

# Impact of antecedents of online learning on learner's satisfaction in higher education: An empirical investigation on Commerce and Management students in the COVID era

Afsha Afreen<sup>1</sup>, Diksha Chaubey<sup>2</sup>

<sup>1</sup>Research Scholar, Faculty of Commerce, Banaras Hindu University, afreenafsha23@gmail.com

<sup>2</sup>Research Scholar, Faculty of Commerce, Banaras Hindu University

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## Abstract

The essence of digitization is rooted in almost all the field in daily routine of every individual, thoroughly. Digital inclusions in education have not been very focused in the past in developing countries like India. Due to the COVID-19 pandemic, even schools at primary level education also started using digital platforms for transmitting knowledge. It is due to the advancement in the field of Information and Communication Technology (ITC) that exchange of knowledge between teachers and students never stopped. In this study, the researcher has focused on evaluating the perception of students towards online learning and analyzing the impact of it on their perceived satisfaction from such electronic plinth. A model was developed taking perceived satisfaction as dependent variable while technology, instructor's role, student's role, interaction and class management as independent variable. A total of 233 valid responses were collected from graduate and post graduate students of commerce and management from Varanasi city using 5-point Likert scale standard questionnaire. Multiple regression analysis revealed that instructor's role and student's role were found significant affecting perceived satisfaction. The study suggested that rather than getting distracted due to unfriendly disturbances in the teaching environment, instructor should focus on attitude development, timeliness and quick response, solving queries and providing feedback to students. Students should give more stress on attitude development and self-motivation. The study will be a great help to the institutions in strengthening their learning environment and further improve learner satisfaction.

**Key words:** COVID-19, ITC, online learning, perceived satisfaction, multiple regression analysis

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**Corresponding Author:** Afsha Afreen, Research Scholar, Faculty of Commerce, Banaras Hindu University, e-mail: afreenafsha23@gmail.com

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## Introduction

Learning has always been imperative for the development of human beings. Learning not only helps in acquiring professional skills, but it also plays an inevitable role in the personal growth of a person. The role of universities and colleges of India can never be understated in the development

of the students. The Indian higher education has always acted as a pillar in the overall development of the students. The Indian higher education imparts education to approx 37.4 million students enrolled in 993 universities and 399931 colleges, with a Gross Enrollment ratio of 26.3%(AISHE, 2018-19). From the past few months, a disturbance has been created in the education system of India

by an invisible enemy, the Corona Virus (COVID-19). On March 11th, 2020, the COVID-19 outbreak was declared pandemic by World Health Organization followed by a complete lockdown in many parts of the world. In the month of March, as an initial measure, many universities, colleges and schools of the world suspended face-to-face education for the safety of their students.

The COVID-19 pandemic inimically disposed almost all the sectors of the economy towards destruction. There was a disruption in the flow of various goods and services. However, due to the development in the Information & Communication Technology (ITC), exchange between teachers and students never stopped. Due to complete lockdown in the country, face-to-face leaning was replaced by online learning in all the universities and colleges of India. Online learning came out to be a tremendous solution to facilitate the exchange process between the tutor and the learner. Online learning or web-based learning implies usage of computer and internet technology to deliver course contents to the end user (Rosenberg, 2001).

Numerous studies have been conducted in the domain of education, technology, psychology, computer science and management to evaluate online learning system. Some studies have focused on the technology related factors and some have focused on the human related factors to evaluate online learning. The objective of the present study is to assess the relationship between perceived satisfaction and its determinants in the COVID scenario. Assessing the satisfaction is significant because it leads to better learning outcome and continuation interest among the learners (Chiu, 2007; Eom, 2006). It is important to know which factors have significant impact on student's satisfaction in the learning environment during COVID. Where the online system of education is totally new to most of the teachers in India, knowing about the factors that significantly

contribute towards the satisfaction of students would be a great help in designing the learning system. Since, no cure has been found for problem created by corona virus till date, it is essential to consider online learning as the only solution in long run and bring changes accordingly in the learning pattern. In the present study, a sample of 233 post-graduate and graduate students of commerce and management from Varanasi city of India has been studied. Varanasi is one of the major academic hubs of India. There are five central universities and more than fifty colleges in the city. Almost all the universities and colleges adopted a traditional face-to-face learning approach before lock-down. Hence, online system of learning is new to the teachers as well as students. Therefore, there is a need to assess the important factors of online learning in order to help the teachers and students to overcome the hindrance in education in this COVID era.

