**HO CHI MINH NATIONAL ACADEMY OF POLITICS**

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# FACTORS AFFECTING THE INTENTION TO ADOPT BLOCKCHAIN TECHNOLOGY IN E-COMMERCE IN VIETNAM

**SUMMARY OF DOCTORAL DISSERTATION**

**MAJOR: ECONOMIC MANAGEMENT**

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# INTRODUCTION

## 1. THE URGENCY OF THE RESEARCH TOPIC

The Fourth Industrial Revolution is fundamentally changing the way the economy operates, with data and digital technology becoming central resources for economic growth and management. The digital transformation process necessitates innovation in public administration methods, moving toward data-driven, more transparent, and efficient approaches. In this context, blockchain technology is not just a technical solution but also an institutional data platform with the ability to ensure the immutability, decentralization, and authenticity of information, thereby creating the premise for enhancing the effectiveness of economic management in the digital environment.

E-commerce is a sector highly compatible with blockchain technology due to its strong reliance on data, information authenticity, and market trust. It also serves as the main driver of Vietnam's digital economy, consistently holding the largest share in terms of scale and maintaining a high growth rate. According to e-Conomy SEA, the value of e-commerce transactions reached USD 22 billion in 2024 and is projected to reach USD 26 billion in 2025, equivalent to nearly two-thirds of the country's total digital economy scale. This confirms that e-commerce is not only a structural pillar but also a central driving force promoting technology dissemination, connecting the digital ecosystem, and leading cross-sectoral digital transformation. This underscores the urgent need to enhance the state's capacity for digital economic management.

In this context, blockchain technology is expected to support the government's transition from an administrative intervention-based management model to a data- and evidence-based management model, contributing to improved market surveillance efficiency, ensuring transparency, and enhancing accountability. At the same time, the demands of sustainable development and a circular economy require economic management tools capable of tracking value chains and allocating resources efficiently, and blockchain technology has the potential to meet these requirements.

From an academic perspective, current research on blockchain technology primarily focuses on finance and supply chains, while research examining blockchain technology as a tool to support economic management in e-commerce is limited, especially in the context of Vietnam. Meanwhile, Vietnam is implementing digital government development strategies and blockchain technology applications, creating an urgent need for a scientific basis for designing appropriate policies and management tools. Therefore, the topic "Factors effecting the intention to adopt blockchain technology in e-commerce in Vietnam" is essential both theoretically and practically, contributing to filling the research gap and providing scientific arguments for modernizing state economic management in the digital economy.

## 2. RESEARCH OBJECTIVES AND TASKS

### *2.1.* Research objectives*:*

🞢 *Theoretical objectives:*

The study aims to systematize the theoretical foundations and develop a research model examining the factors influencing the intention to apply blockchain technology in the B2C e-commerce model in Vietnam. Specifically, the research seeks to construct a theoretical framework that explicates the relationships between influencing factors and the intention to adopt blockchain technology in Vietnam's e-commerce sector, while clarifying the moderating role of government support in the relationship between technological readiness and the intention to apply blockchain technology within the context of the digital economy and the circular economy.

*Practical objectives:*

✓ To analyze the level of compatibility, readiness, and adoption intention toward blockchain technology among B2C retail enterprises in Vietnam in the current period.

✓ To identify and assess the magnitude of influence of each factor on the intention to apply blockchain technology among B2C retail enterprises in Vietnam.

✓ To evaluate the moderating role of government support policies in identifying barriers and drivers that facilitate enterprises' digital transformation through blockchain adoption.

✓ To propose orientations and policy recommendations aimed at enhancing the effectiveness of blockchain application in e-commerce in Vietnam, thereby promoting sustainable business models and optimizing retail supply chains.

- *Research tasks:* To achieve the aforementioned research objectives, the dissertation undertakes the following research tasks:

First, to systematize the theoretical foundations of blockchain technology adoption in e-commerce from the perspective of economic governance, serving as a basis for developing the research model and hypotheses that are appropriate to the Vietnamese context.

Second, to analyze and empirically test the factors influencing enterprises' intention to adopt blockchain technology in e-commerce.

Third, to evaluate the moderating role of government support in the relationship between technological readiness and enterprises' intention to adopt blockchain technology in the e-commerce sector.

Fourth, to interpret the research findings in light of the existing policy framework, thereby proposing implications aimed at improving economic governance instruments and promoting blockchain adoption in e-commerce.

**3. Research objects and scope**

*Research object*: This dissertation focuses on analyzing the factors influencing enterprises' intention to adopt blockchain technology, while also examining the moderating role of government support within the context of Vietnam's orientation toward a circular and sustainable economy.

*Research scope:* The dissertation investigates blockchain technology adoption in e-commerce from a governance - behavioral perspective, with primary emphasis on cognitive, organizational, and institutional environmental factors. The study is conducted on B2C e-commerce enterprises in the retail sector in Vietnam, utilizing secondary data up to 2024 and primary data collected during the period 2022 - 2025.

Policy implications are proposed for the 2025 - 2030 period, with a vision toward 2050, in alignment with the development orientation of Digital Government and the national strategy on blockchain technology.

## 4. Research methodology

To accomplish the objectives of the dissertation, a mixed-methods research design is employed, integrating both qualitative and quantitative approaches and utilizing secondary and primary data sources.

*Qualitative methods:*

Qualitative research is conducted primarily through desk-based research, including the synthesis and systematic review of relevant literature to develop the initial research model and measurement scales. Subsequently, expert discussions and in-depth interviews are carried out with 18 experts, comprising lecturers, researchers, and senior managers from B2C e-commerce enterprises, to refine and adjust the measurement scales and research model in accordance with the practical research context in Vietnam.

*Quantitative methods:*

Quantitative research is implemented to collect, process, and analyze data using SPSS 21.0 and AMOS 21.0. The analytical techniques include descriptive statistics, reliability analysis of measurement scales using Cronbach's alpha, Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM).

Finally, the researcher conducts follow-up in-depth interviews and discussions to interpret the empirical findings, thereby formulating policy recommendations, identifying research limitations, and proposing directions for future research.

## 5. Original contributions of the dissertation

*Theoretical contributions:*

First, the dissertation proposes an integrated and multidimensional theoretical model that enhances the explanatory power of organizational behavior regarding the adoption of blockchain technology at the firm level.

Second, it introduces new variables and relational mechanisms, clarifying mediating and moderating effects, with particular emphasis on the role of government support within the Vietnamese institutional context.

Third, the study substantiates that blockchain technology constitutes a critical component in promoting digital transformation and the circular economy within the e-commerce sector.

*Practical contributions:*

First, the findings provide robust scientific evidence to support policymakers in designing effective policies for blockchain adoption, aligned with the development of the digital economy and the circular economy.

Second, the study assists e-commerce enterprises in identifying key determinants influencing their intention to adopt blockchain technology, thereby informing strategic investment decisions and technological transformation pathways.

Third, the results offer valuable insights for blockchain solution providers, enabling them to tailor products and services more closely to the practical needs of enterprises.

Fourth, the dissertation contributes to raising awareness among businesses and individuals regarding the value and applicability of blockchain technology, while also serving as a useful reference for future academic research in this field.

## Chapter 1
## OVERVIEW OF THE RESEARCH LANDSCAPE
## 1.1. STUDIES ON BLOCKCHAIN TECHNOLOGY AND FACTORS INFLUENCING THE ADOPTION OF BLOCKCHAIN TECHNOLOGY WORLDWIDE AND IN VIETNAM

Due to its multidimensional nature, which is closely associated with historical contexts, socio-economic conditions, cultural factors, and industry-specific characteristics, research on technology adoption intention, particularly regarding emerging technologies such as blockchain, has been approached from diverse perspectives and theoretical frameworks.

