

# Uncertain Supply Chain Management

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## Customer relationship management and brand image: Empirical evidence from marine export company in Indonesia

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### ABSTRACT

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This research aimed to analyze the direct and indirect influence of customer relationship management and brand image on customer loyalty in the marine export department of DSV Transport Indonesia through customer satisfaction. Customer Relationship Management in goods delivery was one of the essential variables to improve company service to satisfy its customers and impact their loyalty. Research with a quantitative approach uses the Path Analysis statistical tool. This research used quantitative methods with a sample of 199 companies. The key findings of this research stated that customer relationship management has a negative and insignificant effect on the satisfaction and loyalty of marine export customers of DSV Transport Indonesia. Thus, the changes occurring in the application of Customer Relationship Management in marine exports would not affect the satisfaction and loyalty of marine export customers of DSV Transport Indonesia. Based on the results of this research, it was stated that customer satisfaction was indirectly able to function as a mediator or mediate the indirect influence of Customer Relationship Management and brand image on the customer loyalty to marine exports of DSV Transport Indonesia.

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## 1. Introduction

International trade is growing, and many companies are exporting the end products of their companies and importing the raw materials needed or exporting their products, which then become raw materials for the production of other products. This activity is a form of the Nawacita program run by the government in special economic zones. This program is expected to optimize industrial activities, exports, imports, and other economic activities with high economic value. With the increase in international trade activities, many logistics service providers have emerged, and many have developed their existing businesses. The number of logistics or freight forwarding service providers that have sprung up has made the competition between logistics service providers even tighter. There are many ways freight forwarders get new customers or keep the existing ones to avoid losing customers (Ricardianto et al., 2022a). Customers are essential to its continuity in the freight forwarding service business. One of the freight forwarding companies in Indonesia is DSV Transport Indonesia, with its

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headquarters in Jakarta. DSV Transport Indonesia has branches in Cengkareng, Semarang, Surabaya, and Denpasar, offering sea freight, air freight, customs clearance, and trucking services. DSV Transport Indonesia has experienced a significant decrease in its subscribers. Some customers have stopped using DSV Indonesia's services. These customers prefer other forwarders for several considerations, such as offering higher prices than other service providers, the need for more responsive customer service in dealing with problems, and the need for more responsive customer service in dealing with problems, and they also feel dissatisfied with DSV Indonesia's services in handling exports.

In general, the findings regarding Customer Relationship Management (CRM) explain a significant and positive influence of most of the social CRM elements studied on customer happiness, influencing customer retention (Alshurideh et al., 2023). The customers moving to another service provider show low customer loyalty, where one of the characteristics of a loyal customer is the immunity to competitors. Transportation service providers can analyze customer relationship management techniques to generate customer loyalty (Gopal & Cline, 2007). A study by Bilgin (2018) supports the proposal that social media marketing activities significantly impact consumer brand image. Samosir et al. (2023) explain that social media marketing can improve brand image and loyalty. Godey et al. (2016) show that a good brand image can increase product quality, value, and the possibility of purchasing the product. Ou et al. (2014) found that the service industry must consider consumer confidence an essential dimension to adjust customer loyalty strategies effectively.

Some problems are found in the research, such as DSV Transport Indonesia's high level of competition in freight forwarding services and a decrease in the number of DSV Transport Indonesia customers. There still needs to be more supervision over implementing Customer Relationship Management at DSV Transport Indonesia due to the absence of a particular department. There is also a decline in DSV's global rank in volume, which affects its brand image. It is also found that there needs to be more customer service supervision, affecting its service quality.

## **2. Literature Review**

### *2.1. Customer Relationship Management*

Customer Relationship Management (CRM) is managing detailed information about each consumer and carefully managing all consumer touch points to maximize customer loyalty (Kotler, 2018). Theoretically, CRM is a process of combining marketing, selling, and customer service efforts to create value for the company (Ramaj & Ismaili, 2015). CRM performance is a concept for knowing consumer needs and relationships, namely making changes to increase business innovation and changes in consumer behavior (Kristinae et al., 2023; Mukhtar et al. (2020; Ramaj & Ismaili, 2015). In addition, CRM is a combination of practices, strategies, and technology companies use to manage and analyze customer interactions and data throughout the customer life cycle (Ekawati et al., 2023).

