Juni KhyatISSN: 2278-4632(UGC Care Group I Listed Journal)Vol-12 Issue-07 No.01 July 2022A STATISTICAL STUDY ON E- LEARNING DIFFICULTIES AMONG UNDERGRADUATE
STUDENTS OF DEGREE COLLEGES IN DHARWAD DISTRICT

Nagesh. S Department of Statistics, Karnatak University Dharwad, Karnataka-580003, India E-mail; <u>nageshstatistics@gmail.com</u>

Abstract

Due to COVID-19 outbreak, students were compelled to learn online mode in India as well as around the globe. During the pandemic, this study aimed to look into difficulties relating to online learning among students. The current study employed a Google form to deliver a questionnaire through e-mail and WhatsApp to randomly selected 340 undergraduate students from 18 degree colleges in Dharwad district. There were 30 questions in the questionnaire including socio-demographic, technical, psychological and environmental characteristics. Cochran's approach was used to calculate the sample size of students and colleges under study. Using a simple random sampling procedure, sample number of students and colleges were selected. To achieve our goal, statistical techniques such as Chi-square test for independence of attributes, odds ratio and diagrammatic representations were performed to the collected data using MS Excel, SPSS and R-Programming Packages. According to the findings, students faced eleven difficulties in their desire to adopt online learning. The E-learning difficulties encountered by students are unstable internet, uninterrupted electricity supply, audiovisuals issues, no private place, lack of information communication technology knowledge, distraction during classes, time management to attend classes, learning in practical classes, health problems caused by sitting in front of electronic devices, social interaction and weight gain issue. Results of Chi-square test for association between attributes showed that significant difference between the variables. This study could add to the body of knowledge that can assist universities plan for the future adoption of online learning and mitigate the problems. This may increase the desire and preference to use online learning in the future.

1. Introduction and background of the study

A new version of Corona Virus (COVID-19) also called SARS-Cov-2, a family of viruses that cause common cold to severe respiratory infections, originated in Wuhan, China on 31, December 2019 (Lee, 2020). It was first reported in India on 27, January 2020 and in Karnataka on 08, March 2020. Immediately the Government declared a shutdown all educational institutions including universities, colleges and schools. The COVID-19 pandemic caused a devastating impact on human health and education in India and worldwide, as of 29, December 2021, there were 281,808270 COVID -19 confirmed cases including 5,411,759 deaths as documented by WHO. The outbreak of COVID-19 pandemic made all educational institutes inevitably shift from traditional classroom approach to E-learning or virtual approach. During the pandemic students learning through virtual classes became mandatory in all the educational institutions across the globe due to advancement of information communication technology.

Learning refers to the process by which knowledge or skills are acquired through study, experience or being taught. Most of the degree college students successfully learnt through offline class only. The term "E-learning" was first introduced in the United States in the 1990s, later it became familiar in developed countries. E-learning or online learning is the process of learning by the method of synchronous or asynchronous through electronic devices like computers, laptops and smart gadgets, which are important parts of online learning with the internet and can be carried out from any place. Online classes can be delivered via video conferencing and students' work can be submitted on Google platforms. Free online platforms that support live video communications are Zoom, Google Meet, Skype, Face book, YouTube live Free Conference, Digitalk, Video Calls etc., available in the web.

(UGC Care Group I Listed Journal)

ISSN: 2278-4632 Vol-12 Issue-07 No.01 July 2022

Although E-learning is an audio visual way of learning, cost effective and flexible to the students, it is not without limitations. Most of the studies have been done on students' e-learning performance across the country, less study (if any) can be found in the literature exclusively on e-learning difficulties among the students in Karnataka, India. This study focuses exclusively on virtual learning difficulties among undergraduate degree students in Dharwad district of Karnataka. The district consisting eight Talukas including Dharwad, Hubballi Urban, Hubballi Rural, Kalghatgi, Kundgol, Alnavar, Navalgund and Annigeri. Dharwad is a hub of education wherein a prestigious Karnatak University is located. More than 134 degree colleges affiliated to Karnatak University in Dharwad district. Every year over 32,000 students joining the colleges in Dharwad district to study and also from other states with different socio-economic status.

