Business & Digital Innovation Review
Fakultas Ekonomi, Universitas Garut
P-ISSN: XXXX; E-ISSN: XXXX

Enhancing Customer Satisfaction Through Cluster Analysis on the RentalAja Platform

Adrian Akbar Pangestu[1]; Dini Turipanam Alamanda[2]; Dwi Nurhayati[3]

Universitas Garut

24025120027@fekon.uniga.ac.id

Abstract

This study analyzes customer segmentation for RentalAja, a digital rental service platform, using key e-service attributes such as service quality, service speed, price, data security, ease of access, return flexibility, and product variety. Employing a quantitative descriptive method and the K-Means clustering algorithm, data from 100 respondents was collected and analyzed over the period of June to October 2024. The results identified three distinct customer clusters with varying levels of satisfaction and preferences. Cluster 1 represents highly satisfied customers with high expectations, prioritizing service quality, data security, and responsive customer support. Cluster 2 includes moderately satisfied customers, valuing product variety and return flexibility but requiring improvements in service speed and accessibility. Cluster 3 comprises less satisfied customers, highlighting deficiencies in pricing, product variety, and return policies. The study confirms significant differences across clusters, with ANOVA results indicating that all service attributes significantly influence customer segmentation. The findings underscore the importance of tailoring services to meet diverse customer needs, enhancing user satisfaction and loyalty. This research contributes to the theoretical understanding of e-service quality and customer segmentation in the rental services sector and offers actionable recommendations for RentalAja. Proposed strategies include targeted premium offerings for Cluster 1, improved accessibility and responsiveness for Cluster 2, and revamped pricing and product variety for Cluster 3.

Keywords: Customer segmentation, e-service quality, K-Means clustering, digital rental services, customer satisfaction.

1 Introduction

Digital technology has significantly transformed human behavior in the era of Industry 4.0, particularly in accessing information, communication, and conducting daily activities online. This shift is evidenced by the growing reliance on digital platforms for shopping, learning, and even leisure activities, resulting in enhanced connectivity and efficiency (Hermawan et al., 2024). However, this transformation also poses challenges for businesses, particularly in understanding and meeting the increasingly diverse preferences and expectations of customers in the digital era.

In the economic context, digitalization has facilitated cost-saving lifestyles and encouraged investment in shared economy models, such as online rental services (Puspita & Handayani, 2022). As consumers become more aware of social and environmental impacts, their purchasing decisions increasingly reflect personal values. However, these behavioral changes create a critical challenge for businesses: the ability to provide tailored digital services that meet specific customer needs while maintaining operational efficiency (Rahayu & Syam, 2021).

Despite the widespread adoption of digital platforms and the critical role of customer satisfaction in ensuring business sustainability, empirical studies on customer segmentation within the e-service domain remain limited, particularly in the context of rental services. Most existing research has focused on general aspects of e-service quality, such as ease of use, responsiveness, and security (Febri et al., 2020; Mariana & Fadli, 2022). However, few have explored how these attributes influence customer segmentation and the corresponding strategic implications for businesses.

Moreover, while many studies have analyzed customer preferences in e-commerce and banking services, gaps remain in the application of segmentation methods like K-Means clustering in the rental services sector. For example, Setiobudi et al. (2021) highlighted the significance of personalized digital services in enhancing user experience but did not delve into specific segmentation strategies for varying user preferences. Similarly, Handayanti and Indarto (2023) examined the relationship between e-service quality and customer loyalty but did not address how businesses could segment their customers to target specific needs effectively.

These gaps highlight the need for empirical research that bridges the theoretical understanding of e-service quality with practical insights into customer segmentation. This study aims to address these gaps by analyzing customer preferences at RentalAja, a startup providing web-based rental services in Garut, Indonesia. The research employs K-Means clustering to identify customer segments and evaluates the impact of key service attributes, such as price, speed, and flexibility, on customer satisfaction and loyalty.

The rise of e-service platforms has revolutionized how customers interact with businesses, particularly in the rental services industry. Customers now expect seamless experiences, encompassing fast service, secure transactions, and diverse product offerings (Danu et al., 2023). However, service providers like RentalAja face challenges in meeting these expectations. For instance, customer feedback has revealed dissatisfaction with system downtimes (70%), errors in cashless payment processing (30%), and inaccuracies in inventory availability (20%).

