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Identify Consumer Behavior in Choosing Delivery Services in Shopping in the Digital Era

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Abstract

The digital age makes all parties deal with delivery services, both e-commerce, and consumers. Not a few confused consumers choose a delivery service that is able to fulfill their desires. The purpose of this research is how to choose a delivery service using the selected criteria. The method used is The Hierarchical Analysis Process where this method can help determine the order of criteria used. Based on the results of the study, the order of criteria used by consumers is the time of collection and delivery of goods amounting to -1,646 stopover time -1,607 handling of loss and damage of goods -1,632 billing system -1,722 and accuracy of information of -1,543, where the results show JNE with a final conclusion rate of 0,392 then SICEPAT 0,342 and the last J&T which is 0,290.

Keywords: Criteria, Analysis Hierarchy Process, Delivery Services.

1. Introduction

In the current pandemic era, the development of logistics services, running rapidly. One of the factors causing such development is the growth of the online business. According to Dedik Kurniawan [1], online business is a series of activities carried out by people on the internet for transactions or in everyday language also called online shopping. [2] And according to Kemenperin.go.id, the company's segment is predicted to account for the largest job openings in the digital technology sector, including e-commerce. The development of e-commerce today makes consumer behavior also change, with demands like this, consumers become turned to online purchases where delivery courier services are needed. The number of companies that provide logistics services with various advantages and disadvantages, making service users freer in determining which logistics company is trusted to take over some of its business functions. In the decision-making process, customers will be faced with various alternatives that can be chosen, so that for a problem several decision-makers can take different decisions. In the business world, the decision-making process becomes one of the fundamental and important keys such as inventory control, new product development, investment, up to supplier selection, and distributor selection, especially for decision making to select the best logistics service, providers.

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Seeing the number of delivery services that must be chosen by consumers, then the policy on the selection of delivery services should be of particular concern for the sustainability of consumer satisfaction. So there needs to be a structured assessment in the process of choosing delivery services that will be used by consumers. Analytic Hierarchy Process (AHP) is used because it can choose conflicting criteria so that these existing criteria will be processed with the AHP method to produce one of the desired alternatives. The working principle of AHP is the simplification of a complex problem that is unstructured, strategic, and dynamic into its parts, and organized in a hierarchy. Then the interest level of each variable is given a subjective numerical value about the relative importance of the variable compared to other variables. These various considerations are then synthesized to determine variables that have high priority and play a role to influence the results of the system (Sinaga, B. (2014). [3].

Delivery services are the main supporting factor to ensure buying and selling transactions conducted by online shops with consumers can run well. Therefore, consumers must have their own criteria in determining the delivery services to be used. Lantern Sanubari 2019 [4] During this time consumers only choose the delivery service of the goods from the product factor, place, price, promotional marketing mix, participation, physical evidence, and process. In this study, a comparison of several delivery services, namely, JNE, J&T, and SICEPAT, because it saw from the trend in the market that the three delivery services are the most popular and often used.

2. Literature Review

According to S. R. As (2016) [5], decision-making is a systematic approach to a problem. From the explanation of decision-making above, it can be concluded that decision-making is a process of choosing the best alternative from several alternatives. While online shopping is an activity to buy goods and services through internet media. Online shopping is classified as a Business to Consumer (B2C) [6] Turban et. al., 2004) transaction. Online shopping and the selection of delivery services are things that are mutually intelligent, so there need to be criteria in choosing so that consumers are not trapped by delivery services that are now popping up.

3. Methodology

This research uses the Analytical *Hierarchy Process* (AHP) method, which is a method that can help decision-makers to determine the best that suits their goals and understanding of the problem at hand (Rina Indrayani and Ragil Pardiyono, 2019). [7] The decision-making process equipment in the main *Analytical Hierarchy Process* method is a functional hierarchy with its main input of human opinion. With hierarchy, unstructured problems can be solved into groups which are then organized into a hierarchical form. The stages carried out in the *Analytical Hierarchy Process* method include three principles that must be considered, namely (Saaty, 2000) in Indrayani.R & Pardiyono.Ragil [8] The principle of preparing a Hierarchical Structure and the Principle of determining priorities The first principle is that the hierarchy that has been made is according to Zaroni (2000) [9], that the criteria in choosing delivery services are the time of picking and delivery of goods, layover time, handlers' loss and damage to goods, billing systems, the accuracy of information. Here's the stage that's done.