Some of the studies have been found in the literature on effectiveness and performance of students through online learning; M. Samir Abou El-Seoud and et al(2014) studied interactive features of e-learning increases the motivation of the undergraduate students, Suresh et al. (2018) conducted study on effectiveness of e-learning mode and found that e-learning has positive influence on the academic performance among undergraduate students, Radha et al. (2020) focused on impact of elearning, students interest in using e-learning resource and performance among undergraduate students, Mishra et al(2020) studied perception of teachers and students on online teaching and learning mode during COVID 19 and Moran et al (2021) made attempt to learn e-learning challenges like shaking their confidence and decreasing motivation faced by undergraduate level students through descriptive survey. Recent studies relating to online learning challenges found in the literature are; Anang Fathoni and Heri Retnawah (2021) investigated challenges and online learning strategies during COVID 19 amongst postgraduate students in Yogyakarta University, Indonesia, reported that students experienced obstacles such as data reception, gadgets and interaction with lecturers along with Psychological negative impact. Azleen Ilias et al.(2020) explored some online learning challenges like Technical issues, unstable internet and communication problems among university students in Malaysia during the pandemic. Braj Mohan (2021) examined the problems faced by students from high school to post graduate level are poor internet connectivity and lack of training to the students in India. Mas Anom Abdul Rashid (2021) reported that the major issue in online learning is Internet access problem to the students. As a result of the abrupt move from traditional education to e-learning, the author of this study will look into the issues and difficulties experienced by the students including other difficulties faced by students in technological, mental and physical to make virtual learning method as an effective and successful alternative approach of learning. Hence we undertake the study with the following objectives.

1.1 Objectives of the study

Objectives of the study are

- 1. To identify the possible e-learning difficulties among the students.
- 2. To examine whether socio-demographic factors affect e-learning.
- 3. To set up possible practical remedies for the e-learning difficulties among the students.

The study also tests the following hypothesis

The null hypothesis (H₀) to be tested against alternative hypothesis (H₁) at 0.05 level of significance is

- 1. H_{0:} Technical factors do not affect e-learning difficulties among the students.
- 2. H₀: Socio-demographic factors do not affect e-learning difficulties.
- 3. H₀: Psychological and environmental factors do not affect e-learning difficulties.
- 4. H₀: Students ICT literacy level does not affect on e-learning difficulties.

1.2 Statement of the problem

Academic achievement of students is one of the critical factors for judging educational standards and quality. The main reason behind this study is a recent change in learning method among the students

(UGC Care Group I Listed Journal)

ISSN: 2278-4632 Vol-12 Issue-07 No.01 July 2022

due to COVID-19 pandemic. Students were forced to adopt a new approach of virtual learning in all the educational institutions including schools, colleges and universities across the globe. Most of the undergraduate students are facing a lot of virtual learning difficulties due to the suddenly adopted approach of learning and their weak socio-economic status, environmental and psychological factors. Therefore it is necessary to analyze the e- learning difficulty factors among the students in order to set up possible practical remedies in making effective and successful e-learning approaches.

1.3 Significance of the study

Online learning is student friendly, affordable and time saving. As part of this COVID-19 pandemic, academic institutions and learners face lot of difficulties in their learning process. Our country is not much forwarded in terms of digital literacy and people are not aware of different new technologies. However in the pandemic situation, educational institutions were inevitably offered online learning approach to their students. Students were accepted the new approach of learning with eager and enthusiastically, but at the same time they appear to be facing different challenges. It was felt important to be aware of their issues so that we could address the challenges of online learning. The study's findings will aid academic administrators, parents, and policymakers in providing the necessary facilities for e-learning to be a viable alternative mode of learning.

1.4 Scope and limitations of the study

The current study is restricted to 2^{nd} , 4^{th} , and 6^{th} (even) semesters undergraduate students of degree colleges during the academic year 2020-2021. The scope of the study is limited to Dharwad district degree colleges affiliated with Karnatak University. The courses B. Ed., B.P.Ed. and BFA introduced by the colleges are excluded from this study.

2. Methodology

The research questions in this study were answered using a cross-sectional survey research design with a case study kind of approach. A structural questionnaire was created with Google form (<u>https://forms.gle/qENbzCnqHwCUUBs6A</u>) and distributed it to the students of sample degree colleges including government, aided, and unaided colleges in Dharwad district affiliated with Karnatak University through e-mail and WhatsApp. The questionnaire consists of 30 questions divided into two sections: Section-A covers socio-demographic variables and Section-B comprises variables related to e-learning challenges.

