 | 45,9 |
| Other | 83 | 29,1 |

**Department:** Approximately 24.9% of respondents hold positions in the Board of Directors, 45.9% are affiliated with the Accounting and Finance Department, and the remaining 29.1% represent managerial roles in other departments. This sample structure is deemed appropriate for ensuring high-quality responses that accurately reflect the actual conditions within the surveyed companies, aligning with the questionnaire's content.

### 4.2. Cronbach's Alpha Reliability test

A total of 283 valid questionnaires were collected and processed using SPSS 20 software, encompassing 29 variables. Each variable demonstrates Corrected Item-Total Correlations surpassing 0.3, and the Cronbach's Alpha coefficient registers at 0.6 or above. As a result, all 29 variables, including 10 independent variables and 19 dependent variables, are retained for the subsequent phase of the research.

Table 2: Reliability Analysis for Measurement Scales (Source: Processing by SPSS software)

| Variable name | Observed variables | Source | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| Information Transparency - Cronbach's Alpha 0,857 | | | | |
| ITRAN1 | Information transparency helps maintaining strong partnerships with parties | (Islam & Sarker, 2020; Javaid et al., 2021; Kim et al., 2020; Nugent et al., 2016; Tan & Sundarakani, 2021) | 0,749 | 0,781 |
| ITRAN2 | Our company is willing to invest more to improve information transparency | | 0,721 | 0,807 |
| ITRAN3 | Information transparency's applicability and contractual relationships replacement | | 0,719 | 0,809 |
| Information Immutability - Cronbach's Alpha 0,916 | | | | |
| IIM1 | Information immutability helps maintaining strong partnerships with parties | (Alshahrani & Alshahrani, 2021; Atienza-Mendez & Bayyou, 2019; Tarkhanov et al., 2019) | 0,778 | 0,901 |
| IIM2 | Any changes of information on blockchains require notification of network members and compliance with requirements | | 0,780 | 0,900 |
| IIM3 | Our company can count on the sincerity of our partners based on the information immutability. | | 0,850 | 0,876 |

| | | | | |
|---|---|---|---|---|
| IIM4 | Information Immutability' applicability and contractual relationships replacement. | | 0,825 | 0,885 |
| | Smart Contract - Cronbach's Alpha 0,939 | | | |
| SC1 | Smart contracts can remove human judgment from transactions and are subject to rules agreed upon with the parties. | (Cong & He, 2019; Mohanta et al., 2018; Staples et al., 2017) | 0,869 | 0,914 |
| SC2 | Smart contracts have become an important element in maintaining strong partnerships | | 0,901 | 0,888 |
| SC3 | Smart contract's applicability and contractual relationships replacement. | | 0,850 | 0,928 |
| | Accounting Information System Efficiency - Cronbach's Alpha 0,908 | | | |
| AIS1 | Back up data effectively | (Anh & Thu, 2023; Atkinson & Shaffir, 1998; Ilham et al., 2019) | 0,682 | 0,899 |
| AIS2 | Provide information quickly | | 0,682 | 0,900 |
| AIS3 | Departments and processes are closely linked | | 0,758 | 0,891 |
| AIS4 | Centralized data management helps improve the accuracy of data and management information | | 0,801 | 0,887 |
| AIS5 | Diverse information formats | | 0,768 | 0,891 |
| AIS6 | Many information selection and filtering functions in the system | | 0,690 | 0,898 |
| AIS7 | The system provides useful information for decision making | | 0,704 | 0,897 |
| | Production Performance - Cronbach's Alpha 0,780 | | | |
| PC1 | Accelerated time for developing new products | (Anh & Thu, 2023; Banker et al., 2000; Neely, 2005) | 0,616 | 0,710 |
| PC2 | Expedited production timelines | | 0,624 | 0,705 |
| PC3 | Enhanced reliability in delivering products | | 0,583 | 0,727 |
| PC4 | Elevated satisfaction of customer needs regarding product quality | | 0,516 | 0,762 |
| | Cost control - Cronbach's Alpha 0,838 | | | |
| CC1 | The increase in savings direct material costs | (Akeem, 2017; Anh & Thu, 2023; Neely, 2005) | 0,695 | 0,783 |
| CC2 | The increase in savings direct labour costs | | 0,605 | 0,822 |
| CC3 | The increase in savings overhead costs | | 0,784 | 0,745 |

| | | | | |
|---|---|---|---|---|
| CC4 | The increase in savings other operational costs | | 0,603 | 0,823 |
| | Profitability – Cronbach's Alpha 0,848 | | | |
| PR1 | The market share is on the rise. | | 0,693 | 0,803 |
| PR2 | There is an increase in Return on Sales (ROS). | (Kaplan & Norton, 1996; Neely, 2005) | 0,670 | 0,813 |
| PR3 | Turnover on assets (TOA) is experiencing growth. | | 0,738 | 0,784 |
| PR4 | Return on Assets (ROA) is seeing an upward trend. | | 0,642 | 0,825 |

