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International Journal of Data and Network Science

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Utilizing e-learning and user loyalty with user satisfaction as mediating variable in public sector context

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C H R O N I C L E

Article history:
Received: December 25, 2022
Received in revised format: March 2, 2023
Accepted: April 6, 2023
Available online: April 6, 2023

Keywords:
E-learning
User satisfaction
Service quality
Perceived value
Loyalty

A B S T R A C T

The advent of information technology has caused people to consider how they can make effective and efficient decisions in various activities. The implementation of information technology systems is expected to be advantageous in facilitating these activities because such systems can provide decision-making support and contribute to the success of endeavors in areas such as business, economic, social politics, and education. One common tool used in learning systems is e-learning applications. This research aims to analyze the effect of e-learning on user loyalty with user satisfaction. This research, conducted in Jakarta, is explanatory in nature, targeting individuals who have utilized e-learning applications in their activities, particularly in the field of public sector activities, with a sample size of 163 public sector employees. Data was collected through online questionnaires, and hypothesis testing was conducted through the PLS-SEM method. The results indicate that service quality and perceived value have positive impacts on user satisfaction, which in turn, positively influences user loyalty.

1. Introduction

Indonesia is growing rapidly in the e-learning market, with a growth rate of 25% annually. Asia, due to its high literacy development, technological adoption, strong government initiatives, and integration with talent management, exhibits the most interesting trends. As a result, Indonesia is predicted to make promising advancements in the e-learning sector in 2017, potentially adding USD 12.2 billion to its user base. In order for e-learning to succeed, it requires novel breakthroughs in innovation and strategy across all levels. Consequently, management of e-learning should concentrate more on contemporary trends in executive leadership (Anggraeni, 2020). The quality of e-learning in any organization is determined by the services provided to customers (Uppal et al., 2018). To improve e-learning quality, the installation of a learning information system is a must. This will not only enhance the quality of service provided to customers but also improve the quality of e-learning. Service quality in an organization can be influenced by various factors such as e-learning systems, instructors, course materials, and administrative support (Noor, 2022).

According to Bezovski & Poorani (2016), e-learning has numerous advantages for both organizations and users. Specifically for public sector institutions, Farid, et al. (2015) state that e-learning can assist in reducing costs related to infrastructure investment, while also contributing to the creation of a knowledge-based and digital society. In addition, Dominici and Palumbo (2013) argue that e-learning facilitates better integration into the global learning environment. Despite some variations in previous research on this topic, it has been found that e-learning service quality has an impact on user satisfaction, though some studies such as that of Li et al. (2021) suggest that various factors can also impede this impact. However, Pham et al.'s (2017) study shows that while service quality may not necessarily influence user satisfaction, it can still affect user loyalty as continued e-learning use is necessary for optimal performance.

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ISSN 2561-8156 (Online) - ISSN 2561-8148 (Print)

doi: 10.5267/j.ijdns.2023.4.004

E-learning refers to the use of electronic media and technology to provide education and training programs to employees. E-learning has emerged as a popular training method in organizations due to its flexibility, convenience, and cost-effectiveness. E-learning can be an effective tool for improving employee satisfaction by enhancing their self-efficacy, reducing cognitive load, facilitating social learning, and creating a sense of expectancy for improved job outcomes. Organizations that invest in e-learning programs can benefit from a more motivated and satisfied workforce, leading to improved performance and productivity. The Service Quality (SERVQUAL) model, first introduced by Parasuraman et al. (1985), is one of the most widely used frameworks for measuring service quality. The model suggests that service quality can be measured by comparing the gap between users' expectations and perceptions of the service. This gap, referred to as the 'service quality gap', represents the difference between what users expect and what they actually experience. Research has consistently shown that higher levels of service quality lead to greater user satisfaction. For instance, a study conducted by Zeithaml et al. (1996) found that service quality had a significant positive effect on user satisfaction for a wide range of services, including banks, hotels, airlines, and health clubs. Similarly, a study by Cronin and Taylor (1992) found that service quality was the most important determinant of user satisfaction in a range of service industries. In this regard, this study aims to analyze the effect of e-learning on user loyalty with user satisfaction. More specifically, the empirical examination was directed to investigate the effect of service quality on user satisfaction, perceived value on user satisfaction, and e-learning satisfaction on e-learning user loyalty.