Based on a synthesis of both international and domestic studies, existing research on blockchain technology can be broadly categorized into five main streams of inquiry, reflecting different analytical orientations and research objectives.

### 1.1.1. Research based on the characteristics and technical features of blockchain technology

International studies initially focus on analyzing the architecture and operational mechanisms of blockchain technology, thereby explaining its capacity to create value in transaction systems and data governance (Nakamoto, 2008; Iansiti & Lakhani, 2017). Blockchain is commonly defined as a distributed ledger system operating through cryptographic hashing and consensus mechanisms, replacing centralized intermediaries with decentralized trust. Its core characteristics include decentralization, immutability, transparency and traceability, and smart contracts (Treiblmaier, 2018). These features generate significant benefits such as enhanced trust, reduced fraud, improved transaction efficiency, and strengthened data security (Koens & Poll, 2018; Schuetz & Venkatesh, 2020).

However, numerous studies also identify limitations related to scalability, transaction latency, and energy consumption (Zhang et al., 2021; Mohanta et al., 2020). Moreover, variations among blockchain types and consensus mechanisms significantly affect system costs and performance (Garriga et al., 2021). In Vietnam, research on blockchain applications has focused on logistics, finance–banking, tourism, and e-commerce, emphasizing transparency, security, and traceability, while integration costs and human resource capacity are identified as major barriers (Nguyen et al., 2024; Hoa & Lien, 2018; Duy, 2021).

### 1.1.2. Studies on blockchain technology adoption

Studies on blockchain adoption primarily evaluate its effectiveness and feasibility across various socio-economic sectors, including finance, supply chains, healthcare, energy, and e-commerce (Ko et al., 2018; Esmaeilian et al., 2024). Blockchain adoption contributes to fraud reduction, enhanced transparency, and operational efficiency; however, its effectiveness largely depends on data standardization, organizational capabilities, and stakeholder coordination (Treiblmaier, 2018; Casino et al., 2019).

In Vietnam, blockchain adoption has been observed in logistics, e-commerce, and banking, where transparency, security, and traceability are perceived as key benefits, while high costs, legal uncertainties, and insufficient data standardization remain significant obstacles (Nguyen & Le, 2021; Pham & Do, 2022; Nguyen et al., 2024). **1.1.3. Studies on determinants of blockchain adoption intention in organizations**

A substantial body of research employs theoretical frameworks such as the Technology Acceptance Model (TAM) (Davis, 1985), UTAUT (Salem, 2019), Innovation Diffusion Theory (IDT), and the Technology-Organization-Environment (TOE) framework (DePietro et al., 1990) to examine determinants of blockchain adoption intention. Key influencing factors include perceived usefulness, perceived ease of use, effort expectancy, trust, facilitating conditions, costs, and organizational readiness (Taherdoost, 2022; Aydogdu, 2023).

Trust plays a central role, exerting both direct effects and moderating influences on the relationship between technological perceptions and adoption intention. Major barriers include implementation costs, technical constraints, legal risks, and the lack of standardization, which particularly affect small and medium-sized enterprises (SMEs) (Dowelani & Ozumba, 2022).

### 1.1.4. Studies on the relationship between blockchain technology and contextual conditions

The effectiveness of blockchain adoption is simultaneously influenced by technological, organizational, market, and institutional factors (Janssen et al., 2020; Treiblmaier, 2018). Infrastructure capacity, partner coordination, policy support, and multi-stakeholder governance mechanisms are critical determinants of successful implementation. International studies indicate that blockchain enhances customer relationship management and inter-organizational governance (Choi, 2018; Karim, 2023; Wang et al., 2019), while studies in Vietnam emphasize the importance of data standardization and legal support frameworks (Nguyee & Lê, 2021; Tran et al., 2023; Pham & Do, 2022).

### 1.1.5. Studies on blockchain technology from a circular economy and sustainability perspective

Blockchain is increasingly recognized as a tool that supports supply chain transparency, product lifecycle tracking, and recycled material certification, thereby facilitating the transition toward a circular economy and sustainable development (Kshetri, 2021; Sahoo et al., 2024; Upadhyay, 2020; Daghighi & Shoushtari, 2023; Bai & Sarkis, 2020; Saberi et al., 2019).

In Vietnam, preliminary studies report positive effects of blockchain adoption intention in healthcare and e-commerce contexts (Lan et al., 2024; Nguyen et al., 2025). Nevertheless, systematic quantitative studies in multi-sectoral contexts remain limited, indicating substantial opportunities for further research.

Overall, these research streams demonstrate that blockchain adoption depends on the complex interaction between technological attributes, organizational–environmental factors, and sustainability objectives. At the same time, they reveal a notable research gap in Vietnam regarding the integration of sustainability considerations into technology adoption models within the e-commerce sector, thereby providing a solid scientific foundation for the present dissertation.

## 1.2. RESEARCH GAPS

### 1.2.1. Gaps in research scope

Research on blockchain technology has been widely conducted both internationally and in Vietnam, primarily focusing on sectors such as finance, banking, logistics, supply chains, tourism, and e-government; however, in-depth studies specifically addressing e-commerce remain limited. Existing research largely evaluates technical potential and feasibility, while empirical studies examining user behavior and the integration of blockchain within the circular economy framework are still scarce.

### 1.2.2. Gaps in research content

Previous studies have mainly concentrated on analyzing the technical characteristics of blockchain and providing general policy recommendations, but they lack a comprehensive assessment of the combined effects of technological, organizational, market, legal, and sustainability-related factors on blockchain adoption intention. Moreover, the moderating role of government support in enhancing technological readiness and fostering adoption intention has not been sufficiently examined.

### 1.2.3. Gaps in research methodology

Most existing studies employ qualitative approaches or basic behavioral models such as TAM and UTAUT, while few have applied multivariate analysis to empirically test the relationships among technological, organizational, environmental, sustainability-related factors, and regulatory policy interventions. To address this gap, the present dissertation develops and empirically validates a comprehensive theoretical model using quantitative methods.

### 1.2.4. Gaps in research context

Although e-commerce in Vietnam has experienced rapid growth, blockchain adoption remains limited, particularly in areas related to value chain transparency, loss reduction, and sustainable development. To date, there has been no comprehensive study that systematically evaluates the feasibility of blockchain adoption, identifies key determinants, and examines the moderating role of government support in the Vietnamese e-commerce context.

In summary, the identified research gaps encompass research scope (Vietnamese e-commerce), content (a comprehensive and sustainability-oriented set of influencing factors), methodology (the lack of multivariate models capable of testing complex

relationships among technological, organizational, environmental, sustainability, and regulatory policy factors), and context (the absence of context-specific empirical evidence). This dissertation aims to address these gaps by constructing and validating an integrated research model that examines key determinants and the moderating role of government support, thereby providing both theoretical and practical foundations for promoting sustainable development and the circular economy in e-commerce.

## Chapter 2
## THEORETICAL FOUNDATIONS ON FACTORS INFLUENCING THE INTENTION TO ADOPT BLOCKCHAIN TECHNOLOGY IN E-COMMERCE
## 2.1. OVERVIEW OF E-COMMERCE ACTIVITIES IN VIETNAM

### 2.1.1. E-commerce

E-commerce refers to a broad set of business activities conducted through electronic networks, in which transactions involving goods and services, information exchange, and payments are carried out without requiring the physical presence of the participating parties (Laudon & Traver, 2021).