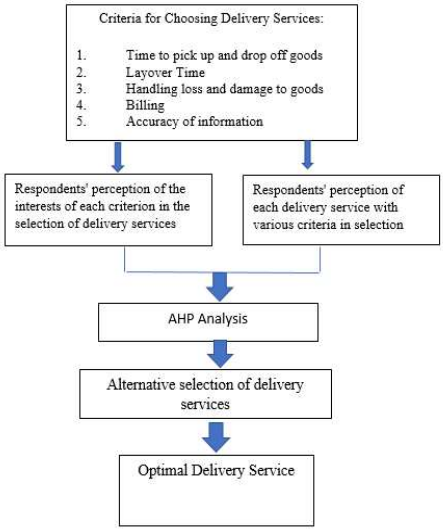

Figure 1. Research Methodology

4. Result and Discussion

Based on data collected from send service users, the comparison matrix created is as follows:

Table 1. Respondent Recapitulation Results Matrix

Criteria	the time of picking and delivery of goods	layover time	handlers' loss and damage to goods	billing systems	accuracy of information
the time of picking and delivery of goods	1.000	4.429	2.758	3.083	2.695
layover time	1.552	1.000	1.195	4.040	2.283
handlers' loss and damage to goods	3.662	4.240	1.000	6.200	4.660
billing systems	2.213	1.202	0.185	1.000	1.330
accuracy of information	2.147	2.129	0.945	3.040	1.000
Total	10.484	12.999	6.084	17.363	11.959

Table 2. Matrix Factor Weighting Hierarchy main normalized criteria

Criteria	the time of picking and delivery of goods	layover time	handlers' loss and damage to goods	billing systems	accuracy of information	Total	Vector Eigen
the time of picking and delivery of goods	0.175	0.229	0.247	0.200	0.210	1.060	0.212
layover time	0.191	0.170	0.209	0.211	0.203	0.984	0.197
handlers' loss and damage to goods	0.227	0.227	0.201	0.230	0.234	1.119	0.224
billing systems	0.203	0.176	0.144	0.160	0.182	0.865	0.173
accuracy of information	0.204	0.198	0.199	0.199	0.172	0.972	0.194
Total	1	1	1	1	1	5	

The average value of the result of this division is *the principal eigen value maximum* (λmax)

$$\begin{bmatrix} 1.000 & 1.347 & 1.225 & 1.253 & 1.219 \\ 1.092 & 1.000 & 1.036 & 1.322 & 1.180 \\ 1.296 & 1.335 & 1.000 & 1.440 & 1.360 \\ 1.163 & 1.037 & 0.714 & 1.000 & 1.059 \\ 1.165 & 1.163 & 0.989 & 1.249 & 1.000 \end{bmatrix} X \begin{bmatrix} 0.212 \\ 0.197 \\ 0.224 \\ 0.173 \\ 0.194 \end{bmatrix} =$$

$$\begin{bmatrix} 1.205 \\ 1.118 \\ 1.275 \\ 0.989 \\ 1.108 \end{bmatrix} \div \begin{bmatrix} 0.212 \\ 0.197 \\ 0.224 \\ 0.173 \\ 0.194 \end{bmatrix} = \begin{bmatrix} 5.682 \\ 5.684 \\ 5.697 \\ 5.717 \\ 5.698 \end{bmatrix}$$

$$\lambda \text{ Max} = \frac{5.696}{5}$$

Because the matrix is 5 (i.e. consists of 5 criteria), the consistency index value (CI) obtained:

$$CI = \frac{(\lambda max^{-n})}{(n-1)} + \frac{(1.139-5)}{(5-1)} = -0.965$$

For n = 5, RI = 1.2 In the table. So:

$$CR = \frac{CI}{RI} + \frac{-0.965}{1.2} = -0.812$$

Because CR<0.1, respondents' preferences are consistent.