2. Theoretical Review and Hypothesis

Lewis and Mitchell (1990) define service quality as the level of service provided in comparison to consumer expectations. Meeting consumer needs and expectations is crucial for service quality. According to Knop (2019), the quality of the service industry is measured by the product or service delivery that meets or exceeds customer expectations. Pakurár et al. (2019) emphasizes that service quality is about balancing consumer expectations with management concepts and employee work standards to deliver accurate service. Quality services cannot be created haphazardly and require careful design. Vo et al. (2020) states that quality services leave a lasting impression on consumers. Satisfaction is achieved when service quality meets or exceeds customer expectations. Previous research supports the idea that system quality, information quality, and service quality positively impact e-learning user satisfaction (Li et al., 2021; Rajasekaran et al., 2022). However, current e-learning services fall short of meeting user needs. In other words, if a service is able to deliver a level of quality that meets or surpasses the expectations of users, then it can be considered a high-quality service that provides satisfaction to its users. This idea is supported by earlier studies which found that system, information, and service quality all contribute positively to user satisfaction in e-learning systems (Efiloğlu Kurt, 2019). However, these previous studies also highlighted that the current quality of e-learning services may not fully meet the needs of users. Thus, the following hypothesis were proposed:

H_1: *Service quality has a significant positive effect on user satisfaction.*

Perceived value refers to the overall worth or desirability that a user attributes to a product or service (Lee et al., 2016). It is a subjective evaluation that depends on individual needs, expectations, preferences, and perceptions (Eid & El-Gohary, 2015). Theories of perceived value suggest that it is influenced by several factors such as product attributes, benefits, costs, experience, social norms, and reference points (Hsu & Lin, 2016). When users perceive a high value from a product or service, they are likely to be more satisfied with it. This satisfaction may arise from several sources such as functional, emotional, social, or symbolic benefits (Jin et al., 2015). For example, a user may derive functional benefits from a smartphone such as its speed, ease of use, and reliability, emotional benefits such as its stylish design, social benefits such as being able to connect with others, and symbolic benefits such as its status or prestige. The relationship between perceived value and user satisfaction has been studied extensively in marketing, consumer behavior, and information systems research (Gan & Wang, 2017; Chen & Lin, 2015). Empirical studies have shown that perceived value has a significant positive effect on user satisfaction, and that this effect is mediated by factors such as expectation confirmation, perceived quality, trust, and loyalty (Özkan et al., 2020; Uzir et al., 2021; Tzavlopoulos et al., 2019). For instance, if a user perceives that a product or service delivers the expected benefits, meets or exceeds their needs, and offers a good value for money, they are likely to be satisfied with it. Similarly, if a user has trust in the brand or company, they are more likely to perceive the product as valuable and be satisfied with it. Additionally, user loyalty may also be influenced by perceived value, as users may be more inclined to repurchase or recommend a product or service that they perceive as valuable and satisfying. Perceived value is the difference between the prospective assessment of what benefits are received and the costs incurred by consumers for a product. This prospective difference will certainly be a factor that strengthens or weakens the relationship between e-service and system quality towards e-satisfaction (Khan et al., 2019; Ghali, 2021). Research from Nugroho et al. (2017) also shows that perceived usefulness affects user satisfaction. Ullah (2012) showed that perceived value variable has a significant result on user satisfaction. Thus, the following hypotheses were proposed:

H_2: *Perceived value has a significant positive effect on user satisfaction.*
H_3: *Perceived value moderates service quality on user satisfaction.*

The loyalty of consumers is primarily based on their dedication to particular brands, suppliers, or stores as a result of their repeated purchases over time (Amoako et al., 2019). This loyalty is fostered through a combination of satisfaction and