### *2.2. Brand Image*

The brand image is the public perception of a company or its products (Kotler, 2018; Wheeler, 2017). Several other definitions of brand image state that brand image is exciting as a subject of discussion in marketing management (Mansur et al., 2021; Delgado-Ballester & Luis Munuera-Alemán, 2005). Lee et al. (2020) explain that brand image contributes significantly to inter-company discussions and marketing management. Bangun (2023) also states that brand image is a description of consumer associations and beliefs about specific brands, while the association is an attribute that is in the brand and has a level of strength. Satisfaction is an attitude based on the experience gained (Wahyuni et al., 2022; Lovelock & Wirtz, 2011). In addition, brand image is theoretically a customer perception of a brand formed by affective, cognitive, and evaluative processes (Leong et al., 2019; Salhab et al., 2023). Concerning brand image, Pechyiam and Jaroenwanit (2014) explain that a product with a trusted brand can give a sense of security so that many more consumers are interested in buying the product. When a brand image is accompanied by good product quality, consumer desire to repeat purchases will be higher (Izzudin & Novandari, 2018).

### *2.3. Customer Satisfaction*

Oliver (2010), Kotler and Keller (2016), and Kotler (2018) state that consumer satisfaction is a person's feeling of pleasure or disappointment that arises after comparing the actual product performance to the expected performance. If the performance is below expectations, the consumer will be dissatisfied. If performance meets expectations, the consumer will be satisfied. Abekah-Nkrumah et al. (2020) and Khan et al. (2020) state that satisfaction is a lengthy judgment on a service or product consumers will buy and consume. Customer satisfaction is an overall customer judgment based on their experiences (Farris et al., 2010; Özkan et al., 2019). Customer satisfaction generally means a business should continuously satisfy its customers and be profitable (Izogo & Ogba, 2015; Pahala et al., 2021).

## 2.4. Customer Loyalty

Loyalty is a condition where customers have a positive attitude towards a brand, commit to the brand, and intend to continue their purchases in the future (Suryawan et al., 2023; Mowen & Minor, 2008; Andri et al., 2022). Loyalty measures how strongly consumers can be associated with a particular brand (Ricardianto et al., 2023). Griffin (2021) states that loyalty is one of the variables in direct purchasing decisions made by decision-making units from time to time. Likewise, regular customers can make repeat purchases (Malik et al., 2011; Upamannyu et al., 2015). Li et al. (2017) explain that customers who remain loyal will always be concerned with customer rights. Kotler and Keller (2016) say customer loyalty is measured through word of mouth, refusal of other products, and repeat purchases. Ricardianto et al. (2022b) revealed that service quality influences consumer loyalty.

The research aims to determine and analyze the direct and indirect influence of customer relationship management and brand image on the satisfaction of DSV Transport Indonesia customers. This research will explain the relationship between variables as a model and research hypothesis (Fig. 1).

