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# **Empowering Faculty: Advancing Pedagogical Training and Support** for Digital Teaching

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#### Abstract

The study explored the impact of the COVID-19 pandemic on undergraduate students at National University of Huancavelica, Peru, focusing on their use of academic resources. A structured questionnaire was distributed to 1,291 students, selected through random sampling stratified. The research revealed that 77.9% of students rated academic service delivery negatively, particularly those in rural areas with limited internet and technology access. Engineering and Agricultural Sciences students had the lowest evaluations. The study employed statistical methods, including Chi-Square tests and One-Way ANOVA, confirming significant relationships between technology access, demographics, and student perceptions. The findings highlight the need for improved digital infrastructure, expanded internet access, and faculty support to ensure equitable learning opportunities. The pandemic underscored the necessity for resilient, uniform academic support systems to address the disparities in service delivery across all student populations, regardless of technical limitations.

Keywords: COVID-19 Pandemic, Academic services, Virtual learning, Educational inequality, Student perception.

## Introduction

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The COVID-19 pandemic invaded every part of global human existence without exception. The education field as a foundation of society faced an unanticipated immediate transition which stripped students from classroom learning and placed online education at the forefront. The developing nations together with other countries discovered digital divides within their infrastructure which exposed deep-seated inequalities regarding access to technology and education quality (Reimers and Schleicher, 2020; UNESCO, 2020). The National University of Huancavelica (UNH) students in Peru experienced a breakdown in their academic rights through this sudden discontinuation of equitable and effective academic service delivery. The department of Huancavelica in Peru encountered distinctive problems because of its status as one of Peru's poorest administrative units. Students residing in distant rural locations struggled to use inconsistent internet services and modern digital devices which transformed their academic transition to online classrooms from constructive to disadvantageous. Students experienced the true extent of inequality because they needed to scale elevations as well as travel extended distances just to access the internet (Huaynate, 2021; Lechleiter and Vidarte, 2020). The university's administrative team whose funding was restricted, experienced difficulties with virtual education demands thus it failed to deliver complete academic support which deepened student inequalities (Cockrell, 2022). Higher learning institutions base their entire mission of student development on educational services which serve as the essential foundation for academic achievement. Students perceive the quality of these services through which they judge their satisfaction levels and engagement (Arce and Arana, 2017). The pandemic exposed the educational services to extensive evaluation regarding their quality. The Engineering and Agricultural Sciences faculties and some other departments encountered significant adaptation challenges during this time although a few faculties adapted relatively smoothly. Student experiences showed faculty inequalities in addition to undermining broader educational equity (Congacha and García, 2017). The requirement to learn via smartphone or minimal internet connections created painful difficulties for students when they attempted to study virtual lessons and academic resources (Guzmán, 2008). The problems of limited laboratory access and handson work such as Nursing and Engineering practice led students to an increased state of dissatisfaction according to Cordero (2011). Students from lower-income families who lived in cities could buy laptops together with stable internet but children from disadvantaged rural areas had to operate independently (Lechleiter & Vidarte, 2020). The educational system displayed significant resource disparities because of which opportunities remained unevenly distributed (Lu et al., 2020).

The virtual education transition exposed fundamental problems which existed throughout Peruvian society at this time. Educational reform remained a controversial issue throughout several decades because of political and economic volatility in the country (Balarin and Saavedra, 2021). COVID-19 revealed existing educational boundaries which led to public debates about funding distribution and infrastructure adjustments and digital solution implementation to close learning gaps (López and Gómez, 2020). Non-face-to-face learning led students to face multiple educational challenges, so faculty support and administrative guidance proved essential to their success. Student engagement and motivation required instant communication together with innovative solutions and prompt response strategies according to Reimers and Schleicher (2020). Students expressed frustration about obtaining insufficient help from the administration and delayed responses and administrative disconnection which damaged their faith in the educational system (Turpo and Donald, 2017). Students clearly experienced violations to their right of receiving quality academic services which initiated ongoing demands for reform alongside more resilient education practices (Bozkurt et al., 2020)

Academic service perception experiences of University of New Hampshire students during the pandemic will be studied through this research together with analysis of their influencing factors. Through analysis the study identifies how the pandemic amplified systemic inequalities and presents data to help develop an education model that is both fair and resistant to change.

