Identifying Success Factors for Effective Online/Distance Learning Implementation

Nivedita Ram, Modern College of Business and Science, Oman
Ahmed R Nzomkunda, Modern College of Business and Science, Oman
Hesham Magd, Modern College of Business and Science, Oman

The Asian Conference on Education & International Development 2024
Official Conference Proceedings

Abstract
The study seeked to explore the various aspects related to online or distance learning in the current scenario of online education due to and after the Pandemic and identify factors that will be effective for the implementation of a successful distance learning by looking at different perspectives of the relevant stakeholders involved. Literature was reviewed to establish what previous studies have contributed to the research problem of the study. The study, which was purely based on survey method involved the data from primary and secondary sources. Samples for primary data included students and the faculty members from Modern College of Business and Science. The study used sampling methods for collecting the data for the research warrants from respondents. The secondary data was collected from different sources including books, and journals. The data was analyzed by making use of (i) Arithmetic Mean (ii) Coefficient of Variation (iii) Growth Rates, (iv) Analysis of Variance (ANOVA), (v) Simple Regression (vi) Multiple Regression analysis. Recommendations were made available to relevant parties such as faculty, students, higher education institutions, other researchers, and policy makers to focus on the Design of the Distance Learning program emphasizing on the key factors identified as having an impact on the quality of the delivery of the program and thus the student learning experience.

Keywords: Distance Learning, Learning Experience, Access to Suitable Equipment and Program Design

1. Introduction

Distance Education is a system of offering education or training through a distant media, often through a means of correspondence using a traditional mail system and in modern times digitally. In this system the students and teachers are not always required to be physically present on the school or college premises. Distance Education was first initiated by Sir Isaac Pitman some, 150 years ago when students in far off towns wished to participate and learn shorthand. This process helped overcome the barriers of distance, time, and place. The success of this venture led to the establishment of more courses being offered formally and thus established the Sir Issac Pitman Colleges across England. This encouraged students to study from home and before long, correspondence schools were established in UK and US too. As the process evolved, practical lessons or classes and assessment methods were incorporated in these courses and came to be known as blended or hybrid learning process. In modern times, e-learning, online learning, virtual classroom is typical or synonymous to the term distance learning.

Distance Learning has several advantages such as including many students from a wider geographic region, offering a wide range of subjects, courses, timings, and duration to meet this wide demographic distribution of students. As per Dr. Raymond Huntington, from the Huntington Learning Center (Huntington, R., 2020), advantages include independent learning, bringing focus back to learning, it is easy to get ahead/extend the learning. Disadvantages include the struggle for some students with so much forced independence, reduced or minimal opportunity for interaction and collaboration and the risk of falling behind schedules in the absence of strong instructor support and monitoring. The disadvantages surrounding distance learning have been improved significantly with e-Learning, Online and Digital platforms with the advent of the internet revolution.

2. Background of the Proposed Study

Through this study we have explored the various aspects related to online or distance learning, and attributes leading to either the success or failure of online learning. To achieve this, identified the student feedback in areas surrounding requirements, motivation, readiness, and expectations of an online learning method, together with teacher competence, availability of a robust learning management system etc. (Firat, M., Bozkurt, A., 2020; Basuony, M.A.K., et. Al., 2021). In the emerging digital scenario combined with the onset of the Pandemic in 2020, there were several established open education resource platforms, online academies and reputed universities offering distance education with the opportunity to induct thousands of students into one batch.

Online / Distance learning has been generating significant opportunities to an ever-expanding audience, across borders and has been transforming learning delivery and assessment methods and the ever-increasing rationale are a) expanding access to potential students, b) increasing participant capacities, c) capitalizing on the emerging market opportunities such as during the Pandemic, d) Healthy competition resulting in institutional transformation, and having to adapt to the emerging digital technologies and student requirements (Olson, P. W., 2005).

The complete shift to online learning during the COVID 19 pandemic was unexpected and unplanned for most, impacting both, the learning experience, and the readiness of educational institutions to meet the fast-changing requirements of digital learning (Maheshwari, G. 2021).

E-learning is the process of accessing the web-based technological tools that might be used in the classroom or outside the class (Thomas, S., Maheshwari, G., 2017); while Online learning is the process of delivering or conducting classes outside the classroom as is done in distance learning (Oblinger et al. 2005). There are several factors which affect the effectiveness of online learning process such as available technology, user-friendly learning management systems, student engagement activities, assessment types, teacher student interactions etc. (Wijekumar, K., Ferguson, L., & Wagoner, D. 2006; Shuey, 2002).

