

THE EFFECT OF VEHICLE TRACKING SYSTEM IMPLEMENTATION AND SERVICE QUALITY ON CUSTOMER SATISFACTION OF GOODS DELIVERY SERVICES AT PT. KAMANJAYA TRANS LOGISTIK IN 2023

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Abstract: PT Kamanjaya Trans Logistic is a business-to-business (B2B) organization that concentrates on transportation and logistics services. This investigation aims to determine the correlation and influence of the vehicle monitoring system and service quality on customer contentment with PT Kamanjaya Trans Logistic's delivery services. Through questionnaires and observation, this investigation implemented quantitative methodologies. To determine a sample size of 50 participants, the researchers used a saturated sampling technique. This study employed a Likert scale with a range of 1 to 5 for the survey. This investigation employed the Structural Equation Model (SEM-PLS) for data analysis, and processed the data using the SmartPLS version 4 application. Assessing the relationship between latent variables identified in the research model is the primary objective of SEM-PLS, a statistical method.

Keywords: *vehicle tracking system, service quality, customer satisfaction, freight forwarding services*

1. Introduction

In the era of modern and rapid advancement of information technology, the logistics industry has undergone significant changes by implementing modern technologies such as vehicle tracking systems for monitoring and tracking purposes. Leading logistics companies such as DHL, FedEx, and UPS have incorporated these systems into their daily activities. The logistics business in Indonesia is experiencing significant progress, mainly driven by the expansion of e-commerce. Companies such as JNE, TIKI, and SiCepat have integrated vehicle tracking technology to improve their service quality. These companies use this system to track shipments in real-time, optimize routes, and guarantee customer satisfaction. Freight forwarders play an important role in ensuring efficient transportation, delivery products and services. According to (Dewantoro et al., 2020) The freight forwarding industry is currently experiencing significant growth, in tandem with the expansion of the online business sector and online transactions in Indonesia. The owner of this freight forwarding or logistics service is an opportunity that can be utilized. (Tannady et al., 2022).

Quoted from (Putri & Matondang, 2023) Monitoring is the process of monitoring and recording the progress of an object periodically, both in terms of process, quality, and final results. One of the monitoring is tracking and the technology is VTS, according to (Huk & Kurowski, 2022) The Vehicle Tracking System transmits GPS signals to the central telematic system in the form of a website, providing information regarding the car's location. Each entity (customer, broker, provider) can monitor the vehicle in real time after registering in and receiving the assigned car identification number. This

solution is unique in that it allows all parties involved, including the service recipient, to monitor the Journey's progress, a capability that was previously unattainable with other systems.

Conversely, according to (Yulianti, 2020) Companies that offer quality and services that satisfy consumer demand will be able to survive because of their ability to generate superior value in comparison to their competitors. The level of service quality significantly affects client satisfaction and their commitment to the organization. according to (Rosa Indah et al., 2019) Ensuring that service quality meets the requirements and desires of consumers and that their delivery is accurate is the key to reconciling their expectations. High quality service directly affects consumer satisfaction, which leads to a higher likelihood of repeat purchases and ultimately results in increased sales. Service quality covers various aspects, such as timely delivery, the condition of the goods received, and the provision of skilled and friendly customer assistance. Improving the quality of services offered by PT Kamanjaya Trans Logistik can result in a good experience for clients, thus increasing the overall success of the organization.

Forwarding companies are essential in facilitating the seamless transportation of commodities within the region. Nevertheless, these companies often face major obstacles, especially security issues and delays in the transportation of goods. PT Kamanjaya Trans Logistik is no exception either.

