The Behavior of Using Blockchain-Integrated Supply Chain Management Systems on E-commerce Distribution Channel

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Abstract

Purpose: Blockchain technology is becoming increasingly important in e-commerce trading applications thanks to the many benefits it brings. The research aims to understand the factors affecting the behavior of using blockchain-integrated supply chain management systems on e-commerce distribution channel. **Research design, data and methodology**: Based on the UTAUT2 model, a theoretical research model was developed. Data was collected from 348 buyers who are using a blockchain-integrated SCM system. **Results:** The results of testing the hypotheses showed that performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value had a positive impact on behavior intention. The outcomes further demonstrated that use behavior is directly impacted by behavior intention. The findings also supported the study model's behavior intention's mediating function. **Conclusions:** This has confirmed that the application and integration of blockchain technology into the supply chain management system is being very well received in Vietnam. Policy recommendations and suggestions for businesses are based on these results. This result contributes to the TAM and TPB theories on usage behavior through the promotion of factors influencing behavior intention. The implications drawn from the research results help businesses and managers make effective decisions in promoting the use of blockchain technology on e-commerce distribution channel.

Keywords : Blockchain, Digital Transformation, E-Commerce distribution channel, Supply Chain Management, Usage Behavior.

JEL Classification Code: R40, B41, F23, O32

1. Introduction

The advancement of blockchain technology in supply chain management (SCM) over the last few years has greatly benefited society (Sheel & Nath, 2020). Blockchain has created many breakthroughs such as reducing operating costs, increasing authenticity and efficiency, and allowing businesses to solve some common problems (Sengupta, 2021; Idrawahyuni et al., 2024). This technology focuses on creating a decentralized and secure ledger system that helps all stakeholders track and store information about products, production processes, transportation, and storage. Furthermore, blockchain improves processes, lowers costs, and boosts trust amongst supply chain participants, particularly in product management and traceability (Lin et al., 2021; Nguyen et al., 2024).

Digitalization has helped form e-commerce platforms, making cross-border transactions easier (Zhang et al., 2020). The rise of Blockchain coincides with the digital transformation orientations of world trade. SCM systems

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help manage supply chains efficiently, securely, and decentrally, for e-commerce businesses (Aslam et al., 2021). Specifically, SCM facilitates tracking of the product source, which aids in adhering to intricate regulations in e-commerce transactions (Avinash et al., 2024).

Some previous studies have shown that the application of blockchain to supply chain management will help users get better services (Naef et al., 2024; Duan et al., 2023; Sheel & Nath, 2020). Blockchain is also being used in many stages of supply chain management, and it will soon be crucial for sustained economic growth (Ramírez et al., 2024). This will generally bring great benefits to society and consumers. Previous research on the factors that influence behavioral intentions indicates three factors that influence motivation, expected performance, and initial beliefs (Sheel & Nath, 2020). Another study that was distributed to a user base revealed that users' intention was significantly influenced by government support and their overall user experience (Osato Itohan Oriekhoe et al., 2024).

Over the years, e-commerce in Vietnam has grown very rapidly. Many service-related businesses have developed mainstream sales channels through e-commerce (Sang, 2023). They create websites for businesses or individuals that are involved in the sale of goods or services on their e-commerce platforms, or they create websites that function as trading platforms for other businesses or individuals. The activities of these businesses have created a fairly vibrant market for buying and selling goods on the Internet on all online channels from websites to social networks. The three largest e-commerce exchanges in Vietnam in 2023 include Shopee, lazada, and Tiki (METRIC.VN, 2023). According to data from the Vietnam E-Commerce Association, about 23% of businesses in Vietnam are willing to participate in e-commerce exchanges.

In particular, the number of businesses using professional software such as customer relationship management (CRM), supply chain management (SCM), and enterprise resource planning (ERP) to support these online buying and selling activities is not high (VECOM, 2023).

Previous studies have been conducted to understand the possibility of using Blockchain in service activities such as financial services (Javaid et al., 2022), banks (Schuetz & Venkatesh, 2020), travel (Ozdemir et al., 2020), logistics (Kühn et al., 2019). Research on blockchain-using behavior in SCM services is also limited. Aslam et al. (2021) studied the oil industry and found that various features of blockchain can help improve supply chain operations, which in turn improves the operational performance of businesses. Research by Chowdhury et al. (2022) shows that when businesses understand the benefits of this technology and deploy it appropriately, it can help businesses manage risks well in the process of supplying goods and services. Further investigation into blockchain's acceptance behavior in SCM

services is thus required, particularly about e-commerce platforms. Furthermore, no research has been done on the variables influencing the behavior of consumers utilizing blockchain-based supply chain services in the Vietnamese market.

