THE IMPACTS OF LOGISTICS SERVICES ON THE CUSTOMERS SATISFACTION DURING THE NETWORK ERA

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ABSTRACT - *The objective of the research is to study the impact of logistics service on e-shopper satisfaction. Hypotheses and problems are also studied in this study. The results show that there is a relationship between dependent variables and independent variables.*

Keywords - E-shoppers; Covid-19; E-commerce.

I. INTRODUCTION

In recent years, various countries actively promote the transformation of the digital economy and major enterprises have flooded into the digital economy market, leading to online shopping becoming the mainstream shopping trend. In the fierce struggle between the major online shopping platforms, the quality of products and services has become a major factor of concern to consumers. According to relevant data, customer satisfaction with services and products will directly affect the company's financial performance [1].

The fierce competition in the market has also led to the development of another service industry, namely logistics. With the rapid development of e-commerce, the logistics industry has become a popular service business in the market. There are many companies that have joined this market with potential development in the future, it makes the logistics industry in a very short period of time to become a competitive market. The rise of the logistics industry not only provides customers with more direct service content but also adds value to e-commerce.

II. Literature Review

2.1 Network Era

The network era can be divided into the earliest television network era and the latest, which is now the digital network era. Modern people should have a better understanding of the digital network era and the logistics network era and the logistics industry is just in this era of the outbreak of the industry. Therefore, the digital network era is often discussed while the logistics industry is being discussed. The history of the network era can actually be traced back to the television era in the United States from the 1950s to the mid- 1980s. The market was not as free and open as it is today but dominated by a handful of big television networks. Some of the key factors that have led to the shift of the TV network era to the digital network era are that the smaller networks have little incentive to take the risk of making shows that cater to niche markets because of their sole control. With the gradual progress of science and technology, enterprises are also gradually adopting more efficient digital technologies. In order to remain competitive in this highly competitive market, enterprises need to integrate the latest mobility, data analytics, cloud, and IoT digital innovations into their operations, processes, and computing systems [2].

When a product or service changes from the initial customer order to the final consumer consumption and even to the hands of consumers, this process is called logistics. Logistics is a customer-centric business model; customers are the key to all logistics activities. Logistics adds value to the supply chain through fast transportation, elegant packaging, and customer-friendly methods. There is logistics in any business and logistics must be kept simple at all times [3]. Customers and companies are increasingly dependent on the logistics industry in an era when the Internet is increasingly sophisticated and online sales are facilitated. They usually move goods or products from point A to point B with an effective transportation service. Logistics companies provide professional management of the transportation process of the business, coordination of transportation affairs so that the final product is delivered to the designated location in a highly efficient manner.

This study has independent variables and dependent variables. In order to gain a better understanding and credibility, this study will need to read each different journal to determine its impact. This study will also build on a review of previous research literature and in particular, propose a framework for showing clearer relationships and effects between variables. Each independent variable will be further explained below.

2.2 Literature Review of the Variables

2.2.1 Delivery Services

Delivery service is the ability of a supplier to deliver products to consumers within a specified period of time. This seemingly simple service can effectively influence consumers' satisfaction with logistics [4]. Therefore, suppliers and logistics companies will use effective plans and strategies to get the goods delivered within a specified time.

Today's logistics industry faces the problem of low distribution efficiency, which causes customers to fail to receive the products in the scheduled time. Delayed delivery is an extremely disruptive experience for customers, so the inefficiency of imperfect integrated analysis and processing techniques has a significant impact on customer satisfaction. At the same time, commodity coordination is effective in meeting the needs of consumers and it is also one of the main factors in e-commerce. Product coordination largely depends on suppliers being able to safely deliver products to

consumers anywhere without other unnecessary delays due to ineffective delivery services [5]. Assuming that big data cannot be improved and promoted in the short term, product coordination will become a key factor affecting customer satisfaction.

If the product will prolong the customers' receiving time due to the imperfect big data of the logistics company, the logistics company should try to reduce the error rate in commodity coordination to avoid the customer's receiving time being longer than expected, which will not only make the customer lose confidence in e-commerce, but also leave a negative impact on the logistics service. Not only that, late delivery errors can affect e-commerce growth and make future development more difficult. Therefore, the logistics company should develop effective strategies and plans and deliver the products to customers in accordance with the scheduled time [6]. Effective delivery services will be a key factor in fulfilling customers' needs and improving customer satisfaction.