### 2.1.2. Benefits of E-commerce
#### 2.1.2.1. Benefits for sellers/ enterprises

E-commerce enables enterprises to expand market reach and enhance their market presence; improve operational efficiency and supply chain flexibility; increase revenue and business performance through continuous operating models; optimize operational costs and distribution efficiency; enhance customer service quality and brand value; leverage customer data to strengthen decision-making capability; and promote exports and international market integration.

#### 2.1.2.2. Benefits for consumers/ customers

E-commerce significantly expands consumers' access to goods and services; enhances convenience and flexibility in shopping behavior; helps optimize purchasing costs; improves information quality and shopping experience; and enables consumers to participate directly in the global marketplace.

#### 2.1.2.3. Benefits for the economy

E-commerce functions as a structural driver of digital economic growth; enhances market efficiency and competitiveness; fosters innovation and the emergence of new business models; promotes international economic integration and knowledge transfer; and contributes positively to sustainable development and social welfare.

### 2.1.3. Common E-commerce business models

In terms of operational models, e-commerce encompasses various forms such as B2B, B2C, C2C, and government-related models. Among these, the B2C model is identified as the focus of this dissertation due to its prevalence, direct impact on consumers, and critical role in the retail sector. B2C e-commerce is not merely a distribution channel but a digital interaction space in which trust, information transparency, and data security become key determinants of technology adoption behavior for both enterprises and consumers.

## 2.2. THEORETICAL FOUNDATIONS OF BLOCKCHAIN TECHNOLOGY

### 2.2.1. Concept of blockchain technology

Blockchain technology is commonly associated with the emergence of Bitcoin, a cryptocurrency introduced by Satoshi Nakamoto in 2008. Blockchain is defined as a decentralized and distributed digital ledger that records transactions chronologically, creating immutable records (Treiblmaier, 2018).

### 2.2.2. Characteristics of blockchain technology

Although blockchain has been examined from multiple disciplinary perspectives, its core characteristics consistently include decentralization, distributed ledgers, immutability, consensus mechanisms, data encryption, transparency, and smart contract functionality. Based on these characteristics and the specific requirements of e-commerce, the most prominent blockchain features in this context include distributed ledgers, immutability, security, transparency, reliability, and traceability.

### 2.2.3. The role of blockchain technology in e-commerce

Blockchain enhances traceability and supply chain transparency by immutably recording the entire product lifecycle, thereby reducing fraud and strengthening corporate accountability (Khan et al., 2022; Nguyen et al., 2024).

It supports transaction automation and reduces intermediary costs through smart contracts, contributing to improved operational efficiency for e-commerce enterprises (Ismanto et al., 2019).

Blockchain also strengthens data security and protects user privacy through decentralized data structures and cryptographic mechanisms, thereby reinforcing trust in digital transaction environments (Kshetri, 2021).

Finally, blockchain contributes to sustainable supply chains and the circular economy by enabling lifecycle tracking and more efficient resource management (Bai & Sarkis, 2020; Lan et al., 2024).

## 2.3. THEORIES RELEVANT TO RESEARCH ON FACTORS INFLUENCING BLOCKCHAIN ADOPTION INTENTION IN E-COMMERCE IN VIETNAM

### 2.3.1. Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA), proposed by Fishbein and Ajzen (1975), posits that behavior is directly determined by behavioral intention, which is primarily influenced by attitudes toward the behavior and subjective norms. The model assumes rational decision-making based on outcome evaluation and social pressure. Due to its omission of non-volitional constraints, TRA was extended by Ajzen (1991) into the Theory of Planned Behavior (TPB) through the inclusion of perceived behavioral control.

### 2.3.2. Innovation Diffusion Theory (IDT)

Rogers' Innovation Diffusion Theory (1962) explains the process of innovation diffusion and adoption through communication channels, time, and social systems, in which "newness" is defined by the adopter's subjective perception. The theory emphasizes five innovation attributes—relative advantage, compatibility, complexity, trialability, and observability—and categorizes adopters into five groups based on

readiness. Owing to its comprehensive analytical framework, IDT has been widely applied to explain technology adoption behavior, particularly in e-commerce and digital technologies such as online platforms, mobile applications, and blockchain.

### 2.3.3. Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) developed by Ajzen (1985, 1991) extends TRA by incorporating perceived behavioral control (PBC) to explain behavior in contexts where individuals do not have full control over execution conditions. TPB has been extensively applied in e-commerce and technology studies to analyze and predict intentions and behaviors related to the adoption of emerging digital technologies such as blockchain and electronic payments.

### 2.3.4. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), proposed by Davis (1989) and grounded in TRA, posits that technology usage intention and behavior are primarily determined by perceived usefulness (PU) and perceived ease of use (PEU). Due to its parsimonious structure and strong explanatory power, TAM and its extensions (e.g., TAM2) have been widely applied in e-commerce and technology research to analyze and predict adoption behavior toward digital systems and technologies such as e-commerce platforms and blockchain.

### 2.3.5. Technology Readiness (TR)

Technology Readiness theory, introduced by Parasuraman (2000), emphasizes the role of underlying psychological predispositions toward technology, which exist prior to cognitive evaluations such as usefulness or ease of use. TR comprises four dimensions-optimism and innovativeness (drivers), as well as discomfort and insecurity (inhibitors)-that shape how individuals and organizations approach and evaluate new technologies. In e-commerce and technologies such as blockchain, high technology readiness helps reduce complexity barriers and trust concerns, thereby supporting effective technology selection, implementation, and utilization.

2.3.6. Technology-Organization-Environment (TOE) Framework

The TOE framework, proposed by Tornatzky and Fleischer (1990), is a foundational theoretical model explaining technology adoption at the organizational level through the interaction of three contexts: technological, organizational, and environmental. The framework suggests that adoption decisions depend not only on technological attributes but also on internal capabilities and external pressures or support. In the Vietnamese e-commerce context, TOE provides a suitable foundation for analyzing blockchain adoption by incorporating technological readiness, managerial capacity, market competition, and regulatory frameworks.

### 2.3.7. COM-B Behavior change model

The COM-B model, proposed by Michie et al. (2011), posits that behavior arises from the interaction of three core components: Capability, Opportunity, and Motivation. This framework emphasizes that behavior occurs only when both internal and external conditions are simultaneously satisfied. In e-commerce, COM-B offers a comprehensive approach to explaining blockchain adoption behavior based on technological capability, infrastructural and institutional conditions, and enterprises' motivational drivers.

**2.3.8. Sustainability, Circular economy, and circular business models**

Sustainability and the circular economy have increasingly become strategic orientations for enterprises aiming to create long-term value, enhance reputation, and optimize resource use under conditions of resource scarcity. The circular economy emphasizes reducing, reusing, and recycling materials throughout the entire value chain, thereby aligning economic growth with environmental protection and social equity. In e-commerce, blockchain technology serves as an important enabling tool by enhancing supply chain transparency, improving resource management, and strengthening market trust, thereby supporting sust ainable and circular business models.

**2.3.9. The role of blockchain technology in economic growth models**

In the global digital economy, technological advancement-particularly blockchain technology-has assumed a central role in shaping economic growth models, governance, and operational mechanisms. Blockchain not only transforms the storage, verification, and sharing of information through transparency, trust, and decentralization, but has also been identified by many countries, including Vietnam, as a strategic tool for enhancing growth and competitiveness. Owing to its broad applicability across sectors, blockchain is expected to become one of the key pillars of Vietnam's digital economy in the coming years.

