EFFICIENCY OF SERVICE PROCESSES IN HIGHER EDUCATION: AN EMPIRICAL ANALYSIS OF USER EXPERIENCE

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Abstract

In addition to their educational and research activities, higher education institutions operate as service organizations in which the efficiency of administrative and other service processes plays an important role in shaping student user experience and satisfaction.
In this context, the aim of this paper is to examine the relationship between the efficiency of service processes in higher education and user experience by identifying the key organizational and functional dimensions of university services. The empirical research was conducted using a structured questionnaire administered to a sample of 211 students. The analysis covers six dimensions of service processes: information availability, information timeliness, service delivery speed, procedural simplicity, coordination among university departments, and digital service accessibility. The data were analyzed using descriptive statistics, correlation analysis, and multiple regression analysis. The internal consistency of the measurement constructs was confirmed, with Cronbach's alpha coefficients ranging from 0.802 to 0.961. The results reveal positive and statistically significant associations between all six dimensions of service processes and student user experience and satisfaction. The regression analysis further confirms the relevance of these dimensions in explaining variations in user experience. Regarding improvement priorities, students particularly emphasize the need for simpler procedures, more timely information, faster service delivery, and better communication with students. The findings indicate that improving university services requires an integrated approach to service process management, based on the functional interrelationships among processes and on students' needs and expectations. This paper contributes to the economic and organizational understanding of service processes in higher education and provides an empirical basis for their systematic improvement aimed at enhancing user experience.

Keywords: efficiency, service processes, higher education, user experience, student satisfaction, university services.

1. Introduction

Contemporary higher education is undergoing increasingly significant changes in the ways educational and ancillary services are organized, managed, and delivered. In addition to their primary educational and research functions, universities are increasingly recognized as complex service organizations whose operations depend on the coordination of numerous academic, administrative, and technical processes. In the context of contemporary approaches to economic exchange, Vargo and Lusch (2004) highlight the emergence of a new dominant logic of marketing based on intangible resources, value co-creation, and the development of relationships. This perspective emphasizes the role of services and interaction in value creation, which is particularly relevant to higher education, where the value of the university experience derives not exclusively from educational content but also from students' overall experience and interactions with the institution. In this regard, Ng and Forbes (2009) point out that the value of the university experience is created through interaction and the joint participation of students and the institution. At the same time, Grönroos and Ojasalo (2004) emphasize the specific nature of productivity in the service sector, highlighting the relationship between the organization of service processes and the quality of service as perceived by users.
Under these circumstances, service quality and efficiency have become important aspects of organizational performance and of the relationships that higher education institutions establish with their users. From an economic perspective, efficient service process management involves the rational organization of activities, the timely provision of information, the simplification of

https://doi.org/10.62792/ut.icfra.y2026.i2.pp140

procedures, coordination among organizational units, and the appropriate use of digital solutions. These aspects are particularly important in university settings, where administrative and other ancillary services are closely intertwined with students' everyday activities. Inadequate coordination, untimely information, complex procedures, or limited digital accessibility may create additional organizational barriers and affect how students perceive the services provided by the institution.

In this context, user experience represents an important indicator of how students perceive the functionality and quality of university services. It concerns not only the final outcome of using a particular service but also the overall process through which it is delivered, including information availability, the time required for service delivery, procedural simplicity, communication, and coordination among the responsible university departments. Accordingly, analyzing user experience makes it possible to identify the organizational aspects that shape students' perceptions and satisfaction, as well as the areas requiring improvement.

Although service process efficiency and user experience are interrelated aspects of service organization performance, examining them in the context of higher education requires particular attention due to the specific organizational structure of universities and the diversity of services they provide. It is especially important to determine which dimensions of service processes are associated with student user experience and satisfaction, as well as which areas students identify as priorities for improvement.

Against this background, the aim of this paper is to examine the relationship between the efficiency of service processes in higher education and student user experience and satisfaction. The analysis is based on six dimensions: information availability, information timeliness, service delivery speed, procedural simplicity, coordination among university departments, and digital service accessibility. Their empirical examination seeks to determine the strength and direction of their associations with user experience, as well as their relevance in explaining student satisfaction.

