The Influence of Perceived Value and Satisfaction on User Loyalty towards E-service Among Vocational Undergraduate Students at UNY

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Abstract. The development of technology in education brings significant changes in academic services for students. Various information related to academic services is accommodated through university e-service services. The optimization of e-service is represented by student loyalty in using university e-service. This research explores a model of student loyalty to e-service usage, focusing on how perceived value and satisfaction influence it. The research involves 100 student respondents and tests hypotheses using partial least squares (PLS). Respondents were asked to fill out a questionnaire that had been distributed previously. There are 13 statements filled in by respondents to reflect the measurement of each variable. The results show that perceived value and satisfaction impact the loyalty of Vocational Undergraduate Students at UNY regarding their use of e-services.

Keywords: loyalty, perceived value, satisfaction.

1 Introduction

User loyalty can be achieved when user needs are fulfilled and satisfaction is reached [1]. Loyalty also represents the willingness to use a service in the long term [2]. Specifically, Culture, contentment, and perceived value are antecedents of loyalty [3, 4]. Based on that, providing for the requirements and delight of users are some essential components of user loyalty.

Examining customer loyalty to long-standing public goods or services in comparison to rival offerings is the goal of user loyalty research [5]. Users' perceptions of the benefits, along with their willingness and satisfaction in using the product or service compared to alternatives, will serve as indicators of loyalty [5]. Therefore, this research specifically evaluates how perceptions of value and satisfaction influence user loyalty, drawing on the work of Diallo, Diop-Sall [4]. Value perception shapes a person's perspective on the advantages they believe a good or service will provide [6]. Perceived value positively affects user loyalty [4, 7, 8]. This study argues that user loyalty is influenced by an individual's evaluation of the value of a product or service that

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provides greater benefits compared to others. Consequently, the aim of this research is to explore how perceived value affects user loyalty.

An individual's perception of their experience with a product or service is shaped by user satisfaction [6]. User satisfaction positively affects loyalty [4, 8, 9]. This research indicates that an individual is more likely to demonstrate loyalty to a product or service when they have a positive experience or impression. Thus, this research investigates how satisfaction affects user loyalty.

This study refers to the research by Diallo, Diop-Sall [4] on the antecedent model of user loyalty, which includes perceived value and satisfaction. This study extends their research to enhance the generalizability of the results within a different context—the use of academic e-services. The empirical approach is expected to generate new ideas, perspectives, and contributions both theoretically and practically for scholars and practitioners alike. The primary aim is to advance understanding, particularly in the field of behavior. The findings should offer additional references for future academic work and provide valuable insights for managing academic services at universities

2 Literature Review

2.1 User Loyalty

Loyalty reflects the bond between a user and a product, which can be clearly observed through repeated behavior or ongoing use of the product [10]. Loyalty also represents a commitment to continue using a product despite external situational influences that might potentially cause users to switch to another product [1]. Loyalty specifically involves a customer's inclination to regularly use a product, remain committed to it over time, and willingly recommend it to others [11, 12]. Factors that influence loyalty include service quality, perceived value, satisfaction, culture, commitment, and trust [3, 4, 10].

Loyalty can be cultivated through various factors, including creating value and ensuring satisfaction [13]. User loyalty can be developed through the process of delivering value to users, which involves providing comfort and service to users, leading to satisfaction, repeat usage, and recommendations to others [13].

User loyalty is shaped by one's attitude towards a product, which is determined by their perceptions and the degree of satisfaction they experience [6]. Furthermore, cultural factors also impact an individual's mindset, which in turn affects their behavior [3]. Service, perceived value, satisfaction, and culture are key factors in determining user loyalty [3, 4].

2.2 The Link Between Perceived Value and User Loyalty

The connection between perceived value and user loyalty can differ and is affected by one's time orientation [4]. Previous studies suggest that perceived value has a more significant effect on user loyalty than factors like commitment and trust [8]. Additionally, various studies demonstrate that perceived value significantly affects user

loyalty [14-16]. The connection between perceived value and loyalty is complex and calls for additional empirical research [17].