Table 1. Data on Delayed Delivery, Lost Goods, and Damaged Goods at PT Kamanjaya in 2023

Bulan	Total Order	Keterlambatan Pengiriman	Kehilangan Barang	Kerusakan Barang
Januari	296	5 (1.69%)	3 (1.01%)	5 (1.69%)
Februari	270	4 (1.48%)	1 (0.37%)	4 (1.48%)
Maret	318	7 (2.20%)	2 (0.63%)	6 (1.89%)
April	342	6 (1.75%)	3 (0.88%)	3 (0.88%)
Mei	315	7 (2.22%)	1 (0.32%)	2 (0.63%)
Juni	326	6 (1.84%)	3 (0.92%)	3 (0.92%)
Juli	332	7 (2.11%)	2 (0.60%)	5 (1.51%)
Agustus	349	8 (2.29%)	3 (0.86%)	4 (1.15%)
September	355	5 (1.41%)	2 (0.56%)	5 (1.41%)
Oktober	373	6 (1.61%)	2 (0.54%)	4 (1.07%)
November	368	9 (2.45%)	3 (0.82%)	4 (1.09%)
Desember	402	10 (2.49%)	3 (0.75%)	6 (1.49%)
Total	4046	80 (1.98%)	28 (0.69%)	51 (1.26%)

Based on table 1 there is still room for improvement in the operations of PT Kamanjaya Trans Logistik. The slightly higher numbers of late deliveries, lost goods, and damaged goods indicate that there are relevant issues to be researched further, in order to improve efficiency and service quality. These issues not only cause disruptions in operations but also negatively impact customer satisfaction, which is critical to maintaining a competitive edge in business. A new and effective approach that is gaining popularity is the use of vehicle tracking systems. These systems provide fast and accurate information about the whereabouts and condition of shipments, which is expected to improve safety and productivity. While vehicle monitoring systems have the potential to

bring benefits, their actual impact on service quality and customer happiness still needs to be further investigated.

This study aims to address key operational challenges faced by PT Kamanjaya Trans Logistik, specifically focusing on delivery delays, damaged or lost goods, and the impact of these issues on customer satisfaction. The frequent delays and incidents of damaged or missing shipments have negatively influenced customer perceptions, leading to a decline in trust and satisfaction, which threatens the company's competitive position in the logistics industry. To mitigate these issues, the study will evaluate the potential of implementing a Vehicle Tracking System (VTS) to provide real-time shipment visibility, enabling more accurate delivery schedules and minimizing the risk of damage or loss through better monitoring. Additionally, the research will explore how service quality improvements—such as prompt communication, responsive customer support, and adherence to delivery standards—can enhance the overall customer experience.

By adopting a dual approach that integrates VTS technology and elevates service quality, the study aims to determine whether these interventions can restore customer confidence, increase satisfaction, and ultimately foster greater customer loyalty and retention. Addressing these intertwined issues is critical for PT Kamanjaya to improve its operational efficiency and sustain its market competitiveness. This research seeks to fill this information gap by examining the correlation between vehicle tracking system adoption and subsequent service quality levels in the context of PT Kamanjaya Translogistik. This research aims to analyze the impact of technological improvements on operational performance and customer satisfaction in order to provide practical insights for freight forwarders looking to improve their service and customer experience.

2. Literature Review

2.1 Vehicle Tracking System (VTS)

Monitoring or tracking is an activity to supervise and evaluate the implementation of activities to ensure the achievement of the goals, vision, and mission of the organization. This can be done with strategies that have been planned by the organization. One of the monitoring and tracking tools is Vehicle Tracking System (VTS), VTS is a system that is useful for knowing the location of vehicles on the surface of the earth. This system works with the help of satellite signals and Global Positioning System (GPS) technology to monitor the route and position of vehicles automatically. According to (Hakimi et al., 2021) Vehicle Tracking Sytem (VTS) is an electronic device project that allows vehicle owners to know the exact location of the vehicle. The project can position the vehicle's location and display it on Google Maps.

2.2 Service Quality

Service quality is a commitment from service providers to their customers, which is reflected in a very positive attitude and consistency in providing satisfying services. According to (Septiani et al., 2020) Service quality must be assessed from the customer's point of view, because they are the ones who consume and experience the service directly. Marketing experts and business practitioners often hear about the concept of "service quality". While this concept is easy to talk about in everyday life, it is difficult to apply comprehensively. Quoted from (Ramya et al., 2019) Some dimensions or attributes that need to be considered in service quality include:

- a. Reliability refers to the capacity to consistently and precisely deliver the expected service. Reliability, in a comprehensive sense, refers to the commitments made by a service company on the timely delivery, provision of services, settlement of issues, and pricing.
- b. Responsiveness is the ability to quickly assist customers and provide prompt service. The emphasis of this dimension is on the readiness and attitude to address customer inquiries, complaints, and issues. This aspect also emphasizes the professionalism, punctuality, and attendance of employees or staff.
- c. Assurance constitutes the third dimension of service quality. The capacity of the company and its employees to establish a sense of trust and confidence in their consumers can be characterized as their knowledge, courtesy, and expertise.
- d. Emphaty is another dimension of service quality. This is characterized by the genuine and personalized attention that institutions or service providers lavish upon their customers.
- e. Tangibility is the fifth dimension of service quality, which is defined as the aspect of physical facilities, apparatus, communication materials, and technology. All of these provide customers with adequate indications of the quality of the company's services.

2.3 Customer Satisfaction

Customer satisfaction is a measure which indicates the extent to which a company's offerings or surpass consumer expectations. This satisfaction is very important because it has a direct effect on loyalty, customer retention, and company reputation. Quoting from (Rcardianto et al., 2019) Customer satisfaction is linked to consumer loyalty and will result in profitability. In addition (Sasongko, 2021) also explains that, Establishing customer satisfaction is a way to generate benefits for the company. Specifically, the relationship between the company and its customers becomes harmonious, which in turn establishes a solid foundation for customer satisfaction and forms a word-of-mouth recommendation that is advantageous to the company. Consequently, customers are more inclined to purchase or utilize the company's services. Quoted from (Muangpan, 2022) to increase customer satisfaction, there are six main indicators, including:

- a) Products exchanged at the time of delivery.
- b) Security of customer information at the time of delivery.
- c) Organize product delivery time.
- d) Convenience of Return Product Delivery.
- e) Extra Service Delivery.
- f) Final communication to the customer upon delivery.

2.4 Hypothesis

Vehicle Tracking System (VTS) implementation is considered to have a significant impact on customer satisfaction within the logistics sector, specifically at PT Kamanjaya Trans Logistik. This hypothesis is based on a growing body of research that highlights the increased efficiency and operational improvements achieved through the implementation of IT solutions in fleet management. According to (Intan & yusup, 2021), research has shown that VTS contributes to the optimization of fleet efficiency by enabling real-time tracking, reducing fuel consumption, and minimizing delivery time delays. These improvements are particularly important in a competitive market where

customer expectations of timely and reliable service are paramount. This relationship forms the basis of the first research question in this study To what extent does the vehicle tracking system have an impact on customer satisfaction at PT Kamanjaya Trans Logistik? Therefore, it is hypothesized that:

H1: Vehicle Tracking System is suspected to have a significant effect on customer satisfaction at PT Kamanjaya Trans Logistics.

In today's competitive logistics industry, service quality plays an important role in determining customer satisfaction. According to (Sucipto et al., 2023) research findings Service quality is one of the main determining factors in maintaining customer satisfaction. As shown by previous research, customers who receive high-quality services tend to have higher levels of satisfaction. This can be seen in various aspects of service, such as reliability, responsiveness, and empathy shown by companies in serving their customers. When service quality matches or exceeds customer expectations, this not only increases satisfaction but also strengthens their loyalty to the company. This relationship forms the basis of the first research question in this study To what extent does service quality impact customer satisfaction at PT Kamanjaya Trans Logistik? Therefore, it is hypothesized that:

H2: Service quality is thought to have a significant effect on customer satisfaction at PT Kamanjaya Trans Logistics.

According (Dikaprio & Lina, 2018) to Implementing a Vehicle Tracking System and improving Service Quality has been shown to significantly improve Customer Satisfaction in logistics and delivery services. Research highlights that real-time vehicle tracking improves delivery accuracy, transparency, and responsiveness, which directly improves customer satisfaction. In addition, high service quality, characterized by efficient communication, personalized service, and proactive problem resolution, further strengthens this relationship. According to (Ganesh Rathore, 2023) , a study found that integrating a vehicle tracking system led to a 14% increase in customer satisfaction due to better service reliability and transparency. Similarly, other studies emphasize the important role of service quality in influencing customer satisfaction, especially in the logistics sector, where timely and accurate service delivery is critical. This relationship forms the basis of the third research question in this study To what extent do vehicle tracking system and service quality together impact customer satisfaction at PT Kamanjaya Trans Logistik? Therefore, it is hypothesized that:

H3: Vehicle Tracking System and Service Quality are suspected to jointly have a positive effect on Customer Satisfaction at PT Kamanjaya Trans Logistics.