2.2.2 Reverse Logistics

Delivery service is a forward process, while reverse logistics is the opposite. Reverse logistics refers to the process by which consumers reverse deliver goods to suppliers that do not conform to standard specifications [7]. Reverse logistics is also called an after-sale transaction. Although this is an after-sale service provided to consumers, the process is quite complicated and difficult. Therefore, consumers would rather give up online shopping than use the reverse logistics service [8]. Suppliers with the ability to go beyond reverse logistics will be able to effectively maintain customer buy-back intentions.

The delivery service does not cause any immediate problems and annoyances for the customer, but reverse logistics is totally different with it. The customer must send the defective product back to the company through reverse logistics and request the service to be returned. But the logistics industry in Malaysia is extremely competitive, so it is quite difficult for customers to make a choice. When using reverse logistics, customers must investigate the service and efficiency of each company to make the most correct choice, which not only increases the burden of customers but also makes the efficiency that e-commerce is focused on disappear. Customer satisfaction and experience may be severely affected by the complexity of reverse logistics [9]. For some complexity of reverse logistics. For some special e-retailers, the company will choose to cooperate with logistics companies with good relations or a wide range of services to avoid unnecessary troubles for customers when choosing logistics companies. These are just some cases. Most of the companies still do not cooperate with specific logistics companies, which leads to customers' inferior experience in reverse logistics service or a series of problems.

2.2.3 Product Quality

The quality of products is of great importance to the company and its customers. This is because the inferior quality of products will directly affect customers' confidence in the company, and may even cause a fatal impact on the survival of the company. For the customer, they are paying a price that matches the price of the product so, in return, they are paying a price that matches the price of the product so, in return, they are going to expect equal or better quality than expected. Therefore, when the production company optimizes and improve the product at the same time, the logistics company is also facing a great test, so the logistics company must ensure that all the goods are in the best shape or the most perfect appearance in front of the customer, that is, the product in the hands of the customer will not appear any negative impact [10]. With the rapid growth of the logistics industry, the service quality of logistics companies has also declined. Many customers found that the products were slightly or seriously damaged in the transportation process after receiving the products. Some of these damages are intentionally caused by people and some are caused by negligence and carelessness. These large and small damages of the products will effectively affect customers' online shopping experience and loss of confidence in online shopping.

2.2.4 Customer Service

The main job of customer service is to respond to customer needs as best as possible [11]. The service is not limited to answering consumers' questions and providing effective information content, but more importantly, an understanding of consumers' unique needs customer service is available before, after, and at all stages of a purchase. Many suppliers will spend a lot of effort to provide excellent customer service for consumers, so as to maintain a good relationship with consumers and improve customer satisfaction. This is because online shoppers crave the same priorities and treatment as physical transactions when they need any help [12]. Customer service is very subjective and difficult to measure work, as long as the extra efforts can effectively improve the level of service, it can also let the customer feel warm.

The main challenge facing the logistics industry in customer service is that customers' questions cannot be answered accurately for the first time. Customers expect to solve the problems they faced in the process of logistics through customer service for the first time, but no matter through the hotline, email, or face-to-face customer service can't even help customers solve their problems at the fastest speed. Customers' questions and requirements must wait for three to seven working days before they can get a complete and accurate reply, which will seriously affect customers' experience and feelings and thus reflect in customer satisfaction [13]. Logistics companies must actively address these types of problems to enhance the customer experience in the logistics process and increase the reputation of the company in the industry and maintain a strong competitive advantage in the market through professional customer service.

III. METHODOLOGY

3.1 Research instrument/measurement

This research will be discussing the impact of logistics service on customers' satisfaction during the network era. So, this research will be using the quantitative method to do surveys. The survey form will have a Likert Scale which strongly disagrees, disagree, normal, agree, and strongly agree. There will be 200 respondents who live in the Subang area.

3.2 Research Hypotheses

Based on the previous studies on the impact of logistics service on customers' satisfaction during the network era the following hypotheses are proposed:

H1: There is a significant relationship between the delivery service and customers' satisfaction during the network era.

H2: There is a significant relationship between reverse logistics and customers' satisfaction during the network era.

H3: There is a significant relationship between product quality and customers' satisfaction during the network era.

H4: There is a significant relationship between customer service and customers' satisfaction during the network era.

IV. DATA ANALYSIS

4.1 Reliability Test

Table 4.1: Reliability Test of Overall Study Variables

Reliability Statistics

Cronbach's Alpha	N of Items
.984	25

A reliability test is a measure of whether the data is consistent with the stability and consistency of the test. The items and measurements of the scale belong to the same structure and the scale has a high internal consistency credibility. In this research, a total of 200 respondents were given questionnaires to ensure the reliability of all data received. As before, all Cronbach Alpha values must be higher than 0.7 in order to ensure valid reliability of the data [14]. As shown in the above table, Cronbach's Alpha value is 0.984, so the data collected are highly reliable.

