

The Effects of Perceived Hindrances in the Relationship of Technological Factors and Online Learning among College Students

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Abstract

Challenges and obstructions in online learning are inevitable. Hence, the government, faculty, and students should understand the hindrances and other factors influencing online learning. This study aimed to determine the effect of perceived hindrances in relation to technological factors affecting the students' online learning engagement. It is quantitative research where data is gathered through an online Google Forms questionnaire. The participants were 273 college students studying from various universities and colleges in Pampanga, Philippines. Smart PLS 3 was used to understand the responses and easily identify those supported and unsupported outcome data. Using the bootstrap method, a p-value of less than 0.05 is a supported outcome. R square is given by the algorithm method, where around 44% of the total variance was presented. As a result, the collected data and findings were reliable and significant. Other factors that supported the constructed hypothesis also greatly influenced and significantly affected college students' online learning. The study's findings and recommendations will serve as a reference for better online learning engagement and implementation for school and government officials—a solution for preventing students from being hindered and creating an active online learning environment.

Keywords: ease of use, hindrances, online learning, technological factors, usefulness

Introduction

The abrupt change from traditional learning to online learning amidst Covid19 made a lot of challenges and changes those students encountered. Pressure and perceived hindrances impeded their online learning to move forward (Panisoara & Lazar, 2020).

Online learning in the middle of COVID-19, the use of gadgets, particularly laptops, computers, cellphones, and tablets, in order to cope with students' education has become crucial (Adedoyin & Soykan, 2020). Therefore, according to the studies of Messiah et al. (2020), the acquisition of using technology for learning can be expensive, and dealing with power or internet interruptions and even physical problems obstruct students from the implementation of

online learning programs. Otherwise, the issue of technology adaptation in relation to online learning programs may be a remarkable hindrance for students.

Therefore, this study aims to determine the effect of perceived hindrances towards online learning among college students. Also, to identify the influence of technological factors such as perceived ease of use and usefulness of students towards the engagement of online learning.

Research Objectives

The purpose of this study:

1. To determine the effect of Perceived hindrances towards perceived ease of use.
2. To identify the effect of student's Perceived hindrances towards perceived usefulness.

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3. To determine the significant relationship between Perceived ease of use and perceived usefulness.
4. To identify the effect of Perceived hindrances towards online learning
5. To determine the influence of students Perceived ease of use towards online learning.
6. To determine the influence of students Perceived usefulness towards online learning.

Research Questions

Due to the abrupt change in society and even the world, many students found themselves adjusting from the old normal to the new normal way of studying due to the implementation of online learning amid a pandemic. Therefore, this study attempts to determine the effect of perceived hindrances to online learning in providing information that can help other researchers solve a problem regarding this related topic. The goal of this study is to answer the following questions:

1. Does Perceived hindrances affect students' perceived ease of use?
2. Does Perceived hindrances affect students' perceived usefulness?
3. Is there a link between perceived usefulness and perceived ease of use influencing online learning?
4. Does Perceived hindrances affect online learning?
5. Does Perceived ease of use influence the student's online learning?
6. Does Perceived usefulness influence online learning?

Hypothetical Statement

The researchers determined and accumulated the following hypothesis below that indicates the effect of perceived hindrances that give rise to the students' daily lives may affect their studies. Furthermore, the researchers gathered results using TAM to emphasize the students' response, to determine the result of the following effects of variables and to identify the hindrances that

students encounter during their online learning engagement. The obtained outcome from the responses is used as a guide for the students regarding online learning. The TAM is also used to help other researchers aid this type of problem further.

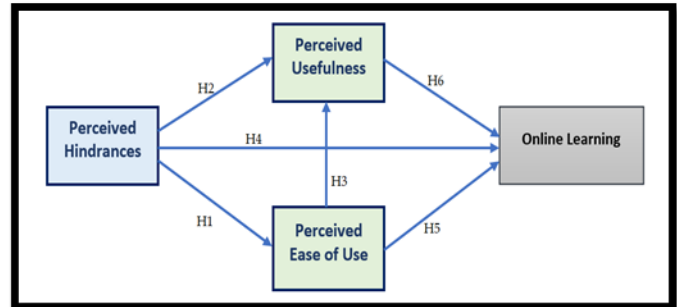


Figure 1. Hypothetical Conceptual Framework

Thus, the researchers hypothesized the abovementioned to determine the effect of perceived hindrances on students' online learning. Accompanied by the hypothetical framework, established hypothesis, and the presented studies in this phase, the next chapter describes the methodology and scrutinizes other processes in this study.