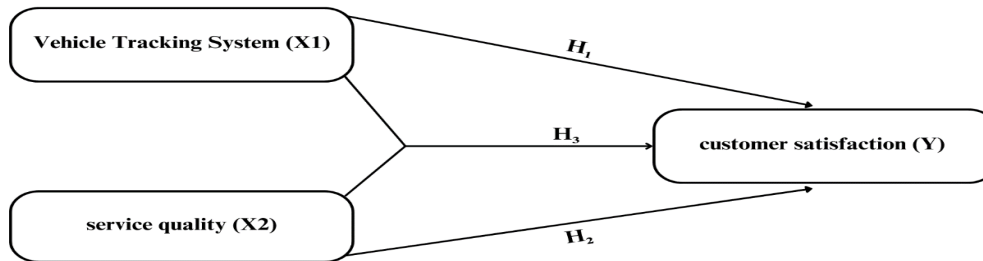


Figure 1. Research Framework

3. Research method

Quantitative descriptive methodology was used in this study, which allows researchers to assess the causal relationship between two or more variables through hypothesis testing (Gunawan et al., 2023) quantitative methods are experimental and survey methods (Aang & Suminar, 2021), therefore survey methods are used. Hypothesis testing is an effective approach and researchers used hypothesis testing to determine the impact of vehicle tracking system and service quality on customer satisfaction at PT Kamanjaya. VTS and service quality are independent variables and customer satisfaction is the dependent variable.

In this research, there are two main instruments used, namely questionnaires and observation.. Observation in this study was carried out to obtain empirical data regarding the implementation of the vehicle tracking system and service quality at PT Kamanjaya Trans Logistik. According to (Pranatawijaya et al., 2019) a questionnaire is a data collection instrument used to collect large amounts of data. a five-point Likert scale is given to respondents to rate each statement based on their personal experience. The questionnaire in this study was designed to measure customer perceptions and satisfaction with the vehicle tracking system and service quality at PT Kamanjaya Trans Logistik.

In this study, users of PT Kamanjaya Trans Logistik's freight forwarding service were surveyed through a questionnaire using a five-point Likert scale. the sampling technique used was a census. Due to the fact that in 2023 the customer or population of PT Kamanjaya Trans Logistik was 50 companies, the selection of this technique was based on a relatively small population size, making it possible to collect data from all individuals in the population. The data analysis method uses the Structural Equation Model (SEM-PLS) and the Smart PLS version 4 program. The purpose of this study is to identify whether there is an influence on VTS and service quality on customer satisfaction at PT Kamanjaya

4. Results

4.1 Respondent demographics

Table 2. Respondent Demographics

List of Company Name Costumer PT Kamanjaya Trans Logistik				
PT. Exxa	PT Surabaya Express	PT DPM Engineering	PT Top Pondasi Indonesia	CV. Sarana Perkasa
PT Trans Continent Jakarta	PT Bangun Beton Pratama	PT Mitra Tangguh Abadi	CV. Auger Expert Indonesia	PT Antara Jabar Baja
PT Decorient Partaya Indonesia	PT Rekagunatek	PT Alpha Focus	PT Bukit Bintang Karya	PT Surya Jaya Crane
PT Jacking Pile Pratama	PT. Uniteda Arkato	PT. Buana Mulia Pratama	CV. Subang Jaya Transport	PT. ATA Bisma Logistik
PT Graha Pondasi Semesta	PT Lemo Crane	PT Nindya Karya	PT Bangun Naga Mas	PT. Kaliabang Jaya Pratama
PT Kranindo Perjaya	PT Royal Krane Perkasa	PT Prakarsa Muda Indonesia	PT. Yasa	PT Azizan Wesi Utama
PT. Tripondasi Manunggal	PT Optima Pondasi Perkasa	PT. Bimaruna Jaya	PT. Lampatar	PT Widiand Jaya Krenindo
PT Selomitra Perkarsa	PT Transporindo Agung Sejahtera	PT Batuta Expedition Logistics	PT Victory Utama Karya	PT Zerowies Marketing
PT Pakubumi Semesta	PT Indo Crane Pratama	PT Adhi Karya Persero	CV. Santoso Tandhang	PT Sumber Sukses Machinery
PT Transway Expressindo	PT Pusaka Abadi Mandiri	PT Multindo Mitra Persada	CV. Mulia Abadi Trans	PT Sapta Buana Logistik

