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Analysis of E-Commerce Law Using Two-Stage Model PLS-SEM Base Neural Network: A Case Study in Vietnam

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Abstract

In the post-Covid-19, the e-commerce industry is expanding rapidly. Electronic companies have been thinking about progressively transitioning to the e-commerce industry. The booming telecommunications sector supports the e-commerce sector's quick acceleration in response to the global economy. Due to the link made possible by computer networks, participants in the e-commerce industry are coming together more and more. The study examines how elements affecting e-commerce in Vietnam or export via an e-commerce platform (EEP) interact with factors affecting Culture and Foreign Language (CFL), the Legal System (LF), and the Digital Technology Platform (DTP). The report provides a general overview of the e-commerce industry and its effects on the industry's growth. To assess the variables influencing Export via E-commerce Platform (EEP) in Vietnam. This study suggests integrating the Partial Least Squares Structural Equation Modeling (PLS-SEM) method with Deep Learning Artificial Neural Network (ANN). The number of survey samples is 2,550 samples collected in Ho Chi Minh City, Vietnam. The Export via E-Commerce Platform (EEP) component is negatively impacted by the Legal Framework (LF) factor, according to the research findings of the PLS-SEM ANN research model. Export via an E-Commerce Platform (EEP) is positively impacted by elements related to the Digital Technology Platform (DTP) and Culture and Foreign Language (CFL).

Keywords: E-Commerce; Partial Least Squares Structural Equation Modeling; PLS-SEM; Artificial Neural Network; ANN

1. Introduction

E-commerce is a method of producing, marketing, selling, and distributing tangible goods that are ordered, paid for, and delivered through the Internet [1]. It also refers to the digitization of various types of information. E-commerce is a method of purchasing and selling goods over the Internet, and it takes place through a computer network system [2]. Many technical industries, including electronic money transfer, supply chain management, Internet marketing, online transaction processing, data exchange, inventory management systems, and automated data collection systems, have the chance to grow in line with the e-commerce sector's development trends [3-4]. The security system for user information as well as the security system for buyers and sellers is a significant problem for managers because e-commerce is a new business model that also needs to be protected by law [5]. Computer science researchers should think about a tight user information security system as a direction for future study to control state government agencies in promulgating pertinent laws and regulations [6]. The following are common e-commerce business models or techniques: A single person conducting business online through online catalogs for products and virtual stores is known as an online retailer. The corporate group and the chain of stores are related in that personal data is collected and used through web contacts. Enterprise-to-business data interchange called Electronic Data Interchange (EDI), To engage with clients online, traditional internet services like email, fax, and newsletter are used. Purchasing and selling between businesses using a computer networked trading system, Partner-to-partner online commercial transactions that are secure.E-business is a method of creating a business system through the creation of an information system that functions as a whole to increase business productivity [7]. Real-time e-business encompasses all business operations, including e-procurement, e-purchasing, managing the material supply chain, processing orders, providing customer care, and interacting with clients and partners using electronic tools to transfer data between departments of the company [8].

The Law on Remote Sales, the Law on Signatures, the Law on Import Control, the Law on Electronic Money, and the contract and indemnification provisions of the Austrian Civil Code are among the laws that regulate e-commerce in Austria [9]. German business law regulations governing the Telesales Law, Telesales Contracts, Information Responsibilities for Sellers, Consumer Right to Cancel Contracts, andRegulations The Civil Code has added the aforementioned. All actions relating to the knowledge that owners of websites of this sort engage in e-commerce are subject to regulation under the Remote Services Act [10]. Online agreements are governed by the laws of the country where the buyer resides, the seller's location, or the location of the server, as well as the rules of international civil law [11]. Legislation on the management of e-commerce companies was also promulgated by the Vietnamese National Assembly in November 2005, and its principal provision establishes the legal significance of electronic documents in commercial transactions [12]. Other particular rules exist. In 2013, the Vietnamese government also passed a law on e-commerce to sternly regulate the obligations of enterprises. Since the end of 2012, e-commerce in Vietnam has risen strongly and

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evolved in various industries and dimensions. The obligation of state management organizations in charge of e-commerce falls on traders who offer online sales services [13]. However, the current legislation lacks precise provisions in many areas, leaving room for enterprises to break the law and engage in unlawful e-commerce. When it comes to e-commerce management legislation in Vietnam, this material is constantly a regulation that requires the attention of legislators [14–15].

This study examines the information on the elements influencing e-commerce in Vietnam. Previous researchers evaluated the effects of the Vietnamese electricity trade using conventional approaches. To fill in the gaps left by earlier studies and increase the effectiveness of e-commerce in Vietnam, this study performs an analysis of the laws and regulations there. The laws and regulations governing e-commerce in Vietnam are the subject of quantitative research in this paper. For this study, a Deep Learning Artificial Neural Network (ANN) method that combines the partial least squares structural equation modeling (PLS-SEM) and PLS-SEM approaches is developed and used. PLS-SEM is a non-parametric approach for reflective and formative interactions, but its capacity to assess model fit is limited. PLS-SEM should be utilized if the study seems to have new latent variables, newly observed variables, or a small sample size [16–17]. Utilizing the PLS-SEM model, this study assesses the mutual effects of regulatory agencies on the influencing elements of e-commerce on the performance quality of e-commerce enterprises. Additionally, it gauges e-commerce users' levels of satisfaction using face-to-face interviews and survey data.ANNs are more accurate than PLS-SEM models at creating both linear and non-linear models because they use interconnected nodes. A single hidden layer method is used in the ANN model [18].

The research has gaps that need to be filled. A deep learning-based ANN model with hidden layers is suggested to increase prediction accuracy and assess the factors affecting e-commerce companies. Latent variable significance is assessed using the PLS-SEM model and ANN, with IPMA indicating those with high importance but low efficiency. A variable with high importance but low efficiency was improved by researchers. This study's primary goals are to: Survey, analyze, rate, and identify Vietnam's regulations on the e-commerce industry. Analyze the benefits and drawbacks of latent variables including culture, foreign language, the legal system, and the digital technology platform, and manage the e-commerce industry. Recognize the importance of the rules and laws governing e-commerce in Vietnam. This study demonstrates that the PLS-SEM method satisfies the thorough investigation of the variables impacting the e-commerce industry. The combined PLS-SEM Neural network method evaluates the variables influencing the e-commerce industry in Vietnam and applies them to new investigations.In conclusion, using ANN and PLS-SEM together can have advantages including improving prediction abilities and comprehension of structural models. However, it's also crucial to take into account any potential disadvantages and make sure the combination procedure is done correctly and efficiently.

The portions of the organizational research paper are as follows: The theoretical underpinnings and hypothesis development are presented in Section 2. The raw materials and study methodology are thoroughly explained in Section 3. The research findings and discussion are detailed in Section 4. Section 5 includes the study's conclusion.

2. Raw material and literature review

The world's population is expected to reach USD7.91 billion by 2022, with up to 57% of people living in large cities. With USD4.95 billion users globally or 62.5% of the world's population, there are USD4.95 billion internet users. There are USD4.62 billion users of social networks worldwide. USD8.28 billion people utilize mobile device connections worldwide, which is equivalent to 104.6% of the world's population and 58.4% of the world's population [19–20].

Businesses of all sizes are switching to traditional and multi-channel formats as the e-commerce sector expands [21]. Businesses have a chance to expand and earn money because of this. According to Nielsen research, Shopee Pay, Momo, and ZaloPay are three widely used e-wallets in Vietnam that provide eco-friendly goods and services. According to PwC and Capgemini, voice-activated devices will displace traditional shopping in 2022. Customers may quickly and simply look for products in their online business using voice search by speaking instead of typing. Artificial intelligence makes searching more convenient by assisting users in identifying errors and suggesting more precise searches [22]. You can put the following procedures in place to guarantee a satisfying experience following a purchase: Establish a fair refund policy, pay for return shipping, andregularly check delivered orders to ensure that customer service is providing the best response to inquiries and helping consumers, If users leave reviews and recommend your website to others, consider providing a discount code or other incentive [23].

