MEASURING THE PROS AND CONS OF E-LEARNING VIA SWOT ANALYSIS

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ABSTRACT

The world is moving towards open education. This method of learning brings instructors and students throughout the world closer through the virtual medium of the internet. People are getting a common platform to share their ideas and work together. Institutes, instructors and students are able to collaborate with each other globally. SWOT is an acronym for Strengths, Weaknesses, Opportunities and Threats. Online teaching and learning have certain difficulties in maintaining communication between teacher and student because direct and physical contact between people is lost. The technical problems of connectivity, technological equipment, and internet access for users can hinder e-learning processes (Favale et al., 2020). Despite the advantages offered by virtual education due to the flexibility of time and geographical location, there are also some fragile aspects that need concern too. This paper intends to explore and evaluate the pros and cons of online learning via SWOT analysis. The data were collected from 138 teachers and models were developed through SEM and SWOT Grid. It is concluded that, from the SWOT analysis, it is focused that strengths and opportunities have more relationships and weaknesses and Threats have lesser relationships.

***Keywords**: E-learning, Issues, Opportunities, Strengths, Weakness, Threats.*

I. Introduction

Online learning is defined as "learning experiences insynchronous or asynchronous environments using different devices (e.g., mobilephones, laptops, etc.) with internet access. In these environments, students canbe anywhere (independent) to learn and interact with instructors and otherstudents" (Singh & Thurman, 2019).The shift from face-to-face lectures to online classes is the only possible solution for online learning.Indeed, academic institutions would not be able to transform all of their college curricula into and online resource overnight. Distance, scale, and personalized teaching and learning are the three biggest

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challenges for onlineteaching. Innovative solutions by institutions can only help us deal with the pandemic (Liguori& Winkler, 2020).The strengths, weaknesses, opportunities and threats (SWOT) analysis is one of the strategic planning approaches used to evaluate the status of a plan or strategy. The strengths describe which aspects of a topic or part of an organization are superior and what distinguishes it apart from the competitors. The weaknesses stop the effectiveness of a strategy at its desired level. Moreover, the opportunities indicate the desirable external factors which can provide the target strategy with a competitive advantage, while threats point out to the factors that are likely to harm the organization or its strategies.

II.Reviews

In a study, students were found to be not sufficiently prepared for balancing their work, family, and social lives with their study lives in an online learning environment. Students were also found to be poorly prepared for several e-learning competencies and academic-type competencies. Also, there is a low-level preparedness among the students concerning the usage of Learning Management Systems (Parkes et al., 2014).Many students and teachers also face psychological problems during crisis—there is stress, fear, anxiety, depression, and insomnia that lead to a lack of focus and concentration. Disasters create havoc in the lives of people (Di Pietro, 2017). To conduct smooth teaching–learning programs, a list of online etiquette was shared with students and proper instructions for attending classes were given to them (Saxena, 2020).One should not merely focus on the pros attached to the adoption of online learning during the crises but should also take account of developing and enhancing the quality of virtual courses delivered in such emergencies (Affouneh et al., 2020).

III.Research Methodology

This study is based on the primary survey which has been conducted exclusively for the purpose of the preparation of the current paper through Google form. A totalof 138teachers responded to the queries on SWOT analysis and were considered as sample respondents. The data obtained were entered and edited in Excel sheets and then transferred to SPSS for further analysis and the output of Path analysis and Structural Equation Modelling were taken from AMOS.

IV.Strengths

The strengths of the online learning modes can rescue us from these hard times. It is student-centered and offers a great deal of flexibility in terms of time and location. The e-learning methods

enable one to customize procedures and processes based on the needs of the learners. There are plenty of online tools available which is important for an effective and efficient learning environment. Educators can use a combo of audio, videos, and text to reach out to their students in this time of crisis to maintain a human touch to their lectures. The following tables give the analytical assessment of Strength in Online Teaching

Table 1 KMO and Bartlett's Test for the Strength in Online Teaching

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.907
Bartlett's Test of Sphericity	Approx. Chi-Square	1871.669
	df	190
	Sig.	.000

Source: Derived

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is a statistic that indicates the proportion of variance in the variables that might be caused by underlying factors. Generally, the KMO values between 0.8 and 1 indicate the sampling is adequate. From the above analysis, it is found that the value of The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.907 which is close to one expressing strong validity. The value of Chi-square is 1871.67 and is statistically significant as the p value is less than the standard limit of 0.05.