2.1 Proportion of degree colleges in Dharwad district

Total number of colleges affiliated with Karnatak University in Dharwad district are 115, in which 86 are degree colleges remaining are B. Ed., B.P.Ed. and BFA colleges. The proportion value p = 0.7478. Total number of students admitted to the degree colleges affiliated with Karnatak University is 84780, in which 32303 students admitted to the degree colleges of Dharwad district.in the year 2020-21.The students proportion is p = 0.3810.

2.2 Sampling techniques

Simple random sampling and population proportional to size sample methods were used to select sample of 18 colleges and sample of 340 undergraduate students in Dharwad district.

2.3 Determination of sample size

The sample size is impacted by a number of factors such as purpose of the study, population size, the risk of selecting a bad sample during a particular time period and allowable sample error.

The amount of precision, level of confidence or risk and the degree of variability to the variables being measured are usually three criteria that must be specified in addition to the study purpose, size of

(UGC Care Group I Listed Journal)

ISSN: 2278-4632 Vol-12 Issue-07 No.01 July 2022

the population to establish the proper sample size. Using Cochran's (1077) technique sample size of 18 (colleges) was calculated out of 86 colleges in Dharwad district as follows

Cochran's formula $n = \frac{n_0}{1 + \frac{n_0}{N}}$, where $n_0 = \frac{Z_{\alpha}^2 pq}{d^2}$, where Z_{α}^2 is table value 1.96 of level of

confidence at $\propto = 0.05$

p = Proportion of degree colleges affiliated with Karnatak University in Dharwad district is

p = 0.7478, q = 1-p is 0.2522, d = Desired absolute precision is 0.2. Then

 $n_0 = \frac{(1.96)^2 0.7478 \times 0.2522}{0.04} = 18.12 = 18.12$, therefore the sample size $n = \frac{18.12}{1 + \frac{18.12}{0.045}} = 18.08 \approx 18$.

The sample colleges were selected using simple random sampling and stratified random sampling. Similarly students sample size can be calculated as

$$Z_{\alpha}^{2} = table \ value \ 1.96$$

at $\propto = 0.05$. $p = 0.3273$, $q = 1-p = 0.6727$ and $d = 0.04$, then
$$n_{0} = \frac{(1.96)^{2} 0.3273 \times 0.6727}{0.0025} = 340$$
, therefore the students sample size $n = \frac{340}{1 + \frac{340}{9365}} = 340$.

The sample of 340 students was selected by employing the method of simple random sampling and population proportional to size sampling.

2.4 Population proportional to size sample

The study has been conducted with sample of 340 students selected from 18 sample colleges using simple random sampling. And population proportional to size sample was used to obtain each college sample size as follows

Sample size of the sample colleges (c_i) is obtained using the following formula. (c_i) = $\frac{Number \ of \ students \ admitted \ to \ each \ colleges}{Total \ number \ of \ students \ admitted \ to \ 18 \ colleges} x \ Determined \ Sample \ size,$

 $i = 1, 2, \dots, 18.$

2.5 Chi-Square test for independence of attributes

The Chi-Square test for independence of attributes evaluates the general hypothesis whether the two attributes are independent of each other or not. Then the test statistic for testing the hypothesis H₀: the two attributes are independent against H_1 : two attributes are not independent. For r \times c contingency table is given by

 $\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(oij - Eij)^2}{Eij}$, where Oij = Observed frequency, E_{ij} = Expected frequency.

Expected frequency of the $(i, j)^{th}$ cell can be obtained as

$$E_{ij} = \frac{(sum \ of \ the \ i^{th} row) * (sum \ of \ the \ j^{th} column)}{sample \ size \ n}$$

Comparing the calculated value with the table value, if the calculated value is less than the table value, it is conclude that the data do not provide any evidence against the independence otherwise conclude as dependent and null hypothesis may be accepted.

One can observe the p value, the probability that the random variables will exceed the observed value, when H₀ is true. If p value is ≤ 0.05 , then the result is significant otherwise result is not statistically significant.

Statistical software: MS Excel, R Programming packages and SPSS were used to analyze the data. The sample colleges drawn from the Dharwad district with corresponding sample number of students are shown in the following table.