In the Technology Acceptance Model (TAM), perceived value is often derived from perceived usefulness, which explains how a technology can offer greater value compared to alternative methods for accomplishing the same task [18, 19]. Technology that offers greater value or benefits to an individual will shape their attitudes and intentions towards it [20]. This suggests that someone who perceives increasing value or benefits from the technology they use will also have increasingly positive attitudes and intentions towards that technology.

This study argues that an individual's perceived value influences the loyalty of undergraduate students at UNY to use e-services due to the perceived benefits they experience. According to TAM, as an individual's perceived benefits increase, so does their perceived value of a service. This, in turn, influences their attitude and intention to continue using the e-service, which enhances user loyalty.

Additionally, based on the theory of goal and action identity perception, perceived value in this study can be defined as attaining the most favorable outcome from an activity [21]. Sirdeshmukh, Singh [21] explain Perceived value can be defined as the motive driving a person's choice to stick with or abandon a product or service based on which one they believe to provide the best value. Students are more likely to exhibit loyalty if they believe using e-services offers more benefits than using alternative options. Consequently, this study proposes the following hypothesis:

H1: Perceived value positively influences the loyalty of undergraduate students at UNY towards using e-services.

2.3 The Link Between Satisfaction and User Loyalty

The connection between satisfaction and user loyalty is influenced by societal conditions, national factors, and applicable regulations [4]. Previous research provides evidence that satisfaction is a critical factor affecting loyalty [8, 22-24]. Previous research on the relationship between loyalty and satisfaction suggests more research because there are a wide range of contributing factors and different results [8]. Studies examining the connection between user loyalty and satisfaction are also categorized based on how users perceive satisfaction using cognitive and emotive components [25]. As stated by Kotler and Keller [1], in particular, user satisfaction expresses how happy or disappointed a person is with a product or service in comparison to their expectations. People who are happy with a product or service are more likely to stick with it, whereas people who are unhappy are more likely to look for alternatives [1]. The higher someone's satisfaction with a perceived service, the higher their loyalty to it.

According to this study, user loyalty is impacted by students' satisfaction with e-service delivery. Customers who are happy with a product or service are more likely to stick with it, while unhappy customers are more likely to move or stop using it. This is due to the fact that happy users of the e-service report favorable results or impressions. Consequently, this study proposes the following hypothesis:

H2: Satisfaction positively influences the loyalty of undergraduate students at UNY towards using e-services.

This research model illustrates the antecedents of user loyalty to e-services among undergraduate students at UNY. The study investigates how perceived value and satisfaction impact user loyalty [4]. Specifically, in Figure 1, the research model is shown.

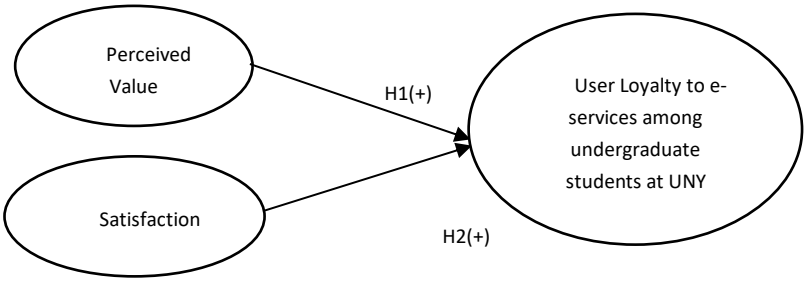

Fig. 1. Research Model

3 Research Methodology

3.1 Research Design

This study uses a quantitative methodology and makes use of a survey that was given to students in the Yogyakarta area. Simple random sampling is used to choose the sample, guaranteeing each respondent an equal and independent chance of being chosen. Structural Equation Modeling with Partial Least Squares (SEM-PLS), a tool for data analysis, aids in the interpretation of the correlations between indicators and latent variables pertinent to the study hypotheses. Six months are allotted to the study.