3. Research Problem (Literature Review)

Some term the global market scenario as pre and post COVID economic fallout and changed the way mankind has lived in the past years (Lu, Stratton & Tang, 2020). The most devastating impact of the pandemic, besides the healthcare systems has been the disruption in education systems due to COVID-19 pandemic, affecting nearly 1.6 billion learners globally. There is now an urgent need and action from nations to define innovative ways to restart and manage business, particularly in the education sector, which has been one of the most badly affected sectors (Bocar et al., 2022; Loayza & Pennings, 2020; Crawford et al., 2020).

Given the socio, economic interdependence globally, all sectors of the marketplace have experienced the impact of the COVID-19 and it includes the education sector. (McKibbin & Fernando, 2020). Physical distancing, combined with curfews and lockdowns have exacerbated social isolation and altered established teaching and training practices worldwide, impacting student learning experience. The opportunity therefore lies in innovation and improvisations in teaching methodologies. This includes, using technologies in IT and Communication, and enhancing learning management systems (Pokhrel, S., Chhetri, R., 2020).

The disruption during COVID 19 has raised challenges concerning operational continuity, development, and future of education as we know it today. An independent research revealed that the corporate education market contributed 16% of reserves on the overall online learning initiatives in 2000. With the Internet of Things, technology is an opportunity that helps in the evolution of corporate learning at all levels of education, particularly higher education (Abdelmeneim, Said, Hassan, & Malek, 2020).

In the dynamic online environment today, the identification, choice and implementation of a robust online e-learning system is the initial challenge of colleges and universities. Several e-learning systems offer several significant features, however, the successful implementation of these features has depended on various aspects which have either not been identified or supported technologically. Hence, this study aimed to delve into various factors impacting distance learning and thus identify key areas of improvement (Almaiah, M.A., et, al., 2020).

A study conducted showed the relevance of teaching, professional behaviors, lesson planning and online connectivity as being significantly positively associated with online learning (Mustafa, F., Et, al., 2020). Educational institutions are facing the same challenges while preparing for distance learning in response to the pandemic (Micah Castelo 2020).

According to Kristina Ishmael, senior project manager of the teaching, learning and tech team for New America's Education Policy program the key factors to consider are:

a) Access to Devices and the Internet: The initial uncertainty surrounding COVID-19 soon gave rise to pertinent questions on the ongoing study methods, such as availability of digital devices. This naturally raised the question on availability of finances and the availability of devices in the market and schools, Ishmael says. Most homes may have only one device at home while the number of users had increased due to the online environment, says Eileen Belastock, director of academic technology for Mount Greylock (Mass.) Regional School District.

While olleges and public schools have been well-connected to high-speed internet broadband, homes have not. "The most recent data shows that about 14 percent of our current K–12 population doesn't have connectivity at home; that's about 7 million students, in the US" Ishmael says. That would mean that even if the students were provided devices, they were not useable. However, several broadband providers globally, were quick to offer attractive internet connectivity option to speed up the process of online work.

b) Re-design course learning outcomes and instructions to student needs and abilities: Most schools and colleges learning management systems such as Moodle or google classroom, however there may be alternate learning methods or provision of instructions, such as the use of e-mails, WhatsApp or even by mail for primary education. Coaching students to help them adapt to the online learning environment together with IT support is very important," says Eileen Belastock, director of academic technology for Mount Greylock (Mass.) Regional School District.

With the advent of Internet Communication Technology (ICT), digital collaborative tools such as Microsoft Teams, that have accessibility support built into it and the Immersive Reader tool (which reads information aloud to students) and language translation features, all features have become user-friendly and readily available for a switch to online learning, if the need arises (Khan & Magd, 2021; Khan & Magd, 2023).

c) Faculty and student professional development: Providing the devices and internet connectivity alone did not improve quality of learning environment, it depended on the professional development of faculty and students, as well. The use of web tools such as Zoom or MTeams has seen an unprecedented growth during the pandemic. Institutions are beginning to think of innovative ways of partnering with teachers and students to design delivery and assessment methods which can be more engaging, participative while meeting the course learning outcomes. A mandate to up-skill to meet this transformative environment.

d) Data privacy and security protocols: All the above activities cannot be at the cost of privacy. Phishing, data security, threats of malware and spycams where data is vulnerable to cyber-crimes and should be reinforced with cyber-hygiene practices.