The paper therefore aims to contribute to a better understanding of the economic and organizational aspects of university services and to provide an empirical basis for their improvement. Particular emphasis is placed on the need for integrated service process management, whereby organizational efficiency is considered in relation to students' needs, expectations, and experiences.

2. User Experience in Higher Education

Higher education represents a complex service system in which, alongside its educational function, numerous administrative, informational, and digital services are provided to students. Throughout their studies, students interact with various university administrative units and use services related to enrolment and semester registration, examination registration, obtaining documents, submitting applications, and accessing information. The way these services are organized and delivered constitutes an important part of students' experience with a higher education institution.

From the perspective of service quality, user experience is determined not only by the outcome of a service but also by the process through which it is delivered. Parasuraman et al. (1985) link quality assessment to users' perceptions of service performance, while their subsequent model provides a basis for operationalizing and measuring perceived service quality (Parasuraman et al., 1988). Accordingly, the organization and management of service processes are important aspects of the value delivered to users.

In the literature, the term "student experience" refers to the broader range of interactions, perceptions, and experiences that students develop throughout their studies; however, its conceptual definition is not entirely consistent. Jones (2018) examines it as the outcome of

students' interactions with various systems and factors within the university environment. Similarly, Benckendorff, Ruhanen, and Scott (2009) point out that the student experience extends beyond teaching, the curriculum, and assessment, encompassing broader institutional, student-related, and external factors. This is also confirmed by the systematic review conducted by Matus Palma, Rusu, and Cano (2021), which indicates that the literature adopts different approaches to defining and measuring the student experience, often linking it to service quality and satisfaction.

For the purposes of this study, it is important to distinguish between the overall student experience and the user experience associated with specific university services. While the former encompasses a broader range of academic, social, and institutional aspects of student life, the latter concerns students' perceptions and experiences when interacting with the university's administrative, informational, and digital services. This narrower understanding is precisely what the present study seeks to measure.

This approach is consistent with models of service quality in higher education. Clewes (2003) examines the assessment of service quality across different stages of the service experience, from the formation of expectations and the use of the service to its subsequent evaluation. Douglas, McClelland, and Davies (2008), in turn, link perceived quality across different aspects of higher education services to satisfaction with the overall student experience. Their subsequent research further emphasizes the relationship between the student experience, teaching and learning aspects, and the service environment in higher education (Douglas et al., 2015).

The variety of approaches to measuring service quality, including the SERVQUAL, SERVPERF, and HEdPERF models, indicates that no single measurement framework is applicable across all higher education contexts. Measurement constructs should therefore be adapted to the specific subject matter and objectives of each study. In this regard, examining user experience through information availability and timeliness, the speed, simplicity, and coordination of service processes, and digital service accessibility provides a more appropriate understanding of how students experience university services.

3. Student Satisfaction with University Services

Student satisfaction is one of the most frequently examined dependent variables in studies of service quality in higher education. Although closely related, service quality and satisfaction are not synonymous concepts. Service quality refers to the assessment of a service's characteristics and performance, whereas satisfaction represents a broader evaluation of the experience in relation to users' expectations and needs.

In higher education, student satisfaction depends not only on the outcome of a service but also on the way it is provided. Information availability and timeliness, response speed, procedural simplicity, communication with the institution, and the accessibility of administrative and digital services are all aspects that may shape students' overall assessment.

The relationship between administrative services and student satisfaction is also supported by Rizos, Sfakianaki, and Kakouris (2022), who examine administrative service quality using the SERVQUAL model. Their findings reveal a gap between students' expectations and perceptions across all the dimensions examined, indicating that their expectations regarding administrative services are not fully met.

Expectations provide an important reference point in service evaluation. Students form expectations regarding information availability, the time required to complete procedures, procedural clarity, and communication with the institution. Their satisfaction is therefore associated with the extent to which their actual service experience meets these expectations.