The application of TRA, TPB, and TAM enables this dissertation to explain the behavioral and cognitive foundations underlying enterprises' intention and decisions to adopt blockchain technology. IDT and TR clarify the diffusion process and internal readiness, while the TOE framework and COM-B model extend the analysis to organizational and environmental levels, addressing limitations of purely individual-based approaches. On this basis, the circular economy framework is integrated as a strategic orientation linking blockchain adoption with sustainable development objectives, thereby establishing a multidimensional and comprehensive analytical framework for the dissertation.

## 2.4. HYPOTHESIS DEVELOPMENT AND RESEARCH MODEL

**2.4.1. Blockchain adoption intention (IB)**

Blockchain adoption intention reflects users' deliberate willingness, readiness, and commitment to accept and implement blockchain technology. It plays a pivotal role in predicting actual adoption behavior and mitigating the risk of technology implementation failure. In the context of e-commerce, adoption intention represents a critical antecedent of successful blockchain diffusion and utilization.

**2.4.2. Perceived ease of use (PEU) and perceived usefulness (PU)**

Based on the Technology acceptance model (TAM), perceived ease of use reflects the extent to which a technology is considered easy to understand, implement, and operate, thereby reducing adoption barriers and enhancing firms' willingness to adopt blockchain technology in e-commerce.

Meanwhile, perceived usefulness refers to the degree to which blockchain technology is perceived to improve organizational performance, operational efficiency, and value creation. Higher perceived usefulness is therefore expected to positively influence blockchain adoption intention.

Accordingly, the following hypotheses are proposed:

*$H_1$: Perceived ease of use (PEU) has a positive effect on blockchain adoption intention in e-commerce in Vietnam.*

*$H_2$: Perceived usefulness (PU) has a positive effect on blockchain adoption intention in e-commerce in Vietnam.*

### 2.4.3. Traceability (TA)

Enhanced traceability enabled by blockchain technology improves transparency, reliability, and the accuracy of product information throughout the value chain. These improvements strengthen enterprises' evaluation of blockchain's functional benefits, thereby positively influencing perceived usefulness in e-commerce contexts.

Therefore, this study proposes the following hypothesis:

*$H_3$: Traceability has a positive effect on perceived usefulness of blockchain technology in e-commerce in Vietnam.*

### 2.4.4. Cost savings (CS)

Operational cost savings derived from blockchain adoption-such as reduced transaction costs, lower verification expenses, and minimized intermediary involvement-contribute positively to enterprises' perceptions of the technology's usefulness. Enhanced perceived usefulness, in turn, indirectly promotes blockchain adoption intention in e-commerce firms.

Thus, the following hypothesis is proposed:

*$H_4$: Cost savings have a positive effect on perceived usefulness of blockchain technology in e-commerce in Vietnam.*

### 2.4.5. Technology readiness (TR)

Technology readiness reflects an enterprise's level of preparedness in terms of digital infrastructure, human resources, and digital management capabilities. A higher degree of technology readiness provides a solid foundation for understanding, implementing, and effectively utilizing blockchain technology in e-commerce.

Accordingly, technology readiness is expected to directly influence blockchain adoption intention, as well as indirectly enhance perceived usefulness and perceived ease of use. The following hypotheses are proposed:

*$H_5$: Technology readiness has a positive effect on blockchain adoption intention in e-commerce in Vietnam.*

*$H_6$: Technology readiness has a positive effect on perceived usefulness of blockchain technology in e-commerce in Vietnam.*

*$H_7$: Technology readiness has a positive effect on perceived ease of use of blockchain technology in e-commerce in Vietnam.*

### 2.4.6. Data privacy security (DPS)

In the context of e-commerce, increasing risks related to data breaches and data misuse have heightened concerns over privacy and security. Blockchain technology's ability to ensure data integrity, confidentiality, and user privacy is considered a core advantage that enhances system reliability and governance effectiveness.

Therefore, the following hypothesis is proposed:

*$H_8$: Data privacy security have a positive effect on perceived usefulness of blockchain technology in e-commerce in Vietnam.*

### 2.4.7. Trading partner pressure (TPP)

In e-commerce ecosystems, pressure from key trading partners—through requirements for system integration, standardization, and technical collaboration—can reduce perceived complexity and implementation risks associated with blockchain adoption. Such pressure is expected to facilitate ease of use perceptions among adopting firms. Thus, the study proposes the following hypothesis:

*$H_9$: Trading partner pressure has a positive effect on perceived ease of use of blockchain technology in e-commerce in Vietnam.*

### 2.4.8. Sustainability (SU)

In the e-commerce context, sustainability orientation-encompassing economic efficiency, social responsibility, and environmental protection-has emerged as a strategic driver motivating enterprises to seek technological solutions that support long-term development. Blockchain technology is increasingly viewed as an enabler of sustainable and circular business practices. Accordingly, the following hypothesis is proposed:

*$H_{10}$: Sustainability has a positive effect on blockchain adoption intention in e-commerce in Vietnam.*

### 2.4.9. Trust (TRU)

In e-commerce environments, trust in blockchain technology-manifested through perceptions of security, transparency, and risk reduction-plays a foundational role in alleviating technological uncertainty and enhancing firms' readiness to operate blockchain-based systems. Trust is therefore expected to improve users' perceptions of the technology's ease of use. Hence, this study proposes the following hypothesis:

*$H_{11}$: Trust has a positive effect on perceived ease of use of blockchain technology in e-commerce in Vietnam.*

### 2.5. THE MODERATING ROLE OF GOVERNMENT SUPPORT IN THE RELATIONSHIP BETWEEN TECHNOLOGY READINESS AND BLOCKCHAIN ADOPTION INTENTION

Government support, manifested through regulatory frameworks, public policies, and infrastructure investment, plays a critical role in reducing uncertainty and fostering the adoption of emerging technologies such as blockchain. For e-commerce enterprises in Vietnam, particularly small and medium-sized enterprises (SMEs), resource constraints often imply that technology readiness alone is insufficient to ensure a strong intention to adopt blockchain technology.

Within a supportive institutional environment, government support can amplify the positive impact of technology readiness on blockchain adoption intention by providing legal clarity, financial incentives, technical guidance, and infrastructural facilitation. Conversely, the absence of adequate government support and regulatory alignment may weaken this relationship, even when firms possess relatively high levels of technological capability. Accordingly, this study proposes the following hypothesis:

*$H_{12}$: Government support moderates the relationship between technology readiness and blockchain adoption intention among e-commerce enterprises in Vietnam.*

**2.6. PROPOSED RESEARCH MODEL**

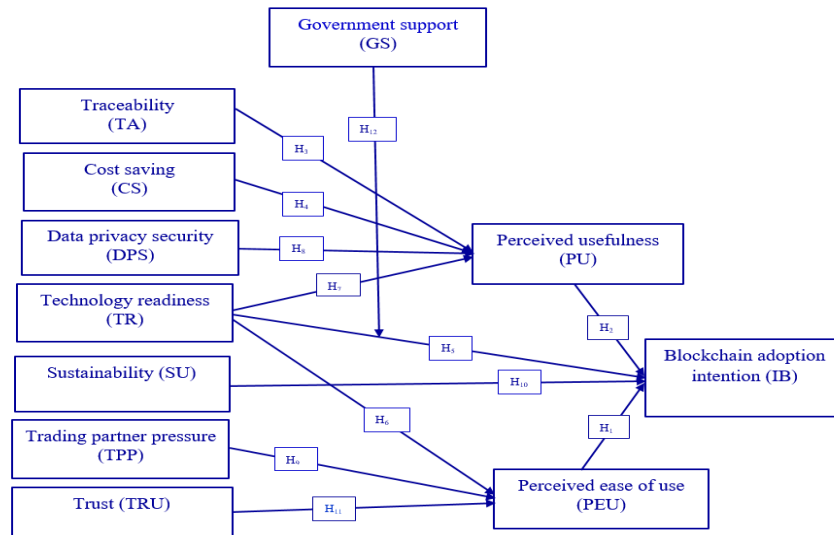Based on the hypotheses formulated above, this study proposes the following research model.