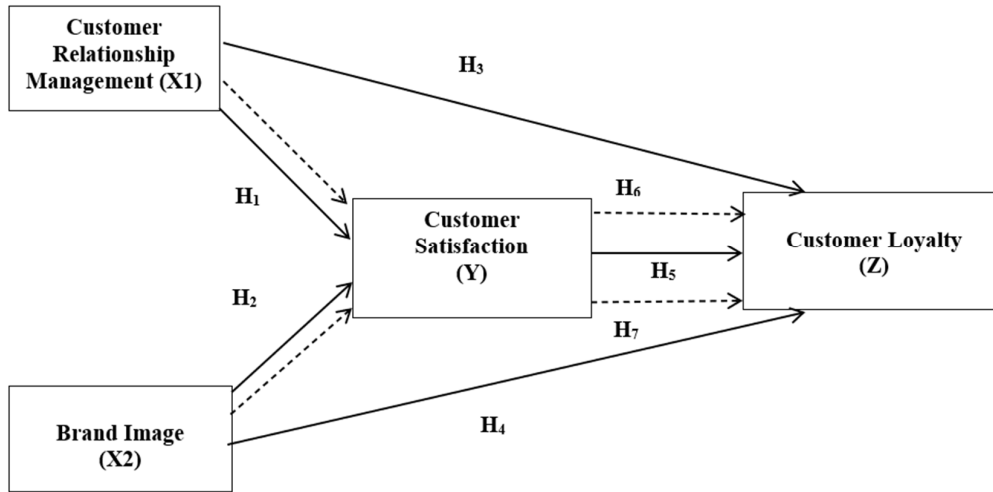


Fig.1. Conceptual Model

## 2.5. Hypotheses

- H1.** Customer Relationship Management directly affects customer satisfaction.
- H2.** Brand image is thought to affect customer satisfaction directly.
- H3.** Customer Relationship Management directly affects customer loyalty.
- H4.** Brand image directly affects customer loyalty.
- H5.** Customer satisfaction directly affects customer loyalty.
- H6.** Customer Relationship Management indirectly affects customer loyalty through customer satisfaction.
- H7.** Brand image indirectly affects customer loyalty through customer satisfaction.

## 3. Research Method

The research method was quantitative with associative research to determine the relationship between variables to find the influence of Customer Relationship Management and brand image on marine export customer loyalty DSV Transport Indonesia – Jakarta through customer satisfaction. Research with a quantitative approach uses the Path Analysis statistical tool. In this research, the population referred to was all the customers of DSV Transport Indonesia, which were 396 companies. The sample data in this research referred to the number of the existing populations to determine the number of samples using the Slovin formula. From the calculation, the number of samples used in this study was 199 companies. Several previous studies have been carried out on sea transportation companies, especially using the path analysis method (Dekker et al., 2012; Zuhri & Palupiningdyah, 2018; Wibowo et al., 2021).

## 4. Results and Discussion

### 4.1. Results of Validity and Reliability Tests

The questionnaire is declared invalid, indicating that each item from each question variable CRM, brand image, customer satisfaction, and customer loyalty are all declared valid with a statistical range between 0.455 – 0.792 (> table 0.361). The

validity testing results state that all variables' alpha coefficient value is reliable because it is more significant than 0.6, with a range of  $\sum 0.606 - 0.825$ . From the results of the validity and reliability analysis above, all the questions from each variable can be used and distributed to all respondents because each item shows a valid and reliable result.

4.2. Results of Hypothetical Test

The data testing in this study uses path analysis, and the relationship structure is divided into two parts, namely sub-structure one and sub-structure 2.

4.2.1. Sub-structure of Test Results 1

**H1. CRM (X1) directly influences Customer Satisfaction (Y).**

The effect of CRM (X1) on customer satisfaction (Y) is  $0.946 > 0.05$ , and the  $t_{\text{statistic}}$  value is  $0.069 < t_{\text{table}} 1.972$ . So, it can be concluded that H1 is rejected, which means CRM (X1) has no influence on customer satisfaction (Y). The coefficient of CRM path (X1) on customer satisfaction (Y) is indicated by a beta value of 0.005. CRM has a negative and insignificant effect on customer satisfaction. Thus, this research is inconsistent with the results of research conducted by Bupu et al. (2023), Nandya and Permana (2021), Dehghanpouri et al. (2020), and Wareewanich et al. (2019) found that CRM has a significant effect on customer satisfaction. Moreover, this research differs from other research, which states that CRM affects customer satisfaction, primarily related to the marine export sector (Darmansyah et al., 2020; Kamal, 2021). Thus, this analysis can be the antithesis, resulting in a research gap. The need for Customer Relationship Management implementation in Indonesian Transportation can cause this. The web services provided by DSV Transport Indonesia to facilitate schedule checking, bookings, and shipment tracking are, in fact, not maximally used by customers. Customers prefer contacting the customer service officer either via email or telephone. This makes them wait for a reply from the customer service officer, which may take time. Thus, CRM has a negative and insignificant effect on customer satisfaction for DSV Transport Indonesia's marine exports. Therefore, changes in the implementation of CRM in sea exports will not affect the satisfaction of DSV Transport Indonesia's sea export customers.