3.2 Operational Definition and Measurement of Variables

Three primary variables are the subject of this study: perceived value, satisfaction, and loyalty. The relationship that exists between a user and a product—that is, when the user exhibits the same behavior or uses the product consistently—is known as loyalty. The term "perceived value" describes how one evaluates the advantages that a good or service offers. User satisfaction is the measure of how satisfied a user is with a product or service. Every characteristic is measured on a 5-point Likert scale, where 1 represents "strongly disagree" and 5 represents "strongly agree."

3.3 Questionnaire Development

This study uses a research questionnaire that was previously employed in a different type of research environment. The survey is predicated on earlier studies. The satisfaction and perceived value surveys are based on Chen et al. [42], while the loyalty questionnaire is based on Niu & Mvondo [41] through the following stages: 1) systematic literature review, 2) translation and adaptation, and 3) validity and reliability testing. The systematic literature review stage is the initial phase to select and explore research instruments that are suitable and relevant. Translation is conducted for instruments originally in languages other than Indonesian. The translated results are then adapted to fit the research context. The final stage involves validity and reliability testing. Validity testing begins with face validity, involving experts in information systems and management accounting. The face validity results are then piloted with a subset of randomly selected respondents to test validity and reliability. In summary, the research instrument framework is presented in Table 1.

Table 1. Instrumentation Structure

Variable	Questionnaire Items / Indicators	References
Loyalty	L1 I intend to continue using e-services regularly in the future.	Niu & Mvondo [41]
	L2 I plan to use e-services more frequently in the future.	
	L3 I will speak positively about e-services to others.	
	L4 I will strongly recommend others to use e-services.	
Perceived Value	PN1 I am very happy spending time engaging with e-services.	Chen et al [42]
	PN2 I feel very valuable spending time interacting with e-services.	
	PN3 I feel very valuable spending effort to interact with e-services.	
	PN4 Interacting with e-services is worth my time.	
	PN 5 Interacting with e-services is worth my effort.	
Satisfaction	K1 Overall, I am highly satisfied with the e-service.	Chen et al [42]
	K2 Overall, I am quite satisfied with the e-service.	
	K3 My expectations for the e-service are fulfilled.	
	K4 I would recommend this e-service to a friend.	

3.4 Population and Sample

The population of this study consists of all undergraduate students. The research involves surveying undergraduate students at UNY in Yogyakarta. Simple random sampling is employed as the sampling technique, ensuring that every respondent has an equal chance of being selected and that selections are mutually exclusive. [27].

There are several ways to determine sample size. Pallant [27] recommends that the number of indicators and constructs can be used to calculate the sample size. This study has a total of 13 indicators and 3 constructs. Therefore, a sample size of 65 is appropriate (i.e., 13 * 5). Gefen, Straub [28] and Kock and Hadaya [29] use the least number of inner or outer linkages connecting to latent variables in the model should be at least ten times the sample size, according to the minimum sample size estimation approach in PLS SEM. A total sample size of 30 is deemed sufficient for this investigation because it contains up to three inner or outer linkages to latent variables (3 * 10).

3.5 Data Analysis Technique

In this study, every hypothesis is assessed by the application of the Partial Least Squares (PLS) method in conjunction with the Structural Equation Modeling (SEM) approach. Smart PLS 3, created by Ringle, Wende [30] is used in this study to estimate measurement and create structural models for hypothesis testing that help guide decision making. Partial Least Squares (PLS) has been employed to examine the cause and effect relationships among latent variables-proposed in this study. PLS is a variance based analysis that allows for minimizing the required sample size [31]. Ho, Ang [32] describe the benefits of PLS utilization. PLS can assess the validity and reliability of the model first. Second, PLS can create a structural model to evaluate the strength of the proposed associations by using latent constructs as indicators. Temme, Kreis [33] explain that PLS can provide better actual values than OLS. PLS is a suitable analytical tool for understanding complex phenomena and extending theories beyond established ones [34]. All research variables in this study are measured using interval data, and PLS is a useful tool for analyzing this type of data [35]. Prior to evaluating the structural model, the measurement model must be evaluated when using PLS to analyze data [36]. Hulland [37] suggests testing measurement and structural models separately and simultaneously. In summary, the testing procedure based on the PLS approach applied in this study is presented in Figure 2.