### 4.3. Exploratory Factor Analysis (EFA)

The principal axis coefficient, utilizing Promax Rotation and Factor Loading Factor ≥ 0.5, is applied to integrate the remaining variables into the EFA model for scale validation. The obtained results reveal a Kaiser-Meyer-Olkin (KMO) coefficient of 0.844 (> 0.5), Bartlett's Test statistic of 5342.529 with a significance level of 0.000 (< 0.05), and Cumulative Variance reaching 72.072% (>50%) (Table 3). These findings affirm the complete consistency of the analysed data. Consequently, all factor loadings exceed 0.5, and the explained variance surpasses 50%, indicating precise grouping of the remaining 29 observed variables akin to the original scale.

Table 3: KMO and Bartlett's Test Result (Source: Processing by SPSS software).

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | | 0,844 |
|---|---|---|
| Bartlett's Test of Sphericity | Approx. Chi-Square | 5,342,529 |
| | df | 406 |
| | Sig. | 0,000 |

The EFA results manifest the following factors:

Factor 1 encompasses observed variables TRANS1-TRANS3, denoted as "Information Transparency" (TRANS).

Factor 2 includes observed variables IIM1-IIM4, labelled as "Information Immutability" (IIM).

Factor 3 involves observed variables SC1-SC3, designated as "Smart Contract" (SC).

Factor 4 comprises observed variables AIS1-AIS7, identified as "Accounting Information System Efficiency" (AIS).

Factor 5 includes observed variables PC1-PC4, named "Production Performance" (PC).

Factor 6 encompasses observed variables CC1-CC4, designated as "Cost Control" (CC).

Factor 7 comprises observed variables PR1-PR4, labelled as "Profitability" (PR).

Post Exploratory Factor Analysis (EFA), it is evident that the model corresponds with the research model, with no elimination of observed variables from the research variables. Table 4 demonstrates the absence of new factor groups.

Table 4: Exploratory Factor Analysis Matrix (Source: Processing by SPSS software).

| Variables | Factor | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| AIS5 | 0,814 | | | | | | |
| AIS3 | 0,810 | | | | | | |
| AIS4 | 0,787 | | | | | | |
| AIS2 | 0,769 | | | | | | |
| AIS6 | 0,747 | | | | | | |
| AIS1 | 0,721 | | | | | | |
| AIS7 | 0,717 | | | | | | |
| IIM4 | | 0,914 | | | | | |
| IIM3 | | 0,889 | | | | | |
| IIM2 | | 0,795 | | | | | |
| IIM1 | | 0,755 | | | | | |
| SC2 | | | 0,971 | | | | |
| SC1 | | | 0,909 | | | | |
| SC3 | | | 0,846 | | | | |
| CC3 | | | | 0,927 | | | |
| CC1 | | | | 0,702 | | | |
| CC4 | | | | 0,670 | | | |
| CC2 | | | | 0,633 | | | |
| PR2 | | | | | 0,806 | | |
| PR3 | | | | | 0,765 | | |
| PR1 | | | | | 0,724 | | |
| PR4 | | | | | 0,701 | | |
| ITRANS1 | | | | | | 0,836 | |
| ITRANS2 | | | | | | 0,787 | |
| ITRANS3 | | | | | | 0,785 | |
| PC2 | | | | | | | 0,747 |
| PC1 | | | | | | | 0,731 |
| PC3 | | | | | | | 0,614 |
| PC4 | | | | | | | 0,544 |

### 4.4. Confirmatory Factor Analysis (CFA)

The EFA results reveal seven identified concepts in the research model. Model fitness assessment, utilizing measures such as CMIN, CMIN/df, GFI, TLI, CFI, and RMSEA, confirms its adequacy. The model meets established criteria: GFI, TLI, CFI values ≥ 0.9, CMIN/df ≤ 3, and RMSEA = 0.041 ≤ 0.08. Confirmatory Factor Analysis (CFA) outcomes, depicted in Figure 2, validate the research model. The observed variables demonstrate a significant value of 0.00, emphasizing their strong representation. Moreover, normalized weights exhibit high values with statistical significance (P-value = 0.000), affirming the discriminant value of the concepts.