## Literature Review

Advancement in the fields of Information & Communication Technology has brought a major transformation in the paradigm of learning. Present upgradations in the computer-based arrangement and proliferation of network access have enabled learner to overcome the time and space limitation and reach educational contents created even in the remote parts of the world. Through web-based delivery system, learning has become more supportive, lean and flexible (Lee, 2010). For the past few decades, web-based learning or online learning has drawn attention of many academicians. A plethora of empirical and conceptual research has been conducted on online learning. A comparative study between face-to-face learning, online learning and blended learning has been a center of discussion in many studies (Zhan, 2013; Stansfield, 2004; O'Malley, 2005; Piccoli, 2001) It was found that, students performed better in face-to-face learning over

online learning when the focus was on attainment on subject knowledge. (Paechter, 2010; Arais, 2018). However, when the focus was on self-regulated learning, learner preferred online learning. (Paechter, 2010; Martinez-Caro, 2011).

Online learning has played a significant role towards the emerging pedagogy of teaching due to its advantages such as flexibility, cost-effectiveness, ease of connection to internet and well-designed class interface (Yang, 2004; McEven, 1997; McDonald, 1997). Numerous studies point out that online learning develop critical thinking and active learning, among the learners (Scriven, 2004). It also enhances retention capacity of the learners (Bransford, 2000; Bereiter, 1989). However, there are also certain disadvantages of online learning. Studies have indicated that online learning has resulted in negative learning experiences like sense of isolation, monotonous environment, anxiety, and confusion, lack of self-regulation and lack of self-motivation (Yang, 2004; Hara, 2000; Piccoli, 2001).

Numerous researches have also been conducted to assess the perceived satisfaction of the learners through online courses (Ozkan, 2009; Cheng, 2014; Sun, 2006; Arambewala, 2009; Swan, 2001; Stefanovic, 2011; Chiu, 2007; Bhagat, 2015; Eom, 2006; Zhan, 2013; Martinez-Caro, 2011; Bolliger, 2004; Beqiri, 2010; Bolliger, 2013; Kauffman, 2015; Joo, 2011). Assessing the satisfaction is significant because it leads to better learning outcome and continuation interest among the learners (Chiu, 2007; Eom, 2006). Perceived satisfaction is a pivot point of many models that have been proposed and validated by academicians.

Hexagonal e-learning assessment model (HELAM) validated six dimensions that significantly affected the perceived satisfaction

through online courses. They were- system quality, service quality, content quality, learner perspective, instrument attitude and supportive issues (Ozkan, 2009). POSTAL determined instructor's characteristics, social presence, instructional design and trust were the factors that affected satisfaction (Bhagat, 2015).

Chiu (2007) investigated distributive fairness, interaction fairness, attainment value and intrinsic value as significant factors affecting satisfaction. Factors like cost and procedural fairness were not found significant in the study.

Cheng (2014) examined the relationship between online participation and course satisfaction. Study revealed online participation in material development network learning were significant. Interactive learning and information access were not significantly related to satisfaction.

Zang (2013) investigated the impact of social presence on satisfaction and it was found that social presence had a significant impact on satisfaction. The impact was stronger in case of online learning as compared to face-to-face learning.

