

## Article

# Corporate social responsibility, customer satisfaction, and customer loyalty for logistics service companies in Vietnam

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**Abstract:** In the context of globalization and rapid socio-economic development, corporate social responsibility has become an indispensable part of the sustainable development strategy of logistics companies, creating a sustainable competitive advantage. This study was conducted to analyze and evaluate the impact of corporate social responsibility on customer satisfaction and loyalty, focusing on logistics service companies in the Southeast region, Vietnam. By using qualitative and quantitative methods, including expert interviews and surveys of 320 customers, both individuals and businesses that have used logistics services, the data were processed using SmartPLS 4 software through several steps: Cronbach's Alpha reliability test, exploratory factor analysis, confirmatory factor analysis, and structural equation modeling (SEM). The results reveal that charitable responsibility, economic responsibility, and moral responsibility positively affect satisfaction. At the same time, satisfaction strongly influences customer loyalty toward logistics service providers. Based on these findings, the authors propose managerial implications to help business leaders and managers develop appropriate strategies, enhance business efficiency, and achieve sustainable development.

**Keywords:** corporate social responsibility; logistics services; loyalty; satisfaction; SEM; social responsibility; sustainable development; Vietnam

## 1. Introduction

Corporate social responsibility (CSR) is increasingly regarded as a core element in the competitive strategy of modern corporations, not only aimed at achieving profit but also at enhancing customer satisfaction and loyalty while strengthening the company's brand reputation. The study by (Mohammadi et al., 2023) indicated that developing CSR activities not only helps improve customer satisfaction but also contributes to building a strong brand and maintaining sustainable consumer loyalty. In the transportation and logistics sector, the role of CSR becomes even more prominent because this industry holds an important position in promoting socio-economic development. Although an efficient transportation system helps to drive growth and improve the quality of life, it also causes several negative consequences, particularly impacts on the environment and public health, mainly from vehicle emissions. With the characteristic of being a service industry closely linked to the supply chain and production, logistics enterprises are greatly influenced by customer trust and brand image; therefore, actively carrying out CSR brings many practical values. Companies are compelled to adapt to the new context by adjusting their mindset and business strategies to better meet the demands of the community and society (Sharma, 2020).

CSR is gradually shifting from charitable activities to a focus on

sustainable development and long-term strategy. Joining new-generation free trade agreements, like EVFTA and CPTPP, has set higher requirements for compliance with labor, environmental, and corporate governance standards, forcing Vietnamese businesses to step up their CSR to maintain competitive advantages. On that basis, the government has also introduced various policies to encourage companies to integrate CSR into their business activities, especially in the areas of environment and sustainable governance. The Green Growth Strategy for 2021-2030 aims to cut carbon emissions, use resources efficiently, and promote a circular economy model. The Net Zero commitment at COP26 also puts pressure on businesses to shift to green production and adopt ESG standards. At the same time, Circular 155/2015/TT-BTC requires listed companies to publish sustainability reports, making information on social responsibility and environmental impact more transparent. These policies are gradually turning CSR from a formal option into an important part of the long-term development strategy for Vietnamese businesses (Yen et al., 2025).

The logistics sector in Vietnam is experiencing steady growth, with an annual growth rate ranging from 12% to 14%, contributing approximately 4% to the country's gross domestic product (Ministry of Industry and Trade, 2024). According to the World Bank (2023), the quality of logistics services in Vietnam has made significant progress, currently ranking third in the ASEAN region, behind only Singapore and Thailand. However, to increase competitiveness, the logistics sector still faces many challenges, particularly the Logistics Performance Index (LPI). In 2024, Vietnam scored 3.30 on the LPI, ranking 38th out of 160 countries. These improvements are largely due to logistics companies boosting the adoption of technology in management and operational activities. According to the Vietnam Logistics Association (2024), there are approximately 699,566 enterprises operating in the logistics sector and related industries in Vietnam, with the Southeast region alone accounting for 35%, equivalent to about 244,848 enterprises. This not only confirms the Southeast region's leading position in Vietnam's logistics industry but also reflects the increasingly fierce competition in this field.

For logistics companies, the demand for going green and implementing CSR faces even greater pressure from the international supply chain. According to the 2024 survey by the Private Sector Development Research Board, up to 44.2% of logistics businesses feel pressure from partners and customers in the supply chain, which is higher than the overall average. In addition, regulations from export markets (39.1%) and policies from domestic authorities (37.7%) also significantly influence the industry's CSR decisions. Notably, logistics companies show the highest interest in optimizing operational efficiency (55%), reflecting the need to combine social responsibility with business benefits. These figures indicate that CSR is not just an option but is gradually becoming a mandatory requirement for businesses in the logistics sector – a field that plays a key role in green supply chains and sustainable trade. So, enhancing customer satisfaction and loyalty has become a vital factor for businesses. Customers increasingly expect higher quality of service, transparency, and the sustainable values that businesses provide. This indicates that CSR has become one of the key strategies, not only helping businesses improve their image but also building strong trust from customers. In the logistics sector where reliability and operational efficiency are crucial; the effective implementation of CSR policies not only helps businesses strengthen their competitive advantage but also contributes to increasing customer satisfaction and loyalty in a continuously fluctuating market. Although numerous studies have confirmed the role of CSR in improving the image and business performance of companies across various industries, the relationship between CSR and customer satisfaction as well as loyalty in the logistics sector, especially in the

Southeast region of Vietnam, has not been thoroughly researched. Therefore, the authors conducted a study on CSR, customer satisfaction, and customer loyalty for logistics service companies in Vietnam.