Figure 2.1. Proposed research model
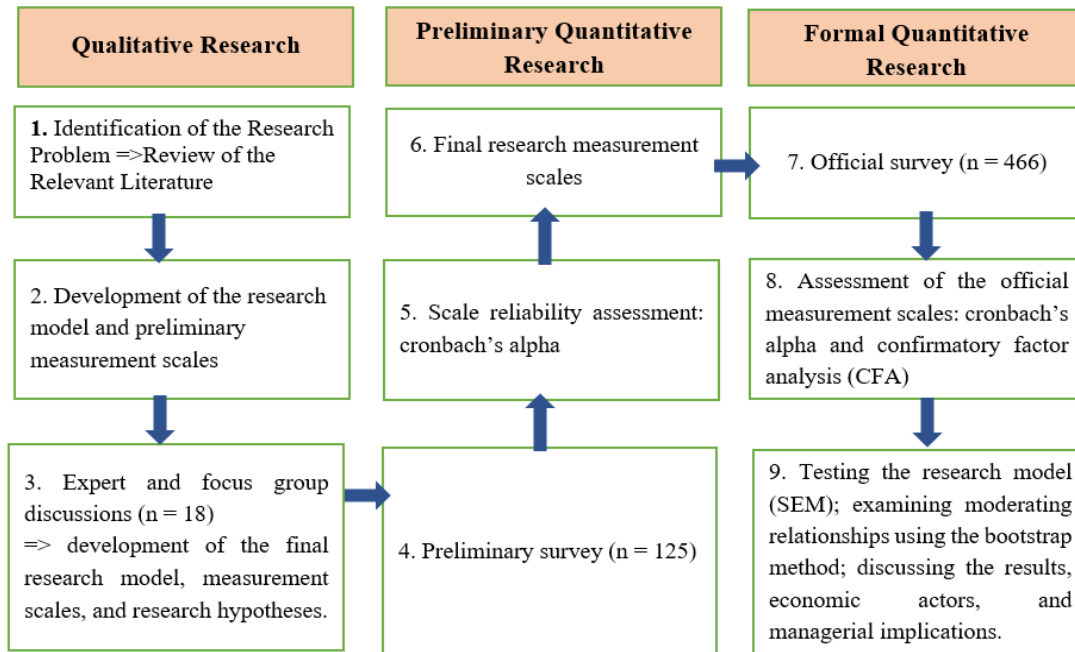
*Source: Author's own research (2024)*

**Chương 3**

**RESEARCH METHODOLOGY**

**3.1. RESEARCH DESIGN**

**3.1.1. Selection of research methodology**

This dissertation reviews qualitative, quantitative, and mixed-method research approaches, among which the mixed-methods approach is considered the most appropriate, as it enables both the exploration and development of constructs and hypotheses, as well as the empirical testing of relationships among research variables. In line with the research objectives of testing the proposed hypotheses and examining the moderating role of government support, the study adopts an integrated qualitative and quantitative approach to ensure the comprehensiveness and methodological rigor of the findings. The overall research process is summarized and illustrated in Figure 3.1 below.

| Qualitative Research | Preliminary Quantitative Research | Formal Quantitative Research |
|---|---|---|
| **1.** Identification of the Research Problem =>Review of the Relevant Literature | 6. Final research measurement scales | 7. Official survey (n = 466) |
| 2. Development of the research model and preliminary measurement scales | 5. Scale reliability assessment: cronbach's alpha | 8. Assessment of the official measurement scales: cronbach's alpha and confirmatory factor analysis (CFA) |
| 3. Expert and focus group discussions (n = 18) => development of the final research model, measurement scales, and research hypotheses. | 4. Preliminary survey (n = 125) | 9. Testing the research model (SEM); examining moderating relationships using the bootstrap method; discussing the results, economic actors, and managerial implications. |

Hình 3.1. Overview of the research process

### 3.1.2. Development of measurement scales and research model

#### 3.1.2.1. Scale development and preliminary research

The dissertation develops an initial research model, identifies key constructs, and formulates draft measurement scales for the proposed relationships. The model comprises seven independent variables, including Cost Savings, Traceability, Data privacy security, Technological readiness, Sustainability, Trading partner pressure, and Trust; three dependent variables: Perceived usefulness, perceived ease of use, and Blockchain adoption intention, and one moderating variable: Government support.

The measurement scales are primarily adapted from validated instruments in prior studies and subsequently refined and extended to better fit the Vietnamese context and enhance the explanatory power of the proposed model.

#### 3.1.2.2. Expert interviews and focus group discussions

In the context of Vietnam's e-commerce sector, the study utilizes qualitative methods, specifically in-depth interviews with 18 experts, to investigate and enhance the measurement scales and relationships within the research model. The findings indicate a high level of consensus regarding the relevance and clarity of the constructs and proposed relationships, thereby providing a solid foundation for establishing the finalized research model and hypotheses.

#### 3.1.2.3. Development of the pilot survey questionnaire

Based on insights from expert interviews and group discussions, the measurement scales were adjusted to align with the Vietnamese B2C e-commerce context, and a pilot survey questionnaire was developed comprising three sections: research information and screening questions, respondent characteristics, and measurement items using a five-point Likert scale.

The pilot study, conducted with 125 valid responses, indicates that most measurement scales achieve acceptable reliability and validity as assessed by

Cronbach's Alpha. Several items that did not meet the required criteria were removed, thereby establishing a robust foundation for the main survey.

### 3.2. SAMPLING AND DATA COLLECTION

**3.2.1. Sample size**

Based on recommendations for exploratory factor analysis and structural equation modeling (SEM), and given 39 observed variables, the final sample size of 466 valid observations exceeds the minimum threshold of 195 and is considered sufficient to ensure the reliability and accuracy of the research results.

**3.2.2. Data collection subjects and procedures**

Data were collected from 466 valid respondents who possess professional experience in B2C e-commerce enterprises in Vietnam. Convenience sampling methods, both offline and online, were employed, incorporating screening questions to ensure respondent relevance and data reliability.

### 3.3. DATA ANALYSIS METHODS

After data cleaning, coding, and entry, SPSS 21.0 was used to assess the reliability of the measurement scales through Cronbach's Alpha, followed by confirmatory factor analysis (CFA) to examine convergent, unidimensional, and discriminant validity. Subsequently, the theoretical model was tested using structural equation modeling (SEM) with AMOS 21.0, while the moderating effects were analyzed using the Bootstrap method with Hayes' PROCESS macro version 4.0.

Following the quantitative analysis, in-depth interviews were conducted to further explore perspectives, validate, and substantiate the underlying mechanisms and empirical findings of the study.

### Chapter 4
### CURRENT STATUS OF BLOCKCHAIN ADOPTION AND FACTORS INFLUENCING THE INTENTION TO ADOPT BLOCKCHAIN TECHNOLOGY IN E-COMMERCE IN VIETNAM

### 4.1. CURRENT STATUS OF BLOCKCHAIN TECHNOLOGY ADOPTION IN VIETNAM

**4.1.1. Institutional and policy context of blockchain technology in Vietnam**

In the context of the Fourth Industrial Revolution, blockchain technology has increasingly been recognized as a foundational digital infrastructure playing a critical role in restructuring transaction models within the digital economy and e-commerce. Acknowledging this trend, Vietnam has gradually developed and refined its policy and legal frameworks to regulate, guide, and promote the research and application of emerging technologies, including blockchain.