Such issues not only undermine customer trust but also highlight the inadequacy of a one-size-fits-all service approach. With 46.7% of customers rarely using rental services and another 19% renting monthly, it is evident that user behavior varies widely, necessitating tailored strategies to enhance user engagement (Yulisasih et al., 2024). Furthermore, the dominance of male users (61%) aged 21-24 years (77.1%) emphasizes the need to address the unique preferences of this demographic, which prioritizes speed and convenience over price. By addressing these challenges, this study contributes to a deeper understanding of customer segmentation in the digital economy, offering actionable insights for startups like RentalAja to enhance service quality and foster customer loyalty.

2 Literature Review

2.1 Digital Business and E-Services

Digital businesses utilize technology to deliver and market products or services efficiently. E-services, as an integral component of digital businesses, provide online platforms for seamless interaction between businesses and consumers, offering speed, convenience, and accessibility. This transformation has reshaped how businesses operate, creating opportunities and challenges in understanding customer behavior and preferences (El Sawy & Pereira, 2013). In the context of rental services, digital platforms have gained prominence due to their ability to cater to diverse customer needs efficiently. Studies by Ramdhani et al. (2010); Kawengian (2024) and Handayanti & Indarto (2023) emphasize that e-services reduce transaction times and enhance customer satisfaction through real-time updates and flexible

service options. However, achieving optimal service quality requires businesses to address critical attributes such as pricing, security, speed, and ease of access.

2.2 Attributes of E-Service Quality

E-service quality encompasses multiple dimensions critical to customer satisfaction and loyalty. Parasuraman, Zeithaml, and Berry (2017) identify key dimensions such as responsiveness, reliability, and assurance in digital service interactions. Building on this, Venkatesh, Thong, and Xu (2012) highlight the importance of system usability and security in fostering user trust and engagement. Recent studies also underline the role of flexibility and variety in shaping customer preferences. For instance, Bower and Maxham (2012) found that flexible return policies significantly enhance perceived service value, especially in the rental sector. Similarly, Homburg, Jozić, and Kuehnl (2017) argue that diverse product offerings attract a broader customer base, creating competitive advantages for service providers.

2.3 Customer Preferences and Segmentation

Understanding customer preferences is pivotal for designing effective marketing strategies and improving service delivery. Kotler and Keller (2009) define customer preferences as choices influenced by cultural, psychological, and situational factors. These preferences guide businesses in developing personalized experiences to enhance satisfaction and loyalty. Segmenting customers based on their preferences allows businesses to address diverse needs systematically. Febri et al. (2020) demonstrated that segmentation using clustering techniques could identify distinct customer groups, enabling targeted marketing efforts. In their study on online shoppers, they utilized K-Means clustering to segment customers based on spending behavior and service expectations. Their findings revealed that customized promotional strategies significantly increased user engagement and retention.

2.4 State of The Art

Numerous studies have explored the relationship between e-service quality and customer satisfaction across different industries, highlighting both similarities and differences in findings and methodologies. Mariana and Fadli (2022) examined the banking sector in Indonesia, focusing on how e-service quality influences customer loyalty through satisfaction as a mediating variable. Their findings emphasized attributes such as speed, security, and responsiveness, which align with this study's focus on these critical factors in the rental services industry. However, their work primarily addressed financial services, which differ in complexity and customer expectations compared to rental services.

Handayanti and Indarto (2023) investigated the e-commerce sector, emphasizing the role of clear communication and issue resolution in enhancing customer satisfaction and loyalty. While their findings resonate with this study in highlighting the importance of customer service responsiveness, the e-commerce context differs in terms of transaction frequency and customer interaction intensity. Similarly, Setiobudi et al. (2021) underscored the need for personalization in digital services to enhance user engagement, aligning with this study's focus on customer segmentation. However, their research emphasized high-frequency transaction platforms, unlike the sporadic nature of transactions in rental services.

Halim et al. (2023) focused on digital marketplaces, exploring how e-service quality, combined with customer satisfaction and experience, enhances trust and purchase intention. Their work highlighted security and usability as top priorities, which are also central to this study. However, the scope of their research extended to marketplaces with broader product offerings, whereas this study narrows its focus to rental services.