This study was conducted to find and analyze the behavior of using blockchain-integrated supply chain management systems on e-commerce platforms. It then provides business strategic implications. The study's findings contribute to the growing body of knowledge on blockchain-using behavior in the context of e-commerce platforms' supply chains. In particular, the research contributes to clarifying the importance of blockchain technology for Vietnamese businesses. This is a market that is an increasingly important contributor to the development of the region but has yet to receive the attention it deserves from researchers. The remainder of the study is structured as follows: part 2 formulates research hypotheses and provides a summary of pertinent theories. Section 3 provides an overview of the research model, the data, and the construction of the primary variables. The results are discussed in Part 4, and the governance implications and conclusions are covered in Part 5.

2. Literature Review

2.1. Extended Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

Various models and analytical frameworks have been proposed to explain the adoption and dissemination of the technology. UTAUT is the widely used model. The UTAUT2 model was developed by Venkatesh et al. (2012) from the extended technology adoption model - UTAUT1. The goal of the UTAUT2 model is to predict the acceptance and use of technology by an organization or individual. In comparison to the previous model UTAUT1, with the inclusion of three additional factors: price value, habit, and beneficiary motivation. The UTAUT2 model has overcome the incomprehensiveness of the TRA model (Madden et al., 1992), TAM (Davis, 1993), TPB (Madden et al., 1992), and UTAUT1 have also been used by many researchers in models that accept their new technology. Based on the UTAUT2 model, researchers can apply the original model or add some new variables to suit the cultural characteristics and level of technological development of each country.

There are 4 main factors in the UTAUT1 model: efficiency expectations, effort expectations, social impact, and favorable conditions. The first four factors influence the user's behavior, while the first three influence their intention to use. The UTAUT2 model has combined the UTAUT

model with three new factors including hedonic motivation, price value, and habit.

Through the results of empirical research, this model has shown superiority over the original individual models and theories in explaining the technology adoption of each individual or organization in different consumer contexts. Applied to this study, the article uses the UTAUT2 model as a baseline analysis framework, thereby adjusting and supplementing it to suit the e-commerce context in Vietnam.

2.2. Blockchain in Supply Chain Management

Blockchain is a decentralized database or ledger that records transactions in a near-real-time chronological sequence (Sengupta, 2021). This technology collects information in groups and is known as "blocks" connected by encryption. It acts as a distributed ledger and is usually controlled by a peer-to-peer network that adheres to the protocol of exchanging information between nodes and validating new blocks. The majority of nodes have to agree to be able to modify any data in a block that has been recorded (Vokerla et al., 2019).

Blockchain serves as a public infrastructure for building decentralized applications and creating interoperability. Blockchain-based applications bring transparency and trust between all stakeholders. In SCM, blockchain provides four main functions including transparency, validation, automation, and tokenization (Queiroz et al., 2019). The application of blockchain in SCM helps the system have supply chain visibility, supply chain integrity, supply chain orchestration, supply chain virtualization, and support supply chain finance management.

2.3. Research Hypothesis

Facilitating conditions are the degree to which an individual believes that using the system will be less time-consuming, depending on the availability of resources and opportunities to perform the behavior (Venkatesh et al., 2012). New technologies require users to invest in learning and learning to use, which in turn can lead to dissatisfaction and disapproval of consumers, especially inexperienced consumers. Therefore, facilitating conditions is a very important factor for SCM applications using blockchain technology, regardless of whether the consumer is a proficient user of the technology or not (A. Sharma et al., 2023). People will be more willing to learn about the features of an SCM application with blockchain integration if it is simple to use, which will increase their intention to use it (Sheel & Nath, 2020). This is one of the most important factors that determine the user's intention, which in turn leads to the decision to use. Facilitating conditions have been studied to affect many different technological

systems including SCM services (Chowdhury et al., 2022; Kumari & Devi, 2023). From there, the following hypothesis is proposed as follows:

H1: Facilitating conditions have a positive effect on behavior intention of using blockchain-integrated SCM systems.

Performance expectancy is the degree to which users trust that using a new technology or system can help them achieve mutual benefits in their work performance. It refers to usefulness, time-saving, and increasing the productivity of customers' work (Venkatesh et al., 2003). The expectation of the performance of the SCM system integrated with blockchain is the expectation of customers that the use of the SCM system integrated with blockchain will bring efficiency. Previous research models have referred to performance expectations as perceived usefulness (Maulidina et al., 2020). Customers can anticipate several advantages of utilizing blockchain technology, including greater convenience and time savings.