From 2017 to 2025, numerous resolutions, decisions, and action programs issued by the government and relevant ministries have focused on digital transformation, science and technology development, innovation, and the establishment of national digital infrastructure. These policy instruments reflect the state's proactive approach, which seeks to balance risk management with the encouragement of innovation and the adoption of advanced technologies. Notably, blockchain technology has been identified as one of the strategic technologies in

national programs and strategies for science and technology development and digital transformation.

However, the existing legal framework has yet to establish a comprehensive, coherent, and explicit regulatory regime for blockchain applications. The legal status of blockchain technology, smart contracts, and distributed data systems has not been fully clarified. Moreover, the legal validity of transactions, evidence, and data recorded on blockchain platforms remains uncertain. This regulatory ambiguity increases legal risks for participants in e-commerce activities and constitutes a significant barrier to the large-scale deployment and commercialization of blockchain applications. Consequently, these limitations hinder the effective realization of national digital transformation objectives.

### 4.1.2. Current status of the blockchain technology market size in Vietnam

#### 4.1.2.1. Global development context of the blockchain technology market

Over the past decade, blockchain technology has undergone a clear transition from the stages of research and experimentation to commercialization, thereby driving the rapid expansion of the global market for blockchain infrastructure and applications. The global blockchain market was valued at approximately USD 28.93 billion in 2024 and is projected to grow substantially in the coming years, reflecting the increasingly widespread adoption of this technology across multiple economic sectors. Key growth drivers include the expansion of decentralized finance, the digitization, fragmentation, and tokenization of assets on blockchain platforms, rising demand for transparency and data integrity in transaction systems, and the integration of blockchain with other digital technologies to enhance operational efficiency. Notably, since 2022, blockchain has increasingly been approached as a foundational digital infrastructure for comprehensive digital transformation, extending beyond its initial role as a supporting technology for cryptocurrencies. Owing to its capabilities in security, verification, and the reduction of reliance on intermediaries, blockchain is regarded as a significant catalyst for restructuring business models and digital transformation strategies in both the private and public sectors.

#### 4.1.2.2. Market size and development trends of blockchain technology in Vietnam

Within the global context, Vietnam has emerged as one of the fastest-adopting blockchain markets in the region, as evidenced by the widespread use of digital assets and strong societal interest in blockchain-based applications. The size of Vietnam's blockchain market was estimated at approximately USD 350 million in 2023 and is projected to reach around USD 925 million by 2029, with a compound annual growth rate (CAGR) of approximately 17.4%. During the 2024–2025 period, on-chain cryptocurrency transaction values exceeded USD 200 billion, indicating large-scale economic interactions conducted on blockchain platforms and creating a foundation for the expansion of blockchain applications beyond digital assets. Concurrently, the market for blockchain solutions, platforms, and services is forecast to reach USD 2–2.5 billion by 2026, driven by the development of the domestic blockchain startup ecosystem and growing demand for applications in e-commerce, traceability, and supply chain management.

**4.1.2.3. Development stages of the blockchain market in Vietnam**

From a temporal perspective, the blockchain market in Vietnam can be divided into three main stages. The 2019-2020 period was characterized by experimentation, small-scale deployment, and concentration within technology communities and early-stage startups. The 2021-2022 period witnessed a surge driven by crypto-assets, accompanied by rapid growth in transaction volumes as well as heightened volatility and risk. From 2023 to the present, the market has entered a phase of adjustment and restructuring, marked by a shift away from speculative activities toward blockchain applications serving the real economy, such as data management, traceability, digital payments, and information authentication.

**4.1.2.4. Factors influencing the size of the blockchain technology market in Vietnam**

The size of the blockchain market in Vietnam is simultaneously influenced by multiple factors. On the one hand, the high level of adoption among individual users provides a broad market base for blockchain-related services. On the other hand, the national digital transformation strategy and government policies promoting digital technology development indirectly foster blockchain as an emerging technological infrastructure. Nevertheless, the absence of a comprehensive legal framework governing blockchain technology, smart contracts, and digital assets remains a significant barrier, causing many enterprises to remain at the pilot or experimental stage and slowing market expansion, particularly in the enterprise segment. Overall, Vietnam's blockchain market is in a growth phase but remains unstable, reflecting the characteristics of an emerging technology market: rapid growth, high sensitivity to policy environments and global trends, and substantial development potential if supported by coherent strategies and a consistent regulatory framework.

**4.1.3. Current status of blockchain technology adoption in the enterprise and public sectors since 2019**

According to Decision No. 749/QĐ-TTg, blockchain is identified as a foundational digital technology serving the development of the digital economy and digital society, with a role in enhancing transparency, ensuring data integrity, and improving public governance efficiency. However, to date, blockchain adoption in both the public and enterprise sectors has largely remained at the stages of research and pilot implementation, without widespread integration into core operational systems and services. This indicates a notable gap between policy orientation and actual implementation.

**4.1.3.1. Current status of blockchain adoption in the enterprise industry**

From 2019 to the present, Vietnamese enterprises have gradually adopted blockchain technology; however, implementation has primarily been limited to pilot projects or small-scale deployments rather than full-scale integration across value chains. Blockchain has been most widely applied in traceability and supply chain management, particularly for agricultural and food products for export, while in logistics and e-commerce, it has mainly served as a supporting tool for data management and transaction authentication. Overall, blockchain adoption in the enterprise sector remains largely auxiliary in nature, constrained by the lack of a clear legal framework, technical standards, and specialized human resources.

#### 4.1.3.2. Current status of blockchain adoption in the public industry

Blockchain adoption in Vietnam's public sector since 2019 has proceeded cautiously, primarily through research and pilot initiatives aligned with the national digital transformation strategy under Decision No. 749/QĐ-TTg. The technology has been deployed mainly in areas with high requirements for data authentication and transparency, such as administrative record management, academic certificates, and traceability systems, functioning as a "trust layer" that supports existing information systems. Nevertheless, the scope of implementation remains limited, and blockchain has yet to become a core digital infrastructure due to the absence of a comprehensive legal framework, unified technical standards, and adequate human resource capacity.

### 4.2. RESEARCH FINDINGS ON FACTORS INFLUENCING THE INTENTION TO ADOPT BLOCKCHAIN TECHNOLOGY IN E-COMMERCE IN VIETNAM

### 4.2.1. Descriptive statistical results

Data were collected through both offline and online surveys from 466 respondents with professional experience in B2C e-commerce enterprises in Vietnam, operating across e-commerce platforms, corporate websites, and social media platforms. Screening questions were employed to ensure the relevance and appropriateness of the respondents. The descriptive statistical results indicate that the sample exhibits a well-balanced structure in terms of gender, age, and work experience, accurately reflecting the characteristics of a young, dynamic workforce with an increasingly professional level of participation in the e-commerce sector. In terms of industry distribution and firm size, the sample is predominantly concentrated in fast-moving consumer goods, beauty, fashion, and micro and small enterprises, which is consistent with the actual development patterns of Vietnam's e-commerce market. Accordingly, the collected data demonstrate a high level of representativeness and reliability for subsequent quantitative analyses.

### 4.2.2. Quantitative analysis results

#### 4.2.2.1. Reliability assessment of measurement scales using Cronbach's Alpha

The preliminary reliability assessment indicates that, after removing four observed variables that failed to meet the acceptable thresholds and re-estimating the model, the remaining 11 constructs comprising 35 observed variables satisfy the reliability requirements. These scales are therefore deemed suitable for inclusion in the subsequent Confirmatory Factor Analysis (CFA).