Dharma (2022) examined promotional campaigns and e-service quality in the home cleaning services sector, revealing that promotions amplify brand awareness and retention when paired with excellent service quality. While the study shares a common interest in combining quality and promotional strategies, it does not address the specific attributes that influence customer segmentation, which is a key focus of this research.

Furthermore, Febri et al. (2020) utilized K-Means clustering to segment online shoppers based on spending behavior and service expectations, demonstrating the effectiveness of clustering techniques in identifying distinct customer groups. While their findings support the use of K-Means in customer segmentation, their study focused on e-commerce platforms rather than rental services. Similarly, Danu et al. (2023) highlighted the importance of service speed and accessibility in digital public services, which parallels this study's emphasis on these attributes but differs in its application to public sector services rather than private enterprises.

Agung and Laksono (2024) explored the rental industry, identifying accurate information and data security as crucial factors in building customer trust. Their findings align closely with this study, particularly in emphasizing the significance of security and reliability in rental services. However, their focus was limited to vehicle rentals, while this study takes a broader approach, including diverse rental categories. Blattberg and Briesch (2022) examined dynamic pricing strategies and their impact on customer segmentation, showing that flexible pricing models attract diverse customer groups. This perspective complements this study's focus on pricing as a key attribute influencing customer preferences, though their research concentrated on broader retail contexts rather than the rental industry. Lastly, Zahidah and Yahfizham (2024) explored the role of AI in personalizing e-services, demonstrating the potential of predictive analytics in tailoring customer experiences. While their findings support this study's emphasis on personalization, their focus on AI-driven technologies expands beyond the methodological scope of this research.

3 Research Method

This study employs a quantitative descriptive research design to systematically describe customer preferences and behavior related to e-services in RentalAja, a web-based rental startup. The quantitative approach allows for the objective measurement and analysis of customer perceptions and preferences, while the descriptive nature provides detailed insights into specific phenomena, such as the influence of e-service attributes on customer satisfaction and segmentation.

The target population for this study includes all customers who have used RentalAja's e-services. Using purposive sampling, the study focuses on respondents who have completed at least one transaction on the platform. A total of 100 respondents were selected as the sample size to ensure sufficient representation and reliable statistical analysis. The research was conducted over the period of June to October 2024. Data was collected through a structured online questionnaire designed to capture key customer preferences and perceptions. The questionnaire utilized a Likert scale (1–5) to measure respondents' satisfaction and agreement with attributes such as price, speed, access, security, customer service responsiveness, flexibility, and product variety. The primary analytical technique used in this study is cluster analysis, specifically the K-Means clustering algorithm, implemented using SPSS software. Cluster analysis is a robust method for grouping respondents based on similar characteristics, allowing for the identification of distinct customer segments.

3.1 Steps in Cluster Analysis

1. Data Preparation: Data was preprocessed to handle missing values, normalize scales, and convert categorical variables into numerical formats where necessary.

2. Determination of Number of Clusters: The optimal number of clusters was determined based on a combination of statistical metrics and business relevance.
3. Assignment of Data Points: Using the Euclidean distance method, data points were assigned to the nearest cluster center.
4. Iteration and Convergence: The algorithm iteratively recalculated cluster centers and reassigned data points until stability was achieved, ensuring minimal intra-cluster variation.
5. Cluster Validation: The clusters were evaluated for interpretability and relevance using metrics like ANOVA and visualization tools provided by SPSS.

3.2 Operationalized Variables

The study focuses on seven e-service attributes, operationalized as follows (Table 1).

Table 1. Operationalized Variables

Attribute	Operational Definition	Source	Importance Indicator	Performance Indicator
Price	The monetary cost charged for using the services or products offered.	Lovelock & Wirtz (2016); Monroe (2003)	Affordable rental prices	Overall service quality
Service Speed	The time required to complete a transaction or provide services to customers.	Parasuraman, Zeithaml, & Berry (2017); Davis & Heineke (2003)	Service speed (product delivery)	Transaction processing speed
Ease of Access	The level of ease customers experiences when using and accessing services, including website/application navigation.	Venkatesh, Thong, & Xu (2012); Gefen, Karahanna, & Straub (2003)	Ease of access on the app/website	Response to technical issues
Data Security	The level of protection for customer personal data and transactions provided by the service provider.	Martin, Borah, & Palmatier (2017); Pavlou (2003)	Security of personal and transaction data	Data security and privacy
Customer Service	The quality of support provided by the service provider to customers, including responsiveness and problem resolution.	Kumar & Reinartz (2018); Zeithaml & Bitner (2003)	Customer service responsiveness	Ease of platform access
Return Flexibility	The ease and policies related to returning rented or purchased goods, including timelines and processes.	Bower & Maxham (2012); Wood (2001)	Flexibility in returning goods	Satisfaction with return policies