## **Materials and Methods**

#### **Research Design**

The research design employed descriptive cross-sectional methods to understand undergraduate students from the National University of Huancavelica about their academic service perception during the COVID-19 pandemic. The chosen design focused on capturing student experiences using frozen graphical snapshots about their perceptions at a certain point in time. The research evaluated how place of residence and internet connection speed together with students' technical equipment choices influenced their views on virtual education.

#### **Study Population and Sample Size**

During the study period 4,307 undergraduate students who attended the university formed the target population. The calculation based on a 99% confidence level with a maximum error rate of 3% yielded 1,291 students as the required representative sample population. A stratified random sampling method was used to obtain adequate representation among diverse faculties as well as demographic factors (Hernández Sampieri et al., 2014).

### **Data Collection Instrument**

The research team designed a questionnaire which served to gather student feedback regarding academic services. The assessment tool included questions which combined multiple-choice options together with Likert-scale ranking questions to assess student opinions about their satisfaction with services and their experiences with online learning resources and faculty and administrative support staff assistance. The questionnaire underwent validity testing through a pilot sample of 50 students representing various academic faculties showing reliable results for internal consistency (Cronbach's alpha = 0.85) (Peralta and García, 2020).

## **Data Collection Procedure**

The online survey data collection process began with email and social media sent to the selected student population. A specific time frame of two weeks was reserved for the survey implementation and both ethical rules and principles of confidentiality were strictly followed. All study participants needed to verify their understanding of the study before commencing the survey. All survey responses received anonymous treatment to uphold data integrity while the platform protected patient confidentiality by obtaining no personal identifying details.

#### Variables

The main dependent variable was student perception of academic services, categorized into five levels: Well, Acceptable, Regular, Poor, and Bad. Independent variables included:

- Location (Urban vs. Rural)
- Device Used for Classes (Smartphone, Laptop, PC, Tablet)
- Internet Access (Fixed Internet vs. No Fixed Internet)

## **Data Analysis**

Statistical analysis occurred by SPSS software for data processing. The researchers compiled summary information about the data through descriptive statistical calculations which included frequencies together with means and standard deviations. Statistical tests based on Chi-Square for independence together with One-Way ANOVA evaluated how essential the relationships are between independent variables and student perception of academic services. The analysis made use of Welch's F-statistic when assessing group variability alongside Cramér's V for determining the magnitude of associations between variables (Hernández Sampieri et al., 2014; Peralta et al., 2020).

## **Ethical Considerations**

The research honored all the necessary ethical requirements for conducting human participant studies. The university retrieved ethical permission to conduct this research from its institutional ethics board. Every study participant received an explanation about study goals along with certainty regarding confidentiality and complete freedom to exit the research without consequences.

## Results

An illustration in figure 1 shows how students from different Huancavelica National University faculties evaluated academic services. An analysis of student feedback resulted in Well, Acceptable, Regular, Poor, Bad as the identified response levels. Students from different academic faculties presented distinct opinions about their academic services according to the response distribution.

Students from Mining Engineering along with Civil Engineering and Environmental Engineering and Engineering Sciences and Business Studies demonstrated the greatest levels of dissatisfaction toward academic services as shown through the substantial Poor and Bad results. Students within these faculties showed a marked dissatisfaction toward the academic services they received. The Health Sciences faculty showed a better satisfaction rate regarding academic services through their increased student ratings above Regular category which differed significantly from other educational departments. Statistical analysis supported these observations. The Welch's F-statistics displayed 9.24 along with a p-value of 0.0000 showed important differences in perception between different faculties with at least 95% confidence. The student-perception variations served as meaningful evidence against random randomness because they demanded recognition for targeted institutional improvement. The research found faculty academic service evaluations showed significant differences because various departments received either poor or superior service feedback from their students. The findings revealed essential areas for university improvement which required precise initiatives to handle service variations and improve academic service delivery.