When it comes to the e-commerce trend, AR, VR, and Metaverse are game-changing technologies that offer immersive buying experiences: Solutions provided by artificial intelligence (AI) can improve customers' online purchasing experiences in the following ways: 24/7 automated customer service (chatbots), development of personalized content and recommendations for each consumer, analysis of e-commerce data to forecast client behavior, Customers can use virtual reality fitting applications in AR to try on clothing and view product details, enabling them to make purchases [24]. Metaverse gives clients a novel shopping experience by enabling them to browse product lines through virtual storefronts and live events. Virtual reality (VR) duplicates real-life experiences, such as visiting a store, to provide customers with an authentic experience when making purchases.According to past website usage, information from customer profiles, and other factors, search personalization uses algorithms to adjust search results for each client [25]. Providing product recommendations based on previous purchases to clients is one efficient personalization strategy. Email promotions for new goods that are comparable to those they just bought, Customize checkout pages to offer clients pertinent information and personalized email experiences. By 2022, there will be USD98.56 million people living in Vietnam, with 38.7% of the country's population living in urban areas and 95.8% of the population being literate. A total of USD156 million people, or 158.3 percent of the population, have access to mobile devices. When compared to the USD72.10 million internet users, the number of persons using social networks is USD76.95 million, or 106.3 percent. USD55.7 million people in Vietnam, or 74.8% of the country's population, have ever made an online transaction, according to the Vietnam Market Assessment. The entire cost of conducting business online is USD 12.42 billion, and the typical yearly income per user of the e-commerce platform is USD 240,000 [26]. 50.2% of all e-commerce purchases and sales were

made through mobile devices. Vietnam's e-commerce has experienced growth and is expected to reach USD39 billion by 2025, ranking second in Southeast Asia. More than USD8 million new online users joined Vietnam in the first half of 2021, with 55% of them coming from rural areas. Mobile devices are responsible for 71% (retail) of online purchasing orders, according to Statista. The Ministry of Industry and Trade's Vietnam E-commerce White Paper 2022 states that female shoppers make up 54% of all consumers (ages 18 to 35 made up 63% of all consumers), followed by employees at 49% and students at 29%. The average annual expenditure per person on online shopping in 2020 will be roughly USD240 (VND 5,520,000), up 42% from 2016. This figure is likely to rise quickly in the years to come. Due to the convenience of e-commerce platforms, it is anticipated that purchasers and spending levels will rise quickly in the upcoming years [20], [27].

The abundance of goods is driving up demand for online shopping. Reputation of the e-commerce platform, preferred policies, diversity, product quality, and the shopping experience are factors to consider while making a purchase, in that order. Shopee is the most widely used exchange (73%, USD91 trillion). Lazada is second (20% with USD26.5 trillion). With USD5.7 trillion, Tiki makes up 5% of the total, and Sendo makes up 1%. - Most items sold on e-commerce floors cost between VND10,000 and VND50,000, or 37% of all items sold. Products in the price ranges of VND100,000–VND200,000 and VND200,000–VND500,000 made up 42.6% of all sales of the floors, generating significant profit for the vendors. Most of the vendors are from Ho Chi Minh City and Hanoi. Due to low costs and abundant supply of items, foreign vendors made up 7.5% of the market in Ho Chi Minh City. Since shop sales typically account for 72.9% of the market share, retailers have access to the market. There are 38,961 mall stores, or 6.09% of all stores. There are 562,065 conventional stores, which make up 93.1% of all stores. VND13 million products were sold for VND1698 billion in November, and 32,000 vendors generated orders. The income of TikTok Shop in January is four times that of Tiki and equal to 80% of Lazada's revenue in the same month. Each day saw an average of 56.6 billion VND (434 thousand products) or VND130,000 for each item. impressive figures that take a long time to build on many other e-commerce floors. Price segments for Tiktok Shop are [19–20], [26–27].

Electronic trade, or "e-commerce," has a strong association with current events and is expanding considerably both in Vietnam and globally. Outstanding e-commerce growth E-commerce is booming both in Vietnam and the rest of the world. The growth of online shopping sites The growth and spread of e-commerce platforms like Amazon, Alibaba, eBay, Shopee, Lazada, and many others is being observed in both Vietnam and the rest of the world. technology- and internet-based-driven The e-commerce industry now has the technical foundation it needs thanks to the advancement of technology and the internet. Vietnam and the rest of the globe have both seen a sharp rise in internet users and the use of mobile devices, giving them easier access to and participation in e-commerce [28]. Customers are changing how they shop both in Vietnam and globally, which is the change in consumer behavior. The growth of e-commerce in particular industries is In particular fields like B2B e-commerce (companies with businesses), cross-border e-commerce, e-commerce in the service sector, and social e-commerce, both Vietnam and the rest of the world are seeing tremendous development. In conclusion, there is a strong correlation between global and Vietnamese e-commerce, and both are rapidly expanding. Technology advancements, alterations in consumer behavior, and the proliferation of e-commerce platforms have all contributed to the favorable atmosphere that has allowed e-commerce to flourish both in Vietnam and internationally. Because of the convenience and variety of online purchasing, this benefits consumers as well as businesses by expanding their markets and opening up new business prospects [29].

Even though e-commerce is evolving rapidly, businesses' use of e-commerce is improving as a result of investments in infrastructure and other reasons. However, there are still issues, and one of the biggest ones for the Vietnamese e-commerce platform is the online payment process. A lot of purchases can be made in an hour of live streaming thanks to the Shopertainment sector that is currently emerging in nations like China. Examples of these platforms are Amazon and TikTok of China, which have moved in the direction of commercial entertainment. The Vietnamese e-commerce market must become more like TikTok, which must increase the size of TikTok Shop, and low-level platforms like Tiki and Sendo, which must push advertising and adhere to the Shopertainment trend to generate income [30]. It is feasible to fully develop every floor of e-commerce in Vietnam. The following topics should be our main priorities if we want to successfully construct the e-commerce platform: Emphasizing information quality, transaction quality, product and service quality, and seller quality Pay attention to payment security concerns, expand your IT and payment infrastructure, and concentrate on developing your human resources for tasks involving business expansion [31].

E-commerce includes the sale of general services, quick internet consumption, and digital content. Using the Internet to facilitate domestic and international operations, major enterprises and financial institutions ensure data security and integrity. There are three key categories that makeup e-commerce: Customers, businesses, and the government. When these three items are merged, there are nine different types of e-commerce: B2C, B2B, B2G, G2B, G2C, and C2B. Globally, e-commerce has altered business paradigms, with the UK having the largest e-commerce sector and a projected 10% rise in the Internet economy between 2010 and 2015. With 384 million Internet users, China now has a larger online presence and saw a USD36.6 billion rise in retail sales in 2009 [32]. For this expansion to occur, customer reliability must get better. With more than USD60 million users and market leaders in e-commerce sectors including travel, gaming, and retail, the Middle East is seeing a tremendous increase in Internet usage. E-commerce has developed into a crucial instrument for worldwide trade, serving as a means of both product sales and customer interaction [33].

To increase customer buy intent, Vietnamese internet enterprises should concentrate more on e-commerce website interface design. In predicting clients' purchasing intentions, website design quality is more crucial than information quality and system quality. Customer purchase intention is positively impacted by service quality, information quality, and interface design quality. The perceptions of usefulness, usability, risk, social influence, and awareness of behavior control are the elements that directly affect Vietnamese consumers' decisions to shop online via e-commerce platforms in both positive and negative ways. Business managers can have a deeper insight into Vietnamese consumers' online shopping habits [34]. Vietnamese consumers should be encouraged to make purchases, therefore e-commerce marketers should devise ways to encourage this. The value of the initial pur-

chase and subsequent purchases are correlated. Depending on the participants' traits, different groups of participants have varying values for the order. Customers take into account price levels when determining the worth of the order. Customers' intentions to shop are positively influenced by elements like perceived utility, transaction security, perceived simplicity of use, trust, and subjective norm. The most important factor influencing a customer's intention to purchase is transaction security [35]. A major obstacle to online purchases through e-commerce websites is perceived danger. Online buyers' happiness and intention to make another purchase are positively correlated with determinant characteristics (reported ease of use, perceived usefulness, website design quality, and pricing perception). The element that had the biggest influence on online shoppers' pleasure and intent to make additional purchases was perceived usefulness. In Vietnam, factors like trust, perceived risk, convenience, and price are significant predictors of the likelihood that a consumer will shop online [36]. Aside from social influence, perceived utility, and reported fun, other significant aspects affect whether or not someone will shop online. The findings of this study show that to enhance online purchasing intention in Vietnam, online retailers should concentrate on fostering trust, lowering perceived risk, and offering convenience and affordable prices. The e-Commerce Adoption Model (e-CAM) was used to investigate the variables affecting Vietnamese consumers' online shopping behavior. Four elements are included in the proposed model: perceived utility, perceived ease of use, perceived risk associated with products and services, perceived risk in the context of online transactions, and perceived payment convenience [37]. The survey's findings showed that the four elements have various effects on buying behavior at various levels. Consumer views of reliability, privacy, customer service, and purchase intention are all favorably correlated with web design. Customer service impression and purchase intention are not positively correlated with consumer opinion of reliability. Customer service perception and purchase intention are not positively correlated with consumer perception of privacy. Due to e-commerce's relative newness in Vietnam, the majority of consumers are unaware of it. When making online purchases, people prioritize product safety. To win customers' trust, online sellers must guarantee a secure checkout experience and offer high-quality goods. Intention to make an online purchase has a positive correlation with perceived usefulness, perceived ease of use, and perceived transaction security in Vietnam [38]. Age and income are two demographic variables that can influence one's intention to shop online. Businesses can utilize the findings to improve consumer attraction tactics and gain a deeper understanding of growing markets. Promotion influences purchasing decisions and the likelihood of repeat purchases favorably. On purchasing decisions and repurchase intentions, price perception has a favorable impact. The decision to buy and the intention to buy again are strongly related. Users' perceptions of the usefulness and usability of a product or service are significantly influenced by the user experience and service quality. Perceived utility and perceived usability are important determinants of attitudes and intentions toward online shopping. The findings offer significant ramifications and insights into the theoretical underpinnings of TAM in the context of Vietnamese internet purchasing [39].