## **2. Theoretical basic and research hypothesis**

### **2.1 Related concepts**

**Corporate social responsibility:** According to Carroll (1991), CSR includes four levels of responsibility: economic, legal, moral, and philanthropic. This model emphasizes that businesses must first ensure economic efficiency, then comply with the law, conduct moral actions, and finally contribute philanthropically to the community. According to Freeman & Dmytriiev (2017), stakeholder theory also plays an important role in determining the scope and targets of CSR. Accordingly, CSR is not only aimed at shareholders but also includes commitments to customers, employees, the community, the environment, and other stakeholders, reflecting the multidimensional and complex relationship between businesses and society. According to Lee & Seo (2017), Aguinis et al. (2020), and Kunz (2020), CSR emphasizes that it is the voluntary contribution of businesses to sustainable development in environmental, economic, and social aspects. From these perspectives, CSR is associated with businesses acting ethically and responsibly, not only towards external stakeholders such as customers, the community, or the environment, but also including internal stakeholders such as employees and shareholders. Furthermore, research by Park et al. (2017) and Singh et al. (2024), also provided clear evidence of the relationship between CSR activities and positive consumer feedback. For this reason, an increasing number of managers recognize that CSR is not simply a tool for building image but also an important strategy that profoundly influences customer purchasing behavior (Kim & Kim, 2016).

**Customer satisfaction:** Customer satisfaction is based on the customer's experience throughout the process of purchasing and using a product or service, including perceived value over a certain period of time (Anderson et al., 2004); according to Lee et al. (2020), customer satisfaction is a measure of the extent to which a product or service can meet or exceed the customer's initial expectations. This is an important indicator for evaluating the success of customer care strategies and serves as a solid foundation for building customer loyalty and return in the future; the level of satisfaction is reflected through the customer's assessment of the product's ability to meet their needs and preferences, as well as the features the product offers (Al-Ansi & Han, 2019; Byun & Jang, 2019).

**Customer loyalty:** is the repeated purchase of goods or services in the future regardless of influences that may change behavior (Oliver, 1999). Customer loyalty encourages them to shop more in the long run, and thus it is considered an essential objective for the survival and development of a business; according to Jacoby et al. (1978), customer loyalty is the biased behavioral response of consumers to one or more brands among available brands. This means that loyalty is reflected through repeated purchasing behavior, along with a commitment to stay attached to that brand.

**Logistics Services:** According to the Vietnamese Commercial Law (2005), Article 233, Clause 4 states: "Logistics services are commercial activities in which merchants organize and perform one or more tasks including receiving goods, transportation, warehousing, storage, customs procedures, other document procedures, customer consulting, packaging, labeling, delivery, or other services related to goods as agreed with customers for remuneration" ; according to Jacobs (2015), logistics services are "the science and art of holding, producing, and distributing materials and products to the necessary place in the required quantities" ; according to the U.S. Logistics Advisory Council, "Logistics is the

process of planning, implementing, and controlling the movement and storage of raw materials, goods in production, finished goods, and related information, from the procurement of materials to consumption, with the aim of meeting consumer requirements" .

## **2.2 Related theories**

**Triple Bottom Line Theory (TBL):** According to Elkington (1997), evaluating a company's performance is not only based on financial indicators but also on its impact on society and the environment. Accordingly, businesses are encouraged to develop strategies that balance three elements: economic profit, social responsibility, and environmental protection. This multidimensional approach not only contributes to the sustainable development of the company but also enhances overall value for stakeholders.

**Social Exchange Theory (SET):** According to Blau (1964), it emphasizes the intangible factors in the relationship between humans and organizations, such as behaviors that go beyond the formal requirements in a job description. SET provides insights into how individuals perceive CSR and the extent to which they trust the organization, thereby affecting each other. It is considered one of the foundational theories that comprehensively explains the interactive relationship between individuals, organizations, and social groups in the workplace and the broader society.

**Stakeholder Theory:** According to Freeman (1999), CSR creates an increasingly higher standard of living while also preserving the interests of stakeholders; stakeholders are any group or individual that has a stake in a company or can affect or be affected by its activities (Ruf et al., 2001; Sakawa & Watanabe, 2020). Matten & Moon (2020) list stakeholders to include: shareholders/owners, employees, the organization's partners, customers, the community, and other entities like regulators, associations, non-economic organizations, or international organizations. Each stakeholder group focuses on different goals, so companies need to build an appropriate CSR strategy to meet stakeholders' demands.

## **2.3 Research hypothesis**

### **2.3.1 Economic responsibility**

Carroll (1991) suggested that economic responsibility is measured through a company's ability to generate profits, increase wealth for shareholders, and enhance the company's competitiveness, including high quality and low costs. Currently, economic responsibility has been expanded to include factors such as creating jobs for employees, attracting investment for the country, producing safe products and services, establishing local business relationships, expanding international business standards, supporting technology transfer, and building infrastructure (Nguyen & Pham, 2018). Additionally, studies by Al-Ghamdi & Badawi (2019) and Chung et al. (2015) also indicate that economic responsibility has a positive impact on customer satisfaction. Based on this, the author proposes the hypothesis:

**Hypothesis H1:** Economic responsibility has a positive impact on customer satisfaction.

### **2.3.2 Legal responsibility**

According to Carroll (1991), a company's legal responsibility is assessed through full compliance with legal regulations and fulfillment of all legal obligations. The products and services provided by the company must meet minimum legal standards. Numerous studies, including Chung et al. (2015) and Amanullah et al. (2024), have demonstrated that legal compliance positively impacts customer perception and response. Specifically, enforcing regulations on consumer protection and privacy significantly affects customer satisfaction and

loyalty, as they tend to trust companies that are transparent and legally compliant in safeguarding their rights (Wirtz et al., 2007). Most previous studies have indicated a positive relationship between the legal aspect of CSR and customer satisfaction. From this, the author proposes the hypothesis:

**Hypothesis H2:** Legal responsibility has a positive impact on customer satisfaction.

### **2.3.3 Moral responsibility**

Moral responsibility is the state of being deserving of praise, blame, reward, or punishment for an action or omission that aligns with a person's moral duties (Gardner, 2016). Moral responsibility involves attributing actions to an agent, holding that agent accountable for those actions, and having obligations toward something or someone (Shoemaker, 2011). Key topics include having a sense of duty or obligation, being accountable to others in fulfilling duties, and being concerned for others (Shoemaker, 2011). Corporate moral responsibility refers to the standards and rules that businesses need to follow in their operations to ensure the interests of all stakeholders and contribute to the sustainable development of society. This not only includes complying with the law but also involves performing proper, fair, and transparent actions in all transactions and interactions with stakeholders such as employees, customers, partners, and the community (Chung et al., 2015; Al-Ghamdi et al., 2019). The role of ethical responsibility is to build brand reputation, ensure sustainable development, and create a positive corporate culture that affects customer satisfaction (Nguyen, 2024). From this, the author proposes the hypothesis:

**Hypothesis H3:** Moral responsibility has a positive impact on customer satisfaction.

### **2.3.4 Charitable responsibility**

Charitable responsibility reflects society's increasing expectations of businesses - they are not only expected to pursue profit but also to act as responsible "corporate citizens" (Carroll, 1991). This responsibility is demonstrated through businesses proactively engaging in community support activities, contributing to improving quality of life, and promoting social welfare. Such actions are not only voluntary but also reflect the moral commitment of businesses to the community. Many studies have shown that philanthropic activities can create dual value by simultaneously making a positive contribution to society and enhancing customer satisfaction (Diener, 2013). Businesses that actively participate in community activities, comply with social standards, and demonstrate a commitment to sustainable development often receive high recognition and favor from the public (Kandaurova & Lee, 2019). These community efforts contribute to building a reputable corporate image, creating a foundation for customer loyalty – an important factor that helps drive sustainable revenue in the long term (Alam & Islam, 2021).

**Hypothesis H4:** Charitable responsibility has a positive impact on customer satisfaction.

### **2.3.5. Customer satisfaction and loyalty**

Many studies have shown that customer satisfaction plays a crucial role in building and maintaining loyalty, regardless of the business sector (Chung et al., 2015) affirmed that when customers are satisfied with a product or service, they develop a positive attitude toward the brand, thereby promoting repurchase intentions in the future - a clear manifestation of loyalty. Sarma et al. (2020) also emphasized that satisfaction is a fundamental and decisive factor in building customer loyalty. Moreover, Chung et al. (2015) found that satisfied customers not only return to use the services but also tend to recommend the brand to others, thereby helping to spread a positive image of the business. In particular,

in the banking industry - where trust is a core factor - the relationship between satisfaction and loyalty becomes even more evident. The study by Hill & Alexander (2017) also demonstrated that satisfaction has a direct, positive, and strong impact on customer loyalty in retail and financial service chains. Proposed research model shows on **Figure 1**.

**Hypothesis H5:** Customer satisfaction has a positive impact on customer loyalty.

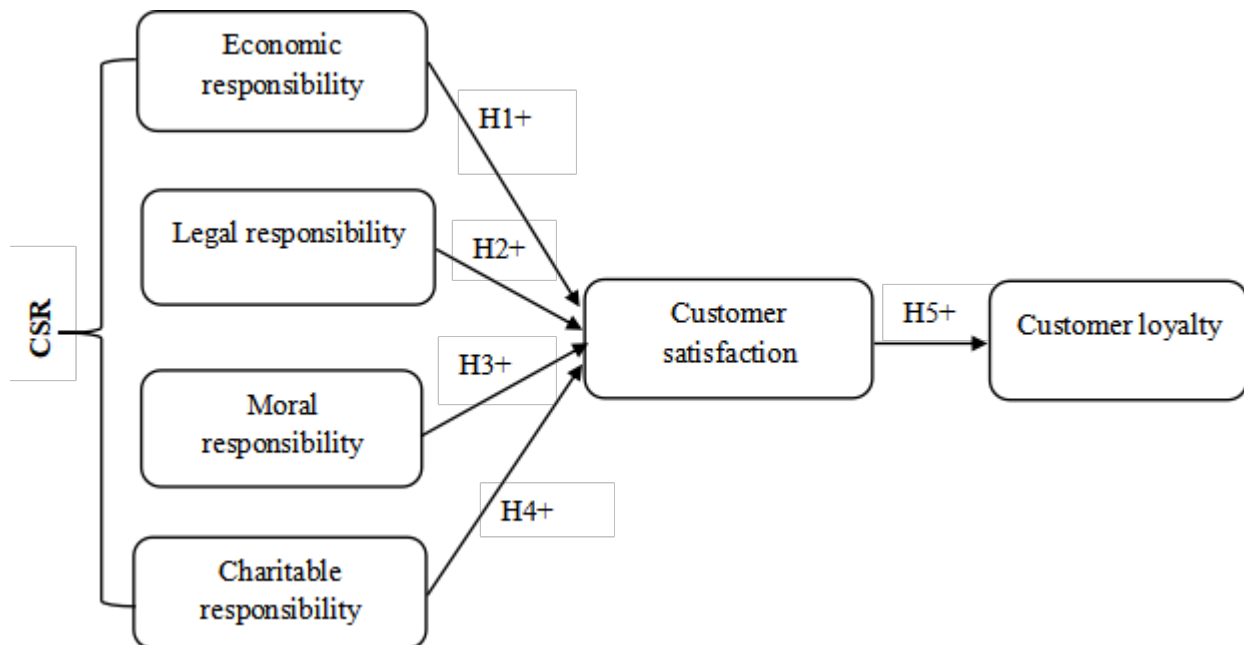


**Figure 1.** Proposed research model.

### 3. Research methodology

**Research method:** The study uses a combination of qualitative and quantitative research methods, divided into 4 stages. In stage 1, the authors collected and analyzed documents to build a theoretical basis and propose a research model. In stage 2, the group conducted qualitative research, prepared a scale table and interviewed 8 experts. In stage 3, the group conducted preliminary quantitative research, collected data from 50 people to test the reliability of the scale with Cronbach's Alpha. In stage 4, conducted official quantitative research with 320 valid survey forms, then used SPSS and SmartPLS 4 software to analyze the data.

