Consumer Preference Analysis in Online Purchase of Inter-city Railway Tickets at Surabaya Pasar Turi Station

Feby Melia Purnomo [1], Tias Andarini Indarwati [2]

[1,2]Department of Management, Faculty of Economics and Business, Universitas Negeri Surabaya

Abstract
The advancement of internet-based technological and informational systems has given rise to various application-based buying and selling transactions. Various industries have become cognizant of the progress in technology, as exemplified by railway ticket service providers venturing into online business for ticket reservation and sales. This research aims to discern consumer preferences and the most pivotal factors influencing decision-making in the online purchase of intercity railway tickets at Surabaya Pasar Turi Station in 2023. The employed methodology in this study is descriptive, employing nonprobability and purposive sampling techniques, with a sample size of 109 respondents. Conjoint Analysis is employed for data analysis. Data collection involves the utilization of a questionnaire instrument aligned with the data collection technique of conjoint analysis. The findings of this research reveal that consumer preferences for online intercity railway ticket purchases at Surabaya Pasar Turi Station include acquiring tickets through alternative platforms (Traveloka, Tiket.com), procuring tickets at reduced rates, employing E-money payment methods, and undergoing the check-in process using E-boarding passes. The correlation output for gauging predictive accuracy yields significant and high correlation values. Consequently, it can be inferred that the predictive outcomes of this conjoint analysis exhibit a substantial degree of accuracy, aligning well with real-world data.

Keywords:
Consumer Preferences; Intercity Railway Ticket Provider Application; Conjoint Analysis

 JEL Code: Written by editor

1. Introduction

The development of the internet holds numerous advantages for society at large. This technology is enjoyed by nearly all segments of society without limitations or difficulties. The populace utilizes the internet across diverse domains such as fashion, electronics, and services to meet their needs. The internet bears numerous benefits for every stratum of society; one such benefit manifests within the realm of business, where the internet plays a profoundly pivotal role. Many enterprises employ the internet as a means to expand their

market reach online, as exemplified in the transportation service sector by PT Kereta Api Indonesia.

Traditionally, the distribution of train tickets was conducted through ticket counters and travel agents. However, with the burgeoning advancement of information technology, PT Kereta Api Indonesia has extended the distribution of train tickets beyond physical sales offices and travel agents, incorporating internet-based platforms. Whereas in the past, payment for train tickets was typically executed via cash, credit cards, or debit cards, today's payment methods encompass E-money services such as OVO, Dana, Shopee Pay, Go Pay, and Link Aja. Acquiring tickets no longer necessitates direct visits to travel agents or ticket counters, as train tickets can now be independently booked online through the KAI Access application.

The process of ticket reservation via the internet is commonly referred to as e-ticketing. Such reservations can be made through the official KAI Access application, developed by PT Kereta Api Indonesia to cater to the needs of passengers across long-distance, medium-distance, and local/commuter train services. The utilization of technology for ticket sales services confers an advantage upon PT Kereta Api Indonesia by economizing operational expenses related to ticket production that previously involved paper-based materials. Moreover, passengers are enabled to check in via the application up to two hours prior to train departure, further enhancing convenience. Besides the aforementioned benefits, e-ticket users stand to gain advantages such as increased efficiency, avoidance of loss or misuse, and more.

Indonesia boasts an array of applications facilitating train ticket sales, including Traveloka, Tiket.com, and others. Given the intensifying competition among mobile applications providing train ticket services, coupled with the proliferation of internet users engaging with these apps, there exists the potential for decreased profitability in online train ticket sales via KAI Access should consumers gravitate towards partner applications affiliated with PT Kereta Api Indonesia. Achieving an alignment between appropriate product attributes and levels, tailored to consumer preferences, is a crucial consideration for service-oriented companies aiming to enhance services in accordance with consumer needs and thwart customer attrition due to inter-company competition that may, at any time, lure patrons away.

One method employed to ascertain consumer preferences towards a product is conjoint analysis. In connection with a study conducted by a student from Telkom University, Agustin Wibisono (2019), exploring consumer preferences in using online applications for airline ticket and hotel booking services, consumers are treated as respondents who fill out questionnaires detailing desired features of online ticket services commensurate with contemporary trends. These features span from the preferred application platforms, ticket pricing, payment methods, to the check-in process. With the

objective of discerning consumer preferences, the author employs conjoint analysis as a tool for investigating this phenomenon. Given the aforementioned exposition, the author is motivated to undertake research titled "Consumer Preference Analysis in Online Purchase of Inter-city Railway Tickets at Surabaya Pasar Turi Station".