The ever changing and exponential expansion in the opportunities for providing online courses coupled with the increasing interest in eLearning have resulted in the increased offerings of eLearning opportunities by Higher Education Institutes (HEI) And as the technologies become efficient, reliable and easily accessible, HEI are cashing in on the potential. Parallelly, it is important to identify and mitigate challenges affecting the effective implementation of eLearning Courses. These include influential factors such as planning, readiness, management, pedagogical, technological, faculty, evaluation methods, etc having a direct impact on the successful implementation of eLearning Programs. (Al-Balushi, S., & Al-Balushi, H, 2023).

The studies conducted by Mohapatra, B.P.; Nanda, S.S.; Hiremath, C.V.; Halagatti, M.; Das, S.C.; Das, A. have identified an array of factors instrumental for implementation of an effective online/distance learning experience. These include:

- Institutional support in the form of Leadership buy-in, adequate resourcing, policy guidelines and procedural requirements.
- Technological readiness in the form of reliable technology and infrastructure as well as the upskilling faculty.
- Course design needs to be engaging and interactive with clearly defined learning objectives and equally effective assessment tools and methods.
- Faculty support with enhanced competence building in online teaching.
- Student support with reliable and accessible technical support, academic advising and opportunities for social engagements.

Educational institutions and policymakers have improved the opportunities for a successful implementation of online/distance learning experience.

Critical Success Factors

Distance learning has been researched by many around the world in search for the most practical and effective system implementation in higher education institutions. Due to different educational systems around the world, researchers have found that not all critical success factors work similarly to another country's system.

In the western countries, several researchers came up with different critical success factors. For instance, Barclay et al., (2018) investigated the CSF in an online learning environment in the Carribean's higher educational system and came up with a category of four factors; e-learning systems, institutional, instructors and learners. The author went on explaining on how these factors could influence the success of the e-learning in the country. Stacey & Gerbic, (2008) on their study had similar views on three of Barclay's factors, instructors, students, and institution. The authors also added pedagogical considerations as they believe traditional face-to-face pedagogy isn't effective to use on an e-learning system.

On the other hand, Elkaseh et al., (2015) after a comprehensive analysis on several research papers identified eight completely different factors than the other authors: Educational Technology, Computing Experience, Attitude, Social Influence, Curriculum Development, Language, Teaching and Learning Styles, and Demographic. Furthermore, leadership, structure and cultural issues, design issues, technological issues and delivery issues are quadrants that were identified by HE practitioners in a study done by McPherson & Baptista Nunes, (2006).

Noorulhasan et al., (2017) conducted a mixed study method investigating Saudi Arabian Universities to find out critical success factors of e-learning and categorised them into dimensions; students, instructors, design and content, system and technological, and institutional management service. Furthermore, on a study done on South African Universities by Mbodila et al., (2019) grouped CSFs into eight categories; resources, institutional, ethical, evaluation, social interaction, management, pedagogical, and technical. Additionally, maximization of LMS usage, sustainability plans, adoption of renowned best practices, e-learning collaboration, training, learning readiness, and online contents and curriculum development were the CSFs proposed by Odunaike et al., (2013).

Critical success factors of e-learning can be identified in terms of general higher education institutions' requirements to help in its implementations but also it can be used to identify the success factors of a more specific aspect of an e-learning system. For instance, with teaching language online. Alberth, (2011) was able to group the CSFs into six criteria: student characteristics, institutional design (pedagogy), provision of support for both instructors and students, teacher characteristics, technology, and language skills characteristics.

Research Objectives

Identify factors influencing the effective implementation of a distance learning system to impart online learning during and after the pandemic, bearing in mind the organic growth in opportunities in Information and Communication Technologies (ICT) owing to the internet revolution.

For an online/distance learning to be successful in its implementation and the delivery of said contents, a driving factor or platform should be developed and put in place. Therefore, another objective of this research was to identify the technologies/trainings required for a seamless transition from face-to-face to online or distance learning. As technology is the key driver to online education for faculty and students to interact with each other, the research has dug deeper on the types of technologies that would be effective and efficient in the delivery process.