3. Development of theoretical foundations and Hypotheses

English is the primary language used in international business transactions including the sharing of information. Vietnamese, which is the country's mother tongue, is preferred for daily contact, and the majority of e-commerce businesspeople in Vietnam are typically individuals [40]. Vietnam views English as a secondary language. Thus, the difficulty with the English language presents a significant obstacle throughout the integration phase of the e-commerce industry.Vietnamese is the language that is most commonly used in Vietnamese e-commerce. Vietnamese is widely used in e-commerce websites, advertising, and customer communication because of the vast number of Vietnamese consumers and enterprises.It should be emphasized, nevertheless, that English is also commonly used in Vietnamese e-commerce, particularly when corresponding with clients and partners abroad. Using English broadens horizons and increases access to international markets [41]. However, adopting foreign languages in e-commerce in Vietnam has several significant advantages, including access to worldwide markets, reputation building, increased competitiveness, and promotion of exports and tourism. In conclusion, adopting foreign languages in e-commerce in Vietnam has several advantages, including access to worldwide markets, reputation-building, competitiveness-enhancing, creating a point of difference, and contributing to the growth of exports and tourism. There are various restrictions on the use of English as a communication language by e-commerce enterprises in Vietnam, even though English is widely used in international e-commerce [42]. inability to communicate in English Uncertainty over grammar and terminology because some Vietnamese e-commerce company individuals have very rudimentary knowledge of the English language. suitable vocabulary and grammar. Different cultures and business practices exist. Another restriction is the lack of resources and training due to the absence of specialist English communication training in the e-commerce industry. It may be challenging for Vietnamese e-commerce companies to engage in international business activities due to a lack of resources and competence in improving English communication skills [43]. As a result of the debate above, the author developed hypothesis H1:

***Hypothesis H1*:** The Export via E-Commerce Platform (EEP) factor is directly impacted by the Culture and Foreign Language (CFL) factor.

Consumers may easily access product information, prices, and suppliers because of e-commerce. Websites with a focus on supplier and product evaluation services enable customers to compare prices and select the best option. Online shopping has significantly impacted retail sales, andbook and travel agencies, according to research, which has enabled smaller businesses to cut prices [44]. To address Vietnam's ignorance of e-commerce, Uncitral drafted the Law on International Trade Law in 1996. This Law serves as the foundation for nations to develop their legal regulations for e-commerce following guidelines: If certain technical conditions are met, electronic documents have the same legal validity as written ones. freedom to bargain for a better deal. Recognize that using electronic communication is a choice. The legal significance of the contract, the rules governing its format, and the prerequisites for a contract's validity and observance. Priority must be given to consumer protection laws [45].

The Law on Electronic Transactions, which was passed in 2005, regulates electronic transactions in civil, commercial, and government agencies. Data communications, electronic

signatures, and electronic signature authentication are among the regulatory provisions it contains [46]. Finalizing and putting into effect electronic contracts: In electronic transactions, there should be security, safety, protection, and confidentiality. Electronic transactions are used for the resolution of disputes and the settlement of infractions [47]. The Commercial Law (amended) serves as a crucial foundation for all commercial activity, including online shopping. It states that data transmissions are acknowledged as documents if they adhere to technical requirements and standards. According to the Civil Code of 2005, civil transactions made using electronic methods are treated as written transactions. A contract is deemed to be entered into when an offer is made or accepted, and a civil contract is considered to be entered into at the house or principal office of the legal body making the request [48]. Regulations for electronic customs declarations, dossiers, and processes are supplemented by the Law on Customs (amended), which was passed in 2005. A significant turning point in the legal framework for the protection of intellectual property rights was the Law on Intellectual Property of 2005. It contains rules concerning e-commerce, such as what constitutes copyright infringement and what constitutes infringement of associated rights in an electronic setting. In the area of e-commerce, the principles of intellectual property law are still applicable [49].

Regulations and laws are required to manage business on social networking sites because e-commerce is a young industry in Vietnam. safeguarding user data when conducting e-commerce transactions and data about sectors supporting e-commerce, such as customs, logistics, online payment, and banking systems row [50]. The aforementioned information necessitates that lawmakers and government organizations think about and create a workable code forthe e-commerce industry.The lack of legal protection, a lack of security and privacy restrictions, and a lack of certification regulations can all have an impact on how e-commerce develops in Vietnam. real and sincere, the absence of laws governing conflicts and dispute settlement, the absence of guidance and support from the government, Lack of adequate e-commerce regulations, legal protection, and cost regulation, to put it briefly details can undermine trust and hinder Vietnam's e-commerce growth [51]. A comprehensive and efficient e-commerce legislative framework must be developed and put into place to support the long-term growth of e-commerce. Legal safeguards, security and privacy laws, laws governing authentication and authentication, laws governing dispute settlement, and government support and guidance are all included [52]. From the justifications given, the author suggests the following hypothesis H2:

Hypothesis H2: The Export via E-Commerce Platform (EEP) element is favorably and significantly influenced by the Legal Framework (LF) factor.

Social media platforms like Facebook, Instagram, and TikTok are providing firms with an expanding chance to market and sell things online through social commerce. The value of social media will increase from $992 billion in 2022 to $2.9 trillion in 2026, enabling users to find businesses, study items, communicate with customer service representatives, and make purchases. Businesses may create relationships with potential clients and increase sales conversions via social media sites like Twitter, Instagram, and Facebook [53]. Matching with influencers, forming alliances with other firms, sharing product photographs, and providing exclusive deals, loyalty schemes, and flash sales are important components. Social networking networks may help businesses swiftly reach potential clients. Live streaming and sales videos are effective marketing tools that let companies reach a worldwide audience and start a new trend in video shopping. In 2023, the e-commerce trend is anticipated to intensify, giving consumers a more practical way to browse and engage with items [54]. Businesses benefit from important customer behavior data and top-notch service from video shopping: improved customer service implementation. View your shopping history. learn more about the supply and demand of customers. Examine consumer behavior. Segmenting objects. Follow the customer's journey through each channel. All e-commerce platforms can be used to track sales and inventories. decreased losses and expenses (as a result of better sales data storage) [55].

According to Google's advice following astudy of Vietnamese consumer insights, sales management software with e-commerce platforms enables 24/7 customer data preservation and quicker problem resolution. By keeping up with e-commerce developments in 2023, firms may better understand the state of the market, boost sales, and increase profitability [56]. The success of an e-commerce business is significantly influenced by consumer information confidentiality. Because it can be stolen and used to create bogus orders and harm the reputation of the store, cyber security is a crucial issue for e-commerce websites. This could result in system bottlenecks, improper operation, and higher expenses if there is weak protection [57]. Therefore, by taking some of the following actions, creating website security needs to be prioritized and focused on: Enhance and safeguard the server. Make sure to purchase the appropriate SSL certificate from a trusted vendor and keep it current. Utilize modern protocols, such asHTTPS. Protocols can help your site rank higher on search engines and guarantee that it is secure. Use a CMS to update websites and control permissions. Your website will be safer and less susceptible to attacks thanks to CMS. If an online store's default password can be easily predicted by AI algorithms, change it. Use secure passwords instead. Keep your password updated frequently [58]. When an unidentified IP address attempts to access your online store, security software can notify you. To safeguard data, use secure payment methods. Ensure the shopping and transaction experience for the customer. To stop hackers from stealing data, use thesoftware. Use security plug-ins for online stores. Boost the defenses against potential attacks on your website. To avoid data loss, consistently and periodically back up your data [59].Social media platforms using digital technology have both positive and negative effects on e-commerce in Vietnam. Due to the Social Platform for Digital Technology helping to increase the potential market for e-commerce enterprises in Vietnam, there has been a positive impact on large market access. Businesses can reach and market to a broad customer base thanks to the growing number of Internet and social network users. Due to the Digital Social Platform's provision of online contact tools and channels such associal networks, chat, and online assistance, consumer involvement and engagement would be improved. Increased contact and client connection, aids organizations in developing better customer connections [60]. The Digital Technology Social Platform's analytical and trend-spotting capabilities offer robust data and analytical tools to analyze and comprehend consumer shopping trends and behavior. This data can be used by businesses to improve their marketing plans and customer service. However, the strong expansion of e-commerce and digital technology social platforms generating a fiercely competitive market has had a negative influence. E-commerce companies must increase the quality of their goods, services, and busi-

ness plans to survive and grow in the face of competition from both domestic and foreign companies. dangers to privacy and security because Risks to information security and personal privacy are also brought on by the growth of e-commerce and online social networks [61]. Personal information misuse and data breaches have a substantial negative impact on consumer and corporate trust. Customers' purchasing habits may change as a result of changing requirements and shopping preferences brought on by the growth of e-commerce and the online social environment. Customers' needs might alter, and they might decide to prefer online buying over conventional purchasing. To retain customers, e-commerce companies must adjust and improve the online purchasing experience. Digital social platforms generally have both positive and negative effects on Vietnam's e-commerce [62]. It offers chances to connect with a big market, improves client engagement and connection, and offers trend analysis capabilities. However, it also presents ferocious rivalry, privacy,and security issues, as well as evolving requirements and purchasing patterns. To grow and flourish in this environment, e-commerce enterprises must acknowledge and capitalize on the benefits of digital social networks, as well as confront and manage associated risks and problems [63]. The author makes the following claim based on the findings covered above H3:

Hypothesis H3: The Export via E-Commerce Platform (EEP) element is positively impacted by the Digital Technology Platform (DTP) factor.