2. Literature Review
2.1 Consumer Behaviour

According to Kotler & Keller (2016:179), consumer behavior constitutes the study of how individuals, groups, and organizations select, purchase, utilize, and position goods, services, ideas, or experiences to fulfill their needs and desires.
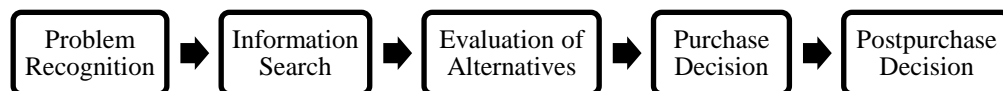
2.2 Purchase Decisions

Kotler and Armstrong (2013:20) assert that purchase decisions represent a phase within the process of purchasing where consumers engage in tangible purchasing activities.

2.3 Purchase Decision Process

As articulated by Kotler and Keller (2016:194), this process involves consumers identifying issues, seeking information regarding specific products or brands, meticulously evaluating all available alternatives to aid in making purchase decisions, and subsequent post-purchase consumer behavior.

Figure 1.
Purchase Decision Process

Problem Recognition → Information Search → Evaluation of Alternatives → Purchase Decision → Postpurchase Decision

2.4 Purchase Decision Process

According to Kotler & Keller (2016:197), comprehending the consumer evaluation process necessitates a foundation of several fundamental concepts. Firstly, customers endeavor to fulfill their needs. Secondly, customers seek specific benefits from product solutions. Thirdly, customers perceive each product as a bundle of features that possess diverse capacities for delivering advantages.

2.5 Consumer Preferences

As posited by Kotler & Keller (2009), consumer preferences denote the consumer's perspective on a selected brand of product, derived through the assessment of various brands across a spectrum of available options. In contrast, Frank (2011:63) defines preference as the process of ranking all consumable entities with the objective of obtaining the chosen product or service.

2.6 Product Attributes

As expounded by Kotler & Keller (2017:249), product attributes constitute elements that differentiate a given product, bestowing supplementary value and advantages that must be deliberated upon during the purchasing decision-making process.

2.7 Conceptual Framework

Figure 2.
Conceptual Framework
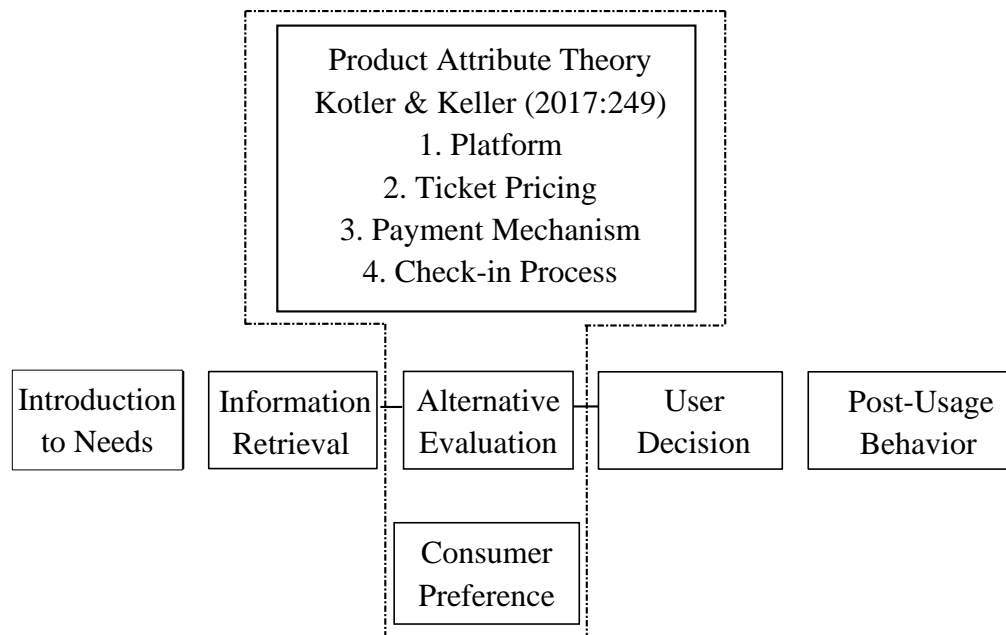
3. Research Method