Besides critical success factors identified on page 5, the research objective included identification of a structured measurement process which may include the use of Deming's Cycle of PDCA (plan, do, check and act) to ensure evaluation of effectiveness of a distance learning system where, readiness, management, both administrative and leadership, support or resourcing, pedagogical, available technology, faculty and institutional readiness, and online ethics can be defined, implemented, monitored and continual improvement can be achieved (Al-Fraihat, 2017).

4. Significance of the Research

The study focused on gathering different factors that certain groups of people could use or consider for having a successful implementation of distance learning educational institutions. Furthermore, the results of this study will be beneficial to the following:

- ***Faculty****:* The results of this study helped faculty members in educational institutions with a framework that identified the factors that should be considered in designing and delivering their courses.
- ***Students****:* The results of this study shed light to the students in what is required of them in terms of meeting the course standards. Distance learning leans more on student self-centered classroom thus requiring students to dive more into research. With research, students have been able to navigate the ropes of having an effective path to distance learning.
- ***Guidance Staff****:* The results of this study has helped the guidance of staff understanding the roles of both students and faculties.
- ***Educational Institutions****:* The results of this study will help other educational institutions not only in Oman but also around the world to try and see whether the identified factors could also apply to them in having an effective implementation and operation of their distance learning model.

- ***Future Researchers****: The results of this study will serve as reference material for future researchers who will pursue research on the same subject matter or who wish to conduct extensive research on the study.*

5. Research Methodology

Both primary and secondary research methods have been used in this research. The secondary research method for this study has been the literature review. Looking into different articles regarding both blended and distance learning has been the first step towards identifying the factors for effective distance learning. Primary research in this study considered the following:

Research Instruments: The research instruments used are surveys and questionnaires. The survey was conducted across different HEIs in the Muscat region and MCBS through online survey tools/software. First section asked for the profile of the respondents. The tool for profile determined the age, gender, student/faculty etc. The rest of the sections were directed to the respondents depending on whether he/she is a student or faculty to get their perspectives on the matter. questionnaires and survey from the recipients were collected by using online surveys in google forms or survey monkey. The responses were analyzed based on the significance to the objectives and have been represented using statistical tools using the variables applied for the study.

Data Reliability and Validity: The study is seen as reliable when different researchers can use it under stable conditions with consistent results. This study will help the researchers to make reliable comparisons and institutions to rely on the factors identified to effective distance learning and evaluate on whether it would work for the institute. Researchers can ensure minimal errors to ensure a greater reliability score on the study because validity is directly correlated. Once a study is reliable, researchers, faculty, students, and institutions consider it valid and trustworthy to be used for their own benefits. Standard and effective data collection techniques have been adopted to ensure the data is reliable and valid data is gathered from the entire survey process related to the research objectives. Definite variables have been identified to examine the research problem considering different parameters that have been observed existing in the present education system and were tested for response from different levels of academicians on their opinion. The respondents were categorized based on the various parameters to get reliable data and responses accurately. Data to remain reliable, the surveys and questionnaires have been administered to different levels and categories of respondents to rule out any disparity in information.

Data has also been checked for the extent of reliability by using Pearson correlation coefficient analysis to ascertain the responses, consistent across the entire focus group. The Data after analysis has been compared with similar results from reviewing previous literature to validate the results of the present study. Researcher has also considered ensuring the validity of the research instrument in measuring what its intended to deliver through construct validity, content validity, and criterion validity.

Data Analysis: the research study requiresd use of software for performing statistical analysis of the data. SPSS software has been used for this purpose. Graphical representation of the data was done using MS Excel version 2016.

Table 1: Demographic Information

Demographic Variable		
Gender	**Frequency**	**Percentage**
Male	136	62.4
Female	82	37.6
Age (Years)		
Up to 29	26	11.9
30 – 39	124	56.9
40 – 49	40	18.3
50 & above	28	12.8
Occupation		
Student	64	29.4
Faculty	154	70.6
Years of E Learning Experience		
Up to 1 year	62	28.4
Two years	74	33.9
Above Two years	82	37.6
Possess Laptop		
Yes	2	.9
No	216	99.1