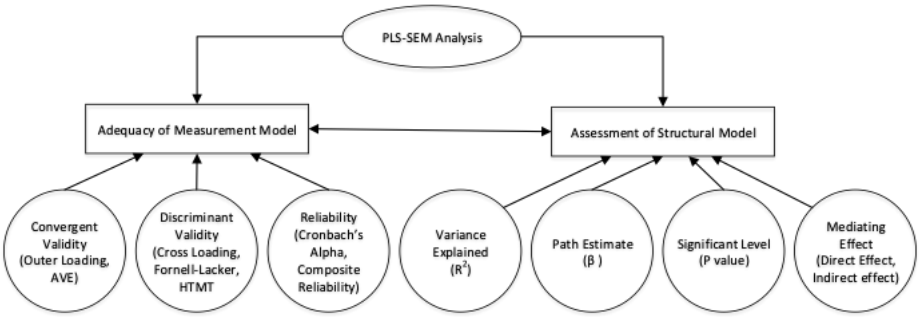

Fig. 2. Procedure and Stages of PLS Testing

There are four main ways to evaluate the interactions between variables in variance based structural equation modeling methodologies, including Partial Least Squares: the product indicator approach, the two stage approach, the hybrid approach, and the orthogonal approach [26]. Each approach treats the indicators of latent variables differently. The moderation and interaction testing in this study employ the moderation model approach in PLS, following the method proposed by Becker, Cheah [38] and Hair, Hult [36].

4 Research Finding

The respondents of this study consist of 100 undergraduate students from the Vocational Faculty of UNY. The majority of respondents are male, comprising 64 individuals (64%), while female respondents account for 36 individuals (36%). The age distribution of respondents is approximately 18-21 years old, comprising 30 individuals; 22-24 years old, comprising 15 individuals; and 25-27 years old, comprising 55 individuals. Table 2 provides a summary of the demographic profile of the respondents.

Table 2. Demographics of Respondents

No.	Characteristics	Respondents	Total	
1	Gender:	Male	64	64.00 %
		Female	36	36.00 %
	Total:		100	100.00 %
2	Age:	18 - 21 years	30	30.00 %
		22 - 24 years	15	15.00 %
		25 - 27 years	55	55.00 %
		>24	0	0.00 %
	Total:		100	100.00 %

Source: Data analysis results (2024)

This study employs a two-step analysis procedure: first, a measurement model is used to evaluate the measuring instruments' validity and reliability; second, a structural model is applied to examine the links between variables or test hypotheses. [39]. Using loading factor values, AVE (Average Variance Extracted), and composite reliability, the study evaluates concept validity and reliability [40].

Numerous indicators (i.e., loading factor values above 0.7 and AVE above 0.5) satisfy the validity standards, according to the results of the measurement model testing. To be more precise, there are five indicators for the perceived value construct, four indicators for the pleasure construct, and four indicators for the loyalty construct. The measuring equipment utilized in this work are reliable, as evidenced by the measurement model results, which reveal that the composite reliability values for each construct are above 0.7. Tables 3, 4, and 5 summarize the findings of the validity and reliability tests.

Table 3. Loading Factor

No.	Variable	Indicator	Value
1	Perceived Value	PN1	0.867
		PN2	0.903
		PN3	0.937
		PN4	0.878
		PN5	0.893
2	Satisfaction	K1	0.946
		K2	0.938
		K3	0.898
		K4	0.928
3	Loyalty	L1	0.903
		L2	0.769
		L3	0.922
		L4	0.893

Source: Data analysis results (2024)

Table 4. AVE

No.	Variable	Value
1	Perceived Value	0.802
2	Satisfaction	0.861
3	Loyalty	0.763

Source: Data analysis results (2024)

Table 5. Composite Reliability

No.	Variable	Value
1	Perceived Value	0.953
2	Satisfaction	0.961
3	Loyalty	0.928

Source: Data analysis results (2024)

Utilizing the structural model, research hypotheses are assessed [40]. In order to evaluate the structural model and determine the relevance of the hypotheses through Smart PLS 3 analysis, 500 subsamples are bootstrapped in this study. Table 6 and Figure 3 provide specifics regarding the results of the hypothesis testing.