Length of Customer Cooperation	Amount	Percentage
1 Year Less	5	10%
1 - 3 Years	26	52%
3 Years More	19	38%
Total	50	100%

Respondent Department	Amount	Percentage
Marketing Department	23	46%
Operational Department	27	54%
Total	50	100%

(Source: processed by researchers using SmartPLS 4)

According to table 2, PT Kamanjaya Trans Logistik has a list of customer companies, which includes PT Indo Crane Pratama and PT Surabaya Express, among 50 customers. According to the data in table 2, the majority of respondents have worked with PT Kamanjaya Trans Logistik for less than 1 year (10% or 5 respondents), 1–3 years (52% or 26 respondents), and 3 years or more (38% or 19 respondents). The respondents are divided into two departments: the marketing department with 23 respondents (46%) and the operational department with 27 respondents (54%). In total, there are 50 companies represented in the survey.

4.2 Evaluation of the Measurement Model (Outer Model)

(nurhalizah & gusmi, 2023) propose outer model is a model that clarifies the precise correlation between latent variables, which include both endogenous and exogenous factors, and the indicators or measurements within the existing variables. The Key indicators include Convergent Validity, AVE, Composite Reliability, and Cronbach's Alpha, and Discriminant Validity Testing

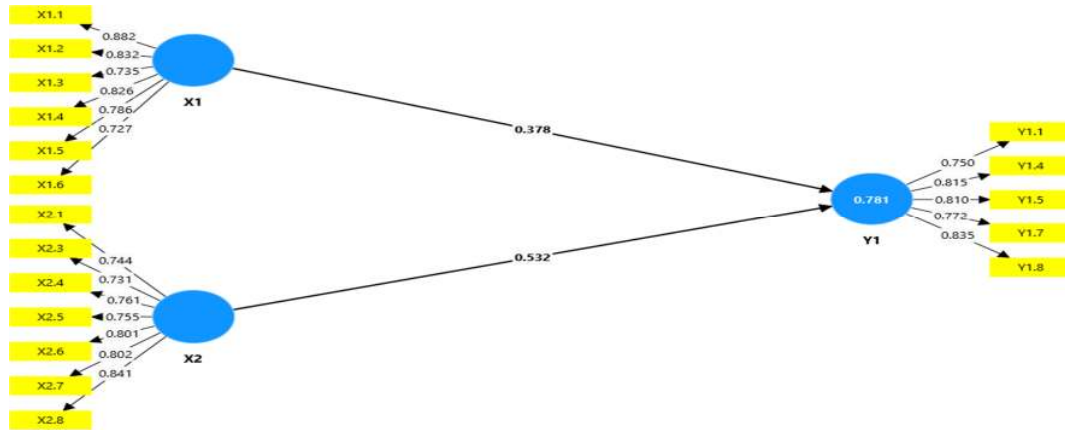


Figure 2. Path Testing Measurement Model (Outer Model)

Table 3. measurement model results (Outer Model)

Variables	Indicator	Outer Loading	Cronbachs Alpha	AVE	Composite reliability
(X1) Vehicle Tracking System	X1.1	0.882	0.886	0.640	0.914
	X1.2	0.832			
	X1.3	0.735			
	X1.4	0.826			
	X1.5	0.786			
	X1.6	0.727			
(X2) Service Quality	X2.1	0.744	0.890	0.604	0.914
	X2.3	0.731			
	X2.4	0.761			
	X2.5	0.755			
	X2.6	0.801			
	X2.7	0.802			
(Y1) Customer Satisfaction	X2.8	0.841			
	Y1.1	0.750	0.856	0.635	0.897
	Y1.4	0.815			
	Y1.5	0.810			
	Y1.7	0.772			
	Y1.8	0.835			

(Source: processed by researchers using SmartPLS 4)

4.2.1 Convergent Validity Test

The convergent validity test is a method used to assess the accuracy of relationships or correlations between indicators and latent variables. If the external load exceeds 0.7, it is considered to have adequate validity. (Rizfanni & Uranio, 2020) According to the information provided in Table 3 of the measurement model findings (outer model) and the measurement model testing picture (outer model) shown in Figure 2, all indicators used to measure constructs are considered valid as they have an outer loading value greater than 0.7.