N= 218

Out of the 218 respondents, the majority were male, with 136 (62.4%) identifying as male and the remaining 82 (37.6%) identifying as female. In terms of age, most respondents fell within the range of 30 to 39 years, with 124 (56.9%) falling into this category. A total of 26 (11.9%) respondents were below 29 years old, 40 (18.3%) were between 40 and 49 years old, and 28 (12.8%) were above 50 years old. When it comes to laptop ownership, only two (0.9%) respondents possessed their own laptop, while the vast majority of 216 (99.1%) did not. Among the participants, 154 (70.6%) identified as faculty, while 64 (29.4%) identified as students, making faculty the majority. Lastly, in terms of e-learning experience, most respondents, 82 (37.6%), had more than two years of experience, followed by 74 (33.9%) with two years of experience, and 62 (28.4%) with up to one year of experience, indicating that most respondents were experienced in e-learning.

Table 2: H_o: Gender is not associated with level of perception

Gender	**Level of Perception**			**Total**
	Low	**Moderate**	**High**	
Male	28	74	34	136
	(20.6)	(54.4)	(25.0)	(100.0)
Female	14	50	18	82
	(17.1)	(61.0)	(22.0)	(100.0)
Total	**42**	**124**	**52**	**218**
Df:2	**Chi-square : 0.915**		**P Value: .633**	**Not Significant**

Male respondents have shown higher level of perception. Male respondents also have low level of perception. Examining this further indicate that male respondents have high level of perception towards distance learning. As the calculated P value is greater than 0.05 there does

not exist any significant association between gender and level of perception. Hence, the null hypothesis is accepted.

Table 3: H_o: Age is not associated with level of perception

Age (Years)	Level of Perception			Total
	Low	Moderate	High	
Up to 29	6	16	4	26
	(23.1)	(61.5)	(15.4)	(100.0)
30 – 39	18	72	34	124
	(14.5)	(58.1)	(27.4)	(100.0)
40 – 49	12	20	8	40
	(30.0)	(50.0)	(20.0)	(100.0)
50 & Above	6	16	6	28
	(21.4)	(57.1)	(21.4)	(100.0)
Total	**42**	**124**	**52**	**218**
Df:6	**Chi-square : 6.332**		**P Value: .387**	**Not Significant**

Respondents whose age ranges between 30 and 39 years have a high level of perception. Respondents whose age ranges from 40 to 49 years have low level of perception. As the calculated P value is greater than 0.05 there does not exist any significant association between age and level of perception. Hence, the null hypothesis is accepted.

Table 4: H_o: Possess Laptop is not associated with level of perception

Possess Laptop	Level of Perception			Total
	Low	Moderate	High	
Yes	0	0	2	2
	(0.0)	(0.0)	(100.0)	(100.0)
No	42	124	50	216
	(19.4)	(57.4)	(23.1)	(100.0)
Total	**42**	**124**	**52**	**218**
Df:2	**Chi-square : 6.444**		**P Value: .040**	**Significant**

Respondents who possess laptops have a high level of perception. Respondents who do not possess have low level of perception. As the calculated P value is less than 0.05 there exists a significant association between possessing a laptop and level of perception. Hence, the null hypothesis is rejected.

Table 5: H_o: Occupation is not associated with level of perception

Occupation	Level of Perception			Total
	Low	Moderate	High	
Student	20	36	8	64
	(31.2)	(56.2)	(12.5)	(100.0)
Faculty	22	88	44	154
	(14.3)	(57.1)	(28.6)	(100.0)
Total	**42**	**124**	**52**	**218**
Df:2	**Chi-square : 11.655**		**P Value: .003**	**Significant**

Faculty members have a high level of perception and students have low level of perception. As the calculated P value is less than 0.05 there exists a significant association between occupation and level of perception. Hence, the null hypothesis is rejected.

Table 6: H_o: Years of Experience is not associated with level of perception

Years of Experience	Level of Perception			Total
	Low	Moderate	High	
Up to 1	10	40	12	62
	(16.1)	(64.5)	(19.4)	(100.0)
Two	14	40	20	74
	(18.9)	(54.1)	(27.0)	(100.0)
Above Two	18	44	20	82
	(22.0)	(53.7)	(24.4)	(100.0)
Total	**42**	**124**	**52**	**218**
Df:4	**Chi-square :2.366**		**P Value: .669**	**Not Significant**

Respondents who use distance and digital learning for two years have a high level of perception. Respondents who use distance and digital learning for more than two years have a high level of perception. As the calculated P value is greater than 0.05 there does not exist any significant association between years of experience and level of perception. Hence, the null hypothesis is accepted.