4. Raw material and Research Methodology

Many chances for small, andmedium-sized businesses and even micro-enterprises are made possible through online export. By the end of 2020, 32% of small and medium-sized businesses will have established contacts with overseas partners online. Vietnamese businesses are gradually moving away from operating websites in favor of social media and online shopping platforms. Although there was a minor decline in 2017–2018, the percentage of businesses engaging in the e-commerce floor increased significantly from 13% to 22% during the period 2015–2020 [64].

The use of electronic devices connected to the Internet, mobile telecommunications networks, or other open networks to conduct all or a portion of commercial activity is known as e-commerce. Vietnam has been taking part in plenty of agreements, growing its export markets, and fostering distribution. In recent years, Vietnam has successfully negotiated and signed several free trade agreements (FTAs), opening up several opportunities to diversify export markets. Vietnam has ratified 15 free trade agreements as of July 2021, most notably the Regional Comprehensive Partnership (RCEP), which would affect USD2.2 billion consumers and represent Vietnam's desire to become more closely connected to regional and international manufacturing networks [65]. The government has given the use of e-commerce serious consideration and has established several favorable conditions for growth. The Government has continuously worked with the authorities to adopt numerous policies to support the growth of e-commerce and the golden population structure in recent years, delivering significant benefits to Vietnam's e-commerce sector [66]. However, cultural and linguistic hurdles, as well as a lack of familiarity with the regulations of e-commerce, pose significant obstacles for Vietnam in the border export process. For Vietnamese businesses, there are numerous potential hazards associated with e-commerce in general and online export in particular. These risks include variations in culture, processes, foreign currency flows, international standards, payments, facilities, institutions, policies, and politics. The digital workforce and platform in Vietnam are yet underdeveloped [67]. When several countries in an agreement share the same product structure, but competition is higher and the regulatory environment for e-commerce is still insufficient, participation in multiple accords puts pressure on the market.

This article suggests a study model based on pre-implicit characteristics that both favorably and adversely influence Export via E-Commerce Platforms (EEP), such as Culture and Foreign Language (CFL), the Legal system (LF), and Digital Technology Platform (DTP) (Fig. 1).

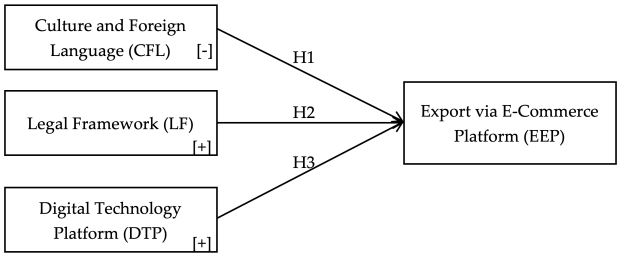

Fig. 1. Research model.

4.1. Sources and measure

The hypothesis tests in this study are tested and evaluated using secondary sources. Table A1 outlines the content of decrees and regulations utilized in Vietnam that are connected to e-commerce. Decrees and regulations relating to e-commerce are considered secondary data sources. There are two main categories of standard e-commerce policies in Vietnam: (1) The several types of laws and policies governing e-commerce in Vietnam, such as import and export tax laws, rules governing thetransportation of goods for import and export, and laws governing themonitoring of e-commerce websites. (2) Regulations governing trade and transportation activities with other nations that are relevant to e-commerce, such as those governing tax finalization, tax finalization forms, and invoices and payment papers. The scope and organization of each source are summarized in Table 1.

Table 1. Data sources and scales.

Index	Categories/ Pillars	Indicators	Scale	
			High	Low
NDVN	Basic requirements	Handling of cargo that the carrier is keeping at the port. regulatory penalties for e-commerce and consumer protection. procedures for enforcing import and export tax legislation. Administrative processes in line with the national single window mechanism, the ASEAN single window, and goods inspection. Regulations on invoices and other documents and multimodal transportation.	10	1
	Technical regula-	A written request for customs clearance for import and export, along	10	1

	tions	with supporting documentation for the import and export notice of the products, valuation of the goods being held, and assessment of the commodities. Establishing the boundaries between the duties of merchants and organizations offering logistics services for operating platforms for online commerce services for e-contract authentication are provided byinternational businesses and organizations' online commerce operations. Certain products are exempt from tax principles for how national and ASEAN single-window portals operate. Organize and protect data and information.		
	Management regulations	The goods may be kept by the transporter. Conditions for foreign investors' admission to the e-commerce market. E-commerce commodities are subject to tax policy application, customs inspection, and monitoring. Administrative rules by the national one-stop shop arethe steps involved in obtaining a business license for international multimodal transportation.	10	1
QDVN	Basic requirements	Regulations governing the disclosure and registration of data related to e-commerce websites. List the many kinds of invoices and vouchers laws governing import and export regulations andrules for managing e-commerce activity through mobile applications regulations governing the functioning of websites that conduct e-commerce and sell products or render services.	10	1
	Technical regulations	Sign up with a website that offers e-commerce services procedures for registering credit rating actions on e-commerce websites. A guide on creating, using, and managing invoices and vouchers laws governing electronic invoices andelectronic document regulations. Tax schedules, tax bases, and tax computation times safeguard tax, anti-dumping tax, and anti-subsidy tax. Exemption, reduction, and refund of taxes arethe procedures for notifying and registering mobile applications for use in online trading. Become a member of an application that offers mobile e-commerce services. Register to offer trading floor services for online business.	10	1
	Management regulations	Disclosure of data about the portal in charge of e-commerce. Create a lookup database for invoices and electronic documents. Organizations and individuals have rights, obligations, and responsibilities related to the usage and administration of electronic invoicing and document words used in tax collection disclosure of data on mobile devices used for e-commerce on the e-commerce management portal. Report on how the trading floor for e-commerce is operating.	10	1

Vietnam's e-commerce-related decrees and rules are aligned with those of the economic organizations to which Vietnam has subscribed, including WHO [68], FTA [69], and ASEAN [70]. The major points of the decrees and rules on e-commerce-related activities are succinctly summarized in Table 2.

Table 2. Summary of decrees and regulations on activities related to e-commerce.

No.	Index	Short name	Year	Title rule
1	Decree	169/2016/ND-CP [71]	2016	Handling of the carrier's cargo maintained at a Vietnamese harbor.
2		85/2021/ND-CP [72]	2021	Amendments to the e-commerce Decree No. 52/2013/ND-CP
3		98/2020/ND-CP [73]	2020	Administrative sanctions in commercial activities, the manufacturing and trade of counterfeit and illegal items, and the protection of consumer interests are all governed by regulations.
4		52/2013/ND-CP [74]	2013	E-commerce decree
5		18/2021/ND-CP [75]	2021	Decree No. 134/2016/ND-CP on measures to enforce the law on import and export taxes is being amended and supplemented.
6		57/2020/ND-CP [76]	2020	Decree No. 122/2016/ND-CP on export tariff, preferential export tariff, list of goods and absolute tax rate, mixed tax, and import tax outside the tariff quota is being amended and supplemented.
7		85/2019/ND-CP [77]	2019	Laws governing the use of administrative processes by national and ASEAN single-window mechanisms as well as specialized inspection of exported and imported commodities.
8		89/2019/ND-CP [78]	2019	Decree No. 92/2016/ND-CP on conditional business lines in the field of civil aviation and Decree No. 30/2013/ND-CP on transportation business aviation and general aviation operations are being amended and supplemented.
9		89/2011/ND-CP [79]	2011	Decree No. 87/2009/ND-CP on multimodal transport: amending and supplementing
10		146/2016/ND-CP [80]	2016	Regulations governing the posting of fees and surcharges in addition to the cost of services provided at seaports for cargo transpor-

				tation.
11		102/2021/ND-CP [81]	2021	Amending and adding to the decree on penalizing administrative infractions in the areas of taxation, billing, customs, insurance, lotteries, management and use of public property, frugal behavior, waste reduction, national reserves, state treasury, independent accounting, and auditing.
12		117/2022/ND-CP [82]	2022	For the sake of implementing the free trade agreement between the Socialist Republik of Vietnam and the United Kingdom, Vietnam has particularly favorable import and export tariffs.
13		123/2020/ND-CP [83]	2020	Regulations for receipts and invoices
14		144/2018/ND-CP [84]	2018	Multimodal transportation decrees may be amended and supplemented.
1	Decision	107/2016/QH13 [85]	2016	The law governing import and export taxes.
2		21/2018/TT-BCT [86]	2018	Amending Circular 59/2015/TT-BCT on the administration of e-commerce activities through mobile applications and Circular No. 47/2014/TT-BCT on the management of e-commerce websites.
3		59/2015/TT-BCT [87]	2015	Regulations for the control of mobile applications used for e-commerce.
4		47/2014/TT-BCT [88]	2014	Rules for the administration of e-commerce websites.
5		46/2010/TT-BCT [89]	2010	Regulations for managing the operations of e-commerce websites that sell products or offer services.
6		12/2013/TT-BCT [90]	2013	Regulations on the methods for notifying, registering, and disclosing data on e-commerce websites.
7		645/QD-TTg [91]	2020	Adopting the 2021–2025 national e-commerce development master plan.