A thorough review of the determinants/factors that affected the satisfaction was done and studies revealed that instructor related factors like instructor knowledge, instructor feedback, instructor timeliness significantly affected satisfaction. (Eom, 2006; Stefanovic, 2011; Sun, 2006; Bolliger, 2013; Ozkan, 2009). Other factors influencing satisfaction were course quality, course flexibility, technology quality, internet quality, diversity in assessment (Stefanovic, 2011), information access (Cheng, 2014), self-motivation, learning style, (Eom, 2006) interaction (Eom, 2006; Stefanovic, 2011; Swan, 2001), ease of use, perceived presence (Joo, 2011).

## Research Gap

From the review of the above literatures, it can be said that the concept of web-based learning or online learning is not a new force in the learning environment. In fact, prominent universities of the world like Michigan University of Technology, Stanford University, and Harvard University etc. has adopted a blended learning approach where education is imparted to students of universities and colleges through both traditional face-to-face classrooms as well as online classrooms. Due to the covid-19 outbreak, teaching online has become a compulsion instead of being an option for the faculty members of universities and colleges. Applications like Zoom, Webex, and Microsoft Teams has become the new hub where students and teachers meet in order to exchange knowledge. An exploratory interview with the students revealed that online platforms have created hindrances in the exchange process from both teachers as well as students end due to reasons like poor quality of internet, lack of access to devices, unorganized class sessions, etc. Therefore, a need was felt to assess the perception of the students regarding online learning during this covid-19 scenario. Review of the literatures revealed that very few empirical works has been done in India in this regard. No work has been done in Varanasi to assess the perception of students in higher education. This study is an attempt to meet the gaps in higher education and recommend possible suggestions to eliminate the problems.

## Objective of the study

The two main objective of the paper are-

- To assess the perception of the students of

higher education regarding online learning in the covid-19 scenario.

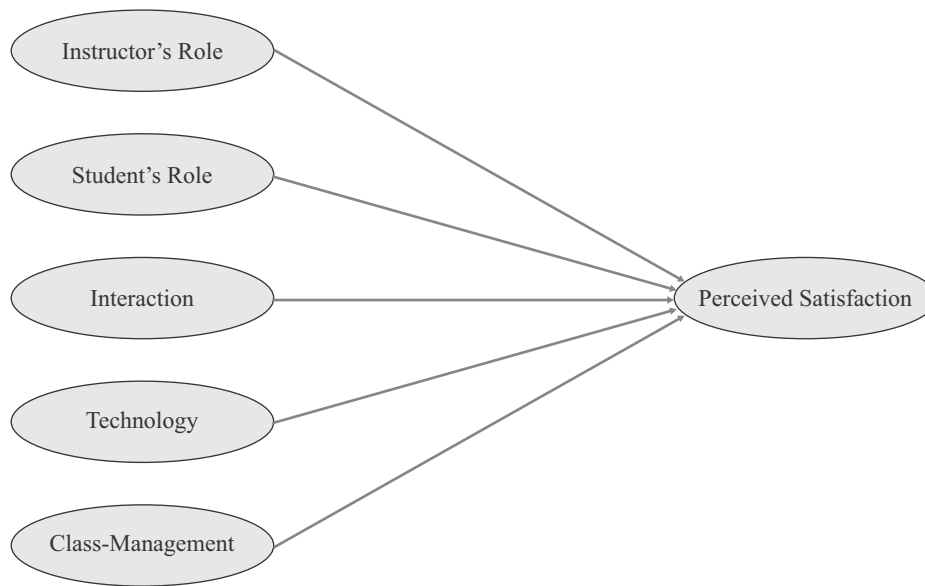
- To examine the impact of online learning variables on the perceived satisfaction of the students.