Table 2.1: Name of the sample colleges with sample size of students

Sl. No	Name of the sample college	Total number of students admitted during 2020-21	Sample size of students
1	Government First Grade College, Gudgeri	540	18
2	Shri. Mahadevappa Basalingappa Halli Govt. I Grade College Annigeri	366	13
3	Karnatak Arts and Science College, Dharwad	2575	77
4	KLES's P.C.Jabin Science College, Hubballi (Autonomous)	967	77
5	Goodnews Welfare Society's Arts, and Commerce College, Kalaghatagi	395	15
6	Kittel Arts College, Dharwad	696	25
7	Shri Amruteshwar Arts and Commerce College, Annigeri	425	16
8	KLE's B.B.A. College, Vidyanagar, Hubli	499	18
9	Anjuman Institute of information Science and Management, Near Old Bus Stand, Anjuman Campus, Dharwad	82	03
10	K.E.Board's First Grade Arts and commerce College, Dharwad	713	26
11	Dr. D. G. Shetty Edn. Socities Rukmini S. Shetty B.C.A College, Dharawad	21	01
12	Sidu Vidya Sansthe Nalanda B.C.A College, Hubli	70	04
13	Global Network Society Global Business School Hubli	299	09
14	Deyosis Board of Education and Social Welfare Trust, Our Lady of Fatima College of Commerce, Hubli	207	08
15	Basavareddy Education Society's Basavareddy Arts and Commerce College, Dharwad	433	16
16	VidyaBharati Foundations Institute of Business Management (BBA), Hubli	140	05
17	Y. B Annigeri Commerce Degree College, Saptapur Dharwad	142	05
18	KLE Arts and Commerce Ist Grade College, Saunshi, Tq- Kundagol	91	04
	Total	8661	340

3. Results and discussion

In this chapter, results are obtained by analyzing the data using statistical techniques; Chi-Square test for independence of attributes and diagrammatic representation.

3.1 Diagrammatic representation of data

In general, diagrams are more attractive and impressive than a set of numerical data. They are more visually appealing leave a lasting imprints on the mind. In practice a wide variety of diagrams are employed to illustrate statistical data. Some of the most commonly utilized diagrams Pie Charts and Bar diagrams are used in this study to depict the data.

Juni Khyat (UGC Care Group I Listed Journal) Figure 3.1.1: Pie chart representation of gender

Gender	Frequency	Percent	Gender
Male	190	56	
			44% ■ Female
Female	150	44	56%
Total	340	100	

The above figure shows that 56 percent (190) of male and 44% (150) of female are participated in the survey.

Figure 3.1.2: Pie chart representation of locality



According to the above chart, 66 percent (225) of students are from rural areas, whereas 34 percent (115) are from metropolitan areas.

Figure 3.1.3: Simple bar diagram representation of faculty



As seen in the graph above, 31 percent of Science students, 16 percent of Commerce students, 42 percent of Arts students, 6 percent of BBA students, and 5 percent of BCA students participated in the survey.

Figure 3.1.4: Pie chart representation of internet problem

Internet problem	Frequency	Percent	Internet problem
Yes	285	84	
No	55	16	Yes 84%
Total	340	100	

According to the graph above, 84 percent of students had internet issues while taking online classes. **Figure 3.1.5: Pie chart representation of electricity problem**

Electricity problem	Frequency	Percent	Electricity problem
Yes	214	63	No 37%
No	126	37	Yes
Total	340	100	03%

According to the figure above, 63 percent of students had problems with electricity during online lessons.

Figure 3.1.6:	Pie chart	representation	of private	room problem
1	I IC CHAIC	- opi eschication	or private	room prosiem

Private room	Frequency	Percent	Private room for attending online classes
No	232	68	Yes 32%
Yes	108	32	No 68%
Total	340	100	

According to the figure above, 68 percent of students had problems finding a private room to take online classes.

Health issues	Frequency	Percent
Headache	73	22
Wearing eyeglasses due to online classes	109	32
Ear problem	18	5
Other physical problem	23	7
All the above	117	34
Total	340	100





As in the above chart, 34 percent (117) of students are faced the problems of the health issues and 32 percent students are experienced eyestrain problem.

Figure 3.1.8: Pie chart representation of lack of ICT knowledge

Lack of ICT knowledge	Frequency	Percent	Lack of ICT Knowledge
No	100	29	No 29%
Yes	240	71	Yes 71%
Total	340	100	

According to the diagram above, 71 percent (240) of students have lack of ICT problem.

ISSN: 2278-4632 Vol-12 Issue-07 No.01 July 2022

Figure 3.1.9: Pie chart representation of audio/video problems during online classes

Audio/Video problems during online classes	Frequency	Percent	Audio/video problem
No	59	17	17%
Yes	281	83	Yes
Total	340	100	83%

The above figure indicates that 83 percent (281) of those who took online classes had problems with audio and video.