**Research scales:** The scales used are based on inheriting the scales from previous studies and adjusting the wording to suit the context and research topic. Specifically, the Economic Responsibility (Kinh\_te), Legal Responsibility (Phap\_ly), and Moral Responsibility (Dao\_duc) scales each consist of 5 observed variables inherited from the study by Al-Ghamdi & Badawi (2019) and Chung et al. (2015). The Charitable Responsibility (Tu\_thien) scale has 5 observed variables inherited from (Kandaurova & Lee, 2019) and Al-Ghamdi & Badawi (2019). For the Customer Satisfaction (SHL) scale, there are 4 observed variables inherited from (Chung et al., 2015) and Sarma et al. (2020). Finally, the Customer Loyalty (Trung\_thanh) scale consists of 5 observed variables inherited from Sarma et al. (2020) and Hill & Alexander (2017).

**Sample size and data collection method:** According to Trong & Ngoc (2008), the minimum sample size for factor analysis should be at least 5 times the number of observed variables. At the same time, according to the formula by Tabachnick et al. (2007), with 4 independent variables, the minimum sample size for regression analysis is  $N = 8 \times 4 + 50 = 82$ . However, to increase reliability

and reduce errors in quantitative research, the authors decided to survey 320 customers, including individuals and businesses that have used logistics services in the Southeast region of Vietnam, to ensure geographical balance. The authors collected 320 valid responses for analysis.

**Data analysis method:** Using descriptive statistics method through SPSS 26 software to summarize and present basic demographic characteristics of the data set collected from the survey. In addition, using PLS-SEM analysis method through SmartPLS software to evaluate the measurement model and structural model. To evaluate the measurement model, the study used outer loadings greater than 0.7 (Hair et al., 2017), Cronbach's Alpha greater than 0.7 (Fink & Litwin, 1995), AVE greater than 0.5 (Hair et al., 2017), composite reliability (CR) greater than 0.7 (Hair et al., 2017), and HTMT index less than 0.85 (Henseler et al., 2015). Next, the study assessed the structural model based on multicollinearity evaluation with VIF values less than 3 (Hair et al., 2014) and the significance of the relationships in the model with  $p\text{-value} < 0.05$  (Esposito et al., 2010).

#### 4. Research results

##### 4.1 Demographic factor statistics

Among a total of 320 valid survey responses, 115 were male (accounting for 35.9%) and 205 were female (accounting for 64.1%). In terms of age, the 18 to under 25 age group accounted for 11.9%, followed by the 25 to under 35 age group at 37.2%, the 35 to under 50 age group at 33.8%, and those aged 50 and above at 17.1%. Regarding education level, 31.3% of survey participants had college degrees, 33.4% had university degrees, 30.3% had postgraduate degrees, and 5% had other qualifications. In terms of business sectors, 35.3% of respondents were in industrial manufacturing businesses, 20.3% were in agricultural production businesses, 40.6% were in trade & service businesses, and 3.7% were in other sectors.

##### 4.2 Model measurement validation

The results of the EFA, in Appendix 1, show that the KMO values all exceed the 0.5 threshold, indicating that the data is suitable for factor analysis.  $\text{Sig.} = 0.000 < 0.05$  on Bartlett's test, confirming that the variables are correlated and meet the requirements for factor analysis. The extracted model identified 4 factors, with Eigenvalues exceeding the threshold of 1, ranging from 1 to 3, and all observed variables have factor loadings greater than 0.5. The total variance extracted shows that the cumulative variance of the factors is above the standard 50%, indicating that the model explains the data variation very well, thus confirming the reasonableness and suitability of the model.

The measurement model is evaluated based on the reliability and convergent validity of the scales. In **Table 1**, the Cronbach's Alpha (CA) coefficient ranges from 0.868 to 0.906, and the composite reliability (CR) is between 0.904 and 0.927. Both indices indicate that the measurement scale achieves reliability as all values are above the threshold of 0.8. The average variance extracted (AVE) values are all greater than 0.5. Therefore, all 6 scales in this study achieve convergent validity (Fornell & Larcker, 1981).

**Table 1.** Results of reliability and convergent validity.

| Scale                                | Factor loadings | CA    | CR    | AVE   |
|--------------------------------------|-----------------|-------|-------|-------|
| Economic responsibility (Kinh_te)    | 0.669–0.770     | 0.887 | 0.918 | 0.501 |
| Legal responsibility (Phap_ly)       | 0.602–0.834     | 0.868 | 0.904 | 0.542 |
| Moral responsibility (Dao_duc)       | 0.705–0.811     | 0.881 | 0.913 | 0.569 |
| Charitable responsibility (Tu_thien) | 0.664–0.762     | 0.906 | 0.927 | 0.533 |

Continued table:

| Scale                          | Factor loadings | CA    | CR    | AVE   |
|--------------------------------|-----------------|-------|-------|-------|
| Customer satisfaction (SHL)    | 0.707 - 0.811   | 0.878 | 0.916 | 0.566 |
| Customer loyalty (Trung_thanh) | 0.672 - 0.799   | 0.884 | 0.915 | 0.510 |

The Heterotrait-Monotrait (HTMT) correlation index is applied to measure the discriminant validity of outcome-type scales, and the HTMT index between pairs of variables being less than 0.9 indicates that the measurement model achieves discriminant validity (Henseler et al., 2015). In **Table 2**, the results regarding the discriminant validity of the scales show that the HTMT indices between pairs of variables are all less than the threshold of 0.9, thus the outcome-type scales in the model achieve discriminant validity.