4.2. Constructs and Indicators

Table 3 includes descriptions of the indicators andstructuresofPLS-SEM methodology.

Table 3. Indicators and constructs.

Indicators		Description	Construct		Source
CFL1	X1	Handling of the carrier's cargo detained at a Vietnamese seaport			
CFL2	X2	Administrative sanctions rules for commercial activities			
CFL3	X3	E-commerce decree			
CFL4	X4	Procedures to make import and export tariffs lawful	CFL	Y1	Index of ND-CP
CFL5	X5	Laws governing the use of administrative procedures			
LF1	X6	Activities involving general aviation and business aviation			
LF2	X7	Regulations for price and surcharge posting			
LF3	X8	The rule on penalizing administrative infractions			
LF4	X9	The preferential export and special favorable import tariffs of Vietnam			
LF5	X10	Regulations for receipts and invoices	LF	Y2	Index of ND-CP
LF6	X11	Multimodal transportation rules			
DTP1	X12	The use of mobile applications to manage e-commerce activities			
DTP2	X13	Rules for the administration of e-commerce activities			
DTP3	X14	Rules for the administration of e-commerce websites			
DTP4	X15	Regulations for the control of the operations of e-commerce websites that sell goods or render services	DTP	Y3	Index of QH, TT-BCT, and QD
EEP	X16	Regulations on the methods for registering, notifying, and disclosing information on e-commerce websites	EEP	Y4	Index of ND-CP, QH, TT-BCT, and QD

4.3. Method of collected Sample

The study uses arandom sampling method to collect data. The sampling subjects are people who have used e-commerce services and are living in Ho Chi Minh City, Vietnam. The sampling time is from January 2023 to April 2023. The random sampling method is used by the author with the goal that random response for sampling opportunities is equal and easy to implement for both the person collecting the sample and the person from whom the sample is collected. The survey was compiled in Vietnamese and the scale followed the 5-point Likert scale. The questionnaire was completed according to the revision request of 5 experts in the e-commerce industry in Vietnam. 2,600 samples were collected of which 50 samples did not meet the requirements because of missing or incomplete answers, possibly because the surveyor did not read the survey questionnaire carefully or the surveyee mistyped survey results. As a result, 2,550 completed survey samples were included in the analysis. 95% of the survey sample were female and 5% were male. Up to 80% of people surveyed have less than a university degree, 155 people have a university degree and 5% have a post-university degree.

4.4 Methodology

In the study, a partial least squares structural equation modeling (PLS-SEM) mode plays a role in addition to an SEM model that is used to simulate all of the pathways simulta-

neously and in detail [92]. (1) even though the PLS-SEM approach has restrictions on sample size, sample size distribution, and sample size. (2) The PLS-SEM method's strength is its ability to assess both non-independent variables while producing accurate and trustworthy results. (3) PLS is an effective defense against independent variables and data bias.

Economic regulations are intricate and rely on current ideas and data, giving researchers insights for interpretive investigations [93-94].Latent variables CFL, LF, and DTP are compared with their effects on export via an e-commerce platform (EEP) in the Vietnamese market using smart PLS. The mirroring model's central topic, as well as its underlying assumptions and outcomes, are reflected in the way that variables are structured. Following is the model specification set up:

16 indicators $(X_1, X_2, X_3, \dots, X_{16})$ make up the research model, with four latent variables (Y_1, Y_2, Y_3, Y_4). Latent factors Y_1, Y_2, Y_3 influence Y_4, and the following is regarded to be the measuring model.

$$X_1 = Y_1 B_1 + \varepsilon_1$$

$$X_2 = Y_2 B_2 + \varepsilon_2$$

$$X_3 = Y_3 B_3 + \varepsilon_3$$

$$X_4 = Y_4 B_4 + \varepsilon_4$$

$$X_5 = Y_5 B_5 + \varepsilon_5$$

$$X_6 = Y_6 B_6 + \varepsilon_6$$

$$X_7 = Y_7 B_7 + \varepsilon_7$$

$$X_8 = Y_8 B_8 + \varepsilon_8$$

$$X_9 = Y_9 B_9 + \varepsilon_9$$

$$X_{10} = Y_{10} B_{10} + \varepsilon_{10}$$

$$X_{11} = Y_{11} B_{11} + \varepsilon_{11}$$

$$X_{12} = Y_{12} B_{12} + \varepsilon_{12}$$

$$X_{13} = Y_{13} B_{13} + \varepsilon_{13}$$

$$X_{14} = Y_{14} B_{14} + \varepsilon_{14}$$

$$X_{15} = Y_{15} B_{15} + \varepsilon_{15}$$

$$X_{16} = Y_{16} B_{16} + \varepsilon_{16}$$

Where, X: Indicators, Y: Latent variables, B: Indicator-related latent variables, and ε: the indicators' residuals. Formula 1 is used to calculate the model.

$$X = B'Y + \varepsilon \quad (1)$$

Where, J vector of indicators make up X. According to the vector matrix J of the loads, B is vector P and Y is vector P of latent variables. J displays one residual across all indicators. There are 16 indicators and 4 variables in the PLS-SEM model.

The following link between variables and formulas is shown by the structural model (2):

$$Y_4 = Y_1\beta_1 + Y_2\beta_2 + Y_3\beta_3 + \gamma_4 \quad (2)$$

Where, β: direction coefficients, Y_1, Y_2, Y_3: exogenous, and Y_4: endogenous.

The following is how the research model is expressed in formula (3):

$$Y = B'Y + \gamma \quad (3)$$

Where, B: the P-by-P matrix containing the path coefficients. There is a weight relationship in the suggested model.

$$Y_1 = X_1\alpha_1 + X_2\alpha_2 + X_3\alpha_3 + X_4\alpha_4 + X_5\alpha_5$$

$$Y_2 = X_6\alpha_6 + X_7\alpha_7 + X_8\alpha_8 + X_9\alpha_9 + X_{10}\alpha_{10} + X_{11}\alpha_{11}$$

$$Y_3 = X_{12}\alpha_{12} + X_{13}\alpha_{13} + X_{14}\alpha_{14} + X_{15}\alpha_{15}$$

$$Y_4 = X_{16}\alpha_{16}$$

Where, α is demonstrated by J (P is given to J). The following can be written as an acronym:

$$Y = \alpha' X \quad (4)$$

There are three sub-models for component analysis:

Measurement model: $X = B'Y + \varepsilon$

Structural model: $Y = B'Y + \gamma$

Weighted model: $Y = \alpha' X$

When J is a vector of indicators, and X is. A vector of loads connected to pre-implicit variables is called B. J. A vector of latent variables makes up Y. The association between latent variables is called. A matrix of path coefficients is called B. is J indices are given a P value by the weight matrix.