In the context of this study, satisfaction is considered an overall assessment of the user experience with university services. Accordingly, information availability and timeliness, the speed, simplicity, and coordination of service processes, as well as digital service accessibility, are examined as interrelated dimensions that may be associated with student satisfaction.

4. Research Methodology

The specific objective of this study is to examine the relationship between the efficiency of marketing-logistics processes in higher education and student user experience and satisfaction. Marketing-logistics processes are operationalized through six dimensions: information availability and timeliness, the speed and simplicity of service processes, process coordination, and digital service accessibility. User experience and satisfaction are defined as the dependent construct and measured through statements addressing the overall experience, the fulfilment of expectations, perceived quality, and overall satisfaction with university services.

Based on this objective, four research questions were formulated. They address students' assessments of the efficiency of service processes and their user experience and satisfaction; the existence of statistically significant associations between the six dimensions and the dependent construct; and the aspects of university services that students identify as priorities for improvement. The general hypothesis assumes a positive relationship between the dimensions of marketing-logistics processes and student user experience and satisfaction. It is further specified through six sub-hypotheses, one for each of the aforementioned dimensions. The conceptual model treats the six dimensions as independent constructs and user experience and satisfaction as the dependent construct. The hypothesized relationships are interpreted as statistical associations rather than causal relationships.

The study was conducted through an anonymous and voluntary survey among students who had used university services. A total of 211 responses were recorded in the dataset; however, the number of valid responses varies across questions. Accordingly, the number of valid responses (N) is reported for each item in the analysis.

Students' attitudes and perceptions were measured using a five-point Likert scale, ranging from 1 – "Strongly disagree" to 5 – "Strongly agree." Each of the six independent constructs was measured using three items, while the dependent construct was measured using four items. Thus, the main analytical model comprises a total of 22 items (see Table 1). For statistical analysis, the items belonging to each construct were combined into composite measures.

Table 1. Items of the Independent and Dependent Constructs

Construct	Role in the model	Number of items
Information availability	Independent	3
Information timeliness	Independent	3
Service process speed	Independent	3
Service process simplicity	Independent	3
Service process coordination	Independent	3
Digital service accessibility	Independent	3
User experience and satisfaction	Dependent	4
Total		22

The data analysis includes descriptive statistics, an assessment of internal consistency, correlation analysis, and regression analysis. Descriptive statistics are used to present the sample structure and the distribution of responses through frequencies, percentages, and

appropriate measures for the composite constructs. The internal consistency of the items within each construct is assessed using Cronbach's alpha coefficient.
Pearson's correlation coefficient (Pearson's *r*) is used to examine the direction and strength of the associations between the six dimensions and user experience and satisfaction. In addition, multiple linear regression analysis is conducted to examine the combined association of the six dimensions with the dependent construct, as well as the relative contribution of each dimension within the model. Since the study is non-experimental, the regression results are interpreted in terms of explained variance and statistical relationships between variables, rather than as evidence of causal effects.

5. Results of the empirical study

5.1. Respondent Profile and Use of University Services

The study included students from different study cycles and years, with the majority enrolled in the first cycle and in the first year of study. This composition makes it possible to examine user experience from the perspective of students with varying levels of experience in using university services.
Among the services examined, semester enrolment or registration was the most frequently used (71.4%), followed by the student affairs office and examination registration (45.7% each), the electronic student information system (43.8%), and the university website (41.4%). Document issuance was reported by 33.3% of respondents, while 31.4% indicated using electronic submission of applications or documents. A smaller proportion used electronic communication with university administrative units (19.5%) and other administrative or digital services. Since multiple responses were allowed, the percentages do not add up to 100%.
Regarding frequency of use, 43.5% of students reported using the services frequently, while 33.8% used them occasionally. A total of 17.4% used the services rarely or very rarely, whereas 5.3% did so very frequently. In terms of service channels, 29.7% used physical and digital channels approximately equally, 25.8% relied predominantly on digital channels, and 21.1% predominantly on physical channels. For 23.4%, the choice depended on the type of service. These findings indicate that students use physical and digital channels concurrently.