Table 2 Factor analysis for the Strengths in Online Assessment

Variables	**Components**		
	Affability	**Automation**	**Adaptability**
Virtual Classroom	.837		
Dynamic Interaction	.769		
Student-Centered	.751		
Access to Resources	.742		
Flexibility	.710		
Impartiality	.652		
Module results were obtained	.467		
Reduces refreshment cost		.869	
Reduces cost of commuting transportation		.836	
Environmentally sound		.730	
Automated assessment		.616	
Promotes collaboration		.592	
Basic IT skills		.569	
Adjustable timings			.751

Instant result and feedback			.728
Serving many students in a short time			.711
Connected both in and out of class			.669
Better student engagement			.652
Creative Thinking			.584
% of variance	23.77	21.35	21.16
% to total	36	32	32
Correlation Analysis			
	Affability	Automation	Adaptability
Affability	1		
Automation	.577**	1	
Adaptability	**.702****	.700**	1

Source: Primary Survey

Affability is the first factor filtered under the strengths of Online Teaching which consists of the statements such as Virtual Classroom(.837), Dynamic Interaction(.769), Student-Centered (.751), Access to Resources (.742), Flexibility (.710), Impartiality (.652), and Module results were successfully obtained (.467). This factor has a variance of 23.77 percent with 36 percent out of the total. **Automation**is the second factor filtered under the strengths of Online Teaching which consists of the statements such as Reduces refreshment cost (.869), Reduces cost of commuting transportation (.836), environmentally sound (.730), automated assessment (.616), Promotes collaboration (.592), and Basic IT skills (.569). This factor has a variance of 21.35 percent with 32 percent out of the total. **Adaptability**is the third factor filtered under the strengths of Online Teaching which consists of the statements such as Adjustable timings (.751), Instant result and feedback (.728), Serving many students in a short time (.711), Connected both in and out of class (.669), Better student engagement (.652), and Creative Thinking (.584). This factor has a variance of 21.16 percent with 32 percent out of the total.It is understood from the correlation analysis that there exists a positive and significant association between the components Accessibility and Affability (.702**), between Adaptability and Automation (.700**), and between Automation and Affability (.577**). The same is further depicted through Path analysis as below.

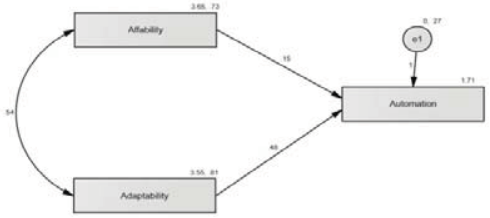

Figure 1: Path Analysis for Strength in Online Classes

Table 3 Regression Weights: Opportunities in Online Assessment

Constructs			Estimate	S.E.	C.R.	P
Automation	<---	Affability	.147	.073	2.01	.045
Automation	<---	Adaptability	.480	.070	6.89	***
Covariance						
Affability	<-->	Adaptability	.540	.080	6.72	***
Correlation						
Affability	<-->	Adaptability	.700			

Source: Derived

As per the regression weights, it is noted that the relationship between Automation with Affability and Adaptabilityis significantas the p values are less than 0.05 and the Critical Ratio values (C.R) are more than the standard limit of 1.96. Further, the Covariance between Affability and Adaptabilityis also statistically significant as per p-value and Critical Ratio and the correlation between the two is positive 0.700 representing a good relationship.