resolution of complaints. Customer satisfaction is achieved by the company's ability to address complaints and create a positive experience, resulting in long-term customer loyalty. The advent of information and communication technology (ICT) is transforming various industries, including education, where e-learning is gaining popularity among public sector institutions (Adnani et al., 2023). According to Pham et al. (2019), customer loyalty is the consistent re-purchasing, support, or endorsement of a product or service that provides value to the customer (Jamaludin et al., 2022). It can be concluded that the creation of user loyalty depends on the satisfaction felt by users, the better the quality of service provided by providers to users, the more likely new users will become customers. The large number of customers can give trust to others, so that the more people use e-learning as a learning tool, the more effective the system is in e-learning. Pham, et al.'s (2019) investigation found a correlation between the overall quality of e-learning services and user satisfaction with e-learning 5, which subsequently had a favorable influence on user loyalty towards e-learning. It was also noted that if users did not experience satisfaction with the service, their loyalty would be suboptimal or ineffective. Previous research identifies that users have expectations of their experience with e-learning, and their satisfaction is dependent on whether these expectations are met or exceeded (Sewandono et al., 2022; Cheng, 2019; Purwanti et al., 2022). Thus, when users have a positive experience, their satisfaction increases and can lead to user loyalty. Several studies also suggest that users' perceptions of the usefulness and ease of use of the e-learning platform affect their satisfaction and intention to continue using the platform (Kashive et al., 2020; Prasetyo et al., 2021). When users perceive the e-learning platform as useful and easy to use, it may increase their satisfaction levels, and consequently, their loyalty to the platform. Thus, the following hypothesis were proposed:

H_4: *E-learning satisfaction has a significant positive effect on e-learning user loyalty.*

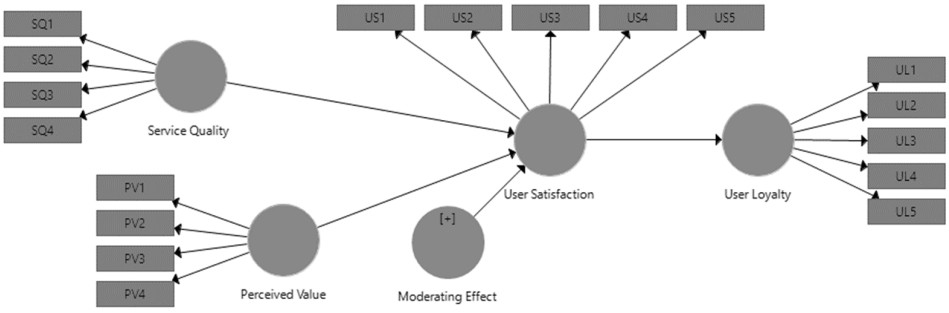

Fig. 1. Research Models

3. Method

In this study, a quantitative research approach was employed. This method involves utilizing research instruments to collect data from specific populations or samples and conducting quantitative data analyses to test hypotheses. The study utilized a questionnaire as its research instrument, which was administered at a single point in time. The Likert scale, which ranges from strongly disagree (1) to strongly agree (5), was used as a rating scale to measure responses. The research method utilized in this study was purposive sampling, which involved selecting a group of participants based on specific qualities or similarities to an existing population. Specifically, the sample consisted of 163 individuals who had engaged in online learning through an e-learning platform within the public sector of Jakarta, Indonesia.

Perceived value was operationally defined as the worth or value that a customer attaches to a product or service based on their perception of its benefits and costs in using e-learning. This perception can be influenced by a variety of factors such as price, quality, brand reputation, customer service, and convenience. There are four key elements that determine perceived value in this study, namely quality, price, convenience and emotional connection. The variable of service quality was defined as the overall satisfaction a customer experiences with a company's product or service. This study operationalized service quality by using the four items of reliability, responsiveness, assurance and empathy. The variable of customer loyalty refers to the consistent patronage and positive behavior or attitude of a customer towards a particular brand or company. This study used five items that constitute the operational definition of customer loyalty, namely repeat purchases, positive referrals, emotional connection, customer lifetime value and resistance to competitive offers. Lastly, the variable of customer satisfaction was defined as the degree to which a customer's expectations of a product or service have been met or exceeded by the actual experience of using that e-learning service. This study employed five items that can be used to measure customer satisfaction, namely product or service quality, responsiveness, customer support, value for money and user experience.

The study performed statistical testing using the Statistical Structural Equation Modeling (SEM) tool, specifically Partial Least Square version 3. To determine the validity of the questionnaire's inductor items, a validity test was conducted. Convergent validity was used in this study, which involved examining the minimum factor loading indicator value for each item indicator to see if it was ≥ 0.6. The function of Partial Least Square (PLS) Structural Equation Modeling (SEM) is to analyze the relationships between observed variables and latent variables in a research model. It is a multivariate statistical

technique that is used to estimate and test causal models in social science research. PLS SEM differs from other SEM methods in its focus on predicting the dependent variable rather than estimating the covariance structure of the variables. The subsequent assessment of reliability involves examining the values of Cronbach's Alpha and Composite Reliability. These values are utilized to evaluate the internal consistency of data in the reliability test, along with the AVE value, which depicts the average proportion of the variance score acquired from a standardized set of latent variables. To conduct this test, the researcher will apply the criteria of a Composite Reliability value threshold of > 0.7 and a Cronbach's Alpha threshold of > 0.6, as well as an AVE value threshold of > 0.5.