Student Perception of Academic Services by Faculty with Statistical Values

Figure 1: Comparison of Student Perceptions of Academic Services Across Various Faculties

Figure 2 presents the academic service perceptions of National University of Huancavelica professional students using Welch's statistical group-differentiation approach. Students evaluated academic services using five categories: Well, Acceptable, Regular, Poor and Bad which appeared on the y-axis for each professional school. The bars in the figure illustrated how students in each school reacted to academic services. The professional schools Mining Engineering together with Systems Engineering and Civil Engineering at Lircay and Huancavelica received numerous negative student feedback which resulted in sizeable Poor and Bad segments. Among these educational institutions, a significant number of students showed negative opinions about academic services. The service perceptions among Obstetrics and Primary Education and Nursing students were distributed evenly between Regular, Acceptable and Well ratings when compared to other professional schools. The data points to student satisfaction that is somewhat better in these subject areas. Student perception variations across various professional schools were established through Welch's F-statistic value of 20.93 and its associated p-value of 0.0000. The high F-statistics revealed that major differences existed between groups thereby verifying that the measured differences surpassed statistical chance randomness. The 95% confidence interval substantially strengthened the reliability of the data because it demonstrated that actual student perception changes truly existed in the results. The figure demonstrated that professional schools had increased rates of student dissatisfaction about academic services, but other schools showed better results. The observed results showed that additional strategic enhancements and interventions need to target specific institutions which showed considerable negative feedback to improve academic service quality across the university.





Student Perception of Academic Services by Professional School (EP) with Welch Statistics

Figure 2: The Perception of Academic Services by Students Across Various Professional Schools

A breakdown of academic service evaluations exists in table 1 for all aspects related to classroom locations and internet access as well as virtual class technology devices. The statistics table presented entire response data within Well, Acceptable, Regular, Poor, and Bad classifications followed by the positive (Well + Acceptable) and negative (Poor + Bad) percentage rates. The researchers evaluated result statistical significance through Chi-Square and ANOVA tests. Rural students exhibited 19.1% positive but 51.8% negative perceptions about the quality of learning compared to urban students who expressed 25.2% positive along with 41.5% negative perceptions. A significant statistical difference between rural and urban students emerged from the Chi-Square test as the p-value came out to 0.023 thus showing potential service quality disparities based on geographical residence. Students who lacked a fixed internet connection showed more negative opinions toward the service than those with access since 19.7% reported positive perceptions while 50.3% reported negative perceptions of the service. Students who accessed the internet from fixed locations demonstrated superior positive perceptions compared to negative perceptions at 27.8% versus 38.2% respectively. A Chi-Square test evaluation revealed an extremely significant relationship (p-value = 0.001) that demonstrated the statistical relevance of how students viewed service quality through internet access variations. The investigative results demonstrated that continuous Internet access directly influenced academic quality for students during online learning. Perceptions were significantly affected by the device students used in classes according to an ANOVA p-value of 0.012. The research found that smartphone users demonstrated the most negative perceptions among participants (50.9%) alongside lower positive perception numbers (19.7%). The respondents who used laptops experienced more success than difficulties with 25.9% good reactions compared to 36.4% bad

responses. Students who possessed PCs or tablets experienced lower dissatisfaction rates and higher satisfaction rates (39.1% and 40.0% respectively) because they possessed better technology for virtual learning. The study findings showed that students' academic service perceptions strongly relied on their device choice and their internet connection along with their physical school location. This data proves the necessity for specific interventions which enhance student virtual learning experiences.

Factor	W ell	Accept able	Regu lar	Po or	B ad	Tot al	% Positive (Well + Accepta ble)	% Negat ive (Poor + Bad)	P-value (Chi- Square/A NOVA)
Locatio n									
Rural	21	104	192	23 3	10 6	656	19.1%	51.8%	
Urban	21	139	212	19 9	64	635	25.2%	41.5%	<b>0.023</b> (Chi- Square)
Interne t Access									
No Fixed Internet	27	152	274	31 1	14 5	909	19.7%	50.3%	
Fixed Internet	15	91	130	12 1	25	382	27.8%	38.2%	<b>0.001</b> (Chi- Square)
Device Used for Classes									
Smartph one	27	151	267	31 8	14 2	905	19.7%	50.9%	
Laptop	12	75	126	99	23	335	25.9%	36.4%	
PC (comput er)	2	16	10	14	4	46	39.1%	39.1%	
Tablet	1	1	1	1	1	5	40.0%	40.0%	<b>0.012</b> (ANOVA)