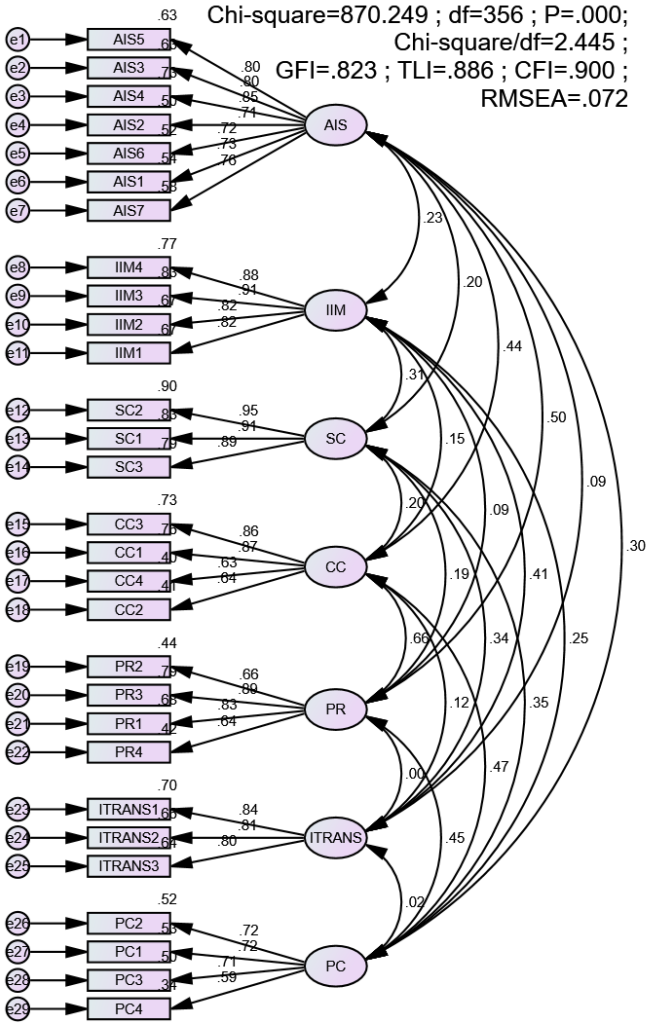


Figure 2: CFA Normalization Diagram of Research Model

(Source: Processing by Amos software).

The standardized weights, surpassing 0.5, and statistically significant

unstandardized weights (sig. < 0.000) signify convergent concepts. The measurement model is deemed appropriate for the research data, with no observable correlation among the measurement errors, affirming the unidimensional characteristic.

### 4.5. Structural Equation Modelling (SEM)

The study employed SEM to assess the adequacy of the research model and explore relationships within the initial model. The SEM analysis resulted in a model with df = 284, Chi-square = 910.068, and a p-value = 0.000 < 0.05, indicating statistical significance. Moreover, the Chi-square/df ratio is 2.466 < 3, GFI = 0.817, TLI = 0.884, CFI = 0.895, and RMSEA = 0.072 < 0.08, confirming the model's suitability for market data (Figure 3).