3.1 Population and Sample

The population under investigation in this research comprises the entirety of consumers or purchasers of train tickets in Surabaya, who subsequently utilize these tickets themselves. The sample is constituted by a subset of individuals who have procured train tickets in Surabaya, engaged in autonomous utilization, and have initiated their journey from the Surabaya Pasar Turi Railway Station. As delineated by Orme (2010), the formula employed for determining the requisite sample size for the study of preferences is derived through the following mathematical expression:

Minimum Sample Size = [(Total of Levels – Total of Atributes) + 1] x 5

Within the framework of this research, involving four attributes, each with twelve attribute levels, the resultant sample size is determined as follows:

Sample Size = [(Total of Levels – Total of Atributes) + 1] x 5
        = [(12 - 4) + 1] x 5
        = 45

3.2 Data Collection Technique

The method employed in data collection entails the utilization of the questionnaire method. The questionnaire is administered to all prospective intercity passengers departing from the Surabaya Pasar Turi Railway Station, with the purpose of eliciting responses to inquiries posed by the researcher. The measurement scale adopted for this study is the Rating Scale. This scale serves as an instrument for quantifying preferences concerning combinations of attributes. The resultant outcomes manifest in the form of preference ratings accompanied by the following categorical descriptions:

a) 1: Extremely Dissatisfied
b) 2: Dissatisfied
c) 3: Neutral
d) 4: Satisfied
e) 5: Extremely Satisfied

3.3 Analysis Technique

Within the framework of this investigation, the data analysis methodology employed is that of conjoint analysis. Conjoint analysis is a multivariate analytical approach utilized to facilitate the identification of the most favored combinations or compositions of attributes inherent to products or services, whether novel or pre-existing, as preferred by consumers. Through the application of conjoint analysis in this study, the researcher endeavors to scrutinize consumer preferences with regard to the online purchase of intercity train tickets, thereby gaining insights into the consumer characteristics associated with the acquisition of train tickets in the locale of Surabaya.

3.4 Attribute Selection and Attribute Factorization

The selection of attributes was undertaken through consultation with the subject matter expert, namely the Assistant Manager of Passenger Transportation Unit at PT KAI Regional Operation 8 Surabaya. From the discourse, four attributes were identified as exerting influence upon consumers in Surabaya during the process of purchasing train tickets. The attributes and corresponding levels of significance are as follows:

Table 1.
Description of Respondent Data

Attributes	Level	Factors
Platform	2	KAI Access
	1	Other Applications (Traveloka, Tiket.com)
Ticket Pricing	5	Discount
	4	Cashback
	3	Flash sale
	2	Reduction
	1	Normal
Payment Method	3	E-money
	2	Cash/Retail outlet
	1	Debit/Credit/Transfer Card
Check-in Process	2	E-boardingpass
	1	Printed Boardingpass

3.5 Designing Conjoint Analysis

The employed conjoint model is the choice-based conjoint model, chosen due to the utilization of fewer than 6 attributes, facilitating aggregate or collective analytical treatment. The selected model follows an additive and interaction-oriented approach. Meanwhile, the presentation methodology employed is the full-profile method.

3.6 Stimuli Design

Stimuli encompass combinations of attributes with their corresponding attribute levels. Given the presence of four attributes (Platform, Ticket Pricing, Payment Method, and Check-in Process) and twelve attribute levels (consisting of 2 levels for the Platform attribute, 5 levels for the Ticket Pricing attribute, 3 levels for the Payment Method attribute, and 2 levels for the Check-in Process attribute), the potential combinatorial permutations are as follows:

$$2 \times 5 \times 3 \times 2 = 60 \text{ stimuli}$$

The stimuli resultant from attributes acquired subsequent to the utilization of the Orthogonal Design and assessed for the viability of attribute level combinations are delineated as follows:

Table 2.
Stimuli Design

Stimuli	Booking Procedure	Ticket Pricing Types	Payment Methodology
1	KAI Access	Discount	Debit/Credit/Transfer Card
2	KAI Access	Discount	Cash/Retail outlet
3	KAI Access	Discount	E-money
4	KAI Access	Reduction	Debit/Credit/Transfer Card
5	KAI Access	Reduction	Cash/Retail outlet
6	KAI Access	Reduction	E-money
7	KAI Access	Normal	Debit/Credit/Transfer Card
8	KAI Access	Normal	Cash/Retail outlet
9	KAI Access	Normal	E-money
10	Other Applications (Traveloka, Tiket.com)	Discount	Debit/Credit/Transfer Card
11	Other Applications (Traveloka, Tiket.com)	Discount	Cash/Retail outlet
12	Other Applications (Traveloka, Tiket.com)	Discount	E-money
13	Other Applications (Traveloka, Tiket.com)	Normal	Debit/Credit/Transfer Card
14	Other Applications (Traveloka, Tiket.com)	Normal	Cash/Retail outlet
15	Other Applications (Traveloka, Tiket.com)	Normal	E-money

4. Data Analysis and Result
4.1 Respondent Characteristics

Based on the sample size calculated using the formula devised by Orme (2010), the requisite sample size was determined to be a minimum of 45 respondents. However, the actual sample size for this study consisted of 109 respondents, thereby exceeding the established minimum threshold for sample size. The demographic profile of respondents who participated in the questionnaire survey is delineated as follows:

Table 3.
Respondent Characteristics

Age				Employment Status		
≤ 20	21 ≥ 30	31 ≥ 40	41 ≥ 50	Entrepeneur	Student	Civil /Private Employee
31	69	6	3	9	65	37
109				109		

4.2 Conjoint Analysis Results

Out of the 109 sets of respondent data obtained from the distribution of questionnaires among consumers who purchased train tickets in Surabaya, undertook individual journeys, and departed from Surabaya Pasar Turi Railway Station, the data underwent analysis through employment of the SPSS tool. The aggregate conjoint analysis results (subfile summary) yielded utility values, importance scores, and overall profiles, all of which were harnessed to ascertain consumer preferences regarding the purchase of intercity train tickets.

4.2.1 Utility Values

Utility values are employed to express the utility of each level within a given factor. When a utility value is positive, it signifies the respondent's preference for the attribute level, whereas a negative value indicates the respondent's lack of preference for the attribute level. The aggregated utility outcomes across all respondents are presented as follows:

Table 4.
Utility Values

		Utility Estimate	Std. Error
Platform	Other Applications (Traveloka, Tiket.com)	.031	.139
	KAI Access	-.031	.139
Ticket Pricing	Normal	-.671	.103
	Reduction	.314	.159
	Flash sale	.179	.085
	Cashback	-.023	.126
	Discount	.202	.090
Payment Method	Debit/Credit/Transfer Card	.186	.081
	Cash/Retail outlet	-.436	.066
	E-money	.250	.089
Check-in Process	Printed Boardingpass	-.090	.142
	E-boardingpass	.090	.142
(Constant)		3.973	.054

a) Utility Value of Platform Attributes
   Platform attributes are categorized into two levels of attributes, namely "Other Applications (Traveloka, Tiket.com)" and "KAI Access".

Figure 3.
Utility Value of Platform Attributes
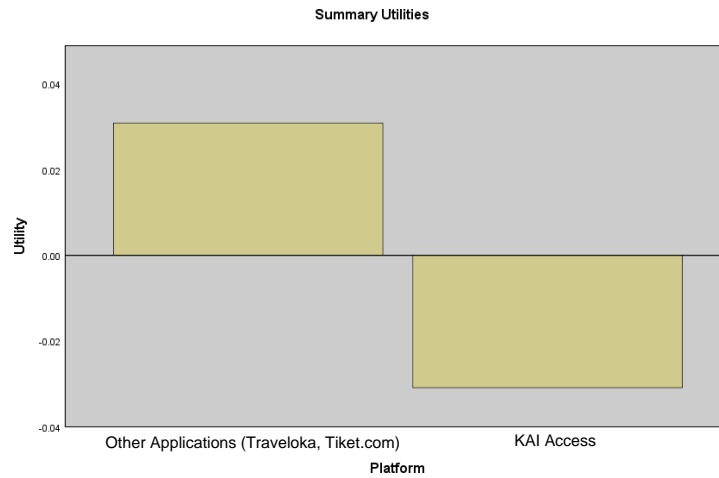
The utility values on the "Other Applications (Traveloka, Tiket.com)" platform yield a utility value of 0.031, while on the "KAI Access" platform, it yields a utility value of -0.031. Based on the highest utility value, it is indicative that respondents are inclined towards purchasing train tickets online via the "Other Applications (Traveloka, Tiket.com)" platform.

b) Utility Value of Ticket Pricing Attributes
The Ticket Pricing Attribute is divided into five attribute levels, namely "Normal", "Reduction", "Flashsale", "Cashback", and "Discount".