5.2. Descriptive Analysis of Service Process Efficiency

The descriptive analysis of the six dimensions was based on three items for each dimension, assessed using a five-point Likert scale. The interpretation takes into account positive responses (4 and 5), as well as neutral and negative ratings.
The results indicate predominantly positive perceptions of information availability and timeliness. The highest level of agreement was observed regarding the availability of information on deadlines and requirements, as well as timely notifications about important deadlines. However, a higher proportion of neutral responses was recorded regarding the timeliness of responses to student enquiries, indicating room for improvement in communication with students.
The speed of service processes was also rated predominantly positively. Most respondents consider that requests are processed within a reasonable timeframe, waiting times are acceptable, and procedures are completed quickly. Nevertheless, the presence of neutral ratings, particularly regarding request processing, indicates that students' experiences are not entirely uniform.
Regarding the simplicity of service processes, positive ratings prevail for both the procedures and the instructions for carrying them out. However, the need for further simplification was the

most frequently identified improvement priority (35.9%), indicating that, despite the relatively positive assessment, students still perceive opportunities for improvement.
The coordination of service processes shows a less favorable response distribution compared with the other dimensions. A particularly notable finding is the higher number of neutral responses concerning the consistency of information provided by different university administrative units (56), as well as the lowest mean score among the six dimensions examined. These findings point to the need for better coordination among administrative units and a reduction in repetitive administrative procedures.
Digital service accessibility was rated predominantly positively. Most respondents agree that information and services are available through digital channels and that electronic systems enable them to access services without being physically present. The availability of electronic services whenever students need them received a particularly positive assessment.

5.3. User Experience and Satisfaction

The results for the four items indicate a predominantly positive assessment of user experience and satisfaction with university services. Positive responses prevail regarding students' overall experience to date, the fulfillment of their expectations, and the perceived quality of services. The most favorable assessment was recorded for overall satisfaction, with 87 respondents agreeing and 65 strongly agreeing that they were satisfied with the services they had used. The mean score for the "User Experience and Satisfaction" construct was M = 3.86.

5.4. Priorities for Improvement

Regarding priorities for improvement, respondents were allowed to select up to three aspects of university services. The most frequently identified priority was the simplification of procedures (35.9%), followed by more timely information about deadlines and changes (32.5%), improved information availability (27.7%), better communication with students (27.2%), and faster service delivery (25.7%).
Greater availability of electronic services and no perceived need for significant improvements were each reported by 18.4% of respondents. Improved functionality of digital systems was identified by 17.0%, better coordination among university administrative units by 15.5%, and improved access to documents and certificates by 11.7%.
The findings indicate that improvement priorities primarily concern simplifying and speeding up service procedures, as well as enhancing the informational and communication aspects of university services.

5.5. Testing the Research Hypotheses

To test the six sub-hypotheses, composite scores were calculated as the mean of the three items measuring each dimension. A composite score for the dependent construct, "User Experience and Satisfaction," was calculated as the mean of its four items.

5.5.1. Internal Consistency of the Measurement Constructs

Table 2. Results of the Cronbach's Alpha Analysis

Construct	Number of items	Cronbach's α
Information availability	3	0.893
Information timeliness	3	0.863
Service process speed	3	0.927

Service process simplicity	3	0.872
Service process coordination	3	0.802
Digital service accessibility	3	0.828
User experience and satisfaction	4	0.961

All Cronbach's alpha coefficients exceed 0.80, indicating good internal consistency reliability of the measurement constructs. The highest coefficient was recorded for the "User Experience and Satisfaction" construct (α = 0.961), while the lowest, although still indicating good reliability, was observed for "Service Process Coordination" (α = 0.802).
These results provide a sound basis for calculating composite scores and using them in the correlation and regression analyses.

5.5.2. Descriptive Statistics of the Constructs

Table 3. Descriptive Statistics of the Constructs

Construct	M	SD	N
Information availability	3.70	0.99	208
Information timeliness	3.64	1.08	208
Service process speed	3.63	1.08	208
Service process simplicity	3.64	1.01	206
Service process coordination	3.43	0.99	206
Digital service accessibility	3.72	1.02	206
User experience and satisfaction	**3.80**	**1.10**	**203**

Note: M = mean; SD = standard deviation; N = number of valid responses.