Customers who use e-commerce exchanges to make purchases yield better results from the blockchain-integrated supply chain management system, which helps to explain the behavioral intentions of its users (Naef et al., 2024). Previous research results show that performance expectations have a positive and significant impact on blockchain technology-using intentions (Chowdhury et al., 2022; Sheel & Nath, 2020). Therefore, the following research hypothesis is proposed:

H2: Performance expectancy have a positive impact on behavioral intentions of using blockchain-integrated SCM systems.

Effort expectancy is the level of ease of achievement about the usability of the technology or system. According to Venkatesh et al. (2012), expect efforts to have a direct and directional impact on the user's usage behavior intention. This comes from customers' positive evaluation of the blockchain system's usability and learning ability. If customers believe that they can easily understand and use this technology without much difficulty, they will be less hesitant to adopt and adopt blockchain (A. Sharma et al., 2023). According to research by Maulidina et al. (2020), the perception of usefulness and ease has an impact on the user's confidence that a task or task can be done without too much effort. So, the following hypothesis is proposed:

H3: Effort expectancy has a positive impact on behavior intention of using blockchain-integrated SCM systems.

Social influence is the degree to which users assume that others believe they should new technology (Venkatesh et al., 2003). Social influence is related to the user's image, social location, and social relationships. The main social influencing factor is the intervention of relatives such as family, friends, and social trends (Davis, 1993; Venkatesh et al., 2003). The support from the community and influencers creates a positive environment, fostering curiosity and a desire to learn more about the technology (Osato Itohan Oriekhoe et al., 2024). Moreover, as more and more pioneering businesses and supply chain partners adopt blockchain, this creates a social pressure not to fall behind (Duan et al., 2023). Therefore, the following research hypothesis is proposed:

H4: Social influence has a positive impact on behavior intention of using blockchain-integrated SCM systems.

According to Theo Maulidina et al. (2020), a user's intention to use is directly correlated with their acceptable cost. The value of price refers to the customer's evaluation of the benefits they receive compared to the cost they have to spend. Customers are more likely to accept and use blockchain technology when they believe the costs are fair and justified in light of the advantages it offers. Research by Setiyani et al. (2023), and D. Sharma & Vaid (2023) suggest that users can consider price value as a benefit in encouraging users to adopt new technologies or systems. In other words, the intention to use the technology is positively affected by the price value, so the hypothesis of the price value is proposed:

H5: Price value has a positive impact on behavior intention of using blockchain-integrated SCM systems.

In the proposal of Venkatesh et al. (2012), the degree of trust that users have in a new technology or system influences their intention to use it. Credibility is especially related to the user's awareness of the safety and security of the technology or system (Kühn et al., 2019). Growing confidence in the fair and transparent conduct of transactions also helps allay worries about the dangers involved in safeguarding sensitive information and data.

Customers feel more secure when using blockchain because trust also contributes to their confidence in the system's functionality and stability (Maulidina et al., 2020). With all of the above factors, a sense of trust plays an important role in increasing customers' willingness to accept blockchain technology in the e-commerce environment (Naef et al., 2024). Since blockchain technology increases transparency and supports traceability, the following hypothesis is proposed:

H6: Perceived credibility has a positive impact on behavior intention of using blockchain-integrated SCM systems.

Not only is it connected to how satisfied users are with technology, but the ability to accept and use technology is also related to the motivation to benefit as mentioned by Maulidina et al. (2020). Blockchain has advantages in terms of technology, but it can also improve user experience with features like enhanced transparency, automated processes, and reduced error rates (Queiroz et al., 2019). When customers feel comfortable and enjoy these benefits, they will be more motivated to accept and use the technology.

The feeling of satisfaction and joy during use not only enhances the overall experience but also creates engagement and loyalty to blockchain technology (Duan et al., 2023). Thus, when new technologies are enjoyable or provide a pleasurable experience, people like to use them or plan to use them. Accordingly, the following hypothesis is proposed:

H7: Hedonic motivation has a positive impact on behavior intention of using blockchain-integrated SCM systems.

In the proposed model by Venkatesh et al. (2012), usage intention has an impact on user usage behavior. Maulidina et al. (2020) believe that intention is the premise for behavior when accepting or wishing to use a new technology. The increase in intent to use is often the result of a positive perception of the technology, confidence in itsfeasibility, and the practical benefits it offers (Maulidina et al., 2020). When this intention is strong, customers will actively learn and test blockchain, thereby transforming it into actual usage behavior. This can be seen through the integration of blockchain into the supply chain management process, from product tracking, and order processing, to financial transactions on e-commerce platforms (Naef et al., 2024). Customers who have high usage intent are more likely to translate their interest and desire into actions, which will increase the usage of blockchain technology (A. Sharma et al., 2023). Intention behavior is considered the best predictor of an individual's behavior (Ajzen & Fishbein, 1975). Accordingly, the study proposes the following hypothesis:

H8: Behavior intention has a positive impact on user behavior.