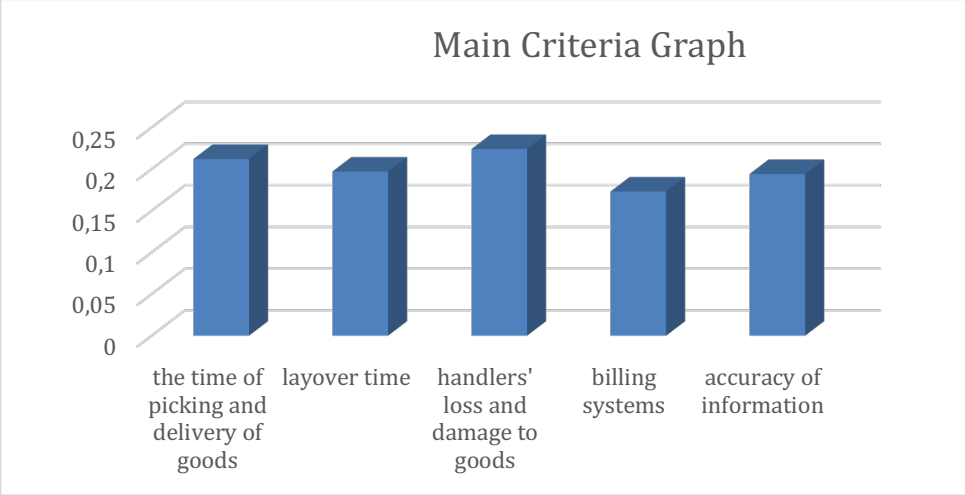

Figure 2. Main Criteria Graph

Based on the results of the processing obtained recapitulation of the pair comparison assessment for all criteria showed results of 2,848 times the time of collection and delivery of goods more important than the time of layover, amounting to 0.315 times more important than the handling and damage of coaling, amounting to 0.617 times more important than the billing system and by 0.4447 times more important than the accuracy of information with the process. The same applies to comparisons to other criteria. From the matrix obtained the actualization of the collection and delivery of goods amounting to 8,379, the layover time of 10,517, the handling of loss and damage of goods amounted to 2,954, the billing system amounted to 7,777 and the accuracy of information by 3,998.

Table 3. Alternative Eigenvalue

Criteria	the time of picking and delivery of goods	layover time	handlers' loss and damage to goods	billing systems	accuracy of information
JNE	0.394	0.394	0.399	0.443	0.333
J & T	0.276	0.279	0.290	0.332	0.312
SICEPAT	0.330	0.372	0.310	0.226	0.355

Table 4. Primary Eigenvalue

the time of picking and delivery of goods	0.212
layover time	0.197
handlers' loss and damage to goods	0.224
billing systems	0.173
accuracy of information	0.194

The comparison table above is the basis for decision-making through the application of eigenvalues in each alternative that is done with the eigenvalue in the main criteria. Where the eigenvalue of the main criteria for the collection and delivery of goods is 0.212, the layover time is 0.197, the handling of loss and damage of goods 0.224, billing system 0.173, and the accuracy of information 0.194 multiplied by the alternative eigenvalue that is JNE against the pick and delivery time of 0.394, JNE against the layover time of 0.394, JNE against the handling of loss and damage of goods amounting to 0.399, JNE to billing System 0.443 and JNE to accuracy of Information of 0.333. Then J&T against the handling of loss and delivery time of 0.276, J&T against the layover time of 0.279, J&T against handling loss and damage of goods amounting to 0.290, J&T against billing system 0.332 and J&T against the accuracy of Information of 0.312, then SICEPAT against retrieval and delivery time of 0,330, SICEPAT against the layover time of 0,372, SICEPAT against handling loss and damage of goods amounting to 0.310, SICEPAT to billing System 0.226 and SICEPAT against the accuracy of information amounting to 0.335.

5. Conclusion

From the multiplication of the two eigen vectors above the final calculation results show JNE with a final conclusion level of 0.392 then SICEPAT 0.342 and the last J&T is 0.290. For the consistency result of the ratio itself all criteria are declared consistent where all values obtained ≤ 0.1, such as the value of the time of collection and delivery criteria of goods of -1,646 layover time -1,607 handling loss and damage of goods -1,632 billing system -1,722 and accuracy of information of -1,543. Based on the results of the study, it turns out that many factors that can be used as criteria in the selection of services supporting decisions made can be developed further or as research for better results. And in doing the breeding should be used methods that are able to provide the right decision. In addition, there needs to be variation on alternatives and criteria added in terms of quantity so that the process of giving consideration and policies taken has a broad scope but still directed.

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