**Table 2.** HTMT index analysis results.

| Scale       | Dao_duc | Kinh_te | Phap_ly | SHL    | Tu_thien | Trung_thanh |
|-------------|---------|---------|---------|--------|----------|-------------|
| Dao_duc     | 0.754   |         |         |        |          |             |
| Kinh_te     | 0.610   | 0.708   |         |        |          |             |
| Phap_ly     | -0.498  | -0.410  | 0.736   |        |          |             |
| SHL         | 0.707   | 0.637   | -0.492  | 0.752  |          |             |
| Tu_thien    | -0.406  | -0.389  | 0.616   | -0.521 | 0.730    |             |
| Trung_thanh | -0.602  | -0.494  | 0.707   | -0.592 | 0.651    | 0.714       |

### 4.3 Structural model assessment

#### Assessing multicollinearity

According to Hair et al. (2014), the assessment of multicollinearity among the variables in the model is done through the variance inflation factor (VIF). From **Table 3**, all variables have VIF values  $< 3$ . It can be concluded that there is no multicollinearity among the observed variables in the model.

**Table 3.** Results of the collinearity analysis.

| Variables   | Kinh_te | Phap_ly | Dao_duc | Tu_thien | SHL   | Trung_thanh |
|-------------|---------|---------|---------|----------|-------|-------------|
| SHL         | 1.237   | 1.220   | 1.310   | 1.278    |       | 1.311       |
| Trung_thanh |         |         |         |          | 1.512 |             |

#### Assessing of $R^2$ values

The analysis results in **Table 4** show that the adjusted  $R^2$  value of "Customer satisfaction" is 0.598. This means that the independent variables in the model can explain 59.8% of the variance in the variable "Customer satisfaction". The remaining 40.2% is due to system errors and exogenous factors not included in the model. Similarly, the variable "Customer loyalty" has an adjusted  $R^2$  value of 0.252, indicating that 25.2% of the variance in "Customer loyalty" is explained by the factor "Customer satisfaction". The remaining 74.8% can be explained by system errors and other factors not included in the model.

**Table 4.** Analysis results of the R-squared.

| Variables   | R <sup>2</sup> | Adjusted R <sup>2</sup> |
|-------------|----------------|-------------------------|
| SHL         | 0.598          | 0.593                   |
| Trung_thanh | 0.252          | 0.250                   |

### Assessing the f-squared coefficient

Cohen (2013) defined small, medium, and large  $f^2$  values as 0.02, 0.15, and 0.35, respectively. The results show that the independent variables all have an average impact on the dependent variables in **Table 5**, except for the independent variable "Legal responsibility" (0.003), which shows a very weak, almost negligible effect on the dependent variable "Customer satisfaction". This may indicate that customers do not really care about the company's compliance with the law in CSR in terms of its influence on satisfaction.

**Table 5.** Analysis results of the f-squared coefficient.

| Variables   | Dao_duc | Kinh_te | Phap_ly | SHL   | Tu_thien | Trung_thanh |
|-------------|---------|---------|---------|-------|----------|-------------|
| Dao_duc     |         |         |         | 0.203 |          |             |
| Kinh_te     |         |         |         | 0.121 |          |             |
| Phap_ly     |         |         |         | 0.003 |          |             |
| SHL         |         |         |         |       | 0.372    |             |
| Tu_thien    |         |         |         |       |          |             |
| Trung_thanh |         |         |         | 0.029 |          |             |

### Research hypothesis testing results

In **Table 6** show that the hypotheses H1, H3, H4, and H5 have p-values all less than 5% and the impact coefficients are all greater than 0, indicating that Economic responsibility, Moral responsibility, and Charitable responsibility all have a positive effect on Customer satisfaction with impact coefficients of 0.285, 0.404, and 0.171, respectively. In addition, Customer Satisfaction also has a positive effect on Customer loyalty with a standardized regression coefficient of 0.521. However, hypothesis H2 has a p-value greater than 5%, which is not statistically significant, indicating that legal compliance activities are considered basic obligations and do not affect customer satisfaction. This is an interesting point, showing that customers may assume that businesses must comply with the law, and therefore do not consider it a distinguishing factor.

**Table 6.** Research hypothesis testing results.

| Hypothesis | Relationship        | Standardized regression coefficient | T-test | P-value | Conclusion    |
|------------|---------------------|-------------------------------------|--------|---------|---------------|
| H1         | Kinh_te - > SHL     | 0.285                               | 4.539  | 0.000   | Supported     |
| H2         | Phap_ly - > SHL     | -0.053                              | 0.891  | 0.373   | Not supported |
| H3         | Dao_duc - > SHL     | 0.404                               | 6.234  | 0.000   | Supported     |
| H4         | Tu_thien - > SHL    | 0.171                               | 2.429  | 0.015   | Supported     |
| H5         | SHL - > Trung_thanh | 0.521                               | 7.905  | 0.000   | Supported     |

### Results of SEM model analysis

The structural model of the relationship between CSR factors affecting customer satisfaction and customer loyalty towards logistics service companies is shown in **Figure 2**.