The highest mean among the six dimensions was recorded for digital service accessibility (M = 3.72), while the lowest was observed for service process coordination (M = 3.43).
The mean score for the dependent construct, "User Experience and Satisfaction," was 3.80 (SD = 1.10).

5.5.3. Correlation Analysis

Pearson's correlation coefficient (*r*) was used to examine the direction and strength of the linear associations between each of the six independent constructs and the dependent construct, "User Experience and Satisfaction," thereby testing hypotheses H1–H6. The analysis was based on composite scores calculated as the mean of the corresponding measurement items. The statistical significance of the correlation coefficients was assessed using a two-tailed test, with a significance level of $p < 0.05$. The magnitude of the coefficients was interpreted in terms of the strength of the associations, while their positive or negative signs indicated the direction of the relationships. The results are presented in Table 4.

Table 4. Pearson's Correlation Coefficients

Sub-hypothesis	**Relationship**	**Pearson's r**	**p**	**N**
H1	Information availability → User Experience and Satisfaction	0.718	< 0.001	201
H2	Information timeliness → User Experience and Satisfaction	0.746	< 0.001	202

H3	Service process speed → User Experience and Satisfaction	0.755	< 0.001	202
H4	Service process simplicity → User Experience and Satisfaction	0.705	< 0.001	202
H5	Service process coordination → User Experience and Satisfaction	0.743	< 0.001	202
H6	Digital service accessibility → User Experience and Satisfaction	0.633	< 0.001	202

All six dimensions exhibit positive and statistically significant associations with User Experience and Satisfaction, with $p < 0.001$.
Accordingly, hypotheses H1, H2, H3, H4, H5, and H6 are supported by the correlation analysis results.
The strongest correlation with User Experience and Satisfaction was found for service process speed ($r = 0.755$), while the weakest was observed for digital service accessibility ($r = 0.633$). These values should be interpreted as indicators of statistical association rather than as evidence that any one dimension causally determines satisfaction.

5.5.4. Multiple Linear Regression

Multiple linear regression analysis was conducted to examine the six dimensions simultaneously.
The results indicate that the regression model is statistically significant:

- $R^2 = 0.725$
- Adjusted $R^2 = 0.717$
- $F(6, 193) = 84.94$
- $p < 0.001$
- $N = 200$

This means that, collectively, the six dimensions explain 72.5% of the variance in User Experience and Satisfaction in the analyzed sample. The adjusted R^2 value of 0.717 indicates that, after accounting for the number of predictors in the model, the six dimensions explain 71.7% of the variance, suggesting that the model retains strong explanatory power after this adjustment.

Table 5. Regression Coefficients

Predictor	**β**	**p**
Information availability	0.198	< 0.001
Information timeliness	0.138	0.067
Service process speed	0.193	0.011
Service process simplicity	0.115	0.059
Service process coordination	0.232	< 0.001
Digital service accessibility	0.128	0.013

In the multivariate model, information availability, service process speed, service process coordination, and digital service accessibility have statistically significant positive coefficients at $p < 0.05$.
For information timeliness ($p = 0.067$) and service process simplicity ($p = 0.059$), the coefficients are positive but do not reach the conventional significance threshold of $p < 0.05$ when all six dimensions are considered simultaneously.

This does not contradict the correlation results. Correlation analysis examines the individual bivariate association between each dimension and the dependent construct, whereas regression analysis considers all six variables simultaneously. Since the dimensions are interrelated, their individual regression coefficients may change when the other dimensions are controlled for.

5.5.5. Summary of Hypothesis Testing

The conclusions regarding hypotheses H1–H6 are based on the pre-specified correlation test. All six hypotheses are supported, as each dimension exhibits a positive and statistically significant correlation with User Experience and Satisfaction (*r* ranging from 0.633 to 0.755; $p < 0.001$).