Methodology

Participants of the Study

The study participants were 1st-year to 4th-year students currently enrolled in the academic year 2021-2022 in different universities and local colleges in Pampanga. 13 schools participated in the survey: City College of Angeles, Holy Angel University, Mabalacat City College, Pampanga State Agricultural University, Angeles University Foundation, Our Lady of Fatima, Don Honorio Ventura State University, System Plus College Foundation, Republic Central Colleges, AMA Pampanga, La Verdad Christian College Apalit Pampanga, Jose C. Feliciano College Foundation, and System Technology Institute (STI) Angeles.

The selected participants are engaged in online learning. As a result, they were eligible respondents in this study. From the effects of perceived hindrances on technology factors and online learning, the researchers assessed the unbiased view of the respondents in gathering data and getting conclusions.

Questionnaire development

Based on the theory of (TAM) model adopted in this study that coincides with the mentioned hypothesis regarding the effect of perceived hindrances to online learning among the college students in Pampanga. Therefore, the researchers established a questionnaire that modifies the studies and answerable by the respondents.

Moreover, the researchers constructed questionnaires adapted the use of 4-point Likert scale in gathering a reliable and consistent form of data with a strong evidence and support for the studies. The researchers adopted a questionnaire related to the studies and will be classify in to three (3) sections in collecting data from the respondents.

Section 1, this part of research questionnaire, researchers' consent, instructions and email information are presented. Furthermore, the Data Privacy Act of 2012 are also indicated to protect the data presented by the respondents.

Section 2, the questionnaire structure of populations of the respondents (Demographic Information). In this part the researchers tend to identify the student's information concerning their courses and university or college school, through this information it will be easy to understand the specifications of the respondents.

Section 3, this part is a gaze of using Four-point Likert Scale ranges from *1-Strongly Disagree*, *2-Disagree*, *3-Agree*, *4-Strongly Agree* in conducting a survey to acknowledge the behavioral perceptions towards perceived hindrances in online learning of college students

in Pampanga. Also, the questions related to perceived hindrances, perceived usefulness, and perceived ease of use are presented.

Research Design

The quantitative method associated with the strength to determine the problem allows the researcher to widen their study, entailing a greater number of concerns towards the proposed dependent variables that also increased the concept of the findings (Boston, 2018). Hence, the researchers used the quantitative method with research instruments like survey questionnaires to determine the effect of perceived hindrances that impede the students' engagement of online learning and the supported and not supported outcome.

Additionally, researchers applied the descriptive-correlational method and found it necessary for this research. Descriptive correlational studies describe the variables and the innate relations between and among them. It is also used to assess the same hypothesis (Blanco et al., 2020). Correlational research can determine whether or not there is a relationship or association between two or more independent variables (Oducado & Estoque, 2021). Therefore, it applies the use of descriptive-correlational methodology, where it will interpret and explain the following findings of the gathered data and provide a description of those supported and unsupported constructs. One of the main aims of the researchers was to describe relationships between the significant relationships between perceived ease of use and perceived usefulness.

Data Analysis Strategy

The researchers used Microsoft Excel as the statistical tool and the SmartPLS version 3 to analyze the gathered data to formulate the results and structure of the model. The researchers initially used Microsoft Excel in arranging and encoding the obtained data, and then the sorted data were converted to a form appropriate for the utilization of SmartPLS.

As per Wong (2016), researchers do not need to compute it using SmartPLS to encode and calculate data manually. It is quicker and more convenient to interpret results from the gathered data of the study. Furthermore, SmartPLS is a tool for analyzing statistics data called PLS-SEM or the Structural Equation Model. It has developed the partial least squares structural equation modeling method from a different academic discipline (Ramayah et al., 2018).