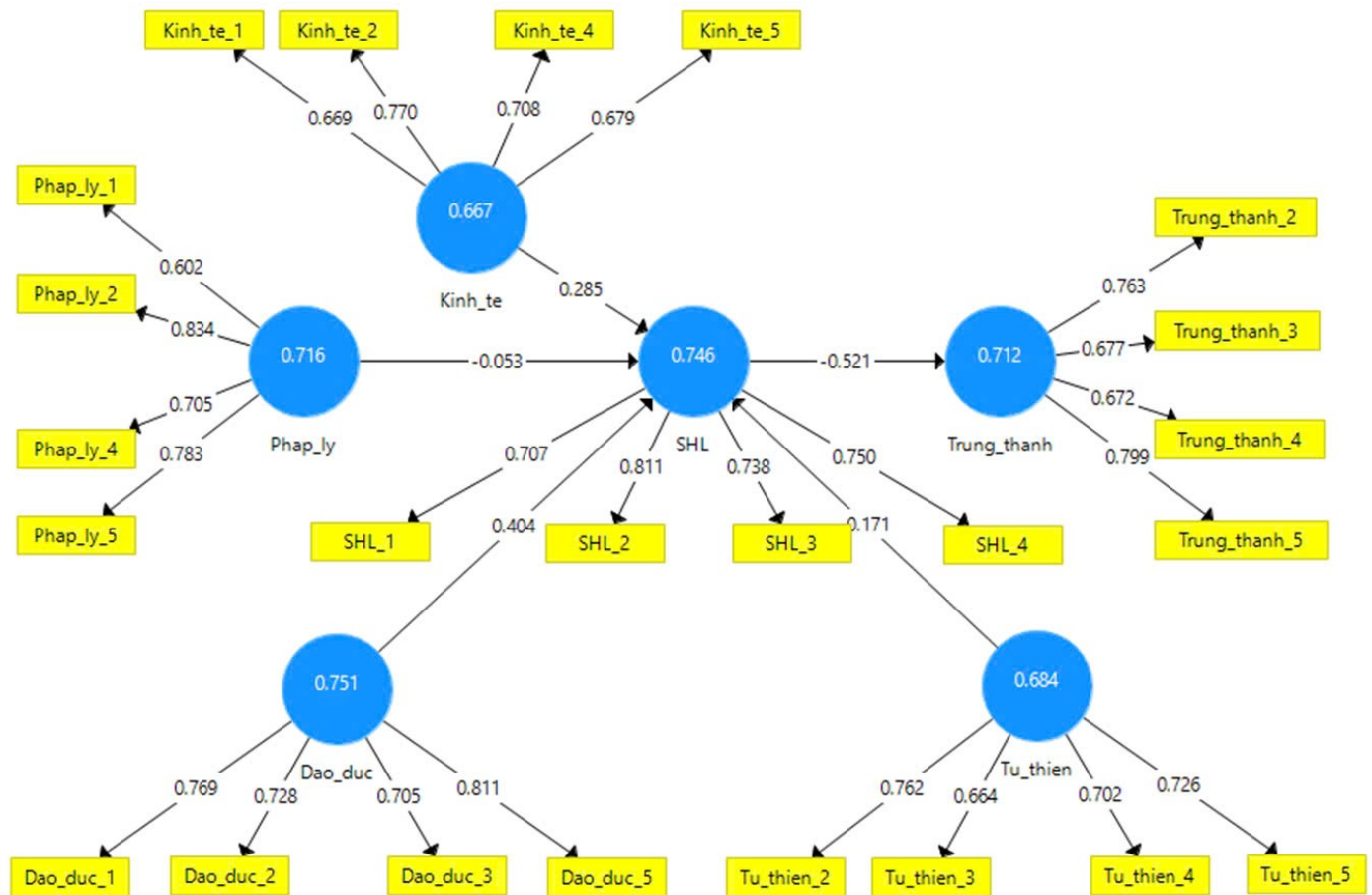


**Figure 2.** Results of the PLS-SEM model analysis.

#### 4.4 Discussion

The analysis using the PLS-SEM method shows that most of the research hypotheses are accepted and align with the initial expectations of the research team, except for the hypothesis related to the legal liability factor, which was excluded from the model. These results indicate that the constructed theoretical model is compatible with the collected practical data. Specifically, four hypotheses were confirmed: H1, H3, H4, and H5. The variables in the model all met the reliability and validity thresholds, thereby reinforcing the argument that CSR factors influence customer satisfaction as well as customer loyalty toward logistics service companies.

The factor of “moral responsibility” has a positive impact on customer satisfaction. This hypothesis is accepted because the standardized p-value is less than 0.05, with the standardized beta coefficient of this factor being 0.404, indicating that the relationship between moral responsibility and customer satisfaction is positive. This is the strongest factor affecting customer satisfaction. This suggests that customers really care about the obligations companies must fulfill to ensure their behavior not only complies with the law but also positively contributes to society and the environment, and treats all stakeholders fairly. This includes ensuring transparency and honesty in service activities; providing services that do not harm society and the environment; treating employees fairly and objectively, ensuring their rights and a safe working environment; and participating in environmental protection and community support activities. This result is consistent with some previous studies such as Al-Ghamdi & Badawi (2019), Chung et al. (2015), and Nguyen (2024).