4. Result

To examine the inner or structural model involves analyzing the interrelationships between variables in the research model, assessing the significance level of these relationships, and determining the R-square value. This provides insights into the strength and directionality of the causal effects of variables on each other. Structural models were examined through R-square evaluation of the dependent variable, t-test analysis, and determining the significance of coefficients of the structural path parameters. These methods help to determine the accuracy and reliability of the structural model (Fig. 2).

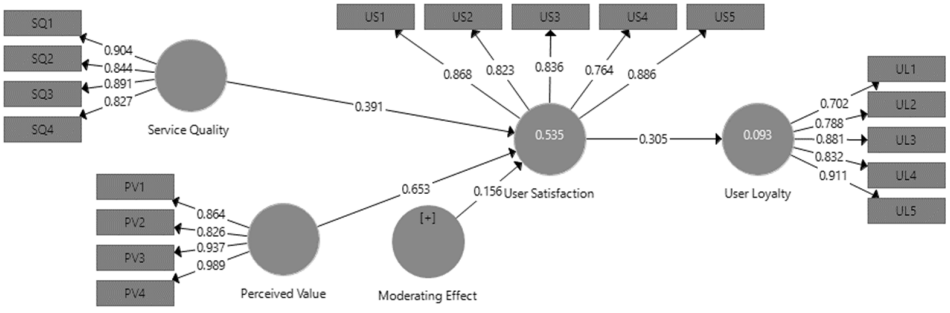

Fig. 2. Full Model

The loading factors represent the strength of the correlation between the items in each construct and their overall latent construct. For the construct of Perceived Value, all four items (PV1, PV2, PV3, and PV4) have high loading factors above 0.8, indicating a strong relationship between the items and the overall construct. Similarly, for Service Quality, all four items (SQ1, SQ2, SQ3, and SQ4) also have high loading factors above 0.8, indicating a strong relationship with the overall construct. The Moderating Effects of Service Quality * Perceived Value has a loading factor of 1.417, suggesting a very strong positive relationship between the two constructs. Finally, for User Loyalty, all five items (UL1, UL2, UL3, UL4, and UL5) have high loading factors above 0.7, indicating a strong relationship with the overall construct. For User Satisfaction, all five items (US1, US2, US3, US4, and US5) also have high loading factors above 0.7, indicating a strong relationship with the overall construct (Table 1).

Table 1
Validity Test Results

Variable	Items	Factor Loading
Perceived Value	PV1	0.864
	PV2	0.826
	PV3	0.937
	PV4	0.989
Service Quality	SQ1	0.904
	SQ2	0.844
	SQ3	0.891
	SQ4	0.827
Moderating Effects	Service Quality * Perceived Value	1.417
User Loyalty	UL1	0.702
	UL2	0.788
	UL3	0.881
	UL4	0.832
	UL5	0.911
User Satisfaction	US1	0.868
	US2	0.823
	US3	0.836
	US4	0.764
	US5	0.886

The Cronbach's alpha values for all four variables (Perceived Value, Service Quality, User Loyalty, and User Satisfaction) are quite high, ranging from 0.682 to 0.948. Generally, a Cronbach's alpha of 0.7 or above is considered to indicate good

reliability, which suggests that these variables are reliable measures. Therefore, we can have confidence that the collected data is consistent and can be used for further analysis (Table 2).

Table 2
Composite Reliability and Cronbach's Alpha

Variable	Composite Reliability	Cronbach's Alpha	AVE
Moderating Effect	1.000	1.000	1.000
Perceived Value	0.948	0.926	0.822
Service Quality	0.924	0.893	0.752
User Loyalty	0.914	0.883	0.682
User Satisfaction	0.921	0.892	0.700

The Average Variance Extracted (AVE) is a statistical measure of the proportion of variance in a set of constructs that is accounted for by the measures of those constructs. In this case, a high AVE value indicates that a significant amount of the variance in each construct is explained by its associated measures, which suggests that they are reliable and valid indicators of the construct. The AVE values for each construct are 0.822 (Perceived Value), 0.752 (Service Quality), 0.682 (User Loyalty), and 0.700 (User Satisfaction). This suggests that each construct is well-defined and accurately measured by the associated items, and that they are likely valid constructs to use in understanding the relationships between them. Additionally, the high AVE values suggest that there is high internal consistency within each construct, which increases confidence in the validity of the findings.