Therefore, the study adapted the use of Smart PLS version 3 as an analytical tool in recognizing the factors affecting online learning engagement. Furthermore, the researcher of this study proved the effective use of Smart PLS in defining the supported and not-supported hypotheses. The provided path model also defined the significant relationship between perceived hindrances, perceived ease of use, and perceived usefulness that also affects online learning.

Construct Reliability and Validity

In testing the validity and reliability of the study, data examination is necessary to take consider for the identification of the constructed hypothesis (Kvarven et al., 2020). Data examination will serve as a tool in determining the exact results from gathered data as well as to identify the knowledge throughout a particular issue or problem that a participants encountered (Lantz,2020). Therefore, in this study will consider the use of construct reliability and validity, Smart PLS, Cronbach Alpha, R-square, and Path Coefficient (P-value) analysis in determining whether data has been good or insufficient reliability and validity.

In assessing the validity Average variance extracted (AVE) are usually collated to squared inter-construct correlations (Triwidyati & Tentama, 2020). The 0.5 above results indicate a sufficient and suitable convergence (Lee, 2019). AVE resolves the quantity of variation gathered by a construct in opposition to the quantity due to measuring error (Abbasi et al., 2019).

Sampling Approaches

Convenience sampling is also known as availability sampling; this is the most common and easier sampling used in conducting a survey, and this is commonly used in pilot testing (Lewis & Thornhill, 2018). This means that this method includes the availability of gaining respondents wherever the researchers find them on its population or field of study, in most cases suitable for the participants.

Therefore, the researchers employed this method for the availability and convenience of the respondents throughout the agreed time in conducting a survey, particularly to college students in Pampanga. The researchers preferred to use convenience sampling because it is convenient for obtaining data sources from the participants.

Results

Demographic Profile Details

The demographic profile of the college students in Pampanga is shown in Table 6. Based on the results of the floated survey, the respondents who participated were 30.8% male and 69.2% female. The majority of the college students came from School1, with 88, followed by School 2 with 36. At the same time, School 3 had 34 responses, followed by School 4 with 33 and 19 participants from School 5. Moreover, the following colleges and universities in Pampanga have 13 responses each: School 6 and School 7, followed by School 8 with 11 responses. School 9 has six responses. Otherwise, each college school and university in Pampanga has five responses, such as School 10, School 11, School 12, and School 13.

Additionally, Table 1 also presents the course or program students are currently taking up. It shows that most students who participated were Bachelor of Technical Vocational Teacher Education with a total of 54 responses, followed by 30 students of Bachelor of Physical Education, 21 responses of BS Management

Accountancy, 12 responses from BS Psychology, 16 responses from BS Tourism Management. Furthermore, each course has 14 participants which were BS Civil Engineering and Bachelor of Arts English Language, followed by 13 participants from BS Information Technology, 12 participants from BS Hospitality Management, 9 participants from Bachelor of Special Needs Education, 7 participants from BS Criminology, and 6 participants from Bachelor of Secondary Education-Filipino. There were 5 participants each from BS Architecture and BS Nursing, followed by 4 participants each from Bachelor Secondary Education, BS Computer Science, BS Arts in History, BS Information System, Bachelor of Secondary Education-Math. BS Performing Arts, following 3 participants each from BS Biology, BS Agricultural Business, BS Agriculture Engineering, BS Business Administration, followed by 2 participants each from AB Communication, BS Geodetic Engineering, BS Medical Technology, BS Entrepreneurship, and BS Dental Medicine. And 1 participant each from BS Aviation Major in Flying, BS Computer Engineering, BS Legal Management, and BS Custom Administration.

Therefore, upon gathering data, there are 13 different college schools and universities with a total of 35 different courses that participated in this study.