**H2. Brand Image (X2) directly influences Customer Satisfaction (Y)**

The effect of brand image (X2) on customer satisfaction (Y) is  $0.009 < 0.05$ , and the  $t_{\text{statistic}}$  value is  $2.626 > t_{\text{table}} 1.972$ . So, H2 is accepted, which means brand image (X2) influences customer satisfaction (Y). The efficiency of the brand image path (X2) on customer satisfaction (Y) is indicated by a beta value of 0.187. Thus, this research is consistent with the results of research conducted by Marina et al. (2023), Fathurahman and Sihite (2022), Dam and Dam (2021), Zuhri and Palupiningdyah (2018), Ferdiawan et al. (2018), Izzudin and Novandri (2018), and Ebrahimi and Tootoonkavan (2014) show that brand image has significant effect on customer satisfaction. From the  $R_{\text{square}}$  table, it can be seen that the magnitude of  $R_{\text{square}}$  is  $0.035 = 3.5$  percent, which means that the ability of the CRM (X1) and brand image (X2) variables to explain the customer satisfaction variable (Y) is 3.5%. Thus, a path analysis diagram for substructure one can be depicted by stating the path coefficient values produced through the data analysis (Figure 2). Thus, the results of the analysis of this study state that brand image has a positive and significant effect on customer satisfaction. This affects customer satisfaction with DSV Transport Indonesia, which is quite good and has been felt by customers. This is what makes customers loyal to DSV Transport Indonesia.

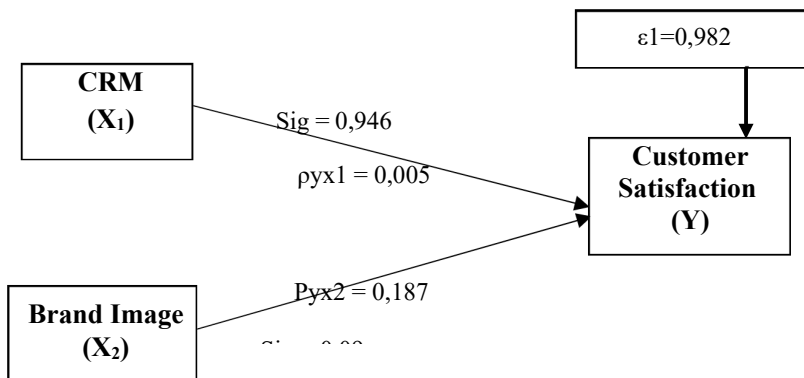


Fig. 2. Sub-Structure Path Analysis Diagram 1

4.2.2. Sub-Structure Test Results 2

**H3. CRM (X1) directly influences Customer Loyalty (Z).**

The effect of CRM (X1) on customer loyalty (Z) is  $0.561 > 0.05$ , and the  $t_{\text{statistic}}$  value is  $0.582 < t_{\text{table}} 1.972$ . So, H1 is rejected,

which means CRM (X1) has no influence on customer loyalty (Z). The significant value of the efficiency of the CRM path (X1) on customer loyalty (Z) is indicated by a beta value of 0.040. CRM has a negative and insignificant effect on customer loyalty. Based on the analysis results, the path coefficient value of the CRM variable to the customer loyalty variable is 0.040 or 4 percent. This states that the CRM at DSV Transport Indonesia does not affect customer loyalty. This study is different from the results of research conducted by Alanazi (2023), Mokha and Kumar (2022), and Juanamasta et al. (2019) state that CRM has a significant effect on customer loyalty. Moreover, this research is different from other research, stating that CRM affects customer loyalty, especially in the marine export sector (Dike & Stanley, 2021; Kamal, 2021). Samosir et al. (2023) found that by understanding and managing the consumer perceptions of a brand, a company will prove its product quality and increase customer loyalty. Thus, this analysis can be the antithesis, which results in a research gap. Even though DSV Transport Indonesia has tried a way by implementing CRM, this has not made customers loyal to DSV Transport Indonesia. There are many things that customers consider to use freight forwarding services, one of which is the tariff. If the price offered by Indonesia is much higher than its competitors, this can be a reconsideration for marine export customers to use DSV Transport Indonesia services. Thus, CRM has a negative and insignificant effect on customer loyalty for DSV Transport Indonesia's marine exports. Therefore, changes in the implementation of CRM in sea exports will not affect the loyalty of DSV Transport Indonesia's sea export customers.