Regression analysis serves as an additional examination of the six dimensions within a joint model. The exact results for this model are $R^2 = 0.725$ and adjusted $R^2 = 0.717$. The model identifies four dimensions as statistically significant predictors: information availability, service process speed, service process coordination, and digital service accessibility. Information timeliness and service process simplicity have positive but statistically non-significant coefficients in the joint model.

Table 6. Summary of Hypothesis Testing

Hypothesis	Pearson's correlation	Statistically significant	Result
H1	r = 0.718; p < 0.001	Yes	Supported
H2	r = 0.746; p < 0.001	Yes	Supported
H3	r = 0.755; p < 0.001	Yes	Supported
H4	r = 0.705; p < 0.001	Yes	Supported
H5	r = 0.743; p < 0.001	Yes	Supported
H6	r = 0.633; p < 0.001	Yes	Supported

5.6. Results of the Multiple Regression Analysis

The additional multiple regression analysis indicates that the six dimensions collectively explain 72.5% of the variance in User Experience and Satisfaction ($R^2 = 0.725$; adjusted $R^2 = 0.717$). The overall regression model is statistically significant, $F(6, 193) = 84.94$, $p < 0.001$.

When all six dimensions are included simultaneously, statistically significant positive standardized coefficients are obtained for:

- Information availability: $\beta = 0.198$; $p < 0.001$;
- Service process speed: $\beta = 0.193$; $p = 0.011$;
- Service process coordination: $\beta = 0.232$; $p < 0.001$;
- Digital service accessibility: $\beta = 0.128$; $p = 0.013$.

For information timeliness ($\beta = 0.138$; $p = 0.067$) and service process simplicity ($\beta = 0.115$; $p = 0.059$), the coefficients are positive but do not reach the conventional statistical significance threshold of $p < 0.05$ in this joint model.

These results do not contradict the findings of the correlation analysis. Correlation indicates the relationship between each dimension and User Experience and Satisfaction when examined separately, whereas regression estimates the contribution of each dimension while statistically controlling for the other five. Therefore, the fact that information timeliness and procedural simplicity are not statistically significant in the regression model does not mean that they are not significantly associated with satisfaction. On the contrary, their bivariate correlations are statistically significant and relatively strong.

From a methodological perspective, this is precisely why the decision to accept or reject the hypotheses in this study is based on the pre-specified correlation test, while regression analysis

is used as an additional approach to understanding the contributions of the interrelated dimensions.

5.7. Summary of the Discussion

Overall, the empirical findings support the proposed conceptual framework. All six analyzed dimensions of marketing-logistics processes exhibit positive and statistically significant associations with User Experience and Satisfaction. Accordingly, hypotheses H1, H2, H3, H4, H5, and H6 are supported.

The strongest bivariate association with User Experience and Satisfaction is observed for service process speed (r = 0.755), followed by information timeliness (r = 0.746), process coordination (r = 0.743), information availability (r = 0.718), process simplicity (r = 0.705), and digital service accessibility (r = 0.633).

The additional regression analysis indicates that the six dimensions collectively have strong explanatory power regarding the variance in User Experience and Satisfaction, with statistically significant positive independent coefficients obtained for information availability, service process speed, service process coordination, and digital service accessibility.

Taken together, the findings suggest that user experience in higher education should be viewed as the outcome of several interrelated process characteristics. It is not merely a matter of whether a service is available, but also whether information is accessible and timely, procedures are fast and simple, different organizational units are coordinated, and students can effectively use digital channels.

This approach is consistent with the contemporary understanding of service quality in higher education as a multidimensional concept, in which different components of the service process may be relevant to student satisfaction.

From a practical perspective, the findings suggest that improving marketing-logistics processes should not be reduced to digitalization alone. Although digital service accessibility has the highest mean score among the six dimensions, students identify procedural simplification, timely information, information availability, communication, and service speed as particular priorities for improvement. Accordingly, digitalization delivers the greatest value when accompanied by organizational simplification and improvements to the overall service process.

The findings suggest that the marketing-logistics approach in higher education should focus on creating a seamless, user-oriented flow of service processes rather than on the isolated optimization of individual administrative activities.