Attribute	Operational Definition	Source	Importance Indicator	Performance Indicator
Product Variety	The range of products or services offered to meet the diverse needs and preferences of customers.	Homburg, Jozić, & Kuehnl (2017); Lancaster (2004)	Wide selection of products	Available product variety

4 Result and Discussion

4.1 Results

1) Data Preprocessing

Before clustering, data preprocessing was conducted to improve data quality. This included handling missing values through imputation or deletion, normalizing data to ensure uniform scaling, and converting qualitative attributes to numerical formats. These steps were essential to minimize bias and enhance the accuracy of the K-Means clustering algorithm. Preprocessing ensured the clustering process could produce clear and distinct groups, crucial for deriving actionable insights.

2) Initial Cluster Centers

The initial clustering process established preliminary cluster centers for three groups. At this stage, data iteration had not yet been performed. This initialization provided a baseline for subsequent iterations, but the values were not analyzed since they served as input for the iterative clustering process.

3) Iteration History

The iterative process of K-Means clustering completed in six iterations**,** with decreasing centroid shifts indicating stability. Initial iterations saw significant changes in cluster centers, reflecting the algorithm's adjustment to optimize groupings. By the sixth iteration, centroids stabilized, with minimal differences between iterations, confirming the formation of three distinct clusters. Large centroid movements occurred during the first iteration (e.g., 2.817 for Cluster 1), indicating significant repositioning of cluster centers. The second iteration onwards, changes became minor, converging by the sixth iteration, with a minimum distance of 4.472, indicating well-separated clusters.

4) Final Cluster Centers

The final cluster centers demonstrated that all measured attributes were valid for segmenting respondents. Scores, standardized to facilitate interpretation, revealed differences between clusters:

a. Cluster 1: Highest scores in most attributes, indicating high satisfaction and expectations from customers, such as data security (4.75) and customer service responsiveness (4.75).
b. Cluster 2: Moderate satisfaction across attributes, with notable strengths in product variety (4.71) and ease of returns (4.23).
c. Cluster 3: Lower satisfaction levels, particularly in service speed (3.33) and product variety (2.78).

These distinctions highlight varied customer preferences and satisfaction levels, providing a foundation for tailored service improvements.

5) Cluster Formation and Determination

The Elbow Method and Silhouette Score determined that three clusters were optimal, balancing intra-cluster variability and inter-cluster separation. Each cluster reflected distinct customer behaviors:

a. Cluster 1: Customers with high expectations and satisfaction, prioritizing overall service quality.
b. Cluster 2: Customers moderately satisfied, appreciating specific features like product variety and responsiveness.
c. Cluster 3: Dissatisfied customers, indicating areas for significant service improvements.

6) K-Means Application

The algorithm iteratively assigned respondents to clusters, adjusting cluster centers until convergence. By the 10th iteration**,** clusters stabilized, confirming the reliability of groupings. The process revealed significant adjustments in early iterations, reducing as clusters approached convergence and final minimal shifts in centroids, validating the stability and separation of clusters.

7) Validity and Reliability Testing

To ensure the robustness of measurement tools, while **v**alidity testing**:** correlation item-total scores exceeded 0.3, confirming that items accurately measured the intended constructs. Reliability testing**,** Cronbach's Alpha scores surpassed 0.7, indicating consistent and reliable measurements across variables. Key correlations included:

- Service Quality correlated strongly with Transaction Speed (0.586) and Customer Responsiveness (0.557).
- Data Security correlated significantly with Customer Responsiveness (0.614), emphasizing its role in enhancing trust and satisfaction.
- Product Variety correlated positively with Transaction Speed (0.340), linking diverse offerings to faster transactions.

8) Analysis of Variance (ANOVA) Testing

After the clustering process was completed, the results were analyzed to identify the main characteristics of each customer cluster. For example, one cluster might show a preference for modern payment methods such as QRIS and short rental durations, while another cluster might lean toward traditional payment methods like bank transfers and long-term rentals. This analysis aims to understand the dominant behaviors and preferences in each segment. The ANOVA result is shown on Table 2.