Table 4.2: Reliability test for each variable

	Cronbach's Alpha.	N of items.
Customers Satisfaction (DV)	0.917	5
Logistics Services (IV1)	0.938	5
Reverse Logistics (IV2)	0.921	5
Product Quality (IV3)	0.928	5
Customers Services (IV4)	0.932	5

From 200 sets of data in this investigation, the reliability test for all dependent and independent variables is provided in the table above. All of the variables' Cronbach's Alpha were more than 0.7, indicating that they were dependable and that additional analysis may be undertaken.

4.2 Descriptive Analysis

Table 4.3–Descriptive Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	200	1.00	2.00	1.5650	.49700
Age	200	1.00	5.00	1.8800	.91641
Education Level	200	1.00	4.00	2.5450	.71451
Working Experience	200	1.00	3.00	1.7000	.75021
Experience of Logistics Services	200	1.00	3.00	1.5950	.66573
Valid N (listwise)	200				

The demographic data including gender, age, education level, working experience, and experience of logistics services are shown in the descriptive statistics above. A total of 200 valid sample sizes were collected for descriptive statistics in this research. Demographic mean and standard deviation have been analyzed and illustrated in the following statistics. The mean is the mean and the smaller the standard deviation, the better. As shown in the above table, the mean and minimum standard deviation of the gender were 1.5650 and 0.49700 respectively, while the mean and maximum standard deviations of the age were 1.8800 and 0.91641 respectively.

2.2 Multiple Regression Analysis

The multiple regression analysis is to predict the value of one variable based on the values of two or more variables. The results of multiple regression analysis can be interpreted using ANOVA models, model summary, and tables of multiple regression coefficients. The summary of these models helps to evaluate the total variation of the dependent variables. The following will present a model summary, ANOVA model and multiple regression coefficients tables one by one and analyze it.

Table 4.4-Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.963[a]	.927	.926	.37344	2.010

a. Predictors: (Constant), CS, RL, PQ, DS

b. Dependent Variable: CSS

According to the model summary shown in the above table, its Durbin-Watson value is 2.010, which is just between the ideal value of 1-3 required by Durbin-Watson and it also means that there is no autocorrelation of residuals in this data. Therefore, the value of 'R Square' will be used to define the strength of association associated with the predictors and results of this research. In this research, R Square had a value of 0.987 or 92.7%. This means that the independent variable (Delivery Services, Reverse Logistics, Product Quality and Customers Services) explains 92.7% of the total variance of the dependent variable (Customers Satisfaction).

4.3 ANOVA

Table 4.5–ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	346.066	4	86.517	620.390	<.001[b]
	Residual	27.194	195	.139		
	Total	373.260	199			

a. Dependent Variable: CSS

b. Predictors: (Constant), CS, RL, PQ, DS

According to the definition provided by Robert in 2014 by the ANOVA model, when the ANOVA model shows a significant value of P=0.000, it means that there is a goodness of fit between data and model. This means that at least one of the independent variables has an effect on the dependent variable. In this research, the significance value of the ANOVA was concentrated and the ideal significance value of the regression had to be less than 0.05. According to the above table, the significance value of ANOVA is less than 0.001, which indicates that the research model is suitable for use because it meets the condition of significance value less than 0.05. In addition, the ANOVA model also shows that df=4, which indicates that the four independent variables are related to the regression results, while the dependent variables are significantly affected by the four independent variables.

4.4 Coefficients

This hypothesis can only be accepted if the significance value is less than or equal to 0.05. In this research, the original data were collected and its coefficients were interpreted as Beta (B) and the values were not standardized [15]. The highest median Beta values are usually the most critical factors. The hypothetical results are presented and explained below.

Table 4.6: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.063	.071		.889	.375		
	DS	.059	.063	.062	.930	.354	.085	11.732
	RL	.540	.056	.542	9.582	<.001	.117	8.561
	PQ	.283	.059	.290	4.768	<.001	.101	9.905
	CS	.090	.063	.093	1.436	.153	.088	11.315

a. Dependent Variable: CSS

V. DISCUSSION AND CONCLUSION

The purpose of this research is to study and discuss the impacts of logistics services on customer satisfaction during the network era. The main purpose of this research is to help the logistics industry to better understand the factors that can affect customer satisfaction to understand the direction of the industry's shortcomings and to improve or enhance and at the same time, this research will also give some constructive guidance. These key factors affecting customer satisfaction include delivery service, reverse logistics, product quality and customer service.