#### 4.2.2.2. Measurement model assessment using Confirmatory Factor Analysis (CFA)

The CFA results demonstrate that all constructs achieve adequate reliability and convergent validity, as composite reliability (CR) values exceed the 0.7 threshold, average variance extracted (AVE) values are greater than 0.5, and standardized factor loadings of all observed variables exceed 0.5. These results indicate a high level of internal consistency and conformity with established theoretical standards. In addition, discriminant validity is ensured as the maximum shared variance (MSV) is lower than AVE, the square root of AVE exceeds the inter-construct correlation coefficients, and the correlation estimates are significantly different from unity. Collectively, these findings confirm that the constructs in the model meet the

necessary conditions for Structural Equation Modeling (SEM) analysis (Anderson & Gerbing, 1988).

### 4.2.2.3. Structural Equation Modeling (SEM) results

After the measurement model achieved an acceptable fit through CFA, the validated observed variables were entered into the structural model to test the research hypotheses using SEM with AMOS 21.0. The SEM results indicate that the theoretical model exhibits a good fit with the empirical data, as key fit indices (CMIN/df, TLI, CFI, RMSEA) fall within acceptable thresholds. All eleven hypotheses are supported at the 95% confidence level, with all structural relationships demonstrating positive effects. Moreover, the relative magnitudes of the factors influencing blockchain adoption intention are identified, thereby confirming the theoretical consistency of the proposed model and directly addressing the research objectives within the Vietnamese e-commerce context.

### 4.2.2.4. Moderating effect of government support on the relationship between technological readiness and blockchain adoption intention

The analysis of the moderating role of government support on the relationship between technological readiness and blockchain adoption intention reveals that both technological readiness and government support exert positive direct effects on the intention to adopt blockchain technology. However, the interaction effect is negative, indicating a weakening moderating role whereby higher levels of government support attenuate the relationship between technological readiness and adoption intention. This finding suggests that existing policies primarily stimulate short-term adoption intentions by reducing institutional uncertainty, rather than strengthening the internal technological capabilities of e-commerce enterprises. Consequently, to promote sustainable blockchain adoption, public policy should shift its focus from external environmental support toward systematic investment in enterprises' technological resources, human capital, and data infrastructure.

### 4.2.2.5. Hypothesis testing results

Based on standardized SEM estimates and moderation analysis conducted using PROCESS Macro 4 (SPSS), all hypotheses from H1 to H12 are supported, indicating that the proposed model possesses strong explanatory and predictive power. Perceived ease of use (PEU) and perceived usefulness (PU) exert positive effects on blockchain adoption intention, with PEU demonstrating a stronger dominant influence, consistent with the Technology Acceptance Model (TAM) and further reinforced by in-depth interview evidence.

Core technological factors, including technological readiness, traceability capability, cost savings, data privacy protection, partner pressure, and trust, exert either direct or indirect effects on perceived ease of use, perceived usefulness, and blockchain adoption intention. These results reflect the multidimensional nature of blockchain adoption decisions in e-commerce and are also consistent with insights derived from qualitative interviews. Notably, technological readiness not only exerts a strong direct effect on adoption intention but also serves as a foundational determinant shaping perceptions of usefulness and ease of use of blockchain technology. The $R^2$ values indicate that the model explains 49.5% of the variance in

PEU, 42.9% in PU, and 48.7% in adoption intention (IB), thereby demonstrating a relatively high level of explanatory power in the Vietnamese research context.

A key novel finding of this study is the negative moderating effect of government support on the relationship between technological readiness and blockchain adoption intention, implying that current policy instruments in Vietnam tend to stimulate short-term adoption intentions rather than enhance firms' internal technological capabilities. Overall, the combined quantitative results and in-depth interviews indicate that blockchain adoption in Vietnam's e-commerce sector simultaneously depends on internal technological foundations, perceived technological value, and the broader institutional and market-relational context.

**Chapter 5**
**ORIENTATIONS AND POLICY IMPLICATIONS TO STRENGTHEN THE IMPACT OF DETERMINANTS ON BLOCKCHAIN ADOPTION INTENTION AMONG E-COMMERCE ENTERPRISES IN VIETNAM**
**5.1. PERSPECTIVES, OBJECTIVES, AND DEVELOPMENT ORIENTATION FOR BLOCKCHAIN APPLICATION IN E-COMMERCE IN VIETNAM FOR THE PERIOD 2025–2030 WITH A VISION TO 2050**
**5.1.1 Global and National Trends in Blockchain Technology Development**
➕ **Global trends in blockchain technology development**

The trend toward institutionalization and legal standardization of blockchain technology is becoming increasingly evident in advanced economies. The United States has taken the lead in driving technological convergence, particularly the integration of blockchain technology with artificial intelligence (AI). Asian economies have emerged as major centers for large-scale blockchain applications. The adoption of blockchain technology in global e-commerce is increasingly becoming a central axis of development. At the same time, emerging technological trends are reshaping the global blockchain ecosystem.

At the global level, blockchain technology has transitioned from a phase of high expectations to one of practical implementation and is increasingly recognized as a foundational digital infrastructure of the digital economy. Many countries and international organizations regard blockchain as a key instrument for restructuring transaction models, data governance, and market operations, particularly in e-commerce, digital finance, and public administration. The trend toward institutionalization and legal standardization of blockchain technology has become more pronounced, exemplified by the European Union's Markets in Crypto-Assets (MiCA) regulatory framework, which establishes cross-border regulatory standards.

Countries such as France and Germany play a central role in linking blockchain with Industry 4.0, digital supply chains, and e-commerce, reflecting an institutional-constructive approach to governance. Meanwhile, the United States leads the trend of convergence between blockchain and artificial intelligence, where blockchain functions as a "trust layer" for automated systems and data-driven decision-making. In Asia, China and South Korea have emerged with large-scale blockchain application models, treating blockchain as public infrastructure for e-commerce, logistics, and digital consumer protection.

Globally, e-commerce has become a focal application domain for blockchain technology, aimed at addressing issues related to authentication, transparency, traceability, and cross-border payments. Concurrently, emerging trends such as cross-chain interoperability, asset tokenization, and sustainable blockchain solutions are reshaping the blockchain technology ecosystem. Overall, blockchain is shifting from isolated technological experimentation toward the construction of institutional infrastructure and ecosystem-based applications. International experience indicates that blockchain can achieve its full potential only when it is coherently integrated with public policy, digital infrastructure, and national digital economy development strategies.

### ⬥ Trends in blockchain technology development in Vietnam

In Vietnam, blockchain technology is transitioning from a phase of fragmented experimentation to one of institutionalization and strategic deployment, based on three core pillars: institutional completion, mastery of "Make in Vietnam" technological infrastructure, and the expansion of applications into real economic sectors, particularly e-commerce.

From an institutional perspective, blockchain has been established as a strategic digital infrastructure of the digital economy through major resolutions and decisions of the Communist Party and the Government. At the same time, the regulatory mindset is gradually shifting toward an "innovation-accompanying" model through the implementation of regulatory sandboxes and legal frameworks for digital assets.

In terms of technological infrastructure, Vietnam is promoting the development of domestic blockchain platforms aligned with data sovereignty and information security requirements, while simultaneously shaping a convergent technological architecture in which blockchain serves as a "trust layer" connecting AI, big data, and digital identity systems.

With regard to practical applications, e-commerce represents a key priority sector for blockchain deployment, with primary application directions including supply chain traceability and transparency, transaction authentication and smart contracts, as well as secure and compliant consumer data governance. In terms of human resources and international positioning, Vietnam is emerging as a promising destination on the global blockchain map, owing to its high level of technology acceptance, a young engineering workforce, and a growing ecosystem of education and innovation. These factors provide a foundation for blockchain to become an effective instrument in promoting a transparent, secure, and sustainable e-commerce ecosystem.