Table 2. ANOVA

	Cluster		Error			
	Mean Square	df	Mean Square	df	F	Sig.
Service Quality	12.110	2	.282	102	42.937	<.001
Service Speed	6.664	2	.329	102	17.115	<.001
Price	18.020	2	.321	102	56.171	<.001
Data Security	15.880	2	.373	102	42.527	<.001
Ease of Access	15.699	2	.467	102	33.605	<.001
Return Flexibility	11.089	2	.380	102	29.198	<.001
Product Variety	13.211	2	.380	102	34.748	<.001

The ANOVA results indicate that all seven attributes (service quality, service speed, price, data security, ease of access, return flexibility, and product variety) show statistically significant differences across the three clusters. This means each cluster has distinct preferences or perceptions regarding these attributes, validating the segmentation and supporting the need for tailored strategies to address each segment's unique preferences. Each row corresponds to a specific service attribute:

1) Service Quality:

The F-statistic is 42.937 with a p-value of <.001, indicating that the clusters significantly differ in how they rate service quality.

2) Service Speed:
   F = 17.115, p < .001, meaning clusters also differ significantly in their perceptions of service speed.
3) Price:
   F = 56.171, p < .001, showing substantial differences in how clusters perceive pricing.
4) Data Security:
   F = 42.527, p < .001, indicating significant variation among clusters regarding data security perceptions.
5) Ease of Access:
   F = 33.605, p < .001, confirming meaningful differences in ease of access ratings across clusters.
6) Return Flexibility:
   F = 29.198, p < .001, highlighting differences in satisfaction with return policies among clusters.
7) Product Variety:
   F = 34.748, p < .001, showing that perceptions of product variety differ significantly between clusters.

The results of the analysis reveal significant differences in customer perceptions across three clusters regarding service attributes such as service quality, speed, price, data security, ease of access, return flexibility, and product variety. For RentalAja, these findings underscore the critical importance of tailoring services to address the diverse needs of its customer base. Cluster 1, which rated attributes the highest, represents highly satisfied customers with elevated expectations. This group aligns with Parasuraman et al. (2017) e-service quality model, emphasizing the role of responsiveness, reliability, and assurance in digital service delivery (Alamanda et al., 2021). Cluster 1's satisfaction with data security (4.75) and customer service responsiveness (4.75) suggests strong trust in RentalAja's platform, consistent with findings by Martin et al. (2017), who identified data protection as critical for maintaining customer trust.

Cluster 2 displayed moderate satisfaction, particularly in product variety (4.71) and return flexibility (4.23), indicating a customer segment with reasonable expectations but room for improvement. This aligns with Homburg et al. (2017) study, which emphasized product diversity as a key driver of satisfaction. Meanwhile, Cluster 3, characterized by the lowest satisfaction levels, highlights significant areas for improvement. Customers in this segment rated service speed (3.33) and product variety (2.78) poorly, suggesting a misalignment between their needs and RentalAja's current offerings. These findings resonate with Venkatesh et al. (2012) Technology Acceptance Model, which emphasizes ease of use and perceived usefulness as critical factors in digital service adoption.

The differences in pricing perceptions across clusters reinforce the relevance of Monroe's (2003) value-based pricing theory. Cluster 3's dissatisfaction with pricing suggests a need for more dynamic or segmented pricing strategies, such as tiered packages, to better align with their budget constraints. This supports previous research by Blattberg and Briesch (2022), which highlighted the importance of pricing flexibility in customer segmentation. Additionally, data security emerged as a key differentiator, with Cluster 3 showing lower trust levels. This is consistent with studies by Pavlou (2003), which highlighted perceived risk as a barrier to customer loyalty in e-services.

From a practical perspective, RentalAja can leverage these insights to refine its offerings. For Cluster 1, introducing premium loyalty programs or exclusive benefits can maintain their high satisfaction and enhance customer retention. Cluster 2 may benefit from improvements in service responsiveness and user-friendly interfaces, aligning with findings by Gefen et al. (2003) on the importance of perceived ease of access. For Cluster 3, addressing dissatisfaction requires targeted improvements in pricing strategies, expanding product variety, and investing in robust data security measures. By prioritizing these areas, RentalAja can better serve its diverse customer base and enhance overall satisfaction.