Table 1. Demographic Profile

Factors	Frequency	%
Gender		
Female	189	69.2%
Male	84	30.8%
Total	273	100%
College		
School/University		
School 1	88	32.23%
School 2	36	13.19%
School 3	34	12.45%
School 4	33	12.10%
School 5	19	6.96%
School 6	13	4.76%
School 7	13	4.76%
School 8	11	4.03%
School 9	6	2.20%
School 10	5	1.83%

School 11	5	1.83%
School 12	5	1.83%
School 13	5	1.83%
Total	273	100%
Course/Program		
BTVTED	54	19.78%
BPED	30	10.99%
BSMA	21	7.69%
BSc	17	6.23%
BSTM	16	5.86%
BSCE	14	5.13%
BAELS	14	5.13%
BSIT	13	4.76%
BSHM	12	4.40%
BSNE	9	3.30%
BS Crim	7	2.56%
BSED-FILIPINO	6	2.20%
BS Architecture	5	1.83%
BS Nursing	5	1.83%
BSED	4	1.47%
BSCS	4	1.47%
BSAH	4	1.47%
BSIS	4	1.47%
BSED-MATH	4	1.47%
PSPA	4	1.47%
BSMM	4	1.47%
BS Biology	3	1.10%
BSAB	3	1.10%
BSAE	3	1.10%
BSAD	3	1.10%
ABCOM	2	0.73%
BCGE	2	0.73%
BSMT	2	0.73%
BSE	2	0.73%
BSDM	2	0.73%
BSAVC	1	0.37%
BSCE	1	0.37%
BSLM	1	0.37%
BSCA	1	0.37%
Total	273	100%

Note: (BTVTED) Bachelor of Technical Vocational Teacher Education; (BPED) Bachelor of Physical Education; (BSMA) Bachelor of Science Management Accountancy; (BSc) Bachelor of Science in Psychology; (BSTM) Bachelor of Science in Tourism Management; (BSCE) Bachelor of Science in Civil Engineering; (BAELS) Bachelor of Arts English Language Studies; (BSIT) Bachelor of Science Information Technology; (BSHM) Bachelor of Science in Hospitality Management; (BSNE) Bachelor of Special Needs Education; (BSC) Bachelor of Science Criminology; (BSED-FIL) Bachelor of Secondary Education-Filipino; (BSA) Bachelor of Science in Architecture; (BSN) Bachelor of Science in Nursing; (BSED) Bachelor Secondary Education; (BSCS) Bachelor of Science in Computer Science; (BSAH) Bachelor of Science in Arts in History; (BSIS) Bachelor of Science in Information System; (BSED_Math) Bachelor of Secondary Education-Math; (BSPA) Bachelor of Science in Performing Arts; (BSB) Bachelor of Science Biology; (BSAB) Bachelor of Science in Agricultural Business; (BSAE) Bachelor of Science Agriculture Engineering; (BSBA) Bachelor of Science in Business Administration, (ABCOM) Bachelor of Arts in Communication; (BSGE) Bachelor of Science in Geodetic Engineering; (BSMT) Bachelor of Science in Medical Technology; (BSE) Bachelor of Science in Entrepreneurship; (BSD) Bachelor of Science in Dental Medicine; (BSAV) Bachelor of Science in Aviation Major in Flying; (BSCE) Bachelor of Science in Computer Engineering; (BSLM) Bachelor of

Analysis of Reliability and Validity

SmartPLS version 3 is also known as "user-friendly" software due to its complete program with innate graphical cooperation with users. (Ramayah et al., 2018). According to Wong (2016), Using SmartPLS in coding and calculating data eliminates the need for researchers to analyze it manually.

Table 2 summarizes the construct’s validity and reliability. Cronbach Alpha gained results from the floated questionnaire. It has been stated that the study should be greater than 0.7 (Gwynne et al., 2020). In all variables, such as the online learning, perceived hindrances and technological factors like perceived ease of use and perceived usefulness have a result of greater than 0.7. Therefore, as determined by the Cronbach alpha, it is valid and recommended.

The equivalent results in assessing the significant variables and moderator, Rho A, should be greater than 0.7 (Yilmaz & Sigirtmac, 2021). Those 0.7 above indicated showed that it was a great result. Therefore, in online learning, perceived hindrances, ease of use, and usefulness, as shown in Table 2, were valid and reliable

Composite reliability is used to assess the internal consistency of research instrument items (Mah et al., 2018). The graph under composite reliability shows that the results should be 0.7 above to be considered valid and reliable (Hadi, 2017). Based on Table 2, all four variables appear to be higher than 0.7, indicating that results are reliable and valid.