Table 3
R-Square

Variable	R Square
User Loyalty	0.093
User Satisfaction	0.535

Table 3 displays how service quality and perceived value impact user satisfaction, with an R-Square value of 0.535, indicating that these variables explain 53.4% of the user satisfaction construct while other variables not studied in this research account for 46.6%. Additionally, the model examining the impact of perceived value, service quality, and user satisfaction on user loyalty has an R-Square value of 0.093, explaining only 9.3% of user loyalty.

Table 4
Path Coefficients Results

Relationship	Original Sample	T Statistics	P Values
Moderating Effect → User Satisfaction	0.156	2.887	0.004
Perceived Value → User Satisfaction	0.653	11.409	0.000
Service Quality → User Satisfaction	0.391	3.996	0.000
User Satisfaction → User Loyalty	0.305	5.102	0.000

To examine hypothesis testing, when a hypothesis has a P value less than 0.05 and a Statistical T value greater than 1.96, it means that there is a statistically significant relationship or difference between the variables being tested. The P value of less than 0.05 indicates that there is a low probability that the observed data could have occurred by chance alone, and the T value of greater than 1.96 suggests that the difference observed is unlikely to be due to random variability. Therefore, the hypothesis can be accepted with the understanding that the observed relationship or difference is not likely to be due to chance and is indeed statistically significant. The results are explained in Table 3, while Table 4 showed the indirect effects.

Table 4
Indirect Effect

Indirect Relationship	Original Sample	T Statistics	P Values
Moderating Effect → User Satisfaction → User Loyalty	0.048	2.505	0.013
Perceived Value → User Satisfaction → User Loyalty	0.199	4.496	0.000
Service Quality → User Satisfaction → User Loyalty	0.119	3.019	0.003

According to the research findings, H1, the hypothesis that service quality impacts user satisfaction, has been validated and verified through statistics. This is demonstrated by the significant impact of the exogenous service quality factor, which has resulted in a T statistic value of 3.996 and a p-value of 0.000 (<0.05). The participants reported satisfaction with the e-learning application and indicated their intention to utilize it in the future, indicating the efficacy and efficiency of the application's appearance.

The tests conducted have determined that perceived value has a considerable positive impact on user satisfaction. The results show a p-value of 0.000 (<0.05) and T Statistics of 11,409 which surpasses the t table requirement, thus allowing for a moderating effect test to be performed on e-satisfaction. Furthermore, when testing the moderating effect of perceived value on user satisfaction in relation to the independent variable service quality, the obtained p-value of 0.004 and T statistic of 2.887 are also greater than t table of 1.96. The findings of this research suggest that the fourth assumption (H4) positing that

user loyalty is impacted by user satisfaction is substantiated and verified with a T Statistics score of 5.102 and a p-value of 0.000 (<0.05). The establishment of user loyalty is contingent upon the level of satisfaction experienced by users. When providers deliver high-quality services to users, it increases the chances of attracting new customers. The more users that use e-learning applications as learning tools, the more effective the system in these applications will be because a larger number of customers instills trust in others. The statement suggests that the level of satisfaction a user experiences is influenced by their perception of the quality of service received. This perception can have implications for user loyalty. DeLone & McLean (2004), Pham et al. (2019) also confirms this by showing that satisfaction with e-learning is positively connected to the quality of e-learning services, which, in turn, affects the loyalty of users.