4.2.2 AVE, Composite Reliability, and Cronbach's Alpha Testing

Cronbach's alpha is an evaluation of the reliability of a construct's limits. According to (Rokhmad & sri, 2019), a research instrument is considered reliable if its

Cronbach's alpha value exceeds 0,60. Table 3 demonstrates this reliability with a Cronbach's alpha value above 0,8. (Anggi & Ransen, 2020) suggest using the composite reliability test to demonstrate the instrument's accuracy, consistency, and accuracy in measuring indicators. If the composite reliability exceeds 0,70, it is considered reliable. Table 3 displays the reliability. The smallest composite reliability is $0,897 > 0,70$, so it is reliable. We use the Average Variance Extracted (AVE) test to determine whether latent variables can own the amount of indicator variance and achieve the conditions for discriminant validity. An AVE value of 0.5 or higher means that the construct can explain 50% or more of the item variance. (Iqbal & Jaka, 2022) According to table 3, the three variables' AVE values are VTS $0.640 > 0.5$, service quality $0.604 > 0.5$, and finally customer satisfaction. $0.635 > 0.5$. Based on the reliability results, we can consider all indicators used in this study to be reliable. Therefore, the findings show that each variable has met its respective value. In general, all variables are highly reliable.

4.2.3 Discriminant Validity Test

Table 4. Discriminant Validity Table

Fornell-Larcker criterion			
	VTS	SERVICE QUALITY	CUSTOMER SATISFACTION
VTS	0.886		
SERVICE QUALITY	0.880	0.866	
CUSTOMER SATISFACTION	0.800	0.777	0.797
Heterotrait-monotrait ratio (HTMT)			
	VTS	SERVICE QUALITY	CUSTOMER SATISFACTION
VTS			
SERVICE QUALITY	0.880		
CUSTOMER SATISFACTION	0.630	0.813	

(Source: processed by researchers using SmartPLS 4)

The process of evaluating discriminant validity involves assessing the measurement model to confirm that variables are distinct in theory and have undergone empirical and statistical testing. The methodologies that are employed are the Fornell and Lacker criterion and HTMT. According to the Fornell and Lacker criteria, the root of the VTS variable must have an AVE root (0.886), which is higher than the correlation with service quality (0.848) and higher than the correlation with customer happiness (0.800). These findings suggest that the job satisfaction variable demonstrates discriminant validity. Similarly, when it comes to the accuracy of service quality and customer satisfaction, the average variance extracted (AVE) root should be higher than the correlation between the variables. (Abbas & Nasir Hamzah, 2023) recommend using HTMT, as it is a more sensitive and accurate test for detecting discriminant validity. Achieving discriminant validity requires a recommended HTMT value of 0.90 for variable pairings. The variable partitions the variance of the measurement item based on its stronger association with the item that measures it, compared to the variance in other variable items.

4.3 Structural Model Evaluation (Inner Model)

The Structural Model Evaluation, also known as the Inner Model, examines the relationships between latent variables in a research model. This research assesses the precision of these connections in creating forecasts and their importance in confirming the assumptions. As per the study conducted by (Hair et al., 2019), the evaluation of the structural model (inner model) involves assessing the absence of multicollinearity between variables using measures such as R square, Q square, 95% confidence interval estimated path coefficient parameters, F square, and hypothesis testing with the T test.