## Research Methodology

### *Research Model*

The conceptual framework of the study categorized the determinants of online learning into two broad dimensions, human dimension and design dimension. Human dimension included two variables, instructor's role and student's role. Design dimension comprised of three variables, interaction, technology, and class management. Fig. 1. demonstrates the model of the study where instructor's role, student's role, interaction, technology and class management are taken as the independent variable and perceived satisfaction is taken as the dependent variable. Taking these variables as a base, following were the alternative hypotheses framed-

- H1: Instructor's role will positively influence perceived satisfaction with online learning.
- H2: Student's role will positively influence perceived satisfaction with online learning.
- H3: Interaction will positively influence perceived satisfaction with online learning.
- H4: Technology will positively influence perceived satisfaction with online learning.
- H5: Class management will positively influence perceived satisfaction with online



**Fig. 1: Conceptual Model of the study**

The general form of model was

$$Y = \alpha + \beta x_1 + \beta x_2 + \beta x_3 + \beta x_4 + \beta x_5$$

Where, Y= Perceived Satisfaction, X1= instructor's role, X2= student's role, X3=interaction, X4=technology and X5= class management.

**Sample characteristics**

The sample comprised of 233 post-graduate and undergraduate students in the field of commerce and management from universities and colleges of

Varanasi. The minimum sample size in linear regression analysis should be  $50+8k$  where k is the number of predictors (Haitham, 2018). In the study, there were five predictors and hence, the minimum sample size should be 90. A Google form was sent to students using convenience sampling technique. A total 248 responses were received. After eliminating incomplete responses and outliers, 233 responses were finalized for further analysis, which was higher than the minimum required sample size. Table 1 demonstrates the description of the sample characteristics.

**Table 1: Description of the sample**

Gender	Male	30.00%
	Female	70.00%
Age	Less than 18	4.70%
	18-21	47.20%
	21-24	38.20%
	More than 24	9.90%
Education	Post-graduate	34.30%
	Graduate	59.70%
	Others	6.00%

Source: Authors calculation using Excel

*Measurement development*

An in-depth interview was conducted to examine the validity of the research model. Based on previous literatures and comments gathered from interview, a questionnaire was developed (Sun, 2008; Stefanovic, 2011 & Eom, 2006). The questionnaire consisted of two parts. Part A of the questionnaire consisted details about demographic variables. Part B was based on 5-point Likert scale ranging from 1 as strongly agrees and 5 as strongly disagree. It included 22 items in total, 19 items were related to factors like instructor's role, learner's role, technology, interaction, and class management. 3 items were related to measure satisfaction.

**Analysis and Discussion**

SPSS was used to analyze data for this research work. Multiple regression analysis was employed to prove the significance of the variables. Appropriate tests were applied to check the assumptions underlying the method of least squares by the classical regression model. Reliability of the items in the questionnaire was examined using Cronbach alpha. Percentage was used to meet the first objective, i.e, to assess the perception of the students regarding online learning.

**Research Findings***Reliability analysis*

As mentioned earlier, the reliability and the internal consistency of the factors was assessed using cronbach alpha. The cronbach values of each of the factor were as follows: instructor's role- 0.84, learner's role- 0.80, interaction- 0.75, technology- 0.82, class management-0.56 and perceived satisfaction- 0.71. All the values were above 0 .70 except for class management.

*Test of normality distribution*

Normality is the basic assumption in regression analysis. The value of skewness ranged from -0.33 to 0.92 and the value of kurtosis ranged from -1.03 to 0.47. As per the guidelines proposed by Haire (2010) and Byrne (2010),  $\pm 2$  of skewness and  $\pm 7$  of kurtosis are considered benchmark to prove normality. As per Kling (2005), value less than 3 in skewness and value less than 10 in kurtosis does not influence the results and the data can be regarded as normally distributed. The results of this study met both the guidelines and therefore it is reasonable to conclude that the data in the research work was normal.

*Test of homogeneity of variance*

It is essential to check for problem of heteroscedasticity in data before using regression analysis. Residual plot was used to assess heteroscedasticity. A random pattern showed that data was free from heteroscedasticity.

*Test of multicollinearity*

Variance inflation factor (V.I.F.) was used to assess multicollinearity among the independent variables. The V.I.F. value ranged from 1.39 to 2.44. All the values were less than 5. This implies that the variables are not highly correlated (Daoud, 2009) and therefore there were no severe multicollinearity problem among the independent variables.