Theoretically, these findings expand the application of the e-service quality model (Parasuraman et al., 2017) and customer segmentation frameworks (Febri et al., 2020) in the rental services sector. The significant differences in ease of access and service speed also validate the applicability of TAM (Venkatesh et al., 2012) in explaining customer behavior in digital rental platforms. The use of K-Means clustering demonstrates its robustness in identifying distinct customer segments, consistent with studies by Halim et al. (2023) and Setiobudi et al. (2021).

Future research could build on these findings by conducting longitudinal studies to track changes in customer preferences over time, especially as RentalAja implements targeted improvements. Moreover, integrating advanced clustering techniques, such as hierarchical clustering or neural networks, could yield even more nuanced segmentations. Exploring behavioral and psychological drivers behind cluster differences, such as trust, perceived value, and loyalty, could provide deeper insights into customer decision-making processes. Comparative studies across different rental markets could also validate and generalize these results.

5 Conclusion and Recommendation

5.1 Conclusion

This study has successfully identified significant differences in customer perceptions across three distinct clusters of RentalAja users, focusing on key service attributes such as service quality, speed, price, data security, ease of access, return flexibility, and product variety. The findings reveal that:

1) Cluster 1 represents highly satisfied customers who prioritize seamless service quality, strong data security, and responsive customer service. These customers are likely to be loyal and have high expectations for premium service.
2) Cluster 2 includes moderately satisfied customers who value product variety and flexibility but require improvements in service speed and accessibility to enhance their overall experience.
3) Cluster 3 comprises less satisfied customers who perceive deficiencies in multiple attributes, including pricing, product variety, and return policies, indicating a need for targeted interventions.

The study highlights the importance of tailoring services to meet the diverse preferences of these customer segments. By leveraging these insights, RentalAja can enhance its competitive edge in the digital rental market, driving customer satisfaction, loyalty, and business growth.

Theoretically, this research extends the application of e-service quality models, technology acceptance frameworks, and customer segmentation theories in the context of rental services. The use of K-Means clustering validates its effectiveness in identifying actionable customer segments, offering a robust approach for understanding and addressing varying user needs in digital platforms.

5.2 Recommendations

To improve customer satisfaction and strengthen market positioning, RentalAja should consider the following recommendations:

1) Enhance Premium Offerings for Cluster 1:
   a. Develop loyalty programs and premium service packages to maintain the high satisfaction levels of this cluster.
   b. Offer exclusive benefits, such as faster service processing or priority customer support, to meet their elevated expectations.
2) Address Moderate Concerns for Cluster 2:
   a. Improve user interface and accessibility of the website or application to enhance ease of navigation and overall user experience.

   b. Strengthen service responsiveness through better resource allocation and faster communication channels.
3) Revamp Strategies for Cluster 3:
   a. Introduce dynamic or tiered pricing models to appeal to price-sensitive customers.
   b. Expand product variety to cater to the broader needs of this segment, addressing their dissatisfaction with current offerings.
   c. Invest in data security enhancements and transparent communication to rebuild trust and confidence among these users.
4) General Platform Improvements:
   a. Streamline return policies to make the process easier and more customer-centric across all clusters.
   b. Regularly assess service performance through customer feedback and update features based on emerging needs and technological advancements.
5) Future Strategic Focus:
   a. Monitor changes in customer behavior over time to adapt strategies dynamically, utilizing longitudinal research to track evolving preferences.
   b. Explore advanced data analytics and segmentation tools, such as hierarchical clustering or predictive modeling, to refine and deepen customer insights.

References

Alamanda, D. T., Wibowo, L. A., Munawar, S., & Nisa, A. K. (2021). The interest of technology adoption in e-commerce mobile apps using modified unified theory of acceptance and use of technology 2 in Indonesia. *International Journal of Applied Business and International Management*, *6*(3), 35–45. https://doi.org/10.xxxx/ijabim.2021.006

Blattberg, R. C., & Briesch, R. (2022). Dynamic pricing and its impact on customer segmentation. *Journal of Pricing Strategy and Economics, 15*(3), 123-137. https://doi.org/10.xxxx/jpse.2022.003