V.Weakness

E-learning has certain weaknesses in the form that it can hamper the communication between the learner and the educator, that is, direct communication and human touch are lost. Users can face many technical difficulties that hinder and slow down the teaching–learning process (Favale et al., 2020). Time and location flexibility, though is the strength of online learning these aspects are fragile and create problems. Students' non serious behavior in terms of time and flexibility can cause a lot of problems.

Table 4 KMO and Bartlett's Test for the Weakness in Online Teaching

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.934
Bartlett's Test of Sphericity	Approx. Chi-Square	2335.78
	df	171
	Sig.	.000

Source: Derived

As a Common phenomenon, the KMO values between 0.8 and 1 indicate the sampling are adequate. From the above analysis it is found that the value of The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.934 which is close to one expressing strong validity. The value of the Chi-square is 2335.78 and is statistically significant as the p-value is less than the standard limit of 0.05.

Table 5 Factor analysis for the Weakness in Online Assessment

Variables	Components		
	Technology issues	Physical Issues	Distraction issues
Lack of computer literacy	.841		
Persons with limited ICT skills	.729		
Expensive resources	.729		
Constantly changing technology	.715		
Lack of Personal Computers	.698		
Extensive faculty training	.665		
Login and enrollment complications	.662		
Lack of awareness	.658		
Lack of coordination among learners	.565		
Can cause depression		.832	
Can lead to insomnia		.802	
Too much sitting		.774	
Worsen eye strain		.683	
Face technical problem		.638	
Difficulty in the usage of software		.636	
Student feedback is limited in online learning			.750
Distractions of Social Media			.727
Lack of attention			.707
Network issues			.562
Increase the habit of cheating			.547
% of variance	29.41	24.26	17.19
Cumulative %	29.41	53.67	70.86
% to total	42	34	24

Correlation Analysis			
	Technical	**Physical**	**Distraction**
Technical Issues	1		
Physical Issues	.754**	1	
Distraction Issues	**.759****	.758**	1

Source: Primary Survey

Technology issues are the first factor filtered under the weakness of Online Teaching which consists of the statements such as Lack of computer literacy (.841), Persons with limited ICT skills (.729), Expensive resources (.729), Constantly changing technology (.715), Lack of Personal Computers (.698), Extensive faculty training (.665), Login and enrollment complications (.662), Lack of awareness on blended learning (.658), and Lack of coordination among learners (.565). This

factor has a variance of 29.41 percent with 42 percent out of the total. **Physical Issue** is the second factor filtered under the weakness of Online Teaching which consists of the statements such as cause depression (.832), lead to insomnia (.802), Continuous sitting (.774), Worsen eye strain (.683), Face technical problem (.638), and Difficulty in the usage of the software (.636). This factor has a variance of 24.26 percent with 34 percent out of the total. **Distraction issue** is the third factor filtered under the weakness of Online Teaching which consists of statements such as Student feedback is limited in online learning (.750), Distractions of Social Media (.727), Lack of attention (.707), Network issues (.562), and Increase the habit of cheating (.547). This factor has a variance of 17.19 percent with 24 percent out of the total.It is understood from the correlation analysis that there exists a positive and significant association between the components Distraction Issues and Technical Issues (.759**), between Distraction Issues and Physical Issues (.758**), and between Physical Issues and Technical Issues (.754**). The same is further depicted through Path analysis as below.

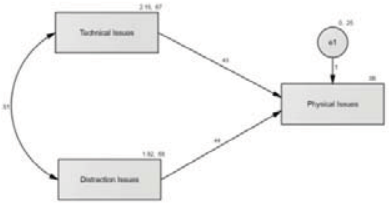

Figure 2: Path Analysis for Weakness in Online Classes

Table 6 Regression Weights: Weakness in Online Assessment

Constructs			**Estimate**	**S.E.**	**C.R.**	**P**
Physical	<---	Technical	.431	.079	5.432	***
Physical	<---	Distraction	.444	.079	5.647	***
Covariance						
Technical	<-->	Distraction	.513	.073	7.076	***
Correlation						
Technical	<-->	Distraction	.759			

Source: Derived

As per the regression weights, it is noted that the relationship between Physical issues and Technical issues and Distraction issues is significant as the p values are less than 0.05 and the Critical Ratio values (C.R) are more than the standard limit of 1.96. Further, the **Covariance between** Technical issues and Distraction issues is also statistically significantas per p-value and Critical Ratio and the correlation between the two is positive to the tune of 0.759 representing a good relationship.