4.5. Evaluating the measurement model

Research importance is assessed using the PLS-SEM model (Fig. 2). Each indicator has a correlation (Eq. 5) with its intended structure that is higher than 0.80. The internal consistency of the study model is evaluated using Cronbach's alpha (Eq. 6) index and HTMT composite reliability (Eq. 7). With scores ranging from 0.891 to 1,000, the Alpha coefficient has a total score higher than the required score of 0.8. The study's data have a composite reliability value (Eq. 8) index of over 0.7, and the average error value (AVE) (Eq. 9) ought to be higher than the advised minimum of 0.5. (Tab. 5). The discriminant validity of structural indices is evaluated using the heterotrait monotrait ratio (HTMT) (Eq. 10). According to Table 6, values under 0.83 signify a sufficient discriminant.

$$\delta_{jh} = cor\left(Y_j, X_{jh}\right) \quad (5)$$

Where, By examining the correlation between latent variables and indicators, one may estimate the outer loading value of the h-indicator on the j-latent variable.

$$\alpha = \left(\frac{k}{k-1}\right)\left(1 - \frac{\sum_{i=1}^{k}\sigma_y^2}{\sigma_x^2}\right) \quad (6)$$

Where: k: the number of items in the measure, σ_y^2: variance associated with each, σ_x^2: variance associated of the total scores.

$$GFI = 1 - \frac{F_t}{F_n} = 1 - \frac{x_t^2}{x_n^2} \quad (7)$$

Where: x_t^2: The chi-square of the target model, x_n^2: The chi-square of the null model, F: The corresponding minimum fit function value.

$$CR = \frac{(ld_1+ld_2+\cdots+ld_m)^2}{(ld_1+ld_2+\cdots+ld_m)^2+\sigma_1^2+\sigma_2^2+\cdots+\sigma_m^2} \quad (8)$$

Where: CR: composite reliability CR of latent variable A, ld_1, ld_2, ld_m: the normalized load coefficient of the observed variable belonging to the latent variable A, m: number of observed variables of latent variable A, $\sigma_1^2, \sigma_2^2, \sigma_m^2$: variance of the measurement error of the observed variable belonging to the latent variable A with $\sigma_m^2 = 1 - ld_m^2$.

$$AVE = \frac{\sum_{i=1}^{k} \partial_i^2}{\sum_{i=1}^{k} \partial_i^2 + \sum_{i=1}^{k} Var(e_i)} \quad (9)$$

Where: k is the number of items, ∂_i: the factor loading of item i, $Var(e_i)$: the variance of the error of item i.

$$HTMT_{ij} = \frac{\overline{Cor_{ij}}}{\sqrt{\overline{Cor_i} \times \overline{Cor_j}}} \quad (10)$$

Where, $HTMT_{ij}$: HTMT value of latent variables i and j, Cor_{ij}: average of correlation coefficients of all pairs of observed variables of latent variables i and j, Cor_i: the average of the correlation coefficients of the pairs of observed variables of the latent variable i, Cor_j: average of the correlation coefficients of the pairs of observed variables of the latent variable j.

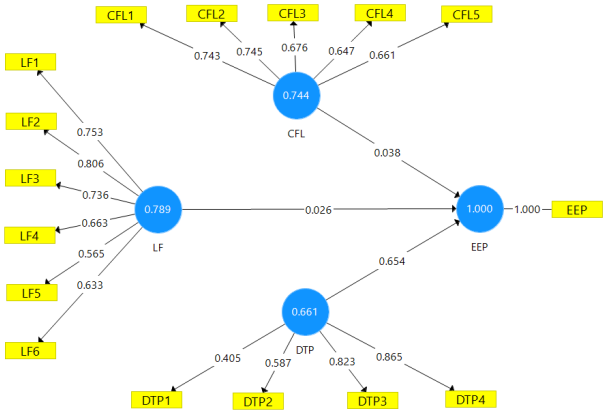

Fig. 2 Indicator loadings

Table 4. Construct validity and reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CFL	0.869	0.885	0.971	0.598
LF	0.888	0.932	0.902	0.548
DTP	0.893	0.836	0.911	0.692

Table 5. Discriminant validity-HTMT

	CFL	LF	DTP
CFL	0.328		
LF	0.474	0.698	
DTP	0.549	0.697	0.493

4.6. Assessment of the structure model

With a statistically significant path coefficient of 95%, the internal VIF (Variable Inflation Factor) value (Eq. 11) indices are investigated, and the results are below the suggested level of 5.0.

$$VIF_i = \frac{1}{1-R_i^2} \quad (11)$$

Where, R_i^2 is the uncorrected coefficient of determination when the ith independent variable is regressed on the other independent variables. Tolerance is the reciprocal of VIF. Depending on personal taste, multicollinearity can be found using either VIF or tolerance.

To forecast the effectiveness of EEP, this study used coefficient of determination (R2), exogenous structural elements (CFL, LF, and DTP), and indications of predictive accuracy. The model's result for EEP was 0.504, with values higher than 0 indicating that a particular endogenous structure is thought to be meaningful. The efficacy size (f2) was discovered to be modest, the DTP to be moderate, and the LF to be large (Tab. 6).

4.7. Discussion and Finding

Path models are assessed based on estimated path coefficients and significance levels using PLS-SEM model analysis. Figure 2 and Table 7 display the results.

Table 6. Hypothesis results

Hypothesis		Coefficient	Standard deviation	T statistics	p-value	VIF	F Square	CI 2.5%	CI 97.5%
								Lower	Upper
H1	CFL -> EEP	-0.295	0.051	3.491	0.000	2.019	0.012	-0.239	-0.142
H2	LF -> EEP	0.398	0.049	6.810	0.000	3.390	0.102	0.298	0.449
H3	DTP -> EEP	-0.439	0.051	11.393	0.000	2.319	0.201	-0.809	-0.698

This study investigates the outcomes of an internal model (Eq. 12) and external model (Eq. 13) on the load factor, p-values, and path coefficients (Eq. 14) indices (Fig. 3). Arrows show the absolute value of each path in the research model together with the path model's significance index (Eq. 15).

$$Z_j = \sum_{i=1}^{m} Y_i e_{ij} \quad (12)$$

Where, Z_j: Latent variable initial estimation value vector Yi that is associated with the hidden variable Yj, e_{ij}: A correlation between related Yi and Yj is represented by the inner weight value vector, m: the quantity of Yi connected to Yj.

$$Y_j = \sum_{h=1}^{k} x_{jh} \widetilde{w_{jh}} \quad (13)$$

Where, Y_j: initial estimation of the j-th latent variable's value vector, x_{jh}: a matrix with a column vector of the j-th latent variable's indicator, $\widetilde{w_{jh}}$: (For the first iteration, $\widetilde{w_{jh}}$ was initialized as a column vector with entries of 1) Outer weight estimation value vector of the j-th latent variable with k indication.

$$\beta = (Y_i^T Y_i)^{-1} Y_i^T Y_j \quad (14)$$

Where, Y_j: estimate of the path coefficient, β: is the vector of the path coefficient, T: the residual vector.

$$Y_j = \sum_{h=1}^{k} X_{jh} \widetilde{\omega_{jh}} \quad (15)$$

Where, ω_{jh}: the outer weight estimation of the j-th latent variable's h-th indicator at the sth and (s-1)th iterations.

Cultural and linguistic factors (CFL) in this study have a favorable impact on e-commerce exports (EEP). E-commerce trading floors are set up in and inside Vietnam; there are no representative offices for e-commerce sites in other nations, and all of the people working on e-commerce sites are Vietnamese. The maternal tongue is used as the main language. This is a challenge for e-commerce companies that want to conduct business with overseas clients, even though I can communicate in a limited amount of English, but because I haven't used it in a while I forget and am unable to do so. Although most Vietnamese use products made in their country, today's youth favor imports. However, the amount of Vietnamese commodities that are exported or exchanged online for foreign countries is still quite small, if not entirely prohibited. E-commerce companies are having trouble with this and require legal assistance.

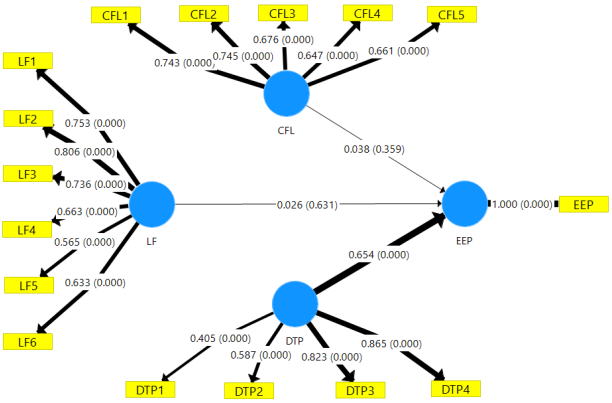

Fig. 3. Model results

Due to the inconsistent Legal Framework (LF), EEP suffers. Vietnam is importing more and more goods from other countries in the form of trading on the e-commerce platform. China is very prominent in e-commerce. Due to consumers exclusively purchasing things through e-commerce websites instead of conventional markets, this condition makes it difficult for businesses in Vietnam to operate. As a result, numerous stores and traditional marketplaces have had to close. Although domestic e-commerce has struggled to compete with Chinese e-commerce sites, this encourages the growth of e-commerce. To enable Vietnam's e-commerce to flourish, strategists and economists will need to regard this as a challenging problem and come up with answers. Vietnamese imports can be made quite quickly and easily. However, Vietnam's e-commerce solely focuses on domestic sales and hasn't paid much attention to international trade. For Vietnamese e-commerce sites to be able to trade and conduct business with international clients via e-commerce, the authorities and government agencies must take this into account and establish the necessary circumstances. To assist and safeguard e-commerce enterprises and enable them to conduct business with other nations with confidence, tax authorities, and legal organizations must create a set of regulations that are specifically tailored to the industry. Laws governing air and marine transportation have been and are being put into practice. Administrative processes are still challenging, and overseas buyers have not been fully happy with the speed of product delivery. For e-commerce companies, export logistics services present some significant challenges. A precise and unambiguous rule on protection rights in e-commerce is essential for foreign trade conducted through such platforms. E-commerce companies are particularly concerned about network security.