Figure 4.
*Utility Value of Platform Attributes*
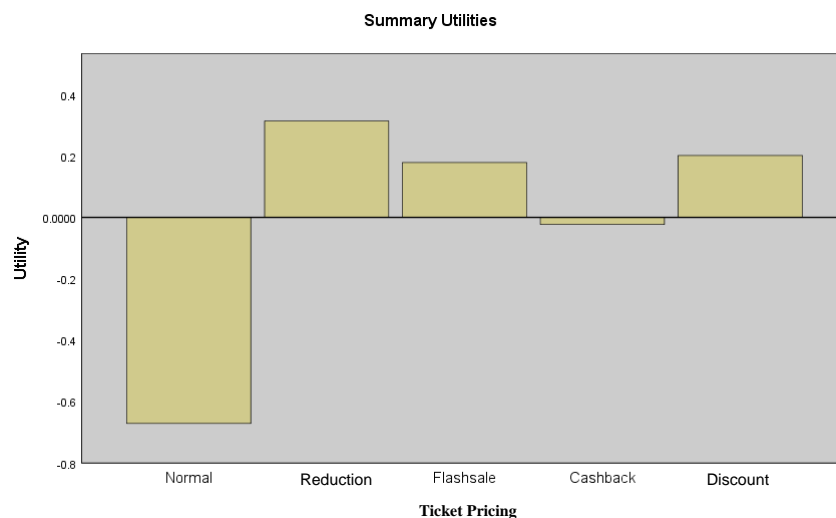
The utility value for the "Normal" ticket pricing attribute is -0.671, while the "Reduction" ticket pricing attribute provides a utility value of 0.314. Similarly, the "Flashsale" ticket pricing attribute yields a utility

value of 0.179. On the other hand, the "Cashback" ticket pricing attribute results in a utility value of -0.023. Lastly, the "Discount" ticket pricing attribute corresponds to a utility value of 0.202. Analyzing the highest utility value indicates that respondents tend to prefer purchasing train tickets with the "Reduction" pricing attribute.

c) Utility Value of Payment Method Attributes
The Payment Method Attribute is divided into three levels of attributes, namely "Debit/Credit/Transfer Card", "Cash/Retail Outlet", and "E-money".

Figure 5.
*Utility Value of Payment Method Attributes*
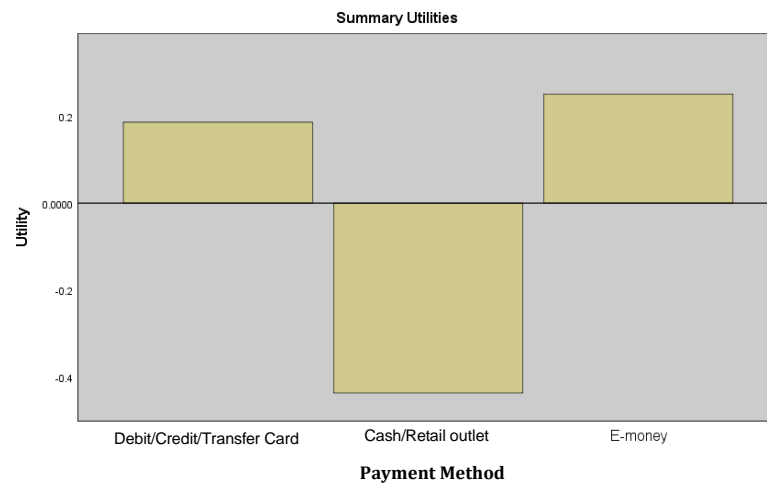
The utility value for the "Debit/Credit/Transfer Card" payment method is 0.186, for the "Cash/Retail Outlet" payment method is -0.436, and for the "E-money" payment method is 0.250. Based on the highest utility value, it indicates that respondents tend to purchase train tickets online using the E-money payment method.

d) Utility Value of Check-in Process Attributes
The attributes of the Check-in Process are categorized into two attribute levels: "Printed Boardingpass" and "E-boardingpass."