Figure 3.1.10: Pie chart representation of distractions during the online classes

Distractions during the online classes	Frequency	Percent	Distraction
No	93	27	No 27%
Yes	247	73	Yes
Total	340	100	73%

As in the above figure, 73 percent (247) of students reported being distracted while taking online classes.

Figure 2	1 11.	Dia abant	nonnocontation	of time	monogoment	nrohlom
rigule 3	.1.11.	r le chart	representation	or time	management	problem

Problem of proper time management for attending online classes	Frequency	Percent	Time management problem
No	89	26	No 26%
Yes	251	74	Yes 74%
Total	340	100	

According to the above chart, 74 percent (251) of students had difficulty managing their time in order to attend online classes.

Figure 3.1.12: Pie chart representation of difficulty in learning practical classes

Difficulty in learning practical classes	Frequency	Percent	Difficulty in practical class learning		
No	77	23	No		
Yes	263	77	Yes 23%		
Total	340	100	77%		

As shown in the above figure, 77 percent (263) of students in online classrooms struggled to learn practical papers.

Figure 3.1.13: Pie Chart Representation of Online learning is a lack of social interaction

Online learning is a lack of social interaction	Frequency	Percent	Lack of Social Interaction
No	98	29	No 29%
Yes	242	71	No.
Total	340	100	Yes 71%

According to the figure above, 71% (242) of students reported a lack of social connection during online sessions.

3.2 Chi-square test for independence of attributes

3.2.1 Association between electricity problem and locality

Null hypothesis H_0 : Electricity problem is independent of Locality against Alternative hypothesis H_1 : Electricity problem is dependent of Locality.

Table 3.2.1: Chi-Square test between electricity problem and locality

	Electricity problem							
Locality	Original data		Expected data			((O-E)^2)/E		
	No	Yes	Total	No	Yes	Total	No	Yes
Rural	73	152	225	83.3823	141.6176	225	1.2927	0.7611
Urban	53	62	115	42.6176	72.38235	115	2.5293	1.4892
Total	126	214	340	126	214	340		

	Value	Degrees of freedom	p-Value
Pearson Chi-Square	6.0724	1	0.0137

Interpretation

We reject the null hypothesis since the p value (Asymptotic significant two-sided) is less than 0.05 in the preceding table; thus, the result is significant, suggesting that the Locality and Electricity problems are interdependent.

ISSN: 2278-4632 Vol-12 Issue-07 No.01 July 2022

Chi-Square test results for independence of other possible attributes are summarized in the following table.

SI No	Variables tested in Chi-Square test of independence of	Chi-Square	n vəluo	
51. 140	attributes	calculated value	p value	
1	Lack of ICT knowledge is independent of Locality	12.7198	0.0003	
2	Lack of ICT knowledge is independent of Faculty	19.7602	0.0005	
3	Private room for attending online classes is independent of	7.0941	0.0077	
4	Locality	11.0006	0.0009	
5	Health Issues are independent of Faculty	27.6613	0.0347	
6	E-learning is as effective as Traditional learning is independent of Locality	14.09859	0.0001	

Table 3.2.2: Summary of Chi-Square test significant results between the attributes

We reject null hypothesis since the p value for calculated Chi-Squared test statistics of all the attributes is less than 0.05, as shown in table 3.2.2. As a result, the results are statistically significant, showing that the above combination of attributes is dependent.

Summary of insignificant Chi square test results for other attributes are summarized in the following table.

Table 3.2.4: Summary	y of Chi-Squ	are test insign	ificant results	between the	attributes

SI No	Variables tested in Chi-Square test of	Chi-Square	n voluo	
51. INU	independence of attributes	calculated value	p value	
1	Electricity problem versus locality	2.0903	0.7191	
2	Lack of ICT knowledge versus Locality	1.0736	0.3001	
3	Lack of ICT knowledge versus Faculty	0.2331	0.6292	
4	Health Issues versus Gender	6.3366	0.1753	
5	Lack of ICT knowledge versus Gender	2.7217	0.0989	
6	Lack of social interaction versus Gender	1.9324	0.1644	
7	Time management versus Gender	0.1858	0.6663	
8	Weight gain versus Gender	0.6665	0.4142	
9	Internet problems versus Faculty	5.4583	0.2434	
10	Lack of social interaction versus Faculty	7.0635	0.1325	
11	Audio/Video problems versus Locality	0.0998	0.7519	
10	Difficulties in learning practical classes versus			
12	Locality	0.0685	0.7934	
13	Distractions during online classes versus Locality	2.8319	0.0924	
14	Internet problem versus Locality	0.5568	0.4555	
15	Lack of social interaction versus Locality	0.6343	0.4257	
16	Time management versus Locality	1.0326	0.3095	
17	Time management versus Faculty	7.5707	0.1086	