EEP benefits from the digital technology platform (DTP). As the digital age has progressed, the world's telecommunications network has expanded, making it easier for individuals to communicate with one another. The expansion of trading activity presents a fantastic opportunity for e-commerce companies to reach a global consumer base. Everywhere in the world, activities involving human-to-human communication can benefit from the communication system's inherent advantages. Additionally, it provides the bad guys with a way in and a requirement to access the customer's personal information system so they can use the user's personal information against them. The primary issue of e-commerce enterprises and a promising area of study for information technology and computer science experts is the security of user information on e-commerce platforms.

The study assessed the Stone-Geisser Q2 index's predictive usefulness and found that it had a significant correlation with the Export via E-commerce platform (EEP) score of 0.356. The Latent Variables (LV) and Visible Variables (MV) predictive relationship is examined and demonstrated using the PLS model. The calculated PLS path model's accuracy is measured by Mean Absolute Error (MAE), Root Mean Square Error (RMSE), and Mean Absolute Percentage Error (MAPE). Mean Absolute Error (MAE) (Eq. 16) computes the absolute mean of the error in addition to measuring the average error of the model in comparison to the real data. The model is better the lower the MAE number.Although MAE determines the absolute mean of the error, it also assesses the mean error of the model in comparison to the real data. As a result, it is simpler to compare models and across different dependent variables when using MAE because its unit of measurement is identical to that of the dependent variable. However, MAE does not assess the size of the errors; it just assesses the mean difference between the expected and actual values.

$$\mathrm{MAE} = \left({}^{1}/_{\mathrm{n}}\right) * \mathrm{sum}\left(\mathrm{abs}\left(\mathrm{y_i} - \mathrm{y_{pred_i}}\right)\right) \quad (16)$$

Where, n: the sample's number of observations, y_i: the dependent variable's actual value as of observation i, y_{pred_i}: value anticipated for observation i's dependent variable.

Root Mean Square Error (RMSE) (Eq. 17) quantifies the model's typical error in comparison to the real data. The better the model is the lower the RMSE number. The square root of the mean squared error between the projected value and the actual value is used to determine the root mean square error, or RMSE. The RMSE calculates the model's mean error in comparison to the actual data. It is simple to compare models and different dependent variables when using RMSE because the value is expressed in units of the dependent variable. In order to evaluate the model's prediction ability, it additionally displays the average deviation between the anticipated value and the actual value. However, it is impacted by noisy or outlier values in the data. RMSE measures the mean deviation between the projected value and the actual value. The RMSE can be dramatically decreased if the data contains noisy or outlier values.

$$\mathrm{RMSE} = \mathrm{sqrt}\left(\left({}^{1}/_{n}\right) * \left(\mathrm{sum}\left(y_i - y_{pred_i}\right)\right)^2\right) \quad (17)$$

The mean absolute percentage error (MAPE) (Eq. 18), which compares the anticipated value to the actual value, calculates the average error percentage. The model is better if the MAPE value is lower. The average of the absolute value of the error divided by the actual value, multiplied by 100, is used to calculate MAPE. MAPE determines the mean of the absolute value of the error divided by the actual value, multiplied by 100. MAPE assesses the mean error of the model when applied to forecast the value of the dependent variable on a test set. The advantage of MAPE is that the model's error can be easily understood because the unit is a percentage. Additionally, it displays the typical error in % between the projected and actual values. However, it cannot be calculated when the actual value is zero. MAPE assesses the percentage error between the projected value and the actual value.

$$\mathrm{MAPE} = \left({}^{1}/_{n}\right) \times \mathrm{sum}\left(\mathrm{abs}\left(\left(y_{test_i} - y_{pred_i}\right)/\left(y_{test_i}\right)\right)\right) \times 100 \quad (18)$$

Where, y_{test_i}: the test set's actual value for observation i's dependent variable.

With a lower PLS-SEM value and a higher Q2 value, Table 7 illustrates the structure's potential PLS prediction ability together with its three display coefficients (CFL, LF, and DTP).

Table 7. PLS Prediction results

	RMSE		MAE		MAPE		Q2	
	LM	**PLS-SEM**	**LM**	**PLS-SEM**	**LM**	**PLS-SEM**	**LM**	**PLS-SEM**
EEP1	1.47	1.31	1.74	1.06	45.03	35.97	0.08	0.18
EEP2	1.32	1.44	1.45	1.37	63.37	61.94	0.07	0.14
EEP3	1.50	1.45	1.56	1.04	41.68	40.03	0.02	0.21
EPQ	-	0.608	-	0.426	-	-	-	0.309

Notes: EEP: Export via E- commerce platform; LM: Linear Model; Q2>0; MAPE: Mean Absolute Percentage Error; RMSE: Root Mean Square Error; MAE: Mean Absolute Error

3.8. Deep learning artificial neural network (ANN)

The PLS-SEM model employs SPSS v22 for analysis and the ANN model [46] to examine findings with linear or non-linear connections (Fig. 4). With ranges between 0.1 and 1 normalized for input and output neurons, the ANN model employs two hidden layers of deep learning [67]. CFL, LF, and DTP are the model's three inputs, and EEP is its output.

Lower values represent higher prediction accuracy, and RMSE was used to create the ANN model for test data (30%) and training data (70%), respectively (Tab. 8).

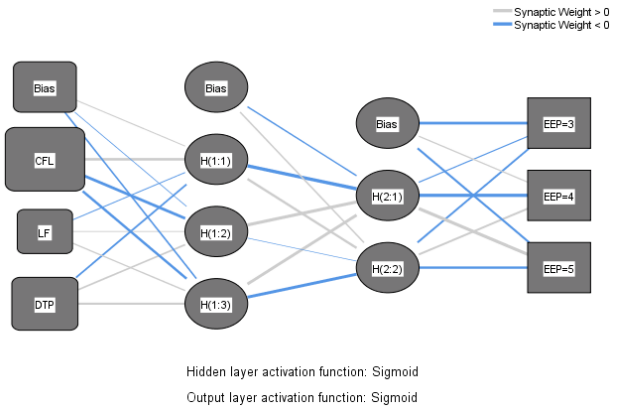

Fig. 4. ANN Model

Table 8.ANN model RMSE values

Output: EEP				
ANN	**Training (70% of 545data samples)**		**Testing (30% of 545data samples)**	
	MSE	**RMSE**	**MSE**	**RMSE**
ANN1	0.136	0.039	0.161	0.079
ANN2	0.151	0.031	0.138	0.082
ANN3	0.158	0.028	0.158	0.088
ANN4	0.152	0.030	0.137	0.089
ANN5	0.140	0.032	0.158	0.076
ANN6	0.163	0.031	0.148	0.087
ANN7	0.174	0.034	0.127	0.086
ANN8	0.131	0.021	0.149	0.083

ANN9	0.161	0.033	0.131	0.089
ANN10	0.142	0.020	0.139	0.079
	Mean	0.0029	**Mean**	0.086

Sensitivity analysis is used to assess how significant input predictors like CFL, LF, and DTP are. The model's full analysis findings are displayed in Table 9. Reliability is the first predictor of LF, followed by DTP in the second, and CFL has the least impact, according to the study.

Table 9. Input predictor relative importance

Output: EEP	Average relative importance	Normalized relative importance (%)	Ranking
LF	0.648	100	First
DTP	0.295	84.59%	Second
CFL	0.190	54.89%	Third