5.1 Delivery Services

First of all, according to the analysis of the relationship between delivery service and customer satisfaction, there is a Beta value of 0.059, so it is positively correlated. According to the assumptions in Table 4.6 above, the value of the relationship between the Beta value and the variable must be less than 0.05 and the results of the analysis show that the significance value of 0.354 is the highest value among all the hypothetical results. However, according to the results of Prasetyo's research in 2021, delivery service is one of the most important factors affecting logistics services in customer satisfaction. Research has shown that the speed of service delivery can have a significant impact on customer satisfaction and real-life online customers do share this view [16]. In the book written by Hurriyati, there are also relevant points of view, which are very familiar with this research. The book notes that customer satisfaction varies depending on the quality, speed and transparency of the delivery service and customer satisfaction will increase when these factors are well performed, and vice versa [17]. Although the analysis results for this factor in this research can be considered irrelevant, only 200 respondents cannot fully cover all online customers, so it is still possible and controversial.

5.2 Reverse Logistics

According to the analysis of the relationship between reverse logistics and customer satisfaction, there is a Beta value of 0.540, so it is positively correlated and it is also the highest Beta value in the hypothesis results of Beta. According to the assumptions in Table 4.6 above, the value of the relationship between the Beta value and the variable must be less than 0.05 and the results of the analysis show that the significance value is less than 0.001 which meets the significance value requirement and is therefore acceptable. Not only that, according to the results of Jalil's research in 2019, reverse logistics is one of the main factors affecting customer satisfaction. The research object of this research report belongs to the Klang Valley of Malaysia, so it is highly reliable and can prove the authenticity of this research based on those 200 respondents who mostly live in Klang Valley areas [18]. Not only Jalil, Amine and Tigu also presented and analyzed the impact of reverse logistics in logistics service in customer satisfaction from the perspective of logistics management in their research reports. These points are also very similar to the points mentioned above. According to the results, the impact of reverse logistics on customer satisfaction is also positively correlated and meets the standard of significance value [19]. Therefore, it can be proved that all the 200 respondents participating in the questionnaire should maintain a positive attitude towards the impact of reverse logistics. Therefore, it is not difficult to see the respondents are likely or looking forward to improving the expectations and requirements of reverse logistics.

5.3 Product Quality

According to the analysis of the relationship between product quality and customer satisfaction, there is a Beta value of 0.283, so it is positively correlated. According to the assumptions in Table 4.6 above, the value of the relationship between the Beta value and the variable must be less than 0.05 and the results of the analysis show that the significance value is less than 0.001 which meets the significance value requirement and is therefore acceptable. According to 2020 research, product quality should always be a priority for all companies and it is one of the key factors affecting customer satisfaction. The research study also emphasizes that maintaining or continuously improving product quality will help increase customer satisfaction and build loyalty. This is very similar to the idea in this research. Not only that, but the

research study also pointed out that many of the reasons for the decline in customer satisfaction were due to dissatisfaction with broken packaging, defects, breakages and so on. These common factors can easily make the company's customers feel disappointed and lower their confidence [20]. Therefore, it can be proved that all the 200 respondents participating in the questionnaire should maintain a positive attitude towards the impact of product quality in customer satisfaction. Therefore, it is not difficult to see the respondents for the logistics company to provide product quality expectations at the same time can also show that product quality can indeed affect customer satisfaction.

5.4 Customer Service

According to the analysis of the relationship between customer services and customer satisfaction, there is a Beta value of 0.090, so it is positively correlated. According to the assumptions in Table 4.6 above, the value of the relationship between the Beta value and the variable must be less than 0.05 and the results of the analysis show that the significance value of 0.153 is the highest value among all the hypothetical results, so the result shown is rejected. Nevertheless, the idea that customer service affects customer satisfaction still has some support from research reports. For example, in a 2017 research report, the quality of customers expects or predicts good customer service, so when customers fail to meet expectations, it will lead to dissatisfaction and affect satisfaction. The researchers believe that the quality of customer service is a process by which the company designs and provides services in a positive and correct form and leads to the satisfaction of external customers and finally to customer satisfaction [21]. Therefore, although the analysis results for this factor in this research can be considered irrelevant, only 200 respondents cannot fully cover all online customers, so it is still possible and controversial.