*Test of autocorrelation*

Durbin- Watson statistics was used to examine the problem of serial correlation. The value of Durbin-Watson was 1.81 which was less than 2. Therefore, the data was free from autocorrelation (Gujrati, 2003).

*Hypotheses testing*

Multiple regression analysis was conducted in order to test the hypotheses. The objective was to establish a relationship between the determinants of online learning and perceived satisfaction. Five hypotheses were framed to test the relationship, independent variables being instructor's role, learner's role, interaction, technology, and class management.

regression analysis. Among five variables, only two variables are considered significant with p-value less than 0.05, i.e., at 5% level of significance. These variables were instructor's role with p-value .012 and student's role with p-value .000. Interaction, technology and class-management was found statistically insignificant with p value greater than 0.05. The value of standardized beta in case of student's role was 0.417 and in case of learner's role was 0.19. This means that student's role is more significant factor affecting perceived satisfaction than learner's role.

Table 2 demonstrates the result of the multiple

**Table 2- Results of multiple regression analysis**

Independent variable	Unstandardized Coefficients	Standardized Coefficients	t- value	Sig*.
	Beta	Beta		
(Constant)	2.103		3.377	.001
Instructor's Role	.132	.192	2.548	.012
Student's Role	.241	.417	5.503	.000
Interaction	.028	.015	.261	.795
Technology	.060	.078	1.264	.207
Class-Management	.131	.089	1.430	.154

\*at 5% level of significance (p value- 0.05) Source- Author's calculation using SPSS

Table 3. demonstrates that the value of R square is 0.466. This means that, the independent variable jointly explains 47% of the variance in perceived

satisfaction. The value of R is 0.683 and the value of adjusted R square is 0.455. Table 4. summarizes the results of all the hypotheses testing.

**Table 3- Model summary**

R	R Square	Adjusted R Square	Durbin-Watson
.683a	.466	.455	1.80

Source: Author's calculation using SPSS

**Table 4- Summary of the results**

Hypothesis	Independent Variable	Significant
1	Instructor's Role	Yes
2	Student's Role	Yes
3	Interaction	No
4	Technology	No
5	Class-Management	No

The COVID-19 has forced the teachers and the learners to meet on online platforms remove the hindrances in the exchange process. However, the process of bringing students and teachers online was not at all easy. Therefore, a need was felt to study the perception of the students regarding online learning. Students were asked certain questions to evaluate their teacher. Majority of them were satisfied with the efforts made by their teachers. 47% students agreed that the teacher was enthusiastic about teaching online, 45% student agreed that the teacher handled their queries well, 47% students agreed that the teacher was able to handle the web technology well and 43% students agreed that the teacher updated the class about home assignments in a timely manner. However, when asked, compared to face-to-face teaching, the teacher was more effective when teaching online, 34% disagreed and 14% strongly disagreed. Some questions were asked to assess the learner's role in online learning. When asked about the effort they put in online learning, 32% said that they put same amount of effort in online learning as they use to put in face-to-face learning. 42% said that they were punctual and they completed their assignment on time.

An exploratory study revealed that majority of hindrance in online learning has been created by technology. This study revealed that technology has been a poor player in the COVID-19 learning scenario. Only 17% of the students strongly agreed that the web technology was easily understandable, 21% agreed that the internet speed was good, 29% agreed that the communication quality was good. Interaction is also one of the most essential elements for interpersonal skill development. Only 32% agreed that they were able to communicate well with the teacher, whereas, only 31% students agreed that they were able to communicate with other students in online arrangements of teaching. However, majority of them felt that the classes were organized in timely manner (49%) and

duration of the classes was not tiresome (47%).