The Average Variance Extract was used to evaluate the reliability of a construct or variables (Yilmaz & Sigirtmac, 2020). The greater than 0.5 results point out sufficient and suitable convergence (Lee, 2019). In Table 2, it was reported that all four variables, exceeded the 0.5

higher, which means results are significant and valid. Thus, all items presented in variables are supported and free from error. Furthermore, the variables' construct was indicated valid, and items are significantly correlated.

Table 2. Construct Reliability and Validity

Codes-Construct’s Validity and Reliability: Retained Items						
Perceived Hindrances	FA	Alpha	Rho	Comp	AVE	
PH1	I always encounter class and power interruptions due to internet connection	.894				
PH2	My gadget/gadgets are not efficient enough, in engaging online learning	.847				
PH3	I cannot afford to buy my own laptop, smartphone, or tablet used in online learning because they are expensive	.876	.750	.712	.795	.544
PH4	I am having physical problems like poor eyesight and headaches from using a smart phone, laptop, or tablet for online learning	.806				
Perceived Ease of Use						
PEU1	I save time in doing online activities	.665				
PEU2	Online learning allows me to acquire knowledge and skills in Microsoft word, Excel, and PowerPoint Presentation,	.697	.772	.779	.846	.524

	or other necessary writing and presentation software					
PEU3	Online learning makes coping with lessons and activities convenient	.785				
PEU4	I find it easier to do my online assignments and projects	.750				
PEU5	Online learning allows me to learn new teaching platforms like Zoom, Google Meet, and Google Classroom.	.716				
Perceived Usefulness						
PU1	Online learning improves my knowledge, understanding, skills and attitude	.824				
PU2	Online learning allows me to discover new lessons around the world	.767				
PU3	Online learning increases my learning efficiency	.874	.905	.906	.927	.680
PU4	Online learning enables me to enhance my learning competencies needed to my area of specialization	.837				
PU5	Online learning enables me to develop my academic performance	.842				

PU6	Online learning improves my Cognitive skills, Creativity, and Problem solving	.799				
Online Learning						
OL1	I believe that online learning is more challenging than regular face-to-face classes	.767				
OL2	I believe online learning improves my self-paced study habit	.628				
OL3	I believe online learning is useful in today's pandemic situation	.862	.762	.786	.848	.586
OL4	I believe online learning is stressful yet fun in acquiring knowledge	.787				

Bootstrap Report: Path Coefficient

The Path Coefficient Values in this study are presented in Table 3. *Path Coefficient Analysis* is a linear regression weight that analyzes the weight coefficient in studying variables' indirect and direct effects (Sarker, 2020). The effect of variables as calculated by the standard deviation indicates whether the coalition construct connects traits with other constructs (Baye et al., 2020). A P-value of less than 0.05 means direct effects (Laraz, 2019).

Table 3. Path Coefficient Report

	Sample	Mean	Standard Deviation	T-Stat	P-Values
Perceived Hindrances → Perceived Ease of Use	-0.228	-0.240	0.071	3.210	0.001
Perceived Hindrances → Perceived Usefulness	-0.189	-0.190	0.048	3.920	0.000
Perceived Ease of Use → Perceived Usefulness	0.595	0.595	0.046	12.932	0.000
Perceived Hindrances → Online Learning	-0.011	-0.011	0.039	0.284	0.777
Perceived Ease of Use → Online Learning	0.209	0.208	0.058	3.578	0.000
Perceived Usefulness → Online Learning	0.626	0.627	0.049	12.737	0.000

Table 3 indicates that *Perceived hindrances → perceived ease of use*, with a p-value of 0.001 where $p < 0.05$, support *Hypothesis 1 Perceived Hindrances affect the students perceived ease of use in online learning. Perceived Hindrances affect the students' perceived ease of use in online learning.* This shows that perceived hindrances significantly affect students' perceived ease of use. Therefore, the significant outcomes imply that perceived hindrances influence how students perceive the ease of use of online learning engagement.