Table 6. Hypothesis Testing

Hypotheses	Relationship	*Original sample*	*T-Statistic*	*P-Value*	Results
H1	Perception of value on loyalty	0.373	2.983	0.003	Significant
H2	Satisfaction on loyalty	0.534	4.837	0.000	Significant

Source: Data analysis results (2024)

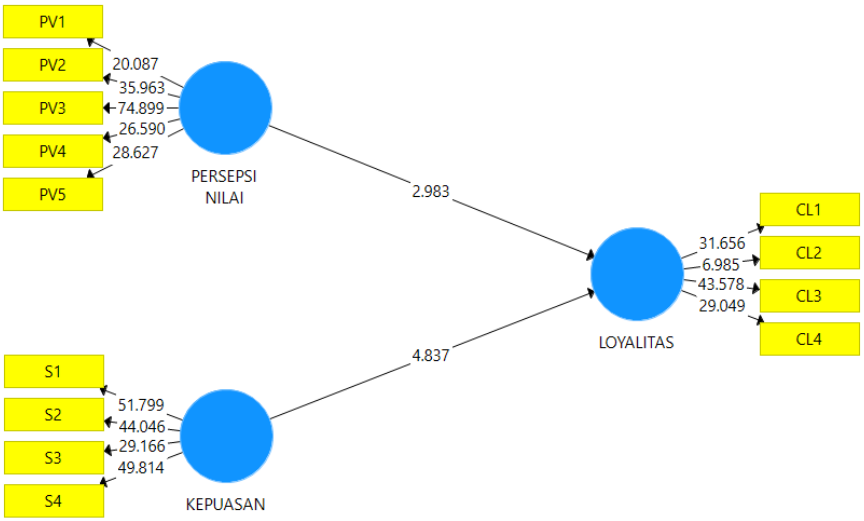

Fig. 3. Structural Model

The study's original sample indicates whether the correlations are positive or negative by pointing out their direction [40]. The t-statistic and the t-table value are compared to test the hypothesis. At a 95% confidence level (5% alpha), the hypothesis is supported if the t-statistic is greater than the t-table value. The critical t-table value for a two-tailed hypothesis is more than 1.96 [40].

Undergraduate students at UNY who use e-services have a beneficial impact on their loyalty when they see value, according to hypothesis H1. The results of the study demonstrate that loyalty is positively impacted by perceived value, as evidenced by the t-statistic of 2.983, which is greater than the t-table value of 1.96, and the p-value of 0.003, which indicates significance at $\alpha = 5\%$. H2 indicates that undergraduate students' loyalty in using UNY's e-services is positively influenced by satisfaction. With a p-value of 0.000, which is significant at $\alpha = 5\%$, and a t-statistic of 4.837, which exceeds the t-table value of 1.96, the data show that satisfaction has a considerable impact on loyalty.

5 Discussion

In general, this study looks into how user loyalty is impacted by perceptions of value and happiness, particularly when it comes to undergraduate students' loyalty to UNY's e-services. In particular, the investigation shows that the hypotheses are substantially validated overall.

Prior studies have demonstrated that perceived value, as opposed to other elements like trust and commitment, has a bigger influence on customer loyalty [8]. Additionally,

various studies indicate that perceived value significantly influences user loyalty [14-16]. Because of the dynamic nature of the relationship between perceived worth and loyalty, empirical research is necessary [17]. According to the Technology Acceptance Model (TAM), perceived value can vary depending on how valuable something is thought to be, which explains why technology can be more valuable than other ways to do the same activity [19, 20]. Technology that is more valuable or advantageous to a person will influence that person's views and intentions toward that technology [19, 20]. This suggests that someone who perceives greater value or benefits from the technology they use will also have a higher or more positive attitude and intention towards that technology. This study argues that an individual's perceived value influences the loyalty of undergraduate students' use of e services at UNY due to the benefits perceived by users. According to TAM, a person's perception of a service's importance rises in proportion to its perceived advantages. User loyalty is increased as a result, as it affects their attitude and intention to utilize the e-service.