To meet the second objective, i.e., to assess the relationship between online learning and perceived satisfaction, all the independent variables were classified into two categories- human dimension and design dimension. The results of the study revealed that all the variables in the human dimension significantly affected perceived satisfaction whereas, all the variables in the design dimension were found insignificant. Among all the variables, few were found confirming the literature and few of them did not confirm the literature. In human dimension, instructor's role and learner's development significantly affected perceived satisfaction. The result corroborated with Stefanovic (2011) and Sun (2008) in case of instructor's role. In case of student's role, our study corroborated with Sun (2008), Eom (2006). Whereas, in design dimension, interaction was found insignificant. The result confirmed Sun (2008), Cheng (2007). However, the findings did not confirm Stefanovic (2011), Swan(2001), Arbaugh, Eom (2006), Chiu (2007). Technology was also found insignificant, confirming Sun(2008), Piccoli (2001). However, our study does not corroborate with Stefanovic (2011).

## Conclusion

This study was an attempt to establish a relationship between variables of online learning and perceived satisfaction among the students during the COVID scenario. The crux was to identify the significant factors that contribute towards the satisfaction of the students. For this purpose, a total of 233 valid questionnaires were collected from various universities and colleges of Varanasi. Multiple regression analysis was employed to study the data. The study revealed that all the variables in human dimension, i.e., instructor's role and student's role were found significant predictors of perceived satisfaction



through online learning. All the variables in design dimension, i.e., technology, interaction and class-management were found insignificant predictors of perceived satisfaction.

### Recommendations

The study has several implications. Firstly, it has been witnessed that teachers are losing confidence while teaching online due to lack of technological knowledge. As per the study, what matters more than technology is instructor's role in teaching. Therefore, rather than getting distracted due to unfriendly disturbances in the teaching environment, instructor should focus on attitude development, timeliness and quick response, solving queries and providing feedback to students. Secondly, it has been found that the strongest predictor of satisfaction is student's role. The study suggests that what matter most in enhancing satisfaction is the attitude of the student. Students should give more stress on attitude development and self-motivation. They should be more punctual in attending classes and submitting their home assignments. The study has revealed that online learning has contributed in a positive manner towards personal development of the students. Time saved in commuting to colleges is now invested in hobbies and skill enhancement. The study will be a great help to the institutions in strengthening their learning environment and further improve learner satisfaction. It is essential to focus on satisfaction of learner because an unsatisfactory perception will result in decreased self-motivation and willingness to learn.

### Scope for Future Research

Firstly, the research is an attempt to the study only the higher education sector. A separate study can be done to assess the problems in primary or secondary education of our country during the COVID-19 scenario. Secondly, a pre-post

comparison of perceived satisfaction from online v/s classroom-based education is out of the purview of this study. A separate study can be done on comparing the satisfaction from online v/s classroom-based learning.

### Limitations of the study

The study is an attempt to solve the emerging problems confronted by the education system of India. However, the study has limitation. The study proposed an integrated model to test the relationship between factors of online learning and perceived satisfaction, it might not be a comprehensive model due to time and resource limitations.

### References

- AISHE All India Survey on Higher Education, 2018-19 (2019) retrieved from <http://aishe.nic.in/aishe/viewDocument.action?documentId=262>
- Al-Asfour, A. (2012). Examining student satisfaction of online statistics courses. *Journal of College Teaching & Learning (TLC)*, 9(1), 33-38.
- Arias, J. J., Swinton, J., & Anderson, K. (2018). Online vs. Face-to-Face: A Comparison of Student Outcomes with Random Assignment. *e-Journal of Business Education and Scholarship of Teaching*, 12(2), 1-23.
- Arambewela, R., & Hall, J. (2009). An empirical model of international student satisfaction. *Asia Pacific journal of marketing and logistics*.
- Bates, R., & Khasawneh, S. (2007). Self-efficacy and college students' perceptions and use of online learning systems. *Computers in Human Behavior*, 23(1), 175-191.
- Beqiri, M. S., Chase, N. M., & Bishka, A. (2009).