Table 1: Factors Influencing Student Perception of Academic Services

Table 2 presented the vital statistical evaluation measures for assessing categorical variables which pertain to student evaluations of academic services. The Chi-Square Statistic ( $\chi^2$ ) value of 77.97 demonstrated a powerful deviation along with its expected frequencies when analyzing the variables studied. Model complexity resulting from multiple variables in analysis is shown

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through df value which equaled 32. High statistical evidence against the null hypothesis became apparent through the p-value of 0.00001 because it denied any relationship between the examined variables. The observed associations that were almost impossible to occur randomly proved the statistical importance of the results through the extremely low p-value. The research findings passed the significance threshold (p < 0.05) which proved the observed variable relationship was statistically important at this 5% level. The strength of variable correlation reached moderate levels (Cramér's V=0.242) indicating associations were rather strong since effect sizes closer to 1 suggest stronger links between variables. Analysts performed the statistical assessment with a 95% confidence interval (CI) which estimated the population parameter would exist within this range during 95% of trials. The analysis used 1,291 observations for the sample size which ensured reliability and robustness of the results obtained. The results of the analysis confirmed the presence of a significant association between variables because the null hypothesis received rejection in favor of the alternative hypothesis. The findings validated how elements affect student views on academic service quality.

Statistical	Value	Interpretation/Description						
Measure								
Chi-Square	77.97	The calculated Chi-Square value, used to test the						
Statistic $(\chi^2)$		association between categorical variables.						
Degrees of	32	The number of categories minus one, reflecting the						
Freedom (df)		complexity of the model being tested.						
P-Value	0.00001	The probability that the observed data could have						
		occurred by chance. A very low value indicates strong						
		evidence against the null hypothesis.						
Significant? (p	Yes	Indicates whether the result is statistically significant						
< 0.05)		at the 5% level. Since the p-value is less than 0.05, the						
		result is considered significant.						
Effect Size	0.242	A measure of the strength of the association between						
(Cramér's V)		the variables. Cramér's V ranges from 0 to 1, with						
		values closer to 1 indicating a stronger association.						
Confidence	95%	The range within which the true population parameter						
Interval (CI)		is expected to fall 95% of the time.						
Sample Size	1,291	The total number of observations or data points used in						
(n)		the analysis.						
Null	No association	The assumption that there is no significant relationship						
Hypothesis	between	between the categorical variables being tested.						
(Ho)	variables							
Alternative	Association	The assumption that there is a significant relationship						
Hypothesis	exists between	between the categorical variables.						
$(H_1)$	variables							

 Table 2: Statistical Analysis Results (Chi-Square Test)

The table 3 showed in detail the academic service perceptions held by students from different Huancavelica National University faculties. The data showed negative sentiments took precedence over positive sentiments among total respondents since negative impressions exceeded positive impressions at 77.9% to 22.1%. Several statistical measures such as

confidence intervals alongside standard deviation and Chi-Square statistics and Cramér's V for effect size evaluation produced the interpretation and statistical assessment of faculty-based perception distributions. Results from Agricultural Sciences demonstrated a strong statistical significance through a Chi-Square value of 4.32 and p-value 0.038. Positive responses reached only 16.7% while negative responses reached 83.3%. A low percentage of 18.4% students in Engineering Sciences experienced positive perceptions which resulted in predominantly negative perceptions as confirmed by the Chi-Square value of 5.12 with a p-value of 0.028. Educational Sciences faculty achieved moderately improved faculty satisfaction than other degrees based on responses from students where 23.5% expressed positive views but 76.5% voiced negative experiences. Students in the Health Sciences faculty demonstrated the best favorable perception levels at 34.5% while other faculties exhibited an unbalanced response. The results indicate that academic service satisfaction stood higher for Health Sciences students since the findings reached statistical significance through a Chi-Square value of 6.67 accompanied by a p-value of 0.015. Business Studies students displayed negative perceptions despite their large participant group since only 21.8% provided positive ratings. The perception ratings among students from Law and Political Science and Nursing showed somewhat better results than others yet the negative outlook dominated all faculties which was confirmed by their specific p-values 0.040 and 0.045. Many students in Electronic Engineering - Systems and Mining as well as Civil and Environmental Engineering demonstrated high dissatisfaction levels through their 22.7% and 18.1% positive perception rates. These engineering faculties maintained a stable negative perception of academic services which demands immediate service enhancements. Students demonstrated a strong significant difference in their perceptions based on statistical Chi-Square 77.97 and p-value 0.00001 across all faculties. The results showed moderate strength between educational units and student evaluations because of the Cramér's V effect size value of 0.242. This indicated broad student dissatisfaction regarding their academic service encounters. The thorough research emphasized major dissatisfaction gaps and demanded specialized student experience improvement programs.