#### H4. Brand Image (X2) directly influences Customer Loyalty (Z).

The effect of brand image (X2) on customer loyalty (Z) is  $0.003 < 0.05$ , and the  $t_{\text{statistic}}$  value is  $3.033 > t_{\text{table}} 1.972$ . So, H2 is accepted, which means brand image (X2) influences customer loyalty (Z). The efficiency of the brand image path (X2) on customer loyalty (Z) is shown with a beta value of 0.210. Brand image has a positive and significant effect on customer satisfaction. Thus, this research is consistent with the results of research conducted by Fathurahman and Sihite (2022), Dam and Dam (2021), Zuhri and Palupiningdyah (2018), Kurniawan and Sucherly (2016), Ferdiawan et al. (2018), and Natalia et al. (2014) state that brand image has a significant effect on customer loyalty. Wibowo et al. (2021) also found that brand image significantly affects customer loyalty. Different results were revealed by Jasin et al. (2023), who found that brand does not affect consumer loyalty. The finding of this research shows that brand image has a positive and significant effect on customer loyalty. This affects customer loyalty to DSV Transport Indonesia, which is quite good and has been felt by them. This is what makes customers loyal to DSV Transport Indonesia.

#### H5. Customer Satisfaction (Y) directly influences Customer Loyalty (Z).

The effect of customer satisfaction (Y) on customer loyalty (Z) is  $0.001 < 0.05$ , and the  $t_{\text{statistic}}$  value is  $3.487 > t_{\text{table}} 1.972$ . So, H2 is accepted, which means customer satisfaction (Y) influences customer loyalty (Z). The path coefficient of customer satisfaction (Y) to customer loyalty (Z) is indicated by a beta value of 0.238. This research still supports the study by Alkufahy et al. (2023), Jasin et al. (2023), and Rahayu et al. (2023), stating that customer satisfaction affects consumer loyalty. Thus, the empirical findings are consistent with the results of research conducted by Aityassine (2022), Mokha and Kumar (2022), Phan et al. (2021), and Aburayya et al. (2020) show that customer satisfaction has a positive and significant effect on customer loyalty. The results of this research also support the studies by Akil and Ungan (2022), Setiawan (2021), Fuliando et al. (2021), Aburayya et al. (2020), Ferdiawan et al. (2018) and Mosahab et al. (2010), which state that customer satisfaction has a significant effect on customer loyalty. Thus, the analysis results of this study state customer satisfaction's effect on customer loyalty. This affects customer loyalty to DSV Transport Indonesia, which is quite good and has been felt by the customers. This is what makes customers loyal to DSV Transport Indonesia. Substructure path two is shown in the path analysis diagram with path coefficient values based on the data analysis process, see Fig. 3.

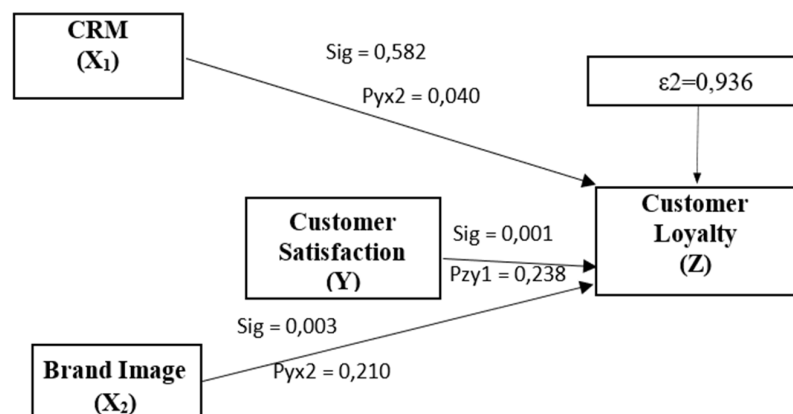


Fig. 3. Sub-Structure Path Analysis Diagram 2

The results of testing the hypotheses sub-structure 2, as mentioned above, can be concluded in the table of direct effect (Table 1).