- Online course delivery: An empirical investigation of factors affecting student satisfaction. *Journal of Education for Business*, 85(2), 95-100.
- Bereiter, C., & Scardamalia, M. (1989). Intentional learning as a goal of instruction. In L.B. Resnick (Ed.), *Knowing, Learning, and Instruction* (p. 361-392). Hillsdale, NJ: Erlbaum.
- Bhagat, K., K., Wu, L., Y., & Chang, C., Y. (2016). Development and Validation of the Perception of Students Towards Online Learning (POSTOL). *International Forum of Educational Technology & Society*, 19(1), 350-359.
- Bolliger, D. U. (2004). Key factors for determining student satisfaction in online courses. *International Journal on E-learning*, 3(1), 61-67.
- Bolliger, D. U., & Wasilik, O. (2009). Factors influencing faculty satisfaction with online teaching and learning in higher education. *Distance education*, 30(1), 103-116.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (2000). *How people learn: Brain, mind experience, and school committee on developments in the science of learning*. Commission on Behavioral and Social Sciences and Education of the National Research Council, National Academy Press.
- Byrne, B. M. (2010). *Multivariate applications series. Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed). New York, NY, US: Routledge/Taylor & Francis Group
- Chang, Su-Chao, and Feng-Cheng Tung. "An empirical investigation of students' behavioural intentions to use the online learning course websites." *British Journal of Educational Technology* 39, no. 1 (2008): 71-83.
- Chawla, D., & Joshi, H. (2012). Management education through e-learning in India: an empirical study. *Campus-Wide Information Systems*.
- Cheng, G., & Chau, J. (2016). Exploring the relationships between learning styles, online participation, learning achievement and course satisfaction: An empirical study of a blended learning course. *British Journal of Educational Technology*, 47(2), 257-278.
- Chiu, C. M., Sun, S. Y., Sun, P. C., & Ju, T. L. (2007). An empirical analysis of the antecedents of web-based learning continuance. *Computers & Education*, 49(4), 1224-1245.
- Daoud, J. I. (2017, December). Multicollinearity and regression analysis. In *Journal of Physics: Conference Series* (Vol. 949, No. 1, p. 012009). IOP Publishing.
- Dabaj, F. (2009). The Role of Gender and Age on Students' Perceptions towards Online Education Case Study: Sakarya University, Vocational High School. *Online Submission*, 8(2).
- Gujarati, D. N. (2003). *Basic econometrics* (4th ed.). McGraw-Hill, NY: McGraw-Hill/Irwin
- Eom, S. B., Wen, H. J., & Ashill, N. (2006). The determinants of students' perceived learning outcomes and satisfaction in university online education: An empirical investigation. *Decision Sciences Journal of Innovative Education*, 4(2), 215-235
- Hair, J., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Upper
- Hara, N., & Kling, R.. (1999). Students' frustration with a web-based distance education course. *First Monday*, 4(12).