5. Conclusion

The findings showed that the quality of e-learning services affects the satisfaction of users. As a result, user satisfaction plays a crucial role in determining user loyalty. The results confirm that user satisfaction has s significant effect on user loyalty. The implications of the findings that quality of e-learning services significantly affects the satisfaction of users are profound. First and foremost, it underscores the importance of investing in high-quality e-learning services. Institutions that offer e-learning courses will need to ensure that their platforms are intuitive, accessible, and engaging in order to keep students satisfied. Moreover, the findings suggest that poor e-learning services can lead to high levels of dissatisfaction among users. This can, in turn, have serious consequences for the success of e-learning initiatives. If students are not satisfied with their e-learning experience, they may be more likely to drop out of their courses, leading to lower completion rates. At the same time, the findings also point to the potential for public sector institutions that are able to provide high-quality e-learning services to gain a competitive advantage. As e-learning becomes more popular, the institutions that are able to offer the best e-learning experiences are likely to be the ones that attract the most users. Moreover, in terms of the finding that user satisfaction has a significant effect on user loyalty has several implications, organizations need to prioritize customer satisfaction. This finding highlights the importance of ensuring that customers are satisfied with the products, services and overall experience provided by an organization. Organizations need to invest in understanding customer needs, preferences, and expectations and then work towards delivering on those expectations. Practically, the findings highlight the importance of quality in the e-learning space, and the need for public sector institutions to invest in e-learning services that are user-focused and designed to meet the needs of modern learners.

As limitations, the findings may only be applicable to a specific context and cannot be generalized to other sectors of the business. Moreover, the study may suffer from a biased sample of users who are more inclined to remain loyal to the company or brand being studied, leading to a skewed interpretation of the results. For future research agenda, future research should investigate the impact of user satisfaction on user loyalty in diverse industries and settings. Further research could compare the impact of user satisfaction on user loyalty across different socio-demographic groups, such as gender, age, income, and education, to assess whether the relationship between these variables is universal or context-dependent. Lastly, theoretical models could be developed that incorporate other variables to determine which specific factors are influencing user loyalty, and whether user satisfaction is a mediating or moderating variable in this relationship.

References

Adnani, L., Jusuf, E., Alamsyah, K., & Jamaludin, M. (2023). The role of innovation and information sharing in supply chain management and business performance of halal products in tourism destinations. Uncertain Supply Chain Management, 11(1),195–202.

Amoako, G. K., Kutu-Adu, S. G., Caesar, L. D., & Neequaye, E. (2019). Relationship marketing and repurchase intention in Ghana's hospitality industry: An empirical examination of trust and commitment. *Journal of Relationship Marketing*, *18*(2), 77-107.

Chen, S. C., & Lin, C. P. (2015). The impact of customer experience and perceived value on sustainable social relationship in blogs: An empirical study. *Technological forecasting and social change*, *96*, 40-50.

Cheng, Y. M. (2019). How does task-technology fit influence cloud-based e-learning continuance and impact?. *Education+ Training*, *61*(4), 480-499.

Cronin Jr, J. J., & Taylor, S. A. (1992). Measuring service quality: a reexamination and extension. *Journal of marketing*, *56*(3), 55-68.

DeLone, W. H., & McLean, E. R. (2004). Measuring e-commerce success: Applying the DeLone & McLean information systems success model. *International Journal of electronic commerce, 9*(1), 31-47.

Dominici, G., & Palumbo, F. (2013). How to build an e-learning product: Factors for user/customer satisfaction. *Business Horizons*, *56*(1), 87-96.

Efiloğlu Kurt, Ö. (2019). Examining an e-learning system through the lens of the information systems success model: Empirical evidence from Italy. *Education and Information Technologies*, *24*(2), 1173-1184.

Eid, R., & El-Gohary, H. (2015). The role of Islamic religiosity on the relationship between perceived value and tourist satisfaction. *Tourism management*, *46*, 477-488.

Farid, S., Ahmad, R., Niaz, I. A., Arif, M., Shamshirband, S., & Khattak, M. D. (2015). Identification and prioritization of critical issues for the promotion of e-learning in Pakistan. *Computers in Human Behavior*, *51*, 161-171.

Gan, C., & Wang, W. (2017). The influence of perceived value on purchase intention in social commerce context. *Internet research*, *27*(4), 772-785.

Ghali, Z. (2021). Motives of customers'e-loyalty towards e-banking services: a study in Saudi Arabia. *Journal of Decision Systems*, *30*(2-3), 172-193.

Hsu, C. L., & Lin, J. C. C. (2016). Effect of perceived value and social influences on mobile app stickiness and in-app purchase intention. *Technological Forecasting and Social Change*, *108*, 42-53.

Jamaludin, M., Busthomi, H., Gantika, S., ... Sunarya, E., & Nur, T. (2022). Market orientation and SCM strategy on SME organizational performances: the mediating effect of market performance . Cogent Economics and Finance, 10(1), 2157117

Jin, N., Lee, S., & Lee, H. (2015). The effect of experience quality on perceived value, satisfaction, image and behavioral intention of water park patrons: New versus repeat visitors. *International journal of tourism research*, *17*(1), 82-95.