VI.Opportunities

Online learning generally has a lot of opportunities available but this time of crisis will allow online learning to boom as most academic institutions have switched to this model. Online Learning, Remote Working, and e-collaboration sexploded during the outbreak of Corona Virus crisis (Favale et al., 2020).Teachers can practice technology and can design various flexible programs for students' better understanding. The usage of online learning will test both the educator and learners. It will enhance problem-solving skills, critical thinking abilities, and adaptability among the students.

Table 7 KMO and Bartlett's Test for the Opportunities in Online Teaching

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.920
Bartlett's Test of Sphericity	Approx. Chi-Square	2044.19
	df	171
	Sig.	.000

Source: Derived

From the above analysis, it is found that the value of The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.920 which is close to one expressing strong validity. The value of the Chi-square is 2335.78 and is statistically significant as the p-value is less than the standard limit of 0.05.

Table 8 Factor Analysis for the Opportunities in Online Assessment

Variables	**Components**		
	Academic Attainability	**Academic Affordability**	**Academic Accessibility**
Flexibility in the scheduling of classes	.782		
Academic/corporate partnerships	.749		
Synchronous Learning hours	.736		
Upskilling in new technologies and resources	.723		
Academic collaboration	.721		
Development of new online resources	.695		
Provide technical instructions	.655		
Frequent meetings are possible online	.611		
Working remotely	.578		

Stimulate activity		.795	
Stimulation of motivation		.792	
Train Teachers in distance learning		.684	
Teach more students at a lower cost		.677	
Meet new people - social interaction.		.591	
User friendly		.498	
Can store data			.826
Accessibility of Documents			.822
Instant record of results			.777
Learning is accessible regardless of location			.464
% of variance	29.07	21.34	18.64
Cumulative %	29.07	50.41	69.05
% to total	42	31	27
Correlation Analysis			
	Attainability	**Affordability**	**Accessibility**
Attainability	1		
Affordability	**.744****	1	
Accessibility	**.734****	.663**	1

Source: Primary Survey

Academic Attainability is the first factor filtered under the opportunities of Online Teaching which consists of the statements such as Flexibility in the scheduling of classes (.782), Academic/corporate partnerships (.749), Synchronous learning hours (.736), Upskilling in new technologies and resources (.723), Academic collaboration (.721), Development of new online resources (.695), Provide technical instructions (.655), Frequent meetings are possible online (.611), and Working remotely (.578). This factor has a variance of 29.07 percent with 42 percent out of the total. **Academic Affordability**is the second factor filtered under the opportunities of Online Teaching which consists of the statements such as Stimulate activity (.795), Stimulation of motivation (.792), Train Teachers in distance learning (.684), Teach more students at a lower cost

(.677), social interaction (.591), and User friendly (.498). This factor has a variance of 21.34 percent with 31 percent out of the total. **Academic Accessibility** is the third factor filtered under the opportunities of Online Teaching which consists of the statements such as can store data (.826), Accessibility of Documents (.822), Instant record of results (.777), and Learning accessible regardless of location (.464). This factor has a variance of 18.64 percent with 27 percent out of the total. It is understood from the correlation analysis that there existsa positive and significant association between the components Academic Affordability and Academic Attainability (.744**), between Academic Accessibility and Academic Attainability (.734**), and between Academic Accessibility and Academic Affordability (.633**). The same is further depicted through Path analysis as below.