Faculty	Positi ve Perce ption (%)	Negat ive Perce ption (%)	Stan dard Devi ation (SD)	Confi dence Interv al (CI)	Sa mpl e Size (n)	Chi- Squ are Stat istic (χ <sup>2</sup> )	P- Val ue	Effect Size (Cra mér's V)	Interpr etation
Agricult ural Sciences	16.7%	83.3%	5.2%	95% CI: 11.5% - 21.9%	54	4.32	0.03 8	0.12	Agricult ural Sciences show a significa nt imbalan ce between positive and negative percepti

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									ons, indicatin g dissatisf action.
Enginee ring Sciences	18.4%	81.6%	4.7%	95% CI: 14.1% - 22.7%	255	5.12	0.02 8	0.14	A large faculty with a relativel y low positive percepti on, contribu ting to the overall negative trend.
Educati onal Sciences	23.5%	76.5%	4.1%	95% CI: 19.4% - 27.6%	196	4.89	0.03 2	0.13	Moderat e percepti on split, though still largely negative Signific ant at the 5% level.
Health Sciences	34.5%	65.5%	6.1%	95% CI: 28.4% - 40.6%	84	6.67	0.01 5	0.16	Health Sciences show the highest positive percepti on. Signific antly more balanced than other faculties

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Busines s Studies	21.8%	78.2%	4.4%	95% CI: 17.4% - 26.2%	216	4.55	0.03 4	0.12	Despite a large sample size, the percepti on remains largely negative
Law and Political Science	25.5%	74.5%	4.0%	95% CI: 21.5% - 29.5%	94	4.12	0.04	0.10	Percepti on in Law is slightly better, but the negative trend is still promine nt.
Nursing	25.9%	74.1%	5.2%	95% CI: 20.7% - 31.1%	85	3.89	0.04 5	0.09	Similar to Law, with slightly more positive percepti on, though overall negative sentime nt dominat es.
Electron ic Enginee ring - Systems	22.7%	77.3%	4.3%	95% CI: 18.4% - 27.0%	119	4.98	0.03	0.13	Enginee ring fields, especiall y Systems, exhibit a high dissatisf action rate with

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									с
									services.
Mining,	18.1%	81.9%	5.1%	95%	188	5.89	0.01	0.15	Among
Civil,				CI:			9		the most
and				13.0%					negative
Environ				-					percepti
mental				23.2%					ons.
Enginee									Shows
ring									significa
_									nt
									dissatisf
									action
									across
									the
									faculty.
Total	22.1%	77.9%	4.8%	95%	1,29	77.9	0.00	0.242	Overall,
				CI:	1	7	001		the
				20.5%					negative
				-					percepti
				23.7%					on
									dominat
									es, and
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 Table 3: Positive and Negative Perception of Academic Services by Faculty

## Discussion

The worldwide COVID-19 pandemic exposed pre-existing educational structural disparities throughout global educational institutions while establishing new obstacles for acquiring quality learning opportunities. The National University of Huancavelica faced its greatest challenges because it operates in a poor geographic area of Peru. Student research showed substantial differences in academic service evaluations which stemmed mainly from spatial situations together with internet availability within the framework of virtual learning tools usage. Global research has confirmed that digital inequality caused by the pandemic constitutes one of the primary factors which generates educational inequality (Van Lancker and Parolin, 2020). Most students located in rural areas struggled to obtain academic assistance because they strongly disliked the current situation. Students in rural areas confronted more obstacles because they **Journal of Posthumanism** 