- Haitham, A. (2018). Re: How to calculate the sample size in regression studies?. Retrieved from: [https://www.researchgate.net/post/How\\_to\\_calculate\\_the\\_sample\\_size\\_in\\_regression\\_studies/5a4b2d263d7f4b55d504c6f0/citation/download](https://www.researchgate.net/post/How_to_calculate_the_sample_size_in_regression_studies/5a4b2d263d7f4b55d504c6f0/citation/download).
- Horzum, M. B., Kaymak, Z. D., & Gungoren, O. C. (2015). Structural equation modeling towards online learning readiness, academic motivations, and perceived learning. *Educational Sciences: Theory & Practice*, 15(3).
- Hughes, M., & Daykin, N. (2002). Towards constructivism: Investigating students' perceptions and learning as a result of using an online environment. *Innovations in education and teaching international*, 39(3), 217-224.
- Hung, M. L., Chou, C., Chen, C. H., & Own, Z. Y. (2010). Learner readiness for online learning: Scale development and student perceptions. *Computers & Education*, 55(3), 1080-1090.
- Joo, Y. J., Lim, K. Y., & Kim, E. K. (2011). Online university students' satisfaction and persistence: Examining perceived level of presence, usefulness and ease of use as predictors in a structural model. *Computers & education*, 57(2), 1654-1664.
- Kauffman, H. (2015). A review of predictive factors of student success in and satisfaction with online learning. *Research in Learning Technology*, 23.
- Kling, R. B. (2005). Principles and practice of structural equation modeling (2nd ed.). New York: Guilford Press.
- Lee, J. W. (2010). Online support service quality, online learning acceptance, and student satisfaction. *The internet and higher education*, 13(4), 277-283.
- Lim, B. C. Y., Hong, K. S., & Tan, K. W. (2008). Acceptance of e-learning among distance learners: A Malaysian perspective. In *Proceedings of the ASCILITE 2008* (pp. 541-551). Retrieved from <http://www.ascilite.org/conferences/melbourne08/procs/lim.pdf>
- Martínez-Caro, E., & Campuzano-Bolarín, F. (2011). Factors affecting students' satisfaction in engineering disciplines: traditional vs. blended approaches. *European Journal of Engineering Education*, 36(5), 473-483.
- Mason, R., & Weller, M. (2000). Factors affecting students' satisfaction on a web course. *Australasian Journal of Educational Technology*, 16(2).
- McDonald, D. (1999-2000). Improved training methods through the use of multimedia technology. *Journal of Computer Information Systems*, 40(2), 17-20.
- McEwen, T. (1997). Communication training in corporate settings: Lessons and opportunities for the academe. *Mid-American Journal of Business*, 12(1), 49-58.
- O'Malley, J., & McCraw, H. (1999). Students' perceptions of distance learning, online learning and the traditional classroom. *Online journal of distance learning administration*, 2(4), 45-62.
- Ozkan, S., & Koseler, R. (2009). Multi-dimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation. *Computers & Education*, 53(4), 1285-1296.
- Paechter, M., & Maier, B. (2010). Online or face-to-face? Students' experiences and preferences in e-learning. *The internet and higher education*, 13(4), 292-297.

- Palmer, S. R., & Holt, D. M. (2009). Examining student satisfaction with wholly online learning. *Journal of computer assisted learning*, 25(2), 101-113.
- Piccoli, G., Ahmad, R., & Ives, B. (2001). Web-based virtual learning environments: A research framework and a preliminary assessment of effectiveness in basic IT skills training. *MIS quarterly*, 401-426.
- Rosenberg, M. J. (2001). *E-Learning: Strategies for Delivering Knowledge in the Digital Age*. New York, NY: McGrawHill Companies.
- Scriven, M. & Paul, R. (2004). Defining critical thinking. Available online January 26, 2006, at <http://www.criticalthinking.org/aboutCT/definingCT.shtml>
- Smart, K. L., & Cappel, J. J. (2006). Students' perceptions of online learning: A comparative study. *Journal of Information Technology Education: Research*, 5(1), 201-219.
- Stansfield, M., McLellan, E., & Connolly, T. (2004). Enhancing student performance in online learning and traditional face-to-face class delivery. *Journal of Information Technology Education: Research*, 3(1), 173-188.
- Stefanovic, D., Drapsin, M., Radjo, I., & Drid, P. (2011). Empirical study of student satisfaction in e-learning system environment. *Technics Technologies Education Management*, 6(4).
- Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & education*, 50(4), 1183-1202.
- Swan, K. (2001). Virtual interaction: Design factors affecting student satisfaction and perceived learning in asynchronous online courses. *Distance education*, 22(2), 306-331.
- Yang, Y., & Cornelius, L. F. (2004). Students' perceptions towards the quality of online education: A qualitative approach. *Association for Educational Communications and Technology*.
- Zhan, Z., & Mei, H. (2013). Academic self-concept and social presence in face-to-face and online learning: Perceptions and effects on students' learning achievement and satisfaction across environments. *Computers & Education*, 69, 131-138.