5. Result and Discussion

PLS-SEM and ANN were employed in the study to examine exports through an e-commerce platform (EEP). the process of anticipating the relative weight of inputs such as Culture and Foreign Language (CFL), Legal Framework (LF), and Digital Technology Platform (DTP) to show valuable information about Export via an E-Commerce Platform (EEP). The PLS-SEM model analysis results indicate that Legal Framework (LF) has a considerable impact on Export via E-Commerce Platform (EEP) with P-Value = 0.000 and F-Square = 0.201 (Table 7). The P-Value and F-Square values for Culture and Foreign Language (CFL) and Digital Technology Platform (DTP), respectively, show that these factors have an EEP impact on the second and third grades.Linguistic factors have a big impact on e-commerce in Vietnam. A good influence can be demonstrated by effective communication. Using simple vocabulary makes it easier for partners in an e-commerce system to communicate effectively. Gaining the buyer's trust by speaking clearly and directly will help you increase your credibility. To increase user experience, e-commerce systems must use terminology that is appealing and easy to understand. However, negative consequences like misunderstanding and miscommunication caused by the use of imprecise or incorrect language can occur between e-commerce partners. This could lead to dissatisfied customers and reduced trust. Due to the use of erroneous or deceptive wording, customers who conduct business online may be vulnerable to information security issues. Market expansion is challenging because specific clients are only targeted by the language used in phishing emails or chats, which could trick users into giving bank accounts or personal information. Particularly, it might make market expansion more difficult. Using language that is out of touch with or inappropriate for your target demographic might hurt your appeal and interest. For the growth of e-commerce in Vietnam, it is essential to use clear, understandable, and enticing language. To create trust, enhance the user experience, and successfully expand their market, businesses must focus on utilizing language. The Legal Framework component (LF) has a relative importance average of 0.398, according to the study results of the ANN Model, which is followed by the average relative important averages of Culture and Foreign Language (CFL) factor and Digital Technology Platform (DTP) factor (0.355 and 0.240). This demonstrates that the LF factor has a significant influence on EEP, as the CFL factor and DTP factor, respectively, occupy the second and third positions. Legal Framework (LF), Culture and Foreign Language (CFL), and Digital Technology Platform (DTP) had the greatest and second-greatest impacts on EEP, respectively, according to PLS-SEM and ANN analyses.The legal system has both positive and negative effects on e-commerce in Vietnam, which has a significant impact. The advantage of the Consumer Protection Law is that it gives consumers more confidence and peace of mind when they shop online by providing a legal framework to safeguard them. The Information Technology Law is about having a legal framework, and the Information Security Regulation is the Law on Personal Information Protection and Personal Data Management that aids in protecting user privacy in e-commerce. E-commerce development is aided by information technology. E-commerce enterprises may experience challenges and increased costs as a result of negative effects like Tax and Customs Regulations. The Copyright and Intellectual Property Law's restrictions on copyright and intellectual property may have an impact on e-commerce operations, particularly when it comes to the distribution of digital content and digital goods, and the Online Advertising and Marketing Regulations' restrictions on advertising and marketing may have an impact on operations on e-commerce platforms. In conclusion, regulations governing consumer protection, personal information protection, and information technology enablement have a positive effect by fostering trust, preserving privacy, and making it easier to conduct online transactions. However, e-commerce enterprises may encounter challenges and hurdles as a result of tax and customs rules, copyright and intellectual property laws, as well as advertising and marketing laws. E-commerce in Vietnam is significantly impacted by digital technology, which can have both positive and negative effects. Positive effects include expanded market access because digital technology has made it possible for e-commerce companies to connect with more potential clients. By offering high levels of customization and personalization, digitalization technology improves user experience, and it also optimizes administration and operations for e-commerce enterprises by offering management tools and enabling efficient operation. Negative effects include privacy and security problems brought on by digitalization technology, particularly when processing personal data and making online payments. little infrastructure and expertise because to construct and run e-commerce systems, it is necessary to have solid technological expertise and infrastructure, and Prices and competition as a result of digital technology The e-commerce sector now faces greater competition thanks to digitization. To put it briefly, digitization creates chances to expand market reach, enhance user experiences, and enhance management and operations. However, it also poses hazards to privacy and security, necessitates a

technology infrastructure, produces pressure from competition, and results in price reductions.

Performance Importance Mapping Analysis (IPMA), which focuses on performance and significance, offers insights on model significance. PLS path models' performance measures are used to gauge their effectiveness. Export via E-Commerce Platform (EEP) is the situation under question. Export via E-Commerce Platform (EEP) is increasingly popular due to the strong influence of the Legal Framework factor (LF). The second most important component is culture and foreign language, whereas the least important factor is the digital technology platform (DTP). Legal Framework (LF), Culture and Foreign Language (CFL), and Digital Technology Platform (DTP) are the three most significant predictive inputs for Export via E-Commerce Platform (EEP). The PLS-SEM model and IPMA analysis findings demonstrate the relative importance ranking of these variables (Table10).

Table 10. Summary of ranking importance

Output: Export via E-Commerce Platform (EEP)	PLS-SEM	IPMA	ANN sensitivity ranking
Legal Framework (LF)	1	1	1
Culture and Foreign Language (CFL)	2	2	2
Digital Technology Platform (DTP)	3	3	3

The e-commerce industry gives criminals the chance to con people using social networks or mobile devices during transactions. Users need to be aware of the 19 methods (Tab. 11) for stealing their personal information.

Table 11. List of tricks to steal personal information of users

No.	List of tricks to steal	Action of tricks to steal
1	Spoofing a law enforcement organization	Ask the user to send the specified amount of money to the account that the investigation's subject has provided.
2	Pretending to be a bank employee	Information and software delivery guidelines then obtain the data necessary to deposit funds into the user's account.
3	A doctor posing as a member of the medical staff	Call the hospital to let them know that your loved one is in need of quick financial assistance for urgent surgery.
4	Send a service activation message while acting like a bank	Send your phone a text message with the link and ask for service activation. All of the user's funds in the bank account will be gone when the user logs in
5	pretending to be a traffic cop	Notify users about traffic violations that are connected to illegal activity and request money in exchange for information.
6	Falsely claiming to be a communications officer	Notify the user that he owes freight or credit then ask him to send money for an investigation while acting like a police officer.
7	incorrect money transfers, compelled debt	Money is transferred to the user's account, and then after a while, the user is asked to repay the money with interest.
8	Getting conned	calling the user to inform him that he has won the prize, requesting payment of a charge in order to get the award, and then taking the money.
9	Upgrade your 4G SIM.	The phone number and bank account associated with that phone number will be lost by those who follow the instructions.
10	pretending to be a banking institution	Provide low-interest loans with straightforward procedures, charge consumers fees for loan processing, and then use the appropriate
11	pretending to be a social insurance organization	Inform users who owe money for social insurance. Make a payment request for the designated funds.
12	Hack Facebook, Zalo, etc. to obtain credit.	Using a user's login information to message friends and family to request a loan on social networking sites like Facebook and Zalo.
13	When you shop online, get a deposit.	The item asks the user to deposit money initially to create a deposit and then appropriate all the money after the user approves the purchase.
14	Donate funds to charity	Users are tricked into sending money to charities, receiving 30% to 40%, before being disguised as customs officials and being asked to pay taxes.
15	A successful investment	Obtain the user's trust so they can send funds to the designated account number to make an investment. Things start out well and people find reasons to usurp possessions.
16	Establishing a virtual exchange	To join the virtual exchange, send the online payment link. Request money from users, then utilize it appropriately.
17	Jobs in recruitment	Introducing desirable, top-notch employment. Simply deposit money to open an account and begin working on the given tasks. After making a deposit to complete the assignment, a commission will be charged. As the deposit amount rises, the object will increasingly find excuses to lock the account and prevent user communication.
18	Recruiting sales partners through social networks and online shopping carts	If you place an order online, you will initially enjoy a discount; nevertheless, larger orders will result in fraud and a loss of money.
19	Seven social network likes	Pretending to be an international sender of money and then posing as a customs official to demand payment for a present.

Users never send money to someone they don't know as a safety measure. Users need to be aware that government organizations do not operate through phone screens. Users must under no circumstances give anyone their personal

information, such as their CCCD/ID, account number, password, or OTP code. When a user borrows money by text, they should call the phone with the owner's number or meet in person to confirm. Users must be mindful of the protection of their personal data on social networking sites. Users should not respond to invitations from social networking sites or apply for high-paying professions. Instead, they should remain cool, clearly identify the issue they are trying to solve, and locate trustworthy information sources.

6. Conclusions

The Model Law of the United Nations on e-commerce, the Legal Framework for e-commerce in Vietnam, the Law on Electronic Transactions, the Commercial Law, Civil Code, Customs Law, Intellectual Property Law, and Information Technology Law are among the factors related to the Legal Framework that have an impact on export via e-commerce platforms (EEP), according to the study's findings legislation administrators are desperately needed in 2006 to evaluate and improve the legislation. Use basic, understandable language and adapt it to the needs of the audience to improve the language used by e-commerce professionals in Vietnam. Establish credibility and trust, Use catchy language, and pay attention to customer communication. When communicating with consumers via email, online chat, or other means, use polite and professional language. To earn clients' trust and boost their satisfaction, respond to their queries, requests, or grievances as soon as possible and clearly and concisely. Finally, always pay attention to client feedback and modify your phrasing in light of it. The following actions and enhancements can be implemented in Vietnam to increase legality for those who work in e-commerce: defending the interests and rights of consumers, establishing favorable conditions for businesses' Electronics, ensuring the security of data and information, Enhancing management and oversight encouraging oversight and inspection of legal compliance in e-commerce. Create a system to address infractions swiftly and fairly, implement severe penalties for e-commerce legal violations, and help and instruction. These enhancements can be accomplished by examining and amending the current laws, while also fostering the growth of e-commerce and its contribution to Vietnam's economic development. Advancing digital commerce technology through the following steps, digital technology in e-commerce in Vietnam can be improved: building up the digital infrastructure promotion of electronic payments, the creation of mobile applications, Using automation and artificial intelligence, data management and security, support for consultation and training, Enhancing user experience and competitiveness through digital technology in e-commerce supports the growth of this sector in Vietnam.

The fact that this study's data collection was restricted to the vicinity of Ho Chi Minh City, Vietnam, is one of its limitations. As a result, it is harder to generalize the research findings to the entire issue. The author suggests increasing the sample size and extending the sampling to include the entire nation of Vietnam as well as individuals conducting business with Vietnam around the world in future studies. Next, it is suggested that the recently gathered huge dataset be analyzed using shallow ANN and deep ANN approaches.

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