We fail to reject null hypothesis since the p value for calculated Chi-Squared test statistics of all the attributes is more than 0.05, as shown in table 3.2.4. As a result, the results are not statistically significant, showing that the above combination of attributes is independent.

4. Conclusions and recommendations

4.1: Conclusions

Our findings back up the idea that the current COVID-19 epidemic has posed major hurdles and difficulties for undergraduate students, affecting their educational progress, lives, and mental health. The findings of this study revealed ten major challenges that students encountered throughout the epidemic.

(UGC Care Group I Listed Journal)

ISSN: 2278-4632 Vol-12 Issue-07 No.01 July 2022

Electricity issues, Internet issues, a lack of information and communication technology (ICT) knowledge, audio/visual issues, health issues such as eyestrain, a private room for an online class, distraction, proper time management issues, a lack of social interaction, and learning difficulties in practical classes are just a few of the issues that come with online learning. The statistically significant results found between the attributes based on the Chi-square test for independence of attributes are Electricity problem against Locality, Lack of ICT knowledge against Locality, Lack of ICT knowledge against Locality and Gender, Health issues sitting in front of electronic devices against Faculty and E-learning is as effective as traditional learning against Locality. Other issues that have arisen as a result of isolation include a lack of a traditional academic environment, a lack of a structured schedule, and a lack of access to external learning materials.

4.2 Recommendations

The following recommendations are provided based on this study in order to promote e-learning system as a viable learning approach.

- 1. Information communication technology (ICT) knowledge, distraction minimization, time management, and self-motivation should all be covered in training sessions.
- 2. To alleviate the isolation, a virtual study group should be established.
- 3. Low-income families should have access to free and low-cost high-speed internet.
- 4. WiFi should be available in the parking lot.

Finally, this study underlines the importance of striking a balance between high-quality instruction and consistent support for undergraduate students in crisis.

5. Acknowledgement

The author expresses gratitude to Karnatak University, Dharwad for supporting this effort financially.

6. References

- 1. Abou El-Seoud, M. S., Taj-Eddin, I. A., Seddiek, N., El-Khouly, M. M., & Nosseir, A. (2014). E-learning and students' motivation: A research study on the effect of e-learning on higher education. *International journal of emerging technologies in learning (iJET)*, 9(4), 20-26.
- 2. Braj Mohan(2021). Problems and challenges in online education during COVID-19 pandemic in India. *International Journal of Research*, 8(9), 264-274.
- 3. Fathoni, A., & Retnawati, H. (2021). Challenges and strategies of postgraduate students in online learning during the Covid-19 pandemic. *Jurnal Prima Edukasia*, 9(2), 2021.
- 4. Ilias, A., Baidi, N., Ghani, E. K., & Razali, F. M. (2020). Issues on the use of online learning: an exploratory study among university students during the COVID-19 pandemic. *Universal Journal of Educational Research*, 8(11), 5092-5105.
- 5. Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open*, *1*, 100012.
- 6. Moran, K., Saikia, P., Sarma, J., & Kalita, R. (2021). E-learning: challenges and prospects among the undergraduate level students during the covid-19 pandemic crisis. *International Journal of Management* (*IJM*), *12*(1).
- 7. Radha, R., Mahalakshmi, K., Kumar, V. S., & Saravanakumar, A. R. (2020). E-Learning during lockdown of Covid-19 pandemic: A global perspective. *International journal of control and automation*, *13*(4), 1088-1099.
- 8. Rashid, M. A. A., Othman, M. N. A., & Yusop, Z. M. (2021). Online Learning Issues and Challenges during COVID-19 Pandemic: A Case Study at a Private University College. *International Journal of Advanced Research in Education and Society*, *3*(2), 50-57.
- 9. Suresh, M., Vishnu Priya, V., & Gayathri, R. (2018). Effect of e-learning on academic performance of undergraduate students. *Drug Invention Today*, 10(9).