**Table 1**  
Direct Influence

Influence	To	Significance	Size of Influence
CRM	Customer Satisfaction	0.946	0.035 = 3.5%
Brand Image	Customer Satisfaction	0.009	
CRM	Customer Loyalty	0.561	0.124 = 12.4%
Brand Image	Customer Loyalty	0.003	
Customer Satisfaction	Customer Loyalty	0.001	

The CRM variable has no direct positive and insignificant effect on the endogenous variables because the significant value is greater than 0.05. In contrast, the brand image and customer satisfaction variables directly positively and significantly affect the endogenous variables, with all significance values less than 0.05.

4.3. Mediation Test with Sobel Test

The Sobel test is a test to determine whether the relationship through a variable is significantly capable of being a mediator in the relationship.

H6. Mediation Test of the indirect effect of CRM (X1) on customer loyalty (Z) through Customer Satisfaction (Y).

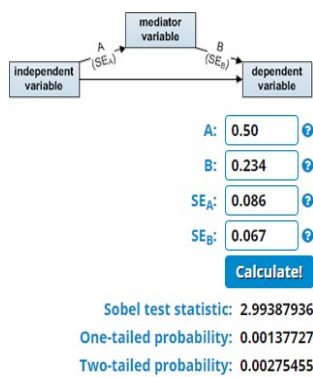


Fig. 4. Sobel Test Model 1

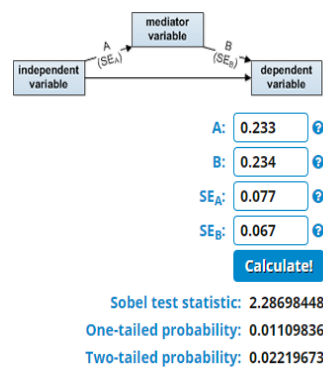


Fig. 5. Sobel Test Model 2

H7. Mediation Test of the indirect effect of Brand Image (X2) on Customer Loyalty (Z) through Customer Satisfaction (Y).

**Table 2**  
Indirect Effects

Influence	To	Through	Sobel Statistics	Z table	Remarks
CRM	Customer Loyalty	Customer Satisfaction	2.99	1.96	Significant
Brand Image	Customer Loyalty	Customer Satisfaction	2.29	1.96	Significant

4.4. Results of Path Analysis Hypothesis Test

The overall influences of CRM variables (X1) and brand image (X2) on customer satisfaction (Y) and customer loyalty (Z) can be described in the complete structure model as follows (Fig. 6).