found it difficult to access stable internet connections when their areas had no internet at all or minimal connectivity (Trucano, 2020). The digital divide produced major disparities in students' learning environment because rural students considered their access to education materials alongside faculty support to be insufficient. The essential condition for efficient online learning includes reliable internet access according to research findings (König et al., 2020). The students' perceptions depended heavily on the devices they used to connect to their virtual classes. The students who used smartphones experienced more dissatisfaction than their peers who used laptops or desktop computers. This observation confirms earlier academic studies showing that mobile devices fail to deliver complex educational needs mainly because of their visibility constraints and inability to multitask and insufficient content accessibility (Yousafzai et al., 2016). The restricted features of smartphones led to diminished educational experiences that made students who used them become more frustrated with their learning process. The evaluation showed major differences between the satisfaction rates of different faculty groups. Engineering and Agricultural Sciences demonstrated the most dissatisfaction among all faculties. The practical nature of these subject areas might explain why students experienced lower satisfaction levels because virtual learning falls short of adequately duplicating hands-on learning experiences Cutri et al. (2020). The lack of access to practical tools together with laboratory facilities intensified student frustrations about virtual learning especially since most of these students need hands-on classroom interactions (Rapanta et al., 2020). Positive perceptions within the Health Sciences faculty exceeded those of other departments mainly because of well-designed adaptation strategies along with supportive faculty initiatives. Research indicates that both successful faculty-student interaction together with quick administrative assistance results in better virtual learning results for students (Kim and Asbury, 2020). Each faculty unit at the university presents varying learning challenges which necessitate specialized approaches to solve specific educational needs. Based on this research it becomes imperative to implement immediate policy initiatives that will merge digital access with superior academic program services. Students need appropriate learning equipment with expanded rural internet access to make virtual teaching effective. Educational institutions together with governments need to dedicate funding for faculty training programs which will optimize virtual education delivery and provide decisive educational experiences for all subjects (Ali et al., 2020). The research findings show the extensive educational consequences that emerge because of social class disparities during digital access. Digital access has proven itself as an essential requirement which the COVID pandemic has made abundantly clear. Elaborating equal educational systems requires partnership between public agencies and educational institutions and private sector organizations to create resilient educational frameworks (Reich et al., 2020). The global pandemic has made urgent the development of education systems which deliver fair opportunities to all learners. The National University of Huancavelica must tackle digital inequality together with faculty barriers and mobile education boundaries as part of establishing better academic service delivery capabilities throughout crisis situations and ongoing normal academic periods.

## Conclusion

Working from home during the pandemic made existing educational disparities worse throughout the National University of Huancavelica and every other institution. Research showed that virtual learning produced extensive obstacles among students because students from rural regions and those with unstable internet access and insufficient devices struggled the most. Students exhibited varying negative impressions about academic services which strongly

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differed across different faculties according to the research findings. Students from Engineering and Agricultural Sciences expressed higher dissatisfaction due to practical course demands yet Health Sciences faculties experienced better virtual learning adjustment. The study established that students' satisfaction primarily relies on where they learn and how they connect to the internet and which devices they use. These issues demand specific solutions which involve enhancing internet access alongside supplying suitable technological equipment together with support structures tailored to different faculties. The pandemic requires policymakers together with educational institutions to work on providing equal digital infrastructure access and additional support programs for vulnerable students to address the adverse crisis impacts. Universities build resilient inclusive effective education systems which guarantee every student can thrive by adopting these measures. The findings demonstrate how crucial it is to unite efforts in solving digital access inequality while enhancing educational service delivery programs across higher education institutions.

#### **Limitations and Future Recommendations**

Several constraints existed throughout the research investigation. The research took place exclusively at the National University of Huancavelica so other universities in Peru and worldwide cannot apply the findings across their campuses. The gathered data from 1,291 students represented a large sample but such results might change if the study happened in regions with distinct socioeconomic environments and institutional frameworks. Self-reported survey data collection contains response biases that might stem from both social desirability effects and difficulties in participant recall. The sudden shift to virtual learning because of COVID-19 represented a special emergency which might affect how well the study captured permanent academic trends. The research has limited its assessment of faculty and administrative staff perspectives despite their potential capability to provide comprehensive information about academic service provider challenges throughout the pandemic. The research failed to evaluate additional elements that might have shaped student learning outcomes including students' emotional states and duties to their families. Subsequent studies need to research by examining several institutions located in various geographic areas thus obtaining a thorough understanding of the pandemic's higher education effects on diverse educational environments. The combination of qualitative interviews with students and faculty members along with administrators would create valuable insights regarding academic services, improvement solutions and obstacles that emerge during emergencies. The ongoing effects of COVID-19 on academic achievement and well-being of students need longitudinal research evaluation for extended monitoring.

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