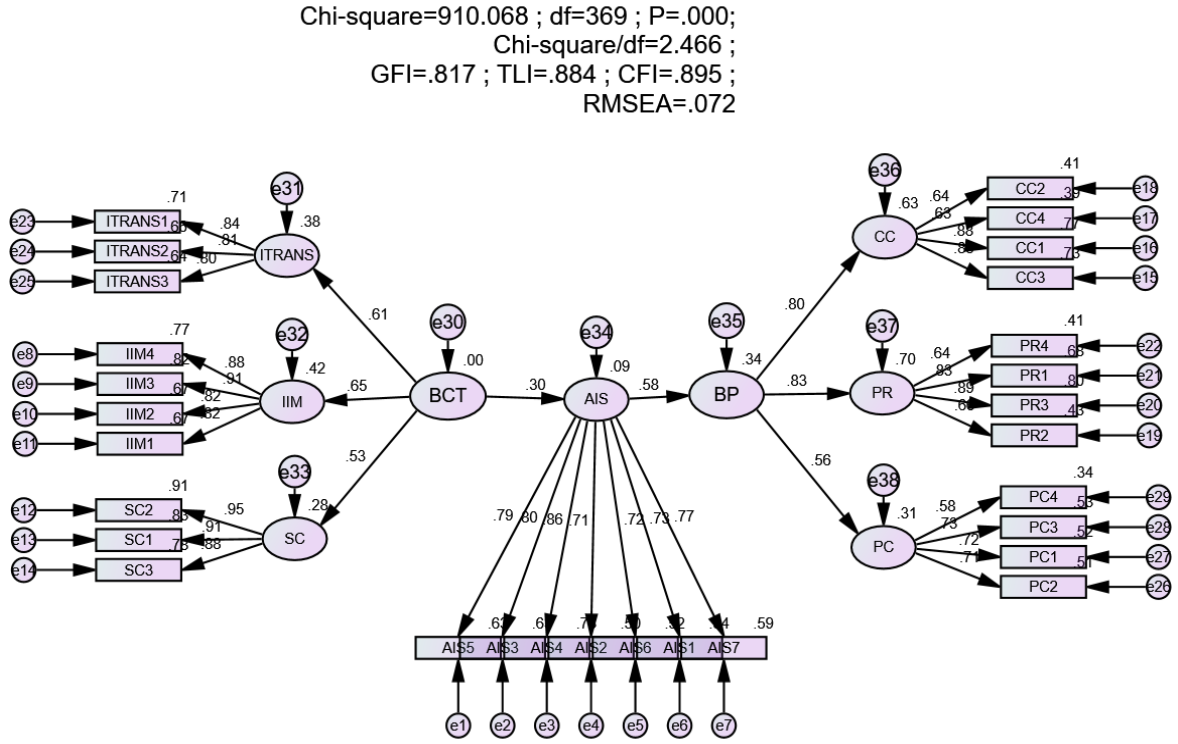


Figure 3. Linear Structural Model (SEM)

(Source: Processing by Amos software)

The regression coefficient results of the model signify the acceptance of all hypotheses (Table 4).

**Table 5. Hypothesis Testing Result (Source: Processing by Amos software)**

| Relation | | | Estimate | S.E. | C.R. | P | Conclusion |
|---|---|---|---|---|---|---|---|
| AIS | <--- | BCT | 0,300 | 0,119 | 3,329 | *** | H1 - Accepted |
| BP | <--- | AIS | 0,579 | 0,065 | 7,334 | *** | H2 - Accepted |

The standardized estimates derived from the SEM regression model (Table 5) demonstrate a significant positive influence of Blockchain Technology on the AIS efficiency within companies owning E-commerce platforms in Vietnam, with an estimate of 0.300, p=0.000 <0.5. Additionally, the results reveal a substantial positive impact of AIS efficiency in the context of Blockchain Technology on the business performance of companies owning E-commerce platforms in Vietnam, with an estimate of 0.579, p=0.000 <0.5.

## 5. Discussion

### 5.1. Main Findings

Blockchain Technology exerts a positive and robust influence on the AIS within companies that own E-commerce platforms in Vietnam. These findings align with earlier research studies (Al Shanti & Elessa, 2023; Faccia & Petratos, 2021; Fang et al., 2023; Zhang et al., 2021). The amalgamation of accounting practices with Blockchain Technology has significantly reduced manual work, accelerated payment settlement processes, and mitigated the risk of financial reporting fraud. Moreover, it has the potential to revolutionize corporate management and operations by eliminating time lags in financial reporting. Blockchain adoption facilitates a real-time accounting system, enabling instant payment tracking accessible to the public and key stakeholders, thereby eradicating time delays. Blockchain accelerates accounting processes, enhancing payment reliability and detailed record-keeping. It brings clarity to asset ownership and liabilities, improving overall performance. The protocol's focus on decentralization offers cost and time advantages, boosting security and consensus certainty. Unlike the Internet, Blockchain facilitates direct transfers between parties and eliminates ledger reconciliation needs. It ensures transparency, making it ideal for E-commerce platforms with numerous suppliers engaging in continuous 24/7 transactions. Blockchain serves as a valuable asset in streamlining accounting tasks for such businesses.