Figure 6.
Utility Value of Check-in Process Attributes
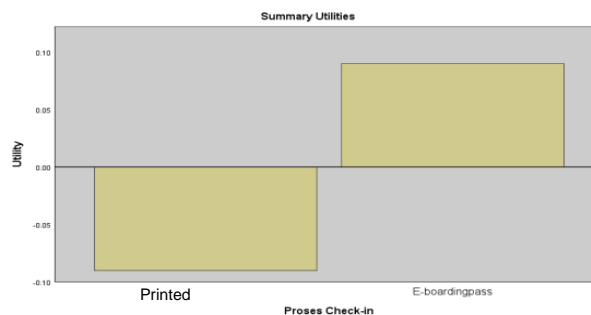
E-boardingpass

The utility value associated with the "Printed Boardingpass" check-in process is -0.090, whereas the utility value for the "E-boardingpass" check-in process is 0.090. Based on the highest utility value, it is evident that respondents tend to prefer the check-in process involving the utilization of the E-boardingpass.

4.2.2 Importance Values

The value of importance, which signifies the amalgamation of respondents' perspectives towards the specified factors, serves as a pivotal determinant. The value of importance is utilized to discern which factors are deemed most crucial by respondents when engaging in the online purchase of intercity train tickets. The ensuing Importance outcomes across all respondents are delineated as follows:

Table 5.
Importance Values

Platform	17.269
Ticket Pricing	41.559
Payment Method	25.161
Check-in Process	16.011

Averaged Importance Score

Derived from the collective outcomes of all respondents, it can be ascertained that the attribute deemed most vital in the context of procuring intercity train tickets online is the "Ticket Pricing" attribute, constituting a significant 41.559%. The attribute deemed of secondary importance is the "Payment Method" attribute, comprising 25.161%. Subsequently, the third attribute in order of importance is the "Platform," accounting for 17.269%, while the ultimate attribute in terms of perceived importance is the "Check-in Process," representing 16.011%.

Figure 7.
Importance Values
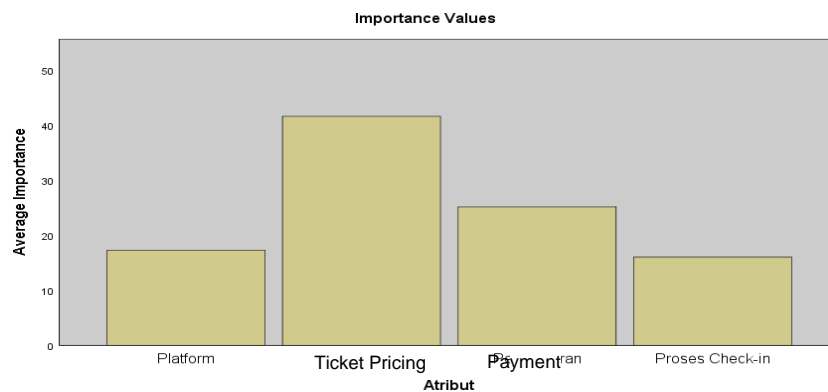
Check-in Process

4.2.3 Correlations Values

The Correlations Values signifies the correlation between actual assessments and assessments based on estimated outcomes. The purpose of the correlation coefficient is to measure predictive ability. The Correlations results for all respondents are as follows:

Table 6.
Correlations Values

Correlations[a]

	Value	Sig.
Pearson's R	.982	.000
Kendall's tau	.880	.000

a. Correlations between observed and estimated preferences

The obtained results indicate that the correlations measurement displays a high correlations value, both in terms of Pearson's R at 0.982 and Kendall's Tau at 0.880. Consequently, the research is considered valid and robust, as the correlations value exceeds 0.5, with a significance level smaller than the established threshold of $\alpha = 0.05$. Thus, it can be inferred that the predictive outcomes of this conjoint analysis demonstrate a high degree of accuracy and alignment with real-world data.

5. Conclusion

Based on the research findings and discussions elucidated in the preceding chapters, the following conclusions can be drawn:

a) The combination of attributes and attribute levels deemed most crucial according to consumer preferences when purchasing intercity train tickets online at Surabaya Pasar Turi station involves acquiring tickets through alternative applications (Traveloka, Tiket.com), obtaining tickets pricing with reduction , utilizing E-money as the payment method, and undergoing the check-in process via E-boarding pass.

b) Attributes within the populace's preferences when procuring intercity train tickets online, ranked in descending order of Importance Values, encompass Ticket Pricing, Payment Method, Platform, and Check-in Process.

c) The correlation output, designed to assess predictive accuracy, yielded highly significant correlation values.

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