Furthermore, the optimal accomplishment of a goal through an activity is what is meant to be understood as perceived value in marketing research, as per goal perception and identity action theory [21]. Sirdeshmukh, Singh [21] explain that perceived value is a driving force behind people's decisions to stick with or abandon a product or service based on which one they believe to provide the best value. The first hypothesis that a person's perceived worth influences undergraduate students' allegiance to UNY e-services because of their perceived advantages is supported by the results of this study. Additionally, an individual's view of the value of the service rises in tandem with the perceived benefits, improving their attitude and intention to keep using the e-service and ultimately increasing user loyalty.

Prior research has also shown that loyalty is significantly influenced by satisfaction. [8, 22-24]. The connection between satisfaction and loyalty is categorized into emotional and rational dimensions [25]. According Kotler and Keller [1], Satisfaction is defined by the positive or negative feelings experienced from using a product or service. A person who is unhappy with a product or service is unlikely to keep using it [1]. The degree of satisfaction reveals how devoted a user is. This study confirms the second hypothesis, which suggests that an individual's satisfaction with a product impacts the loyalty of undergraduate students toward e-services at UNY. A satisfied person is more likely to stay loyal to the product or service, whereas dissatisfaction may prompt them to switch to alternatives. This occurs because a positive experience or impression from using the e-service influences their loyalty.

The results of this study show that undergraduate students' loyalty to UNY's e-services is strongly influenced by their perceptions of value and pleasure. The results indicate that e-service users perceive benefits from the provided services. They also have positive experiences with the e-service, suggesting that these factors influence e-service user loyalty.

6 Conclusion, Limitations, and Research Recommendations

The issue this study attempts to solve is the phenomena of user loyalty, particularly as it relates to academic services that UNY students use, primarily e-services. Research on user loyalty has been extensive, but little has specifically examined user loyalty in academic service contexts for students. The findings of the study conclude that perceived value and satisfaction significantly influence the loyalty of vocational undergraduate-students UNY towards e-service usage.

The topic of this research focuses on the significant influence of perceived value and satisfaction on user loyalty towards e service usage among vocational undergraduate students UNY. Challenges in this study include data collection processes, data analysis, and hypothesis development. The strengths of the research lie firstly in addressing a relevant research problem in the current context, and secondly, in developing variables that influence user loyalty. However, weaknesses include the relatively small data and sample size. The study offers insightful information despite these obstacles and constraints, especially within the sector of academic services and the comprehension of customer loyalty. For additional validation, future research could apply this approach to other industries with larger datasets or samples. Additionally, future studies could explore different factors influencing user loyalty, such as cultural variables as suggested by Parida and Sahney [3].

The purpose of this study is to provide suggestions for audiences that are scholarly and non-academic, especially in the area of user loyalty. For the academic sector, the study is expected to provide new empirical insights and advancements in understanding user loyalty, particularly within marketing management. In the non-academic sector, it is anticipated to serve as a valuable resource for business practitioners studying factors that influence user loyalty. Specific recommendations for academic services include considering policy changes to boost user loyalty, emphasizing service excellence, improving user experience, and addressing cultural factors. This research, if related to the Sustainable Development Goals (SDGs), intersects with SDG 4, which focuses on quality education. Continuing education aims to ensure quality education by providing lifelong learning opportunities for everyone [43]. Effective e-services support good learning by facilitating learning activities with systematic services. Additionally, this study provides recommendations for universities. Firstly, it offers empirical evidence on factors influencing user loyalty, specifically perceived value and user satisfaction. Secondly, it provides insights for academics to study and develop research on user loyalty topics.

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