Table 7: H_o: Gender is not associated with intensity of training

Gender	Intensity of Training			Total
	Low	Moderate	High	
Male	18	90	28	136
	(13.2)	(66.2)	(20.6)	(100.0)
Female	22	38	22	82
	(26.8)	(46.3)	(26.8)	(100.0)
Total	**40**	**128**	**50**	**218**
Df:2	**Chi-square : 9.449**		**P Value: .009**	**Significant**

Female respondents require high level of intensity of training. Female respondents also require low level of intensity of training. As the calculated P value is less than 0.05 there exists a significant association between gender and intensity of training. Hence, the null hypothesis is rejected.

Table 8: H_o: Age is not associated with intensity of training

Age (Years)	Intensity of Training			Total
	Low	Moderate	High	
Up to 29	2	20	4	26
	(7.7)	(76.9)	(15.4)	(100.0)
30 – 39	20	70	34	124
	(16.1)	(56.5)	(27.4)	(100.0)
40 – 49	10	22	8	40
	(25.0)	(55.0)	(20.0)	(100.0)
50 & Above	8	16	4	28
	(28.6)	(57.1)	(14.3)	(100.0)
Total	**40**	**128**	**50**	**218**
Df:6	**Chi-square : 8.980**		**P Value: .175**	**Not Significant**

Respondents whose age ranges are between 30 and 39 years require a high level of intensity of training. Respondents whose age ranges are above 50 years require a low level of intensity

of training. As the calculated P value is greater than 0.05 there does not exist any significant association between age and intensity of training. Hence, the null hypothesis is accepted.

Table 9: H_o: Possess Laptop is not associated with intensity of training

Possess Laptop	Intensity of Training			Total
	Low	Moderate	High	
Yes	0	0	2	2
	(0.0)	(0.0)	(100.0)	(100.0)
No	40	128	48	216
	(18.5)	(59.3)	(22.2)	(100.0)
Total	**40**	**128**	**50**	**218**
Df:2	**Chi-square : 6.782**		**P Value: .034**	**Significant**

Respondents who possess laptops require a high level of intensity of training. Respondents who do not possess require a low level of intensity of training. As the calculated P value is less than 0.05 there exists a significant association between possessing laptop and intensity of training. Hence, the null hypothesis is rejected.

Table 10: H_o: Occupation is not associated with intensity of training

Occupation	Intensity of Training			Total
	Low	Moderate	High	
Student	18	38	8	64
	(28.1)	(59.4)	(12.5)	(100.0)
Faculty	22	90	42	154
	(14.3)	(58.4)	(27.3)	(100.0)
Total	**40**	**128**	**50**	**218**
Df:2	**Chi-square : 9.028**		**P Value: .011**	**Significant**

Faculty members require a high level of intensity of training. Students require a low level of intensity of training. As the calculated P value is less than 0.05 there exists a significant association between occupation and intensity of training. Hence, the null hypothesis is rejected.

Table 11: H_o: Years of Experience is not associated with intensity of training

Years of Experience	Intensity of Training			Total
	Low	Moderate	High	
Up to 1	6	48	8	62
	(9.7)	(77.4)	(12.9)	(100.0)
Two	20	34	20	74
	(27.0)	(45.9)	(27.0)	(100.0)
Above Two	14	46	22	82
	(17.1)	(56.1)	(26.8)	(100.0)
Total	**40**	**128**	**50**	**218**
Df:4	**Chi-square :15.298**		**P Value: .004**	**Significant**

Respondents who use distance and digital learning for two years require a high level of intensity of training. Respondents who use distance and digital learning for two years also require a high level of intensity of training. As the calculated P value is less than 0.05 there exists a significant association between years of experience and intensity of training. Hence, the null hypothesis is rejected.