The factor of “economic responsibility” has a positive impact on customer

satisfaction. This hypothesis is accepted because the standardized p-value is less than 0.05, with the standardized beta coefficient of this factor being 0.285, indicating a positive relationship between economic responsibility and customer satisfaction. This is the second strongest factor influencing customer satisfaction. This suggests that customers care a lot about the company's business efficiency, its obligation to create economic value, maintain profits, pursue sustainable development, and contribute to society. These activities are also what make a difference, serving as a foundation to increase brand value and improve the company's image in attracting customers among logistics service companies. This result is also consistent with the views of previous studies such as (Nguyen & Pham, 2018), Al-Ghamdi & Badawi (2019), and Chung et al. (2015)

The factor of "charitable responsibility" has a positive impact on customer satisfaction. This hypothesis is accepted because the standardized p-value is less than 0.05, with a standardized beta coefficient of 0.171, indicating that the relationship between charitable responsibility and customer satisfaction is positive. This is the third strongest factor affecting customer satisfaction. This suggests that customers are very sensitive to information about a company's charitable activities, and these activities also create differentiation, serving as a basis to enhance competitiveness and improve the company's image to attract customers among logistics service companies. This result is consistent with several previous studies such as (Kandaurova & Lee, 2019), Al-Ghamdi & Badawi (2019), and (Alam & Islam, 2021). Studies suggest that businesses involved in volunteer activities are often considered socially responsible if they meet community expectations and are more likely to be favored by the community. These activities impact customer demand, leading to higher levels of customer satisfaction.

The factor of "customer satisfaction" has a positive impact on customer loyalty. This hypothesis is accepted because the standardized p-value is less than 0.05, with the standardized Beta coefficient of this factor being 0.521, indicating that the relationship between customer satisfaction and customer loyalty is positive. This is a factor that strongly influences customer loyalty. This result aligns with Chung et al. (2015), Al-Ghamdi & Badawi (2019), and Sarma et al. (2020). All studies suggest that customer satisfaction is known to be one of the main factors determining customer loyalty, indicating that highly satisfied customers are more likely to remain loyal to the services they receive.

In addition, the factor of "legal responsibility" has a positive impact on customer satisfaction. This hypothesis is not accepted because the standardized p-value is greater than 0.05. This indicates that legal compliance activities, which are considered basic obligations, are not enough to influence customers' perceptions and behavior; and following the law is a mandatory requirement for every logistics service company to operate, so this factor isn't strong enough to create a significant positive impression or emotional attachment from customers; or customers' demands regarding legal issues may be beyond the reach of logistics service companies. Moreover, compared to the world, logistics service companies in Vietnam operate under quite a specific mechanism according to Vietnam's logistics law and enterprise law. Therefore, customers almost do not distinguish the legal responsibilities between companies. This result aligns with Khanh (2017); different from the studies of Chung et al. (2015), Islam et al. (2021), and Wirtz et al. (2007). Most previous studies show a positive relationship between the legal aspect of CSR and customer satisfaction.

## **5. Conclusion and implications**

### **5.1 Conclusion**

Through the use of a mixed research method, the research team obtained important results with high practical value. Specifically, the authors identified

and measured the extent to which core factors of CSR affect customer satisfaction and customer loyalty towards logistics service companies. The results show that the three main factors influencing customer satisfaction, in order of impact from highest to lowest, are moral responsibility, economic responsibility, and charitable responsibility; at the same time, customer satisfaction also has a positive effect on customer loyalty. Meanwhile, legal responsibility is considered a basic obligation that businesses must fulfill to be allowed to operate, so this factor is not sufficient to create a strong positive impression or emotional attachment from customers towards logistics service companies.

## **5.2 Implications**

### **5.2.1 Regarding moral responsibility**

The factor of "Moral responsibility" is the most influential factor on customer satisfaction with logistics service companies. The results show that logistics service companies that fulfill their commitments to moral responsibility have recorded a noticeable level of customer satisfaction. Satisfaction scores range from 2.43 to 2.88, with factors ranked in descending order as follows: "The company operates in a manner consistent with social and moral expectations" with the highest score of 2.88, while "The company recognizes and respects new moral standards" has the lowest score of 2.43. Other factors include "The company prevents immoral behavior" (2.57 points), "The company strives to be a good citizen" (2.47 points), and "The company provides complete and honest information about products and services" (2.59 points). This indicates that fulfilling moral responsibility is an important factor in helping companies strengthen their image and enhance customer trust. Customers are increasingly focusing on transparency, fairness, and moral commitments in business operations. To enhance satisfaction, businesses need to demonstrate genuine moral responsibility, from internal governance to marketing activities; ensuring employee rights, transparency in service information, and supply chain processes are crucial factors. Businesses also need to build and publish periodic CSR reports, which help strengthen trust and credibility in the minds of customers and promote sustainable development.

### **5.2.2. Regarding economic responsibility**

The factor of "Economic responsibility" is the second strongest factor affecting customer satisfaction with logistics service companies. The results show that logistics service companies that fulfill their commitments to economic responsibility have recorded significant customer satisfaction. The indices range from 2.39 to 2.50, with the variables ranked in descending order as follows: "This company focuses on maximizing income" scored 2.50, "This company is committed to profitability" scored 2.46, "This company has a strong competitive position" scored 2.40, "This company seeks a profitable business" scored 2.48, and "This company pays taxes fully and honestly" scored 2.39. This shows that most logistics service companies believe that fulfilling economic responsibilities not only helps enhance the company's image but also improves customer satisfaction, strengthens competitive position, and builds trust with business partners. This is an important factor that affirms the role of economic responsibility in the sustainable development strategy of businesses. Therefore, logistics companies can implement supplier diversification programs, creating opportunities for small and medium-sized enterprises to participate in the supply chain, promoting fairness and social responsibility; they need to develop sustainable development strategies with a clear vision, combined with assessment and adjustment activities; companies should participate in social work programs and cooperate with non-governmental organizations, while investing in staff training to improve quality and employee engagement; and establish strategic relationships with academic institutions to stay updated on trends and apply

sustainable logistics solutions.