The findings reveal that the efficiency of the AIS within the framework of Blockchain Technology significantly influences the business performance of companies operating E-commerce platforms in Vietnam. This outcome aligns with

prior research (Ahmad et al., 2019; Al-Najjar & Al-Najjar, 2017; Albashabsheh et al., 2018; Arif et al., 2020; Fagbemi & Olaoye, 2016; Fang et al., 2023; Kwarteng & Aveh, 2018; Patel et al., 2015; Thapayom & Ussahawanitchakit, 2015). However, it contrasts with studies on Chinese stock market-listed businesses, where Blockchain Technology is associated with negative business performance (Li et al., 2021). In the context of Blockchain Technology application, an effective AIS proves instrumental in enhancing business performance. AIS, integrated into Information Systems and Technology, plays a vital role in managing economic and financial issues. Greater AIS effectiveness translates into improved cost control, savings, increased profits, and positively impacts production efficiency—reducing new product development and delivery times through swift information exchange, fostering trust among businesses engaged in E-commerce platforms. This outcome resonates with the experiences of E-commerce platform-owning businesses in Vietnam, particularly amid evolving legal regulations and accounting organizational challenges. The application of Blockchain Technology becomes indispensable for enhancing AIS effectiveness and, consequently, contributing to improved business performance in the current landscape.

### 5.2. Policy Implication

The research outcomes underscore the substantial impact of Blockchain Technology on the efficacy of AIS, subsequently influencing the business performance of E-commerce platform-owning entities in Vietnam. Notably, information transparency, information immutability, and smart contracts exhibit positive correlations with AIS effectiveness. This underscores several recommendations for the Vietnamese government. Firstly, there should be a heightened focus on establishing legal frameworks that encourage businesses to integrate this contemporary technology into their operations, particularly emphasizing its application in financial and management accounting. Furthermore, educational institutions are encouraged to integrate Blockchain Technology into curricula for E-commerce, accounting, and auditing, facilitating the rapid adoption of this technology across Vietnamese businesses, especially those with E-commerce platforms. Additionally, financial

institutions should offer preferential loan packages for Blockchain Technology expansion initiatives, facilitating businesses' access, utilization, and upgrades in technology, thereby enhancing the overall utility of Blockchain Technology in AIS.

For E-commerce platform-owning businesses, fostering Blockchain Technology application is crucial. Ongoing investments to ensure information transparency, immutability, and smart contracts are essential. A profound understanding of AIS's impact on business performance is vital. In the realm of Blockchain application, heightened AIS effectiveness correlates with increased production results, cost control, and profits—a verified impact. Thus, managerial focus on enhancing the application of Blockchain Technology in financial accounting is paramount for improved business performance.

Businesses with E-commerce platforms should advocate for increased adoption and investment in Blockchain Technology. Emphasis on enhancing information transparency, immutability, and smart contracts is crucial. A comprehensive understanding of AIS's influence on business performance is necessary. In the context of Blockchain application, heightened AIS effectiveness corresponds to increased production, cost control, and profits—a correlation verified in this study. Consequently, managerial attention should be directed towards refining the application of Blockchain Technology in financial accounting, thereby contributing to enhanced business performance.

## 6. Conclusion

This study investigates the correlation between Blockchain Technology, AIS effectiveness, and business performance in Vietnam's E-commerce platforms. Analysing data from 283 managers and accountants across 139 businesses, the study employs SEM to reveal positive associations between Blockchain Technology and AIS effectiveness, as well as AIS effectiveness and business performance. The findings suggest recommendations for the Vietnamese government and businesses to leverage Blockchain in financial accounting, enhancing overall business performance.

Despite its noteworthy contributions, this study has limitations. It focuses on E-

commerce platforms in Vietnam without distinguishing between large and medium-sized enterprises. Future research should broaden this perspective. Additionally, while evaluating Blockchain Technology's impact on AIS and business performance, the study doesn't differentiate the level of influence for each factor. Furthermore, it doesn't explore how AIS impacts specific components of Business Performance. Future research could delve into these aspects and extend the investigation to various business sectors.

**Role of Author and Contributor**

The author was only involved in the conception and design, analysis and interpretation of the data; the drafting of the paper, revising it critically for intellectual content; and the final approval of the version to be published.

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