Table 5. hypothesis testing / structural model testing

Path	path coefficient	P value	95% Confidence Interval Path Coefficient		test results/sig?	VIF	T Statistics	F Square	R square	Q Square
			lower limit	upper limit						
Vehicle Tracking System -> Customer Satisfaction	0.378	0.031	0.038	0.742	Significant	4.637	2.160	0.140	0.781	0.520
Service Quality -> Customer Satisfaction	0.532	0.002	0.147	0.842	significant	4.637	3.057	0.278		

(Source: processed by researchers using SmartPLS 4)

4.3.1 Test Coefficient of Determination or R Square

The The R-squared value (R²) quantifies the extent to which the independent variable affects the dependent variable. According to (Maya & Belda, 2023) findings, a value of 0.75 classifies the independent latent variable as strong, a value of 0.50 classifies it as medium, and a value of 0.25 classifies it as weak. The findings from the study utilizing the PLS-SEM approach indicate that the impact of the vehicle tracking system and service quality on customer satisfaction is 0.781, or 78.1%. This suggests that factors not explored in this study account for 21.9% of the variability. Given that the value exceeds 0.75, the model is demonstrated to possess strong significance. The presented table illustrates the impact of the vehicle tracking system and service quality on customer satisfaction.

4.3.2 Predictive relevance test Q Square

Furthermore, the performance of the PLS model can be assessed by considering the Q value, in addition to the R value. The Q value is utilized to quantify the degree to which the model accurately produces the observed value and the parameter estimates conducted. The Q number signifies that the model possesses a predictive relevance more than 0, whereas a Q value = 0 shows a lack of predictive significance in the model. The calculated Q-squared value is 0.52. Given that the Q-squared value is above 0, it indicates that the model possesses a high level of predictive significance.

4.3.3 F Square Test

F square (f²) in Smart PLS is used to measure how much effect the predictor (independent variable) has on the dependent variable in the model. According to (Hasnah,

2023) f square value is the direct variable effect at the structural level with the criteria (fsquare 0.02 low, 0.15 moderate and 0.35 high) This helps evaluate the relevance of variables in the structural model. It can be seen in table 5 for the F Square number of this study that the vehicle tracking system increases customer satisfaction even though it has a low influence which is at 0.140 and service quality increases customer satisfaction even though it has a moderate/moderate influence, namely at 0.278 at the structural level.

4.3.4 Hypothesis Testing with T Test, P Square, VIF and 95% Confidence Interval

Hypothesis testing is carried out at a significance level of 5% or 0.05, accepted if T count > 1.676 (T table) and $p < 0.5$ The results of hypothesis testing obtained by bootstrapping smartpls are presented in Table 5. Based on table 5,

1. Hypothesis (H1) **is accepted**, namely customer satisfaction is influenced by the vehicle tracking system with T count of $2.160 > 1.676$ and P value $0.031 < 0.5$ in the confidence interval of 0.038 to 0.742 with VIF below 5 at 4.637. This also shows that customer satisfaction is significantly influenced through the path coefficient by the vehicle tracking system of 0.378 with a small standard deviation of 0.175.

2. Hypothesis (H2) **is accepted**, namely customer satisfaction is influenced by service quality with T count of $3.057 > 1.676$ and P value $0.002 < 0.5$ in the confidence interval of 0.147 to 0.842 with VIF below 5 at 4.637. This also shows that customer satisfaction is significantly influenced through the path coefficient by service quality of 0.532 with a small standard deviation of 0.174, so it can be concluded that customer satisfaction is significantly influenced by service quality.

3. Hypothesis (H3) **is accepted** because hypotheses H1 and H2 are accepted, it can be concluded that H3 is accepted and through R - Square it shows that the influence of the vehicle tracking system and service quality together has an impact on customer satisfaction of 78.1%, then with a p value vehicle tracking system affects customer satisfaction by $0.031 < 0.5$ (significant) and service quality affects customer satisfaction has a p value of $0.002 < 0.5$ (significant) and T count of vehicle tracking system affects customer satisfaction by $2.160 > 1.676$ then T count of service quality affects customer satisfaction by $3.057 > 1.676$. So it can be concluded that **the three hypotheses can be accepted**

5. Conclusion and discussion

5.1 discussion

The analytical findings of this study offer a thorough understanding of how PT Kamanjaya Trans Logistik's Vehicle Tracking System (VTS) and service quality affect client satisfaction. The results are in line with earlier studies, but they also highlight some notable variations that might be the consequence of variations in the variables employed, the methodology employed, the location or setting of the study, or any number of other characteristics.