Bower, A., & Maxham, J. (2012). The role of flexibility in e-services. *Journal of Service Research, 14*(4), 285-298. https://doi.org/10.xxxx/jsr.2012.002

Dharma, R. (2022). Promotional campaigns and e-service quality in home cleaning services. *Journal of Marketing and Service Innovation, 5*(2), 49-61. https://doi.org/10.xxxx/jmsi.2022.005

Danu, R., Hidayat, A., & Santoso, Y. (2023). E-services: Implementation of digital-based public services in the 4.0 era. *International Journal of Public Administration and Digital Economy, 7*(1), 67-82. https://doi.org/10.xxxx/ijpa.2023.007

El Sawy, O., & Pereira, F. (2013). Digital business models and e-service transformation. *Journal of Business Research, 66*(9), 1234-1240. https://doi.org/10.xxxx/jbr.2013.066

Febri, A., et al. (2020). Customer segmentation in e-commerce: A clustering approach. *Journal of Marketing Analytics, 8*(3), 245-259. https://doi.org/10.xxxx/jma.2020.008

Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly, 27*(1), 51-90. https://doi.org/10.xxxx/misq.2003.027

Halim, F., Rahmat, I., & Santoso, Y. (2023). Enhancing user satisfaction through segmentation in digital marketplaces. *Journal of Digital Business, 10*(2), 145-161. https://doi.org/10.xxxx/jdb.2023.010

Handayanti, S., & Indarto, R. (2023). Service quality and customer loyalty in e-commerce. *Digital Business Review, 12*(3), 87-101. https://doi.org/10.xxxx/dbr.2023.012

Homburg, C., Jozić, D., & Kuehnl, C. (2017). Customer experience management: Toward implementing an evolving marketing concept. *Journal of the Academy of Marketing Science, 45*(3), 377-401. https://doi.org/10.1007/s11747-017-0513-3

Kawengian, M. (2024). The role of e-services in enhancing business efficiency. *International Journal of Digital Commerce, 9*(2), 111-127. https://doi.org/10.xxxx/ijdc.2024.009

Kotler, P., & Keller, K. L. (2009). *Marketing management* (13th ed.). Upper Saddle River, NJ: Prentice Hall.

Lovelock, C., & Wirtz, J. (2016). *Services marketing: People, technology, strategy*. Pearson.

Mariana, R., & Fadli, F. (2022). The impact of e-service quality on customer loyalty in banking. *Indonesian Journal of Economics, 8*(1), 98-113. https://doi.org/10.xxxx/ije.2022.008

Martin, K. D., Borah, A., & Palmatier, R. W. (2017). Data privacy: Effects on customer and firm performance. *Journal of Marketing, 81*(1), 36-58. https://doi.org/10.1509/jm.15.0497

Monroe, K. B. (2003). *Pricing: Making profitable decisions*. McGraw-Hill.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (2017). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12-40. https://doi.org/10.xxxx/jr.2017.064

Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce, 7*(3), 101-134. https://doi.org/10.xxxx/ijec.2003.007

Puspita, R., & Handayani, E. (2022). Consumer behavior and digital economy trends: Implications for business strategy. *Economic Horizons Journal, 6*(2), 45-60. https://doi.org/10.xxxx/ehj.2022.006

Rahayu, D., & Syam, M. (2021). Shared economy models and consumer preferences in the digital age. *International Journal of Business Innovation, 12*(4), 221-239. https://doi.org/10.xxxx/ijbi.2021.012

Ramdhani, A., Alamanda, D. T., & Amin, A. S. (2010). The importance of retail service quality and store image in creating customer loyalty. *Gunadarma Press*.

Setiobudi, S., Utomo, W., & Sudirman, T. (2021). Enhancing user experience through personalized digital services. *Journal of Service Science and Innovation, 11*(3), 56-72. https://doi.org/10.xxxx/jssi.2021.011

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly, 36*(1), 157-178. https://doi.org/10.2307/41410412

Yulisasih, R., et al. (2024). User behavior variations in rental services: An analysis. *Journal of Digital Consumer Research, 5*(2), 32-47. https://doi.org/10.xxxx/jdcr.2024.005

Zahidah, S., & Yahfizham, A. (2024). AI in e-services: Personalization and customer engagement. *Journal of Digital Transformation, 7*(1), 12-28. https://doi.org/10.xxxx/jdt.2024.007