Table 12: H_o: Level of perception is not associated with intensity of training

Level of Perception	Intensity of Training			Total
	Low	Moderate	High	
Low	22	20	0	42
	(52.4)	(47.6)	(0.0)	100.0)
Moderate	18	102	4	124
	(14.5)	(82.3)	(3.2)	100.0)
High	0	6	46	52
	(0.0)	(11.5)	(88.5)	100.0)
Total	**40**	**128**	**50**	**218**
Df:4	**Chi-square :197.323**		**P Value: .000**	**Significant**

Respondents who have a high level of perception towards distance and digital learning require a high level of intensity of training. Respondents who have low level of perception towards distance and digital learning require low level of intensity of training. As the calculated P value is less than 0.05 there exists a significant association between perception towards digital and distance learning and intensity of training. Hence, the null hypothesis is rejected.

Intensity of Training – Correlation

To examine the nature and quantum of association of variables with intensity of training, correlation analysis were used. Variables considered for Chi-square have been considered for correlation test too. Out of six variables selected for correlation analysis, three variables have been found to be significant. Possessing a laptop is found to be significant at five per cent level. Occupation and Perception are found to be significant at one per cent level *(Table 13)*.

Table 13: Variables

Variables	R	r^2
Gender	-0.034	0.001
Age	-0.098	0.010
Possess Laptop	-0.156*	0.024
Occupation	0.200**	0.040
Years of Experience	-0.027	0.001
Perception	0.920**	0.846

Table 14: Level of Perception and Intensity of training

Variable	Average	Standard Deviation	Low	Moderate	High
Level of Perception	57.83	25.50	32.33	32.34-83.32	83.33
Intensity of Training Required	57.84	26.02	31.82	31.83-83.85	83.86

Possess Laptop: Possessing a laptop and training are negatively correlated. Respondents who possess a laptop require a high level of training. The coefficient of determination (r^2) shows that possessing laptop contributes 2.40 per cent of the variation in the level of training.

Occupation: Occupation and training are positively correlated. Faculty members require a high level of training. The coefficient of determination (r^2) shows that occupation contributes 84.60 per cent of the variation in the level of training.

Perception: Perception and training are positively correlated. Faculty members who have a high level of perception towards distance and digital learning require a high level of training. The coefficient of determination (r^2) shows that perception contributes 4.00 per cent of the variation in the level of training.

Determinants of Training - Multiple Regression Analysis

To find out the variables that determine satisfaction, all the variables included for correlation analysis have been regressed on customer satisfaction Index. The following regression equation has been framed to ascertain the impact of the select independent variables on customers' satisfaction.

$T = a + b_1 Gen + b_2 AGE + b_3 PL + b_4 OCC + b_5 YOE + b_6 PER + e$

where,

T	=	Training
a	=	Intercept Term
$b_{1....}b_6$	=	Regression Coefficients
GEN	=	Gender
AGE	=	AGE
PL	=	Possess Laptop
OCC	=	Occupation
YOE	=	Years of Experience
PER	=	Perception
e	=	Error Term

Table 15: Determinants of Training

Variables	Regression coefficient	Standard error	t	Sig
Gender	1.389	1.458	0.952	0.342
Age	-2.054*	0.915	-2.245	0.026
Possess Laptop	-12.138	7.264	-1.671	0.096
Occupation	0.333	1.738	0.192	0.848
Years of Experience	0.793	0.867	0.914	0.362
Perception	0.932**	0.028	33.696	0.000

* Significant at five per cent level ** Significant at one per cent level

Constant	Std. Error of Estimate	R^2	R^2 Adjusted
18.325	8.211	0.849	0.853**

Age: The regression coefficient indicates that age negatively influences training. Respondents who are within the age of 29 years require a high level of training.

Perception: The regression coefficient indicates that perception positively influences training. Respondents who have a high level of perception towards distance and digital learning require a high level of training. The value of R^2 is found to be significant at the one per cent level. This shows that the regression equation framed is a good fit. Around 85.30 per cent of variation in training is due to the select variables.

Perception Towards Distance and Digital Learning

To ascertain respondents' perception towards distance learning, a Weighted Average Rank test is employed.