In blockchain-integrated supply chain management, the mediating role of intention to use is an important factor in better understanding the relationship between determinants and actual usage behavior (Fan et al., 2022). Usage intention acts as a bridge, explaining how factors such as performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value may affect the user's final decision to apply and use this system (Duan

et al., 2023). Specifically, when users have high expectations for performance and ease of use, they tend to have a higher intention to use the system, which in turn leads to higher actual usage behavior. Furthermore, social influence and supportive conditions also play an important role in the formation of usage intent, because the support from the surrounding environment and favorable conditions can motivate users to decide to adopt the new technology (Kühn et al., 2019). Motivation for interest and price value can also influence usage intentions through the way they satisfy personal needs and generate economic benefits. Thus, the intention to use is not only the result of these factors but also the main determinant that leads to the actual usage behavior of the blockchain-integrated supply chain management system. From there, the following research hypotheses are proposed:

H9: Behavior intention has a positive mediating role in the relationship between performance expectancy and user behavior.

H10: Behavior intention has a positive mediating role in the relationship between effort expectancy and user behavior.

H11: Behavior intention has a positive mediating role in the relationship between facilitating conditions and user behavior.

H12: Behavior intention has a positive mediating role in the relationship between social influence and user behavior.

H13: Behavior intention has a positive mediating role in the relationship between perceived credibility and user behavior.

H14: Behavior intention has a positive mediating role in the relationship between price value and user behavior.

H15: Behavior intention has a positive mediating role in the relationship between hedonic motivation and user behavior.

Based on the UTAUT2 model and the theoretical basis as above, this paper proposes the research model as shown in Figure 1.
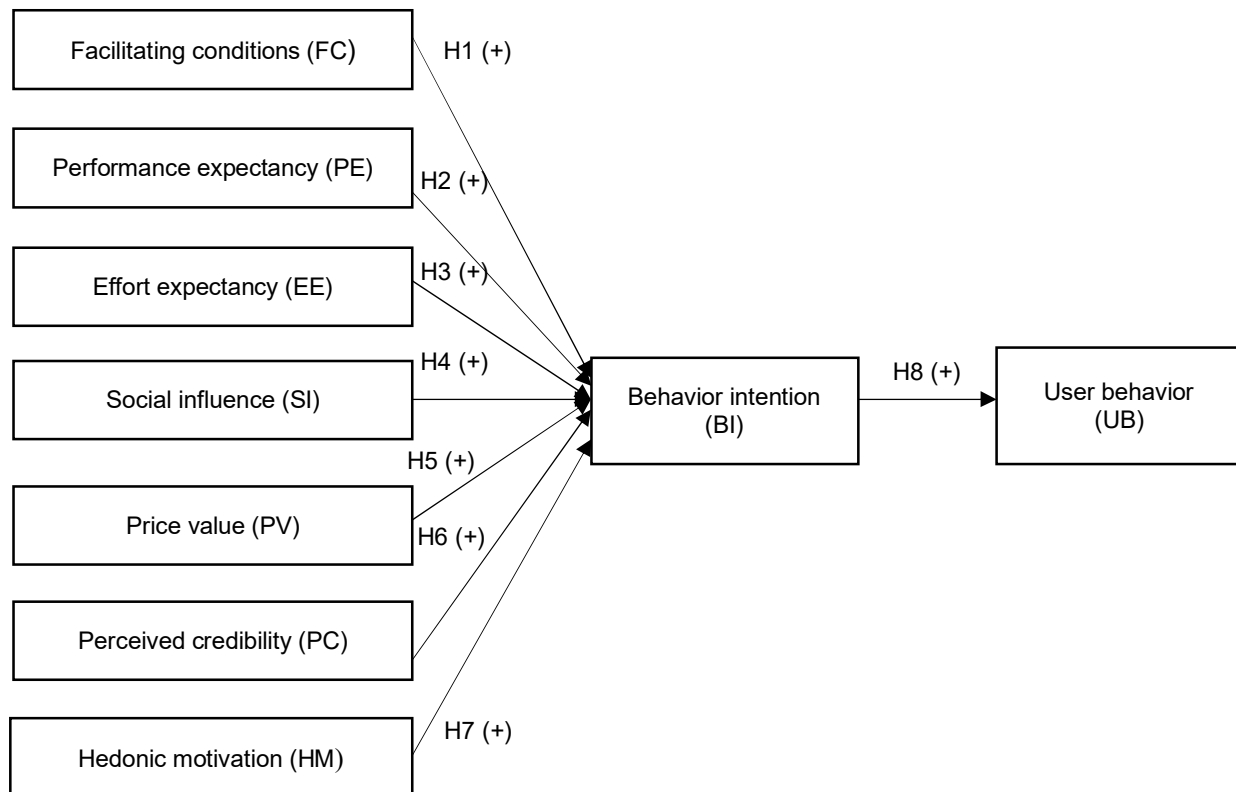