Kashive, N., Powale, L., & Kashive, K. (2020). Understanding user perception toward artificial intelligence (AI) enabled e-learning. *The International Journal of Information and Learning Technology*, *38*(1), 1-19.

Khan, M. A., Zubair, S. S., & Malik, M. (2019). An assessment of e-service quality, e-satisfaction and e-loyalty: Case of online shopping in Pakistan. *South Asian Journal of Business Studies*, *8*(3), 283-302.

Knop, K. (2019). Evaluation of quality of services provided by transport & logistics operator from pharmaceutical industry for improvement purposes. *Transportation Research Procedia*, *40*, 1080-1087.

Lee, S., Phau, I., Hughes, M., Li, Y. F., & Quintal, V. (2016). Heritage tourism in Singapore Chinatown: A perceived value approach to authenticity and satisfaction. *Journal of Travel & Tourism Marketing*, *33*(7), 981-998.

Lewis, B. R., & Mitchell, V. W. (1990). Defining and measuring the quality of customer service. *Marketing intelligence & planning*, *8*(6), 11-17.

Li, F., Lu, H., Hou, M., Cui, K., & Darbandi, M. (2021). Customer satisfaction with bank services: The role of cloud services, security, e-learning and service quality. *Technology in Society*, *64*, 101487.

Nugroho, A. H., Bakar, A., & Ali, A. (2017). Analysis of technology acceptance model: Case study of Traveloka. *Arthatama*, *1*(1), 27-34.

Özkan, P., Süer, S., Keser, İ. K., & Kocakoç, İ. D. (2020). The effect of service quality and customer satisfaction on customer loyalty: The mediation of perceived value of services, corporate image, and corporate reputation. *International Journal of Bank Marketing*, *38*(2), 384-405.

Pakurár, M., Haddad, H., Nagy, J., Popp, J., & Oláh, J. (2019). The service quality dimensions that affect customer satisfaction in the Jordanian banking sector. *Sustainability*, *11*(4), 1113.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of marketing*, *49*(4), 41-50.

Prasetyo, Y. T., Ong, A. K. S., Concepcion, G. K. F., Navata, F. M. B., Robles, R. A. V., Tomagos, I. J. T., ... & Redi, A. A. N. P. (2021). Determining factors Affecting acceptance of e-learning platforms during the COVID-19 pandemic: Integrating Extended technology Acceptance model and DeLone & Mclean is success model. *Sustainability*, *13*(15), 8365.

Purwanti, Y., Purwanto, B.H., & Jamaludin, M. (2022). Citizen Participation In Electronic Public Administration: The Considerations Of Functionality And The Technology Acceptance Model. International Journal of Public Policy and Administration Research, 2022, 9(4), 90–101.

Rajasekaran, V. A., Kumar, K. R., Susi, S., Mohan, Y. C., Raju, M., & Hssain, M. W. (2022). An evaluation of e-learning and user satisfaction. *International Journal of Web-Based Learning and Teaching Technologies (IJWLTT)*, *17*(2), 1-11.

Sewandono, R. E., Thoyib, A., Hadiwidjojo, D., & Rofiq, A. (2022). Performance expectancy of E-learning on higher institutions of education under uncertain conditions: Indonesia context. *Education and information technologies*, 1-28.

Tzavlopoulos, I., Gotzamani, K., Andronikidis, A., & Vassiliadis, C. (2019). Determining the impact of e-commerce quality on customers' perceived risk, satisfaction, value and loyalty. *International Journal of Quality and Service Sciences*.

Ullah, S. (2012). Customer satisfaction, perceived service quality and mediating role of perceived value. *International journal of marketing studies*, *4*(1).

Uzir, M. U. H., Al Halbusi, H., Thurasamy, R., Hock, R. L. T., Aljaberi, M. A., Hasan, N., & Hamid, M. (2021). The effects of service quality, perceived value and trust in home delivery service personnel on customer satisfaction: Evidence from a developing country. *Journal of Retailing and Consumer Services*, *63*, 102721.

Vo, N. T., Chovancová, M., & Tri, H. T. (2020). The impact of E-service quality on the customer satisfaction and consumer engagement behaviors toward luxury hotels. *Journal of Quality Assurance in Hospitality & Tourism*, *21*(5), 499-523.

Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of marketing*, *60*(2), 31-46.