6. Conclusions and Recommendations

6.1. Conclusions

Contemporary higher education is increasingly characterized by a service-oriented approach, whereby students, in addition to their academic role, also act as users of various administrative, informational, and digital services. In this context, the way university services are organized, coordinated, and delivered represents an important aspect of the overall student user experience.

This study examined the relationship between six dimensions of marketing-logistics processes in higher education—information availability and timeliness, the speed and simplicity of service processes, their coordination, and digital service accessibility—and student user experience and satisfaction. For this purpose, a structured questionnaire using a five-point Likert scale was administered, and the statistical analysis included descriptive statistics,

internal consistency reliability assessment, correlation analysis, and multiple regression analysis.

The Cronbach's alpha values (0.802–0.961) indicated satisfactory to high internal consistency reliability across all measurement constructs, allowing composite measures to be calculated and subsequently analyzed. The descriptive results showed that all six dimensions had mean scores above the midpoint of the scale. Digital service accessibility received the highest rating ($M = 3.72$), while service process coordination received the lowest ($M = 3.43$). The mean score for User Experience and Satisfaction was $M = 3.80$, indicating a predominantly positive perception of university services.

The correlation analysis revealed positive and statistically significant associations between all six dimensions and User Experience and Satisfaction ($r = 0.633–0.755$; $p < 0.001$). The strongest association was observed for service process speed ($r = 0.755$), while the weakest was found for digital service accessibility ($r = 0.633$). Thus, all six proposed sub-hypotheses (H1–H6) are supported.

The multiple regression analysis showed that the model was statistically significant ($R^2 = 0.725$; adjusted $R^2 = 0.717$; $F(6, 193) = 84.94$; $p < 0.001$; $N = 200$), with the six dimensions collectively explaining 72.5% of the variance in User Experience and Satisfaction. In the joint model, statistically significant positive regression coefficients were found for information availability ($\beta = 0.198$; $p < 0.001$), service process speed ($\beta = 0.193$; $p = 0.011$), service process coordination ($\beta = 0.232$; $p < 0.001$), and digital service accessibility ($\beta = 0.128$; $p = 0.013$). Information timeliness and process simplicity had positive but statistically non-significant coefficients in this model. The difference compared with the correlation results arises because regression examines the dimensions simultaneously, estimating their relative contributions while controlling for the other dimensions.

The statistical findings are complemented by the priorities identified directly by students. The most frequently reported priorities were the simplification of procedures (35.9%), more timely information about deadlines and changes (32.5%), improved information availability (27.7%), better communication with students (27.2%), and faster service delivery (25.7%). These results highlight the need to improve both the organization of service processes and the informational and communication aspects of university services.

It is particularly important to note that positive mean ratings do not eliminate the need for improvement. This is evident in the case of procedural simplicity, which, despite its relatively positive mean score, was the most frequently identified improvement priority. The same applies to coordination, which had the lowest mean score but also showed a strong bivariate association with User Experience and Satisfaction ($r = 0.743$; $p < 0.001$). This confirms that assessments of the current state and the relevance of individual dimensions to user experience represent distinct analytical aspects.

Overall, the findings support the application of a marketing-logistics perspective to the analysis of university services. They indicate that user experience is associated with the integrated functioning of the informational, administrative, organizational, and digital processes through which students access and use services. Since the study is correlational and non-experimental, the identified relationships do not constitute evidence of causal effects. Nevertheless, the findings provide an empirical basis for improving the organization and delivery of university services, with particular emphasis on simplifying procedures, providing timely information, strengthening coordination among administrative units, and improving the functionality of digital channels.