Figure 1: Research Model

3. Methodology

3.1. Research Data

The research employs a quantitative approach, with a set of survey questions comprising 32 items and a 5-point Likert scale: 1 represents total disagreement, 2 is disagreement, 3 is no opinion, 4 is agreement, and 5 is total agreement. The research uses a simple random sample selection method. The pattern is selected from buyers who are using the blockchain-integrated SCM system. The questionnaire is sent to the survey using technology applications and direct surveys. The study uses Google Forms to collect data. The answer sheets after collection are checked for validity, completeness, and input into Excel files for processing in SmarPLS 4.0 software.

To analyze the behavior of using blockchain-integrated SCM systems on e-commerce platforms, the author uses the linear structure analysis (SEM) method. According to Hair et al. (2019), this method is suitable for exploratory research, with a minimum sample size of 100 – 150. This study essentially satisfies the requirements of the analysis method because of its sample size of 348.

The questionnaire uses filtering questions to ensure the right target surveyors. The data collection period is from April 1, 2024 to May 30, 2024. The number of questionnaires collected is 400, after filtering, the number of valid answers is 348. Thus, the response rate is 87%. 51.5% of the 348 surveyors were men and 48.5% were women. Ages 18 to 24 accounted for the largest proportion of the population (46.7%), followed by 25 to 34 (35%). About 37% of survey participants confirmed using blockchain technology on Shopee, 31% shopping on Lazada, 29% shopping on Tiki and 3% buying on other platforms.

The scale of this study is mainly inherited from previous studies. In particular, the scales of performance expectancy, effort expectancy, social influence, facilitating conditions, and hedonic motivation are referred to from the study of Setiyani et al. (2023) and Sheel & Nath (2020). Price value, behavior intention, user behavior, and perceived credibility scales inherited from Sheel & Nath research (2020).

3.2. Research Methods

Based on the research results of Haq & Awan (2020) the research identified the model as a reflective measurement model. The evaluation of the outcome measurement model includes the following steps: (1) The first step is to evaluate the reliability of the scale. The reliability of the scale is evaluated through Cronbach's Alpha, Composite Reliability (CR), AVE_average variance extracted, rho_A coefficient, and outer loadings. The scale is considered reliable when there is a higher Cronbach's Alpha coefficient and CR coefficient of 0.7, a higher AVE coefficient of 0.5, a higher rho A coefficient of 0.7, and a higher outer loading coefficient of 0.7 (Hair et al., 2017); (2) The second step is to check the differential value according to the HTMT criterion, the maximum value threshold of this criterion is 0.85; (3) The third step is to evaluate the structural model and paths in the models.

4. Research Results

4.1. Evaluate the Measurement Model

The results of the analysis of the measurement model in Table 1 show that all outer loadings are greater than 0.7 (Hair và cộng sự, 2021). All structures have a Cronbach's Alpha coefficient above the threshold of 0.6 and a composite reliability (CR) higher than 0.7. The results confirm the intrinsic consistency of the scales. The average variance extracted (AVE) of each structure exceeds 0.5 (Fornell & Larcker, 1981) and the outer loading of the structures is all greater than 0.7, so the convergence value of the structures is satisfactory. The results in Table 2 also show the response of the differential value. In which, the value of HTMT is less than 1 (Henseler et al., 2016).

Table 1: Measurement Model Evaluation Results

Variable symbol	Constructs	Outer Loading	Cronbach's Alpha	Composite reliability rho_a	Composite reliability rho_c	Average variance extracted AVE
Performance Expectancy (PE)						
PE1	I find blockchain useful in my daily life	0.868	0.830	0.836	0.888	0.664
PE2	Using blockchain-integrated SCM systems increases my chances of achieving tasks that are important to me	0.838				
PE3	blockchain-integrated SCM systems help me accomplish tasks more quickly	0.810				
PE4	blockchain-integrated SCM systems increase my productivity.	0.739				