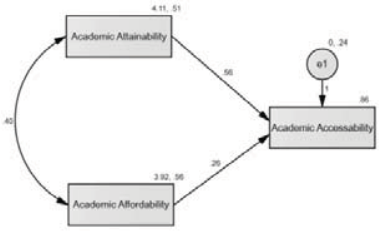

Figure 3: Path Analysis for Opportunities in Online Classes

Table 9 Regression Weights: Opportunities in Online Assessment

Constructs			**Estimate**	**S.E.**	**C.R.**	**P**
Academic accessibility	<---	Attainability	.560	.087	6.423	***
Academic accessibility	<---	Affordability	.260	.083	3.123	.002
Covariance						
Attainability	<-->	Affordability	.395	.057	6.988	***
Correlation						
Attainability	<-->	Affordability	.744			

Source: Derived

As per the regression weights, it is noted that the relationship between Academic Accessibility and Attainability and Affordability is significant as the p values are less than 0.05 and the Critical Ratio values (C.R) are more than the standard limit of 1.96. Further, the Covariance betweenAttainability and Affordability is also statistically significant as per p-value and Critical Ratio and the correlation between the two is positive to the tune of 0.744 representing good relationship.

VII.Threats

Online learning faces many challenges ranging from learners' issues, educators'issues, and content issues. It is a challenge for institutions to engage studentsand make them participate in the teaching–learning process. It is a challenge forteachers to move from offline mode to online mode, change their teachingmethodologies, and manage their time. It is challenging to develop content that not only covers the curriculum but also engages the students (Kebritchiet al., 2017).

Table 10 KMO and Bartlett's Test for the Threats in Online Teaching

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.911
Bartlett's Test of Sphericity	Approx. Chi-Square	2269.86
	df	190
	Sig.	.000

Source: Derived

In general, KMO values between 0.8 and 1 indicate the sampling is adequate. From the above analysis, it is found that the value of The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.911 which is close to one expressing strong validity. The value of the Chi-square is 2269.86 and is statistically significant as the p-value is less than the standard limit of 0.05.

Table 11 Factor Analysis for the Threats in Online Assessment

Variables	**Components**		
	Connectivity issues	**Assessment issues**	**Health issues**
Unstable power supply	.860		
Unsecure Wi-Fi	.836		
Insufficient training	.783		
It is expensive to use LMS	.765		
Lack of computers	.721		
Mandatory websites	.574		
Insecure website	.547		
Plagiarism	.544		
Issues with assessment		.784	
Resistance to adopting change		.759	
Time constraints		.747	
Lack of commitment		.616	
Issue with automation		.533	
Privacy issues		.484	
Unsecured Job		.451	
Distractions and time management.			.836
Technical issues.			.793
Health threats			.709
Effects on eyes			.613
Threat to on-campus institutions			.484
% of variance	26.38	20.93	20.04

Cumulative %	26.38	47.31	67.35
% to total	39	31	30

Correlation Analysis

	Connectivity	**Assessment**	**Health**
Connectivity issues	1		
Assessment issues	.797**	1	
Health issues	.718**	.752**	1

Source: Primary Survey

Connectivity issue is the first factor filtered under the threats of Online Teaching which consists of the statements such as unstable power supply (.860), Unsecure Wi-Fi (.836), Insufficient training (.783), it is expensive to use LMS (.765), Lack of computers (.721), Mandatory websites (.574), insecure website (.547), and Plagiarism (.544). This factor has a variance of 26.38 percent with 39 percent out of the total. **Assessment issues** is the second factor filtered under the threats of Online Teaching which consists of the statements such as Issues with assessment (.784), Resistance to adopting change (.759), Time constraints (.747), Lack of commitment (.616), Issue with assessment (.533), Privacy issues (.484), and Unsecured Job (.451). This factor has a variance of 20.93 percent with 31 percent out of the total. The health **issue** is the third factor filtered under the threats of Online Teaching which consists of the statements such as Distractions and time management (.836), Technical issues (.793), Health threats (.709), Eye Strain (.613), and Threat to on-campus institutions (.484). This factor has a variance of 20.04 percent with 30 percent out of the total. It is understood from the correlation analysis that there existsa positive and significant association between the components Assessment issues and Connectivity issues (.797**), between Health issues and Assessment issues (.752**), and between Health issues and Connectivity issues (.718**). The same is further depicted through Path analysis as below.