### 5.1.2. Blockchain technology development from the perspective of the Party and the State

According to Resolution No. 52-NQ/TW and the Documents of the 13th National Congress of the Communist Party of Vietnam, proactive participation in the Fourth Industrial Revolution is identified as a strategic task in which blockchain technology is classified as a key priority technology for development. Blockchain is positioned as an important instrument for modernizing state governance and

enhancing transparency, accountability, and efficiency in socio-economic management.

To operationalize this orientation, the government promulgated the National Strategy on Blockchain Application and Development to 2025, with orientations toward 2030 (Decision No. 1236/QĐ-TTg), aiming to gradually master blockchain technology and develop "Make in Vietnam" platforms. The strategy emphasizes the development of autonomous blockchain infrastructure, the promotion of "blockchain+" models, and the integration of blockchain into various sectors and fields, including e-commerce.

In parallel, the State places strong emphasis on improving the legal corridor, developing regulatory frameworks for digital assets and cryptocurrencies, and implementing sandbox mechanisms to both mitigate risks and encourage innovation. In the context of green transformation and circular economy development, blockchain is regarded as a foundational digital infrastructure that enables supply chain transparency, traceability, and emissions management in e-commerce. Blockchain adoption contributes to strengthening consumer trust, supporting enterprises in meeting sustainability standards, and participating more deeply in global value chains. Furthermore, blockchain facilitates the digitalization of logistics, carbon credit management, and the promotion of low-carbon business models associated with e-commerce. Overall, the Party's and the State's orientation toward blockchain development reflects an integrated approach combining technology, market mechanisms, and public policy, positioning blockchain as a key driver supporting Vietnam's simultaneous pursuit of digital transformation, green transition, and long-term sustainable development.

### 5.1.3. The new context: convergence of market dynamics, public governance innovation, and national strategic orientations for e-commerce development

E-commerce in Vietnam has experienced rapid growth but increasingly reveals challenges such as fraud, counterfeit goods, data security risks, and a lack of supply chain transparency, which undermine consumer trust and intensify regulatory pressures. In this context, together with the State's strategic orientation that establishes blockchain as a core digital infrastructure, the convergence of market demand, governance requirements, and national policies provides a foundation for blockchain application aimed at enhancing the safety, transparency, and sustainability of the e-commerce ecosystem.

### 5.1.4. State Governance Perspectives on Blockchain Application in E-Commerce in Vietnam for the Period 2025–2030 with a Vision to 2050

- State governance perspectives on blockchain application in e-commerce for the period 2025-2030 with a vision to 2050.

- State management objectives for blockchain application in e-commerce.

### 5.1.5. Specific policy orientations for blockchain application in e-commerce

• 2025–2030: Completing the legal foundation and implementing controlled pilot programs for blockchain application models in e-commerce.

• 2030–2040: Expanding blockchain applications and deeply integrating them into e-commerce management systems.

• Vision to 2050: Completing an e-commerce governance ecosystem based on blockchain technology and digital data.

## 5.2. GOVERNANCE AND POLICY SOLUTIONS TO PROMOTE BLOCKCHAIN APPLICATION IN E-COMMERCE IN VIETNAM FOR THE PERIOD 2025–2030 WITH A VISION TO 2050

### 5.2.1. Solutions from the Government and regulatory authorities

At the state level, promoting blockchain adoption in e-commerce should be approached as a central component of modern economic governance, in which the government plays a role in institutional creation, market regulation, and strategic resource allocation to encourage innovation while managing risks. Policy priorities include the completion of a transparent and stable legal framework, combined with financial support instruments, tax incentives, and sandbox mechanisms to reduce initial investment costs and regulatory uncertainty for enterprises. At the same time, the State should foster an ecosystem and market standards to promote the diffusion of blockchain in e-commerce, thereby enhancing resource efficiency and the competitiveness of the digital economy.

### 5.2.2. Enterprise-level solutions to optimize resources and enhance blockchain application effectiveness

At the enterprise level, blockchain adoption should be regarded as a strategic decision aimed at optimizing resources, reducing operating costs, and generating long-term value in the context of intense competition and high requirements for transparency and data security in e-commerce. The focus should be on enhancing awareness and technological readiness, leveraging blockchain to improve supply chain transparency, automate processes, and control costs, thereby improving governance efficiency and profit margins. At the same time, pressures from partners and the market act as catalysts that encourage enterprises to shorten learning curves, strengthen technological trust, and expand blockchain applications in a substantive and sustainable manner.

### 5.2.3. Solutions for blockchain technology solution providers

Blockchain solutions should adopt an e-commerce enterprise–centered approach, with modular and flexible designs that align with different business models and levels of technological readiness. Systems should be simple and user-friendly, reducing technical complexity in order to enhance acceptance and adoption intention. Blockchain platforms must be well integrated with existing e-commerce, payment, and logistics systems to minimize implementation costs and deployment time. In addition, solution providers should diversify delivery models, such as Blockchain-as-a-Service (BaaS), combined with consulting and technical support services to improve application effectiveness.

### 5.2.4. Solutions to enhance labor productivity and efficiency through blockchain application in e-commerce

Workers are the direct agents who transform blockchain technology into economic value in e-commerce; therefore, their capabilities, awareness, and technological trust determine resource utilization efficiency and labor productivity. Enhancing awareness, skills, and technological adaptability helps reduce transition

costs, mitigate operational risks, and optimize the practical effectiveness of blockchain applications. Trust in the security and transparency of blockchain fosters positive attitudes and technology usage behaviors, thereby improving governance effectiveness and sustainable economic performance. The effectiveness of blockchain application depends on the linkage among the State, enterprises, and educational institutions, with individual workers serving as the central actors in absorbing and operationalizing technological knowledge.

## 5.3. RESEARCH LIMITATIONS AND DIRECTIONS FOR FUTURE STUDIES

This study is subject to several limitations related to the research context and timing, the size and scope of the sample, and the range of analytical variables considered. These constraints limit the generalizability of the findings and restrict a comprehensive assessment of the long term impacts of blockchain adoption as well as government support policies.

Future studies should expand the sample size and research scope, employ longitudinal research designs, and incorporate additional variables related to performance outcomes, costs, and innovation. Further research is also encouraged to examine policy impacts more deeply and to explore the integration of blockchain with other digital technologies within the e commerce ecosystem.

## CONCLUSION

E-commerce in Vietnam represents a core pillar of the digital economy, characterized by rapid growth while simultaneously facing substantial challenges related to trust, product quality, data security, and governance efficiency. These challenges necessitate the adoption of innovative technologies such as blockchain to support sustainable development and promote a circular economy. This dissertation identifies the key factors influencing blockchain adoption intention in e-commerce and clarifies the moderating role of government support on firms' technological readiness, thereby providing a solid scientific basis for policy formulation and technology implementation.

The findings indicate that sustainability orientation, perceived usefulness, and perceived ease of use exert direct effects on blockchain adoption intention. Cost-related factors, data security, traceability, partner pressure, and trust influence adoption intention indirectly through mediating variables, while technological readiness demonstrates both direct and indirect effects. Notably, government support, including legal frameworks, incentives, technical assistance, and training, plays a positive moderating role in strengthening blockchain adoption intention among e-commerce enterprises. These results highlight the importance of coordinated and comprehensive policy support to effectively foster blockchain adoption and implementation in the e-commerce sector.

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