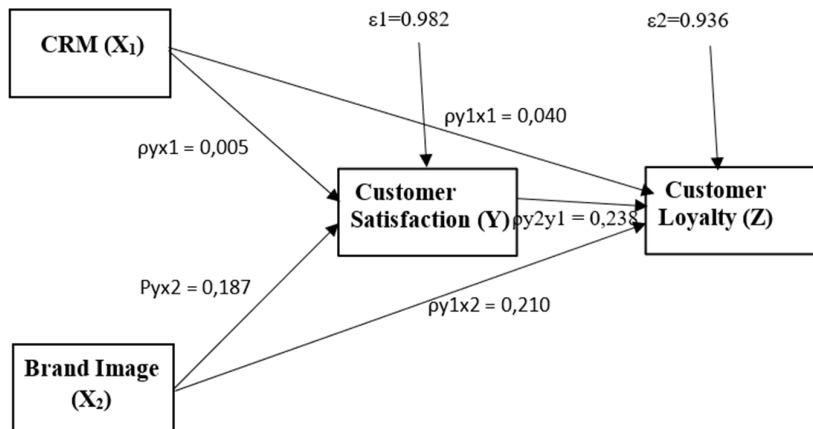


Fig. 6. Path Analysis Results Diagram

Based on Fig. 4, the result of the Sobel test shows the Sobel test statistic of  $2.99 > 1.96$ , meaning that it shows significant results because the Sobel test value is greater than the value of Table Z. It can be concluded that the customer satisfaction variable (Y) can function as a mediator or can mediate the indirect effect of CRM (X1) on customer loyalty (Z). The results of this research generally support the studies by Khan et al. (2022) and Mokha and Kumar (2022), which state that CRM indirectly affects customer loyalty through customer satisfaction. The results of this research align with several studies that state that CRM indirectly affects customer loyalty through customer satisfaction (Emaluta & Soewarno, 2019; Haryandika & Santra, 2021). This research is also in line with Agrawal (2020), who found that CRM has the quality to maximize customer satisfaction and maintain customer loyalty simultaneously. Thus, the finding of this research shows that CRM has an indirect effect on customer loyalty through customer satisfaction. This affects customer loyalty to DSV Transport Indonesia, which is quite good and has been felt by themselves. This is what makes customers loyal to DSV Transport Indonesia.

Based on Fig. 5, the result of the Sobel test shows the Sobel test statistic of  $2.29 > 1.96$ , meaning that it shows significant results because the Sobel test value is greater than the value of the Z table. It can be concluded that the customer satisfaction variable (Y) can mediate the indirect effect of brand image (X2) on customer loyalty (Z). The results of the Sobel test can be summarized in the table of indirect effects (Table 2). The results of this research generally support the studies by Jasin et al. (2023), Dam and Dam (2021), Rusmahafi and Wulandari (2020), Zuhri and Palupiningdyah (2018), Ferdiawan et al. (2018), and Nischay et al. (2014) which state that of brand image has an indirect effect on customer loyalty through customer satisfaction. The results of this research are also in line with several studies which state that brand image has an indirect effect on customer loyalty through customer satisfaction (Lookman, 2022; Susanto et al., 2022; Indrasari et al., 2022; Utomo & Saragih, 2023; Wibowo et al., 2021). The results of this research, especially for sea transportation vessels, align with the previous research, which states that brand image indirectly affects customer loyalty through customer satisfaction (Aldiansyah et al., 2021; Subaebasni et al., 2019). Thus, the finding of this research shows that brand image has an indirect effect on customer loyalty through customer satisfaction. This affects customer loyalty to DSV Transport Indonesia, which is quite good and has been felt by the customers. This is what makes customers loyal to DSV Transport Indonesia.

## 5. Conclusion

Based on the analysis results, CRM has a negative and insignificant effect on the satisfaction and loyalty of marine export customers of DSV Transport Indonesia. So, changes in the application of CRM in marine exports will not affect the satisfaction and loyalty of marine export customers of DSV Transport Indonesia. The results of this research indirectly state that customer satisfaction can be a direct and indirect mediator for the influence of CRM and brand image on customer loyalty for marine exports of DSV Transport Indonesia. Thus, changes in the existing CRM implementation on DSV Transport Indonesia can influence customer loyalty indirectly through the sea export customer satisfaction of DSV Transport Indonesia.

DSV Transport Indonesia still needs to improve its fairly good brand image and the wrong impression that still exists among some of DSV Transport Indonesia's marine export customers. This is because brand image significantly influences customer satisfaction and loyalty. This is necessary to increase customer satisfaction and loyalty. For DSV Transport Indonesia to be observed and controlled correctly, it is necessary to conduct regular customer satisfaction surveys. The company can improve its services according to customer needs through these surveys. This is necessary to maintain the satisfaction level of marine export customers of DSV Transport Indonesia. Similar research in the future can examine the problems of DSV Transport Indonesia more deeply. Besides discussing CRM, brand image, customer satisfaction, and customer satisfaction, future researchers can discuss other variables such as service quality. Using a mixed method to get maximum analysis results is also recommended.

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