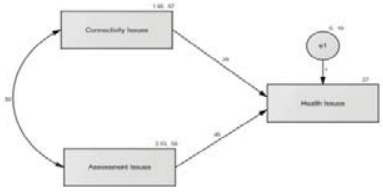

Figure 4: Path Analysis for Opportunities in Online Classes

Table 12 Regression Weights: Opportunities in Threats Assessment

Constructs			**Estimate**	**S.E.**	**C.R.**	**P**
Health	<---	Connectivity	.278	.076	3.649	***
Health	<---	Assessment	.450	.082	5.524	***
Covariance						
Connectivity	<-->	Assessment	.497	.068	7.296	***
Correlation						
Connectivity	<-->	Assessment	.797			

Source: Derived

As per the regression weights, it is noted that the relationship between Health issues and Connectivityissues and Assessmentissuesis significantas the p values are less than 0.05 and the Critical Ratio values (C.R) are more than the standard limit of 1.96. Further, the Covariance betweenConnectivity and Assessmentisalso statistically significant as per p-value and Critical Ratio and the correlation between the two is positive to the tune of 0.797 representing a good relationship.

Table 13 Correlation Among Swot

		Strength	**Weakness**	**Opportunities**	**Threats**
Strength	r	1			
	Sig				
Weakness	r	-.142	1		
	Sig	.097			
Opportunities	r	**.706****	-.255**	1	
	Sig	.000	.003		
Threats	r	.084	**.429****	.022	1
	Sig	.328	.000	.796	
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Derived

The degree of relationship is positive between Strengths and Opportunities (.706**) and is comparatively low between Threats and Weaknesses (.429**) while other interrelationships are meager and negative. However, the following figure explains the path analysis among the variables of SWOT analysis.

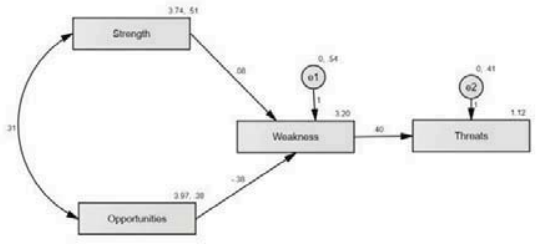

Figure 4: Path Analysis for SWOT Analysis

Table 14 Model fit Indices for the Structural Equation Modeling on Swot

Name of category	Name of index	Adequate fit	Index Value	Remarks
Absolute Fit measure	CMIN/DF	< 3.00	2.015	Accepted
	AGFI	> 0.90	0.962	Accepted
	RMSEA	< 0.80	0.860	Not Accepted
Incremental fit measure	NFI	> 0.90	0.970	Accepted
	CFI	> 0.90	0.984	Accepted
	TLI	> 0.90	0.953	Accepted
	IFI	> 0.90	0.985	Accepted
Parsimonious fit measure	PCFI	> 0.50	0.328	Not Accepted
	PNFI	> 0.50	0.323	Not Accepted
	p-value	> 0.05	0.133	Accepted

Source: Derived

The above table shows the model's fitness. In the case of absolute fitness, CHIN/Df value is 2.015 is less than 3, AGFI is 0.962 is greater than 0.9, and RMSEA is 0.860 which is more than 0.80. Thus, the model for the SWOT analysis on Online Teaching is an adequately fit. The incremental fit measure includes the value of the Normal Fit Index (NFI) is 0.970 > 0.9, Comparative Fit Index (CFI) is 0.984 > 0.9, the Tucker Lewis index (TLI) is 0.953 > 0.9, and Incremental Fit Index (IFI) is 0.985 > 0.9 and proves the incremental fitness of the model. The parsimony comparative fit index (PCFI) value is 0.328 is lesser than the desired value of 0.5 and the Parsimony normed fit Index (PNFI) value is 0.323 is lesser than the required value of 0.5. Though the value of the Parsimony Goodness of fit Index (PGFI) is less than the desired values still the value is close to the required level. Thus, the value of all the indices except the Parsimonious fit measure satisfies the criteria required for having the fitness model. The p-value is 0.133 which is more than the required value of 0.05 denoting the significance.