### **5.2.3. Regarding charitable responsibility**

The factor of "Charitable responsibility " is the third factor affecting customer satisfaction with logistics service companies. The results show that logistics service companies that fulfill their charitable responsibility commitments have recorded significant levels of customer satisfaction. The indicators range from 3.49 to 3.90, with the variables arranged in descending order as follows: "The company supports local activities " scored 3.49 points, "Managers and employees participate in local community charity activities " scored 3.64 points, "The company supports private and public educational institutions " scored 3.56 points, "The company supports improving the quality of life in the local community " scored 3.90 points, and "The company helps cases of difficulty, natural disasters, and fires " scored 3.58 points. This shows that most logistics service companies believe that engaging in charitable activities not only helps enhance their corporate image but also has a positive impact on their satisfaction. Therefore, logistics businesses need to design professional training programs for local communities to improve capabilities and build a potential workforce; they should participate in relief activities, especially in emergency situations, to demonstrate social responsibility; companies should also take part in volunteer activities and sponsor cultural and social development programs to build a friendly and responsible image within the community.

### **5.2.4 Regarding CSR**

Analyzing the results of factors affecting CSR on customer satisfaction and loyalty in logistics service companies, it is clear that businesses face barriers related to workforce quality and technology challenges. Therefore, for a company to effectively carry out CSR to enhance customer satisfaction and loyalty, it needs to allocate capital reasonably for staff training and improving working conditions. Accordingly, there should be regular training programs on labor safety, green vehicle operation skills, and sustainable supply chain management. At the same time, companies must ensure medical insurance and accident insurance for employees and implement welfare support policies such as housing and fair wages to attract high-quality talent. Additionally, investment in labor safety monitoring technology is necessary, such as temperature and humidity sensors in warehouses and health tracking devices for employees working in harsh environments.

## **6. Limitations and directions for future research**

Although the study has made certain valuable contributions, there are still some limitations that need to be addressed. First, the study was limited to collecting data mainly from the Southeast region of Vietnam, thus not fully reflecting the situation in other regions/areas. Subsequent studies should expand the scope, supplementing data from other regions/areas to increase representativeness and allow for comparison of results between regions/areas. Second, the study only focused on certain factors such as economic responsibility, legal responsibility, moral responsibility, and charitable responsibility, which fall under the category of social responsibility, while other factors need further consideration, such as responsibility to consumers and the goods market, responsibility to protect the general environment, responsibility to employees of businesses, and responsibility to the community and society. Finally, the moderating role of demographic factors (gender, education level, business sector, etc.) on customer satisfaction and loyalty to the service also needs to be further clarified in subsequent studies.

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the experiments/collecting important additional data to strengthen the results, software, statistical analysis, contributed to discussing the conclusions, P.N.K., N.D.P. and N.A.C.; reviewing the literature and improving the linguistic style of the draft, P.N.K. and T.T.C. All authors have read and approved the final manuscript.

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**Data availability statement:** The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## Appendix

### Appendix 1. Results of the exploratory factor analysis of the variables.

| Variables               | Dao_duc                  | Kinh_te | Phap_ly | Tu_thien | SHL     | Trung_thanh |
|-------------------------|--------------------------|---------|---------|----------|---------|-------------|
| Dao_duc1                | 0.769                    |         |         |          |         |             |
| Dao_duc2                | 0.728                    |         |         |          |         |             |
| Dao_duc3                | 0.705                    |         |         |          |         |             |
| Dao_duc5                | 0.811                    |         |         |          |         |             |
| Kinh_te1                |                          | 0.669   |         |          |         |             |
| Kinh_te2                |                          | 0.770   |         |          |         |             |
| Kinh_te4                |                          | 0.708   |         |          |         |             |
| Kinh_te5                |                          | 0.679   |         |          |         |             |
| Phap_ly1                |                          |         | 0.602   |          |         |             |
| Phap_ly2                |                          |         | 0.834   |          |         |             |
| Phap_ly4                |                          |         | 0.705   |          |         |             |
| Phap_ly5                |                          |         | 0.783   |          |         |             |
| Tu_thien2               |                          |         |         | 0.762    |         |             |
| Tu_thien3               |                          |         |         | 0.664    |         |             |
| Tu_thien4               |                          |         |         | 0.702    |         |             |
| Tu_thien5               |                          |         |         | 0.726    |         |             |
| KMO and Bartlett's test |                          |         |         |          |         |             |
|                         | Kaiser-Meyer-Olkin (KMO) |         |         |          | 0.826   |             |
|                         | Bartlett's test          |         |         |          | 0.000   |             |
|                         | Eigenvalues              |         |         |          | 1,237   |             |
|                         | % of total variance      |         |         |          | 67.824% |             |
| SHL1                    |                          |         |         |          | 0.707   |             |
| SHL2                    |                          |         |         |          | 0.811   |             |
| SHL3                    |                          |         |         |          | 0.738   |             |
| SHL4                    |                          |         |         |          | 0.750   |             |
| KMO and Bartlett's test |                          |         |         |          |         |             |
|                         | Kaiser-Meyer-Olkin (KMO) |         |         |          | 0.694   |             |
|                         | Bartlett's test          |         |         |          | 0.000   |             |
|                         | Eigenvalues              |         |         |          | 2.043   |             |
|                         | % of total variance      |         |         |          | 68.563% |             |
| Trung_thanh2            |                          |         |         |          |         | 0.763       |
| Trung_thanh3            |                          |         |         |          |         | 0.677       |
| Trung_thanh4            |                          |         |         |          |         | 0.672       |
| Trung_thanh5            |                          |         |         |          |         | 0.799       |
| KMO and Bartlett's test |                          |         |         |          |         |             |
|                         | Kaiser-Meyer-Olkin (KMO) |         |         |          | 0.712   |             |
|                         | Bartlett's test          |         |         |          | 0.000   |             |
|                         | Eigenvalues              |         |         |          | 2.158   |             |
|                         | % of total variance      |         |         |          | 71.305% |             |