REFERENCES

[1] Rita, P., Oliveira, T., & Farisa, A. (2019). The impact of e-service quality and customer satisfaction on customer behavior in online shopping. *Heliyon*, *5*(10), e02690.

[2] Tomkos, I., Klonidis, D., Pikasis, E., & Theodoridis, S. (2020). Toward the 6G network era: Opportunities and challenges. *IT Professional*, *22*(1), 34-38.

[3] Waters, C. D. J. (2019). *Logistics: an introduction to supply chain management*. Red Globe Press.

[4] YuSheng, K., & Ibrahim, M. (2019). Service innovation, service delivery and customer satisfaction and loyalty in the banking sector of Ghana. *International Journal of Bank Marketing*.

[5] Yu, Y., Yu, C., Xu, G., Zhong, R. Y., & Huang, G. Q. (2020). An operation synchronization model for distribution center in E-commerce logistics service. *Advanced Engineering Informatics*, *43*, 101014.

[6] Yu, F., & Zhou, Y. (2021, February). Optimization of E-Commerce Logistics Distribution Path Algorithm under the Background of Big Data. In *Journal of Physics: Conference Series* (Vol. 1744, No. 4, p. 042214). IOP Publishing.

[7] Masudin, I. (2017). *SUPPLY CHAIN MANAGEMENT AND REVERSE LOGISTICS*. UMMPress.

[8] Lau, Y. Y., Ng, A. K., & Acevedo, J. (2019). *Principles of Global Supply Chain Management*. Anthem Press.

[9] Dinesh, K. R. An Insight on Challenges of Reverse Logistics for Effective Supply Chain Management in Manufacturing Industry.

[10] Sari, D. A. T., & Giantari, I. G. A. K. (2020). Role of Consumer Satisfaction in Mediating Effect of Product Quality on Repurchase Intention. *International Research Journal of Management, IT and Social Sciences*, *7*(1), 217-226.

[11] Hinson, R. E., Adeola, O., Nkrumah, K. O., Agyinasare, C., Adom, K., & Amartey, A. F. O. (2019). *Customer Service Essentials: Lessons for Africa and Beyond*. IAP.

[12] Lee, S. M., & Lee, D. (2020). "Untact": a new customer service strategy in the digital age. *Service Business*, *14*(1), 1-22.

[13] Chira, R., & MUSETESCU, A. (2016). THE IMPACT OF CUSTOMER SERVICE ON LOGISTICS. *Revista Economică*, *68*(3).

[14] Bujang, M. A., Omar, E. D., & Baharum, N. A. (2018). A review on sample size determination for Cronbach's alpha test: a simple guide for researchers. *The Malaysian journal of medical sciences: MJMS*, *25*(6), 85.

[15] Szucs, D., & Ioannidis, J. (2017). When null hypothesis significance testing is unsuitable for research: a reassessment. *Frontiers in human neuroscience*, *11*, 390.

[16] Prasetyo, Y. T., Tanto, H., Mariyanto, M., Hanjaya, C., Young, M. N., Persada, S. F., ... & Redi, A. A. N. P. (2021). Factors affecting customer satisfaction and loyalty in online food delivery service during the covid-19 pandemic: Its relation with open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(1), 76.

[17] Hurriyati, R., Tjahjono, B., Yamamoto, I., Rahayu, A., Abdullah, A. G., & Danuwijaya, A. A. (Eds.). (2020). *Advances in Business, Management and Entrepreneurship: Proceedings of the 3rd Global Conference on Business Management & Entrepreneurship (GC-BME 3), 8 August 2018, Bandung, Indonesia*. CRC Press.

[18] Jalil, E. E. A. (2019, December). CUSTOMER SATISFACTION AND REVERSE LOGISTICS IN E-COMMERCE: THE CASE OF KLANG VALLEY. In *Proceedings of the 9th International Conference on Operations and Supply Chain Management, Ho Chi Minh City, Vietnam. journal. oscm-forum. org* (pp. 15-18).

[19] Ghoumrassi, A., & Tigu, G. (2019). *The impact of the logistics management in customer satisfaction*. LAP LAMBERT Academic Publishing.

[20] Situmeang, R. R., Tanzil, W., Tandratama, V., & Putra, S. A. (2020). The Effect of Product Quality, Distribution Channels and Service Quality on Customer Satisfaction Spotlights. *Enrichment: Journal of Management*, *10*(2, May), 44-49.

[21] Ativah, L. A. (2017). Impact of service quality on customer satisfaction. *Australian Journal of Basic and Applied Sciences*, *11*(5), 20-28.