Table 16 Regression Weights: Opportunities in Online Assessment

Constructs			Estimate	S.E.	C.R.	P
Weakness	<---	Strength	.080	.123	.652	.514
Weakness	<---	Opportunities	-.380	.143	-2.650	.008
Threats	<---	Weakness	.400	.072	5.565	***
Covariance						
Strength	<-->	Opportunities	.312	.046	6.751	***

Constructs			Estimate	S.E.	C.R.	P
Correlation						
Strength	<-->	Opportunities	.706			

Source: Derived

As per the regression weights, it is noted that the relationship between Weakness and Opportunities(.008) and between Threats and Weakness (.000) is statistically significant and between Weakness and Strength (.514) is not statistically significant as the threshold value of p is 0.05. Further, the Covariance betweenStrength and opportunities is also statistically significant as per p-value and Critical Ratio and the correlation between the two is positive to the tune of 0.706 representing a good relationship.

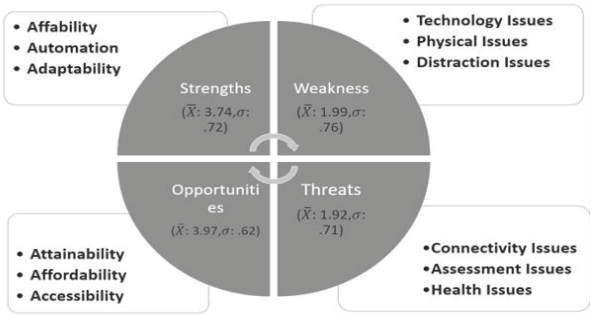

Figure 5: SWOT Analysis

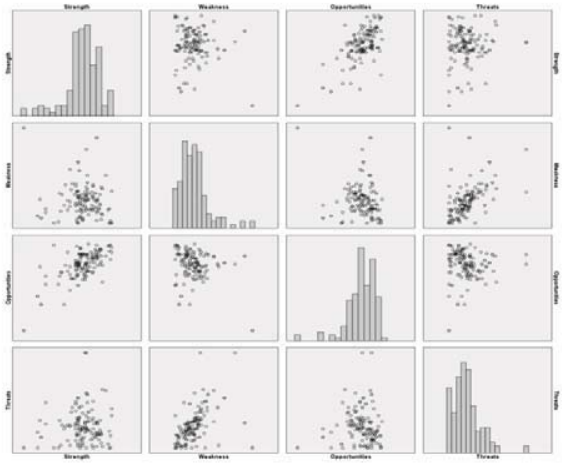

Figure 6 SWOT Grid Analysis

VIII.Conclusion

Ensuring digital equity is crucial in this tough time. Not all teachers andstudents have access to all digital devices, the internet, and Wi-Fi. Unavailability ofproper digital tools, no internet connections, or Wi-Fi connections can causea lot of trouble due to which many students might lose out on learning opportunities. The present study focus on the Pros and Cons of E-learning Via SWOT analysis. The opinion obtained from 138 teachers from various places resulted that the strengths of online learning filtered with the components of Affability, Automation, and Adaptability, the weakness of online learning filtered with the components such as Technology issues, Physical Issues, and Distraction issues, the opportunities of online learning filtered with the components such as Academic Attainability, Academic Affordability and Academic Accessibility and the threats/challenges of online learning filtered with the components such as Connectivity issues, Assessment issues and Health issues. It is concluded that the issues under the components of SWOT analysis are more intense among Connectivity Issues, Distraction Issues, Physical Issues, Health Issues and Assessment Issues. From among the SWOT analysis, it is focused that strengths and opportunities have more relationships and weaknesses and Threats have lesser relationships. Efforts should be taken by institutions to ensure that every student andfaculty is having access to the required resources and can increase the implementation of digitalization to wider higher education in all aspects.

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