Variable symbol	Constructs	Outer Loading	Cronbach's Alpha	Composite reliability rho_a	Composite reliability rho_c	Average variance extracted AVE
Effort Expectancy (EE)						
EE1	Learning how to use blockchain-integrated SCM systems is easy for me.	0.854	0.889	0.898	0.923	0.751
EE2	My interaction with blockchain-integrated SCM systems is clear and understandable.	0.796				
EE3	I find blockchain-integrated SCM systems easy to use.	0.911				
EE4	It is easy for me to become skillful at using blockchain-integrated SCM systems	0.902				
Social Influence (SI)						
SI1	People who are important to me think that I should use blockchain-integrated SCM systems.	0.803	0.751	0.754	0.858	0.667
SI2	People who influence my behavior think that I should use blockchain-integrated SCM systems.	0.815				
SI3	People whose opinions I value prefer that I use blockchain-integrated SCM systems.	0.832				
Facilitating Conditions (FC)						
FC1	I have the resources necessary to use blockchain-integrated SCM systems.	0.894	0.888	0.889	0.924	0.754
FC2	I know necessary to blockchain-integrated SCM systems	0.933				
FC3	Blockchain-integrated SCM systems is compatible with other technologies I use.	0.898				
FC4	I can get help from others when I have difficulties using Mobile banking.	0.734				
Hedonic Motivation (HM)						
HM1	Using blockchain-integrated SCM systems is fun	0.804	0.776	0.776	0.870	0.690
HM2	Using blockchain-integrated SCM systems is enjoyable	0.832				
HM3	Using blockchain-integrated SCM systems is entertaining.	0.855				
Price Value (PV)						
PV1	Blockchain-integrated SCM systems are reasonably priced.	0.796	0.701	0.711	0.834	0.627
PV2	Blockchain-integrated SCM systems are good value for the money.	0.850				
PV3	At the current price, Blockchain-integrated SCM systems provide good value.	0.724				
Behavior Intention (BI)						
BI1	I believe that Blockchain-integrated SCM systems are trustworthy.	0.849	0.816	0.821	0.890	0.730
BI2	I trust in Blockchain-integrated SCM systems.	0.865				
BI3	I do not doubt the honesty of Blockchain-integrated SCM systems.	0.849				
User Behavior (UB)						
UB1	I regularly use Blockchain-integrated SCM systems on e-commerce platforms	0.746	0.814	0.826	0.877	0.641
UB2	Using blockchain-integrated SCM systems on e-commerce platforms is a pleasant experience	0.811				
UB3	I currently use Blockchain-integrated SCM systems as a supporting tool on e-commerce platforms	0.834				
UB4	I spend a lot of time on Blockchain-integrated SCM systems used on e-commerce platforms	0.809				
Perceived Credibility (PC)						
PC1	I think blockchain-integrated SCM systems are dependable	0.712	0.707	0.717	0.818	0.630
PC2	I think blockchain-integrated SCM systems are safe	0.773				
PC3	Overall, I can trust the blockchain-integrated SCM systems	0.724				
PC4	I think blockchain-integrated SCM systems are safer than traditional systems	0.700				
PC4	I think the blockchain-integrated SCM systems would help to reduce errors	0.712				

(Source: Analysis results from SmartPLS 4.0)

Table 2: HTMT Results

	BI	EE	FC	HM	PC	PE	PV	SI	UB
BI									
EE	0.725								
FC	0.727	0.452							
HM	0.792	0.528	0.635						
PC	0.742	0.631	0.698	0.760					
PE	0.777	0.781	0.675	0.779	0.844				
PV	0.814	0.561	0.651	0.835	0.760	0.819			
SI	0.770	0.575	0.768	0.791	0.745	0.812	0.791		
UB	0.716	0.718	0.745	0.723	0.787	0.759	0.711	0.752	

Abbreviation: BI, Behavior Intention; EE, Effort Expectancy; FC, Facilitating Conditions; HM, Hedonic Motivation; PC, Perceived Credibility; PE, Performance Expectancy; PV, Price Value; SI, Social Influence; UB, User Behavior.

4.2. Results of Structural Model Evaluation

The bootstrapping technique with 5,000 iterative patterns was used to estimate the magnitude and importance of the path coefficients (β) at a 95% confidence level. The results of Table 3 show that BI is significantly affected by PE, EE, FC, HM, OC, PV, and SI. In which, PV has the strongest impact. In addition, the results also show that BI has a positive and strong impact on UB. The variation of UB is determined by variables in the model with $R^2 = 85,2\%$.

Table 3: Results of Structural Model Evaluation

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Empirical Remarks
Direct effect						
PE → BI	0.301	0.303	0.046	6.610	0.000	Accept
EE → BI	0.095	0.092	0.037	2.588	0.010	Accept
FC → BI	0.264	0.260	0.064	4.139	0.000	Accept
HM → BI	0.141	0.142	0.052	2.710	0.007	Accept
PC → BI	0.117	0.118	0.049	2.413	0.016	Accept
PV → BI	0.383	0.383	0.052	7.401	0.000	Accept
SI → BI	0.302	0.300	0.048	6.343	0.000	Accept
BI → UB	0.894	0.896	0.015	57.999	0.000	Accept
Indirect effect						
EE → UB	0.085	0.083	0.033	2.571	0.010	Accept
PC → UB	0.105	0.106	0.044	2.398	0.017	Accept
FC → UB	0.239	0.234	0.058	4.124	0.000	Accept
PE → UB	0.269	0.272	0.041	6.587	0.000	Accept
HM → UB	0.126	0.127	0.047	2.689	0.007	Accept
PV → UB	0.342	0.343	0.047	7.245	0.000	Accept
SI → UB	0.272	0.271	0.043	6.330	0.000	Accept