6.2. Recommendations

Based on the empirical findings, the following recommendations are proposed to improve the organization and delivery of university services:

Findings and identified priorities	Recommended direction for improvement	Operational recommendation
Procedural simplification was the most frequently identified priority (35.9%).	Reducing administrative complexity.	Map key service processes, eliminate unnecessary steps and repetitions, and reduce the number of actions students are required to undertake themselves.
Timely information about deadlines and changes was identified by 32.5% of students.	Ensuring timely and coordinated communication.	Establish a notification system with clearly defined channels and responsibilities to ensure timely communication of deadlines, procedural changes, and requirements.
Information availability has a mean score of M = 3.70; 27.7% of students identified it as a priority. It is positively associated with User Experience and Satisfaction ($r = 0.718$; $\beta = 0.198$; $p < 0.001$).	Improving information accessibility and quality.	Centralize and systematize service-related information, clearly specifying requirements, steps, deadlines, required documents, and contact details as an integral part of the service process.
Service speed has a mean score of M = 3.63; 25.7% of students call for faster service delivery. It shows the strongest bivariate association with User Experience and Satisfaction ($r = 0.755$; $\beta = 0.193$; $p = 0.011$).	Reducing processing and waiting times.	Monitor the duration of key services, identify stages where delays occur, and establish internal indicators for the processing time of student requests.
Service process coordination has the lowest mean score (M = 3.43), but a strong association with User Experience and Satisfaction ($r = 0.743$; $\beta = 0.232$; $p < 0.001$).	Strengthening coordination among administrative units.	Define clear roles, responsibilities, and sequences of activities, as well as mechanisms for transferring information and documents between administrative units, so that students are not unnecessarily required to act as intermediaries.
Digital service accessibility has the highest mean score (M = 3.72), but 18.4% of students call for greater availability of electronic services, while 17% identify the need for better functionality of digital systems. This dimension is positively associated with User Experience and	Improving digital accessibility and usability.	Expand the range of electronic services and improve the functionality of existing systems, ensuring that digitalization is accompanied by procedural simplification and easier access to services.

Satisfaction ($r = 0.633$; $\beta = 0.128$; $p = 0.013$).		
Communication with students was identified by 27.2% of respondents as an area requiring improvement.	Improving the quality and timeliness of communication.	Establish clear communication channels and standards for the manner and response times for addressing students' questions and requests.
The mean score for User Experience and Satisfaction is $M = 3.80$.	Continuous monitoring of user experience.	Periodically measure student satisfaction using the same or comparable indicators in order to monitor changes and assess the effects of implemented measures.
The six dimensions collectively explain 72.5% of the variance in User Experience and Satisfaction ($R^2 = 0.725$).	Integrated service process management.	Plan improvements as an integrated process in which information, timeliness, simplicity, coordination, and digital accessibility are addressed as interrelated dimensions.

The proposed recommendations highlight the need for systematic and integrated improvements to university service processes. Priority should be given to simplifying administrative procedures, ensuring timely and accessible information, speeding up service delivery, and improving coordination among university administrative units. At the same time, digitalization and the continuous monitoring of user experience should form an integral part of service management. In this way, the recommendations are aimed not only at improving individual activities but also at enhancing the overall efficiency of university service processes.

6.3. Scientific Contribution of the Study

The scientific contribution of this study lies in linking the marketing-logistics perspective with student user experience and satisfaction in higher education. University service processes are therefore analyzed not only in terms of their organization and functioning but also through the perceptions of students as users of these services.

This contribution is achieved by operationalizing service processes through six dimensions: information availability and timeliness, service process speed, simplicity and coordination, and digital service accessibility. This provides an analytical framework for examining the relationship between the organization and delivery of university services and user experience.

The empirical contribution is supported by the identified positive and statistically significant correlations between all six dimensions and User Experience and Satisfaction ($r = 0.633–0.755$; $p < 0.001$). The multiple regression analysis further showed that the model explains 72.5% of the variance in the dependent construct ($R^2 = 0.725$; adjusted $R^2 = 0.717$; $p < 0.001$). These findings provide empirical support for the proposed analytical framework and identify key dimensions of university service processes relevant to understanding student user experience.

The methodological contribution lies in the development and application of a structured instrument for measuring students' perceptions, with the measurement constructs demonstrating high internal consistency reliability (Cronbach's $\alpha = 0.802–0.961$). The proposed model enables an integrated examination of the informational, temporal, organizational, and digital aspects of university services.

At the same time, the study provides a basis for further research and for testing the model in different institutional contexts, including other categories of service users, objective indicators of service processes, and additional factors related to user experience.

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