This study discovered that, in terms of VTS, VTS has a major impact on customer satisfaction. This is consistent with studies carried out by (Intan & yusup, 2021) about "PENGARUH SISTEM PELACAKAN ONLINE DAN KETEPATAN WAKTU PENGIRIMAN TERHADAP KEPUASAN PELANGGAN (STUDI KASUS J&T EXPRESS KOTA BARU BEKASI)" which demonstrates how a robust tracking system

boosts customer satisfaction by enabling users to follow shipments in real time and predict when goods will arrive. But this research was done in the business-to-business (B2B) context at PT Kamanjaya Trans Logistik, with research time in 2024 and using SmartPLS 4.0, as opposed to earlier research that was done in the context of business to consumer (B2C) and the research site at J&T Bekasi using SPSS.

The findings of this study demonstrate that service quality has a stronger impact on customer satisfaction than VTS. This is consistent with studies carried out by (Sucipto et al., 2023) about “THE EFFECT OF ON-TIME DELIVERY AND SERVICE QUALITY ON CUSTOMER SATISFACTION IN ORDER TO INCREASE CUSTOMER LOYALTY J&T EXPRESS EAST JAKARTA” They discovered that excellent service had a major impact on customer satisfaction. Nevertheless, this study only included 50 respondents, whereas earlier studies utilised 100 respondents.

Additionally, an R-square of 78.1% may be attributed to the interaction between VTS and service quality and customer happiness, suggesting that these two factors are complementary. This is in line with studies carried out by (Dikaprio & Lina, 2018) about “PENGARUH KUALITAS PELAYANAN, KETEPATAN WAKTU PENGIRIMAN DAN FASILITAS TRACKING SISTEM TERHADAP KEPUASAN PELANGGAN JNE”, with R - Square obtained 80.2% which states that the integration of VTS technology with high service quality standards can significantly increase customer satisfaction. However, for R Square, there are differences in the previous research variables, namely 3 X variables with additional timeliness as the X3 variable, while this study only has 2 X variables, namely VTS and service quality.

5.2 Conclusion

Based on research conducted at PT Kamanjaya Trans Logistik on the influence of the Vehicle Tracking System and service quality on customer satisfaction, these factors have proven to be very significant in influencing customer satisfaction. The research findings show that customer satisfaction is significantly influenced by the implementation of the Vehicle Tracking System and high service quality. which means customers are more focused on choosing good service, on time, and can ensure that their goods are delivered safely to the desired location, so timely delivery and safety of goods are crucial to maintaining customer satisfaction. Customer satisfaction is positively influenced by the Vehicle Tracking System including real-time monitoring of vehicle location, Quick Response to Problems. Furthermore, service quality, including interactions between customers, such as responsiveness, politeness, personalization, and communication skills.

6. Implications

The results of data processing from a survey involving 50 respondents show that the implementation of the Vehicle Tracking System (VTS) has a significant influence on customer satisfaction and service quality provided by PT Kamanjaya Trans Logistik. The vehicle tracking system allows the company to monitor and optimize delivery routes, improve the reliability and timeliness of goods delivery. This has a positive impact on customer satisfaction, who value transparency and reliability in delivery services.

Therefore, PT Kamanjaya Trans Logistik should continue to improve and expand the use of the Vehicle Tracking System to ensure more efficient and timely delivery. In addition, the company should focus on improving service quality through employee training for faster and more professional responses to customer requests. Previously declining customer trust can also be improved by increasing the reliability of the tracking

system and the quality of interactions with customers. Researchers advise PT Kamanjaya Trans Logistik to not only rely on the Vehicle Tracking System (VTS) but also improve the delivery fleet and employee professionalism.

7. Research Limitation

Researchers faced several challenges, the most notable being the study's short timeframe, which resulted in testing only 50 respondents who used PT Kamajaya Trans Logistik's expedition services in East Jakarta. This small sample size limits the generalizability of the results to a broader population. This limitation was due to the reliance on data gathered through distributed questionnaires within such a short period of time. Although the study's findings effectively show relationship between the independent and dependent variables, offering valuable insights for future research, the limited number of respondents fails to adequately represent the larger population. Future studies should aim to include a larger and more diverse sample to achieve more representative results.

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