Abbreviation: BI, Behavior Intention; EE, Effort Expectancy; FC, Facilitating Conditions; HM, Hedonic Motivation; PC, Perceived Credibility; PE, Performance Expectancy; PV, Price Value; SI, Social Influence; UB, User Behavior.

5. Discussion

The results also found that behavior intention (BI) was positively affected by facilitating conditions (FC) (β = 0.264; p = 0.010). This result confirms the H1 hypothesis and is similar to the study by Chowdhury et al. (2022) and Kumari & Devi (2023). Blockchain offers obvious benefits such as process transparency, product traceability, and information security. When favorable conditions support the implementation of these features, customers find it easier to access and use the technology. In addition, the increase in awareness and knowledge of blockchain technology due to favorable conditions also contributes to the strengthening of customer acceptance intentions. They better understand the potential benefits that this technology can bring to the supply chain management process on the e-commerce platform, thereby creating a motivation for the adoption and application of this technology.

The results showed that performance expectancy (PE) had a positive impact on behavior intention (BI) (β =0.301; p = 0.000). This result implies that the expectation of increased efficiency increases the intention to accept blockchain technology in the use of supply chain

management systems on e-commerce platforms. This result confirms the H2 hypothesis and is similar to the study by Chowdhury et al. (2022), and Sheel and Nath (2020). Expectations of increased performance can play a key role in driving customers' willingness to adopt blockchain technology in the supply chain management system on e-commerce platforms. When customers believe that blockchain will bring outstanding performance improvements, such as reduced transaction times, and enhanced ability to accurately trace the origin of products, they will tend to support and accept this technology. These benefits not only enhance the shopping experience but also increase confidence in the quality of products and services. Therefore, as expectations for the efficiency of blockchain use increase, the intention to accept and support this technology from customers also increases, creating a strong impetus for the development and application of blockchain in supply chain management on e-commerce platforms.

Effort expectancy (EE) has a positive effect on behavior intention (BI) ($\beta = 0.095$; $p = 0.010$). This result is similar to the study by Maulidina et al. (2020) and confirms the H3 hypothesis. Effort expectancy refer to how easy it is for users to use a new technology. When customers notice that the use of blockchain in an e-commerce supply chain management system requires less effort and is easy to integrate into existing processes, they will tend to adopt the technology more (Duan et al., 2023). Reducing the effort required not only reduces anxiety and psychological hindrance but also increases confidence and satisfaction in using new technology. Therefore, low effort expectancy can be a key factor driving customers' intention to adopt blockchain technology, facilitating its widespread and effective adoption in supply chain governance on e-commerce platforms.

Social influence (SI) has a positive impact on behavior intention (BI) ($\beta = 0.302$; $p = 0.010$). The results confirm the H4 hypothesis and are similar to the research results of Maulidina et al. (2020). When blockchain technology is recognized and appreciated by reputable teams, customers feel more secure about its effectiveness and safety. Thus, the increase in social influence not only raises awareness of blockchain but also increases the motivation to adopt this technology, because customers do not want to miss out on the potential opportunities and benefits that the new technology can bring.

Price Value (PV) has a positive impact on customer intent (BI) with $\beta = 0.383$ and $p = 0.016$. This result confirms the H5 hypothesis and is similar to the study by Setiyani et al. (2023), D. Sharma & Vaid (2023). When customers realize that these benefits outweigh the costs, they will appreciate the value of the price and are willing to use blockchain technology. This is especially important in the context of e-commerce, where competition is fiercer than in

traditional markets. The perception of the high value of the price increases the intention to adopt blockchain, as customers find it an effective and worthwhile investment in improving the performance and transparency of the supply chain management system.

The results of the study also confirmed the H6 hypothesis. Perceived credibility (PC) was found to have a positive effect on behavior intention (BI) with $\beta = 0.117$ and $p = 0.016$. As trust increases, so does the willingness of customers to adopt blockchain technology in the use of supply chain management systems on e-commerce platforms. This stems from the nature of blockchain technology, which stands out for its transparency, security, and ability to record transactions in an immutable way (Kumari & Devi, 2023). When customers feel that blockchain is a reliable technology, they will have more incentive to accept and use it in supply chain management.

When the motivation to benefit increases, so does the customer's intention to use.