Perceived Hindrances → Perceived Usefulness with p value of 0.000 where $p < 0.05$, supports *Hypothesis 2: Students perceived hindrances affects the perceived usefulness in online learning.* This indicates that perceived hindrances have significant effects on students' perceived usefulness. Furthermore, this means that there is a possibility that perceived hindrances impede students in relation to perceive usefulness of online learning.

Perceived Ease of Use → Perceived Usefulness with P-value of 0.000, where $p < 0.05$, supports *Hypothesis 3: There is a significant relationship between Perceived ease of use and Perceive usefulness.* This reveals a significant relationship between perceived ease of use and perceived Usefulness in online learning engagement. As a result, students considered the ease of use and usefulness of educational platforms and software and the usage of computers, laptops, smartphones, or tablets for online learning to be convenient and beneficial.

Perceived Hindrances → Online Learning with P-value of 0.777, where $p > 0.05$, did not support *Hypothesis 4: Perceived Hindrances have significant effects towards online learning.* When P-value results are more significant than 0.05, no effects are observed (Fan et al., 2016; Wang et al., 2018). This illustrates that students' perceived hindrances do not negatively affect online learning. However, it still supports the study since perceived hindrances, as proved and supported by other data in table 3, influence perceived ease of use and usefulness in relation to students' online learning engagement.

Perceived Ease of use → Online Learning with p value of 0.000, where $p < 0.05$, supports *Hypothesis 5: Perceive ease of use influences the online learning engagement of students.* This shows that Perceived Ease of Use has significant effects towards Online Learning. Thus, Perceived ease of use can be used to aid a student's learning process as they progress through their online learning. Additionally, this can be considered to eliminate the effect of perceived hindrances of the students.

Perceived Usefulness → Online Learning with P-value of 0.000, where $p < 0.05$ supports *Hypothesis 6: Perceive Usefulness influence the online learning engagement of students.* It displays that Perceived Usefulness has a significant effect towards Online Learning. As a result, perceived usefulness in online learning

influences students' performance and satisfaction based on how they improve or enhance their skills and knowledge during the online learning engagement. Furthermore, it has been shown that utilizing other technological factors for online learning is very useful in this current circumstance.

Figure 2 depicts the link between the factors influencing students' online learning in further detail. As mentioned above, Smart PIs 3 software was used to evaluate student responses. In order to analyze data PLS-SEM, also known as the Structural Equation Model, was also utilized to identify the quality of gathered data. This study also used it to analyze statistical data (Ramayah et al., 2018).

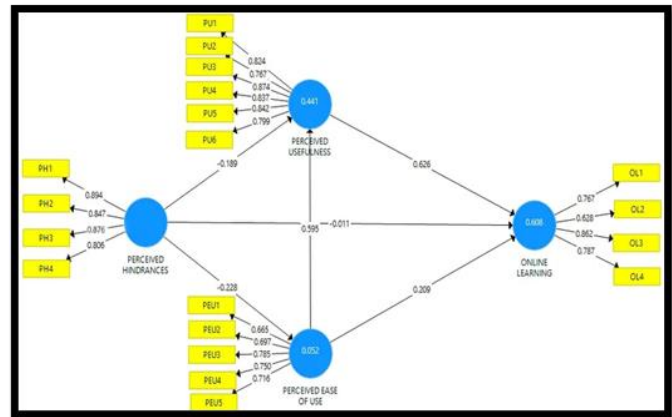


Figure 3. Factors affects Online Learning (Bootstrapping Model)

The construction of the latent variables in this section is based on the study's developed framework. This study determines the effect of perceived hindrances and technological factors on online learning, which correlates to the hypothesis regarding the substantial relationship and link between variables. Figure 5.2 illustrates the p-values on the inner arrows and the t-values on the outer arrows of variables influencing online learning among Pampanga college students. According to the statistics, hindrances and technological factors substantially affect online learning—each construct's link to the other factors considerably affected each construct. As a result, the variables that influence online learning are crucially significant. The next chapter contains a deeper discussion and analysis conclusion.

Discussions

Table 4 below, together with the corresponding T-statistics and P-value, shows the hypothesis path is supported and unsupported results.

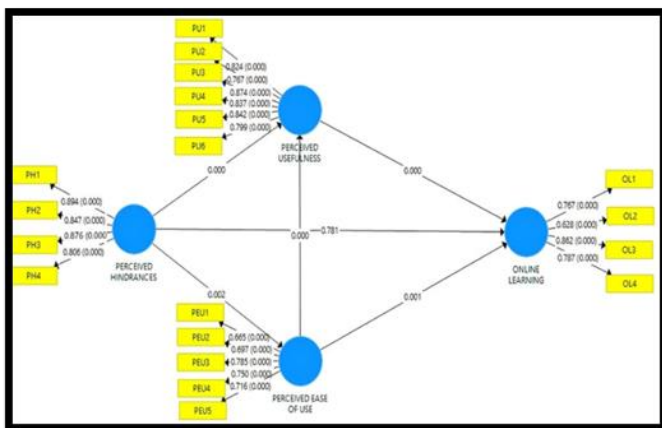


Figure 2. Factors affects Online Learning (PLS Algorithm)

Figure 2 displays the variables influencing online learning among college students in Pampanga. The SmartPLS method was used to manage a variance a round total of 44% for the perceived usefulness and 5% for the perceived ease of use, and 61% for the online learning that has been specified in the analysis. PLS Algorithm is a significant regression model described in terms of weight matrix (Hannya, 2016). Figure 3 depicts the bootstrapped model of the aforementioned factors influencing students' online learning.

Table 4. Discussion of Supported and Not supported outcomes

Hypothetical Paths	t-stats	P-values	Supported?
H1: Perceived hindrances affects the students perceived ease of use in online learning.	3.210	0.001	Yes
H2: Students Perceived hindrances affects the perceived usefulness in online learning.	3.920	0.000	Yes
H3: There is a significant relationship between Perceived ease of use and Perceive usefulness.	12.932	0.000	Yes
H4: Perceived hindrances has significant effects towards online learning	0.284	0.777	No
H5: Perceive ease of use influence the online learning engagement of students.	3.578	0.000	Yes
H6: Perceive usefulness influence the online learning engagement of students	12.737	0.000	Yes

According to the presented results in Table 4, there are five significant and supported hypothesis paths, which are H1, H2, H3, H5, and H6. Otherwise, one result is not supported, particularly the *H4: Perceived hindrances significantly affect online learning* with a P-value of 0.777, transcending the $p < 0.05$ threshold. One of the main aims of this research is to determine if perceived hindrances substantially affect the online learning engagement of college students in Pampanga. According to the findings of this study, perceived hindrances to online learning are insignificant. Therefore, findings indicate that perceived hindrances have no direct effect on online learning. According to the studies of Spurnburn, 2020 stated that when there are no effects observe within perceived hindrances, this means that students are resilient and adaptable, allowing them to accept teachings and learn meaningfully while participating in an online learning session. With that, teachers can improve their teaching techniques as students engage in online learning through the implementation of online courses and activities, which should be emphasized. Furthermore, students can improve their

knowledge, skills, and attitudes throughout online learning engagement. Therefore, it indicates that perceived hindrances are insignificantly affecting online learning. This implies that the engagement of college students in Pampanga in their online learning is not affected by the perceived hindrances. With that, college students can learn and engage throughout their online learning sessions without the negative effect of hindrances.

Conclusion

According to the study's findings, factors such as perceived ease of use and perceived usefulness significantly affect the online learning of college students in Pampanga. Per the results, perceived usefulness has the highest influence on online learning, followed by perceived usefulness and perceived hindrances. One of the primary objectives of this study is to determine if perceived hindrances significantly affect online learning. Thus, based on the Path Coefficient analysis of value results, perceived hindrances to online learning were insignificant (0.777) and should be $p < 0.05$, implying that perceived hindrances do not affect online learning. As a result, it was concluded that perceived hindrances have no negative effects on learners' engagement in online learning. Otherwise, other relationships such as Perceived hindrances towards perceived ease of use, perceived hindrances towards Perceived usefulness, and other factors influencing Online learning were found significant. As a result, these factors significantly affect online learning, and educating college students about the appropriate tools, educational software, and platforms will significantly enhance their perceptions and intention to engage more in online learning. Enhancing student engagement in online learning would result in a developed educational setup in the middle of a pandemic and the growth of higher-order thinking abilities required in today's 21st-century generation.