Hedonic Motivation (HM) was found to have a positive effect on Behavior Intention (BI) with $\beta = 0.117$ and $p = 0.016$. The results confirm the H7 hypothesis and are compatible with the study of Maulidina et al. (2020). When customers experience the convenience, ease, and sense of control when using blockchain, they tend to feel more excited and comfortable. This is especially important in the context of e-commerce, where user-friendliness and positive experiences can strongly influence the decision to use new technology.

The results also confirmed that behavior intention (BI) had a strong and positive impact on user behavior (UB) with $\beta = 0.894$ and $p = 0.016$. This result confirmed the H8 hypothesis and similar to the results of Sharma & Vaid (2023). Behavior intention plays an important role in influencing the behavior of using blockchain technology on electronic exchanges. If users feel they have the ability, knowledge, and resources to use the technology effectively, their intent to use it will be enhanced. These factors interact with each other and create behavior intention, which in turn leads to the actual use of blockchain technology on electronic exchanges.

In addition, BI was also found to have an indirect impact on the relationship between PE and UB. This result confirmed the H9 hypothesis. Performance expectancy also leads to user behavior through behavior intention (Maulidina et al., 2020). When users have a positive attitude and believe in the usefulness of blockchain, they will form their intention to use this technology. Behavior intention is the bridge between performance expectations and actual usage behaviors, reflecting the user's motivation and commitment to moving from awareness to action. When this intent is strong enough, the user will move from the consideration phase to the actual usage behavior. It plays an

important intermediary role, transforming performance expectations into behavior using blockchain technology on SCM.

BI was found to have an indirect impact on the relationship between EE and UB. This result confirms the H10 hypothesis and similar to the research of Kumari and Devi (2023). Behavior intention acts as an intermediary, connecting expectations about the actual efforts and usage behavior of blockchain technology, and helping to transform users' awareness of ease into practical behavior in applying the technology on SCM.

The relationship between FC and UB is also mediated by BI, this result accepts the H11 hypothesis. BI is a bridge, transforming the awareness of support conditions into determination and desire to use blockchain. Once this intention is strong enough, it translates into actual usage behavior, when users trust that they have the means and skills to implement this technology

BI have an indirect relationship between SI and UB. This result is consistent to the study of Kühn et al. (2019) and confirm the H12 hypothesis. Behavior intention is an intermediary factor in transforming social influence into behavior using blockchain technology, helping users balance social impact and actual actions.

BI also have an indirect relationship between PC and UB. The result is similar to those of Maulidina et al. (2020) and confirm the H13 hypothesis. BI transforms trust perception into usage behavior, helping users move from theoretical trust to concrete actions when using blockchain technology.

The result also confirms the mediating role of PV and answer the H14 hypothesis. This means that behavioral intent helps transform the perception of cost value into usage behavior, helping users weigh between costs and benefits to decide to use blockchain technology.

Finally, BI also plays an intermediary role between HM and UB. The result confirms the H15 hypothesis. As the intention to adopt blockchain technology increases, the behavior of customers to use supply chain management systems on e-commerce platforms also tends to increase. The intention to accept technology is an important psychological factor, showing the willingness and desire of customers to adopt and use a new technology. When customer adoption is high, this is often accompanied by a clear understanding of the benefits and efficiencies of blockchain technology, such as its ability to enhance transparency, improve data security, and optimize supply chain management processes.

6. Conclusions and Management Implications

Before the boom of e-commerce, SCM systems with blockchain integration were an effective solution. This technology helps track commodity information, authenticate product origin, enhance electronic services, and improve the transaction efficiency of individuals. The results showed that performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value had a positive impact on behavior intention. The results also confirmed that behavior intention has a direct impact on User Behavior. The results also confirmed the mediating role of behavior intention in the research model.

Theoretically, the results provide more empirical evidence for the UTAUT2 model. The research results show that supply chain management systems on e-commerce platforms should be integrated with blockchain technology. These results show that the decision to use SCM with blockchain integration brings many benefits to users. from there, the customer's intention to use increases, leading to an increase in usage behavior.

Vietnam is in a period of strong digital transformation, applying new technologies and strengthening information technology infrastructure is an effective measure to accelerate the digital transformation process in organizations and businesses. The study has identified seven statistically significant factors using the proposed research model and hypotheses related to the factors that impact the intention to apply blockchain technology. Based on this result, it can be affirmed that the decision to use SCM with blockchain integration brings many positive impacts to users.

7. Research Limitations

The data of this study was only collected from buyers who are using the SCM system integrated with the Vietnamese blockchain. This may affect the ability to generalize research results for other regions. Furthermore, this study excludes other blockchain technologies that might affect customer usage behavior in favor of concentrating solely on blockchain applications in SCM system administration.

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