Objectives Achieve on Perceived Hindrances affecting Perceived Ease of Use

According to the research findings, the effect of perceived hindrances on perceived ease of use in online learning of college students in Pampanga was successfully determined. The substantial influence of perceived hindrances on perceived ease of use was identified. Therefore, this means that the substantial effect of perceived hindrances on students' perceived ease of use leads to the improvement of online learning engagement, which helps those teachers to enhance their teaching strategies and construct a virtual learning environment that imposes the use of different instructional software and other tools to help students learn online conveniently. Otherwise, students may develop their skills and abilities in engaging online learning while utilizing their smartphone, laptop, or tablet.

Objectives Achieve on Perceived Hindrances affecting Perceived Usefulness

The study results indicated that perceived hindrances also influence students' perceived usefulness in engaging in online learning. It was also proven that perceived hindrances impede the ability to adapt and employ accessible approaches and techniques in engaging in online learning. Those interpreted results can help students learn how to cope with the tools and educational platforms used in online learning. Additionally, in order for the students to learn meaningfully and interactively during online learning engagement, the teachers should employ vigorous online learning materials and online educational platforms to stimulate the students' knowledge. Thus, students are beneficially engaged in online learning and can nourish their ideas and receive the skills needed.

Objectives Achieved on Perceived Ease of Use and Perceived Usefulness

The partial results of this study presented that perceived ease of use and perceived usefulness have a significant relationship. These play a significant role in affecting the online learning

engagement of college students in Pampanga. The influence of perceived ease of use and perceived usefulness of students' interest and engagement is considered a crucial role in developing their knowledge and skills through online learning. As a result, the ease of use of online learning serves to obtain and widen students' knowledge. It leads to an advantage perception of online learning's usefulness. Additionally, students' perceived usefulness and ease of use of online learning significantly affect the development of their attitude, knowledge, abilities, and engagement in online learning.

Objectives Achieve on Perceived hindrances towards Online learning

One of the main aims of this research is to determine if perceived hindrances substantially affect the online learning engagement of college students in Pampanga. According to the findings of this study, perceived hindrances to online learning are insignificant. Therefore, findings indicate that perceived hindrances have no direct effect on online learning. Students are resilient and adaptable, allowing them to accept teachings and learn meaningfully while participating in an online learning session. With that, teachers can improve their teaching techniques as students engage in online learning through the implementation of online courses and activities, which should be emphasized. Furthermore, students can improve their knowledge, skills, and attitudes throughout online learning engagement.

Objectives Achieved on Perceived Ease of use influencing Online learning

Based on the research findings, it has been proven that perceived ease of use has a significant effect on online learning. Perceived ease of use is used to effectively determine students' attitudes about engaging in online learning. The presented outcome of perceived ease of use towards online learning has a positive influence on students' engagement in online learning, which means that they can conveniently do their tasks and requirements needed to

accomplish in online learning. Thus, students' perceived ease of use may be leveraged to improve a student's learning process as they select their own pace to help themselves learn better and adopt newfound skills and ideas in utilizing online tools, software, and platforms throughout online learning engagement.

Objectives Achieved on Perceived Usefulness influencing Online Learning

The results identified the influence of perceived usefulness on online learning, and it has been stated that it is significant. Perceived usefulness substantially affects students' efficiency and satisfaction as it relates to how they improve or strengthen their skills and knowledge during their online learning engagement. Furthermore, students consider the aim of online learning to make them more attentive and practice their abilities to articulate and collaborate in academic work. As a result, the perceived usefulness of online learning has a significant and positive influence on students as they continue to learn and engage in online learning.

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