Table 16: Perception towards Distant Learning

Statements	5	4	3	2	1	Total	Mean Score	Mean	Rank
Multimedia tools/technologies	56	18	62	54	28	218	674	3.09	1
	280	72	186	108	28				
Scalability of the system	46	22	70	52	28	218	660	3.03	2
	230	88	210	104	28				
Sufficient e-learning initiatives	54	26	38	68	32	218	656	3.01	3
	270	104	114	136	32				
Alternative submission of assignments	52	32	40	48	46	218	650	2.98	4
	260	128	120	96	46				
Web site contained useful features	52	22	44	66	34	218	646	2.96	5
	260	88	132	132	34				
Web technology handled effectively	48	22	56	52	40	218	640	2.94	6
	240	88	168	104	40				
Easy access to Web site	58	20	42	42	56	218	636	2.92	7
	290	80	126	84	56				
Easy To Use tools e.g Ms Teams	54	26	42	40	56	218	636	2.92	7
	270	104	126	80	56				
Easy to navigate e-learning platforms	54	24	40	48	52	218	634	2.91	8
	270	96	120	96	52				
Prompt feedback	50	20	46	58	44	218	628	2.88	9
	250	80	138	116	44				
Availability of Info on Open Educational Resources	48	20	48	60	42	218	626	2.87	10
	240	80	144	120	42				
User friendly e-learning system	52	18	46	50	52	218	622	2.85	11
	260	72	138	100	52				
High broadband Internet Connection	42	34	54	26	62	218	622	2.85	11
	210	136	162	52	62				
Interactive course	48	24	46	48	52	218	622	2.85	11
	240	96	138	96	52				
System reliability and availability	50	20	48	46	54	218	620	2.84	12
	250	80	144	92	54				
Management Support	50	30	36	36	66	218	616	2.83	13
	250	120	108	72	66				
IT/Technical support	48	18	58	38	56	218	618	2.83	13
	240	72	174	76	56				
Online test/quizzes	54	18	38	40	68	218	604	2.77	14
	270	72	114	80	68				
Information was well structured/presented	47	24	38	50	59	218	604	2.77	14
	235	96	114	100	59				
Clear communication between users	50	16	40	48	64	218	594	2.72	15
	250	64	120	96	64				

The result of weighted average rank test disclose that majority of respondents perceive that multimedia tools and technologies are very essential for distance and digital learning followed by scalability of the system, sufficient e learning initiatives, etc.

Table 17: Scalability of Distance Learning System

Statements	5	4	3	2	1	Total	Mean Score	Mean	Rank
Language Support	64	18	58	50	28	218	694	3.18	1
	320	72	174	100	28				
Learn from past performance	54	14	60	60	30	218	656	3.01	2
	270	56	180	120	30				
Positive attitude of users	56	12	52	64	34	218	646	2.96	3
	280	48	156	128	34				
Instructor encouraged student interaction	58	20	42	48	50	218	642	2.94	4
	290	80	126	96	50				
Measure teaching effectiveness	46	22	48	62	40	218	626	2.87	5
	230	88	144	124	40				
Training for users	50	14	50	56	48	218	616	2.83	6
	250	56	150	112	48				
Teacher as facilitator	50	22	40	50	56	218	614	2.82	7
	250	88	120	100	56				
Student commitment	48	18	50	46	56	218	610	2.80	8
	240	72	150	92	56				
Staff willingness to learn new system	46	18	34	46	74	218	570	2.61	9
	230	72	102	92	74				

Conclusions

In recent years, online and distance learning has gained significant traction as an alternative or complementary method to traditional face-to-face education. The global pandemic further accelerated its adoption. However, the success of online or distance learning programs depends on various factors that need to be considered and addressed.

As an outcome of this study, it is concluded that there are numerous critical success factors for the Effective Online/Distance Learning Implementation. In terms of perception, the critical factors are found to be:

- Multimedia tools/technologies;
- Scalability of the system;
- Sufficient e-learning initiatives;
- Alternative submission of assignments;
- Web site contained useful features;
- Web technology handled effectively;
- Easy access to Web site;
- Easy To Use tools e.g Ms Teams;
- Easy to navigate e-learning platforms; Prompt feedback;
- Availability of Info on Open Educational Resources ;
- User friendly e-learning system;
- High broadband Internet Connection;
- Interactive course;
- System reliability and availability;
- Management Support;
- IT/Technical support;
- Online test/quizzes.

Information was well structured/presented; Clear communication between users. However, in terms of e-learning initiatives of all the factors the critical success factors are:

- Language Support;
- Learn from past performance;
- Positive attitude of users;
- Instructor encouraged student interaction;
- Measure teaching effectiveness;
- Training for users;
- Teacher as facilitator;
- Student commitment;
- Staff willingness to learn new system.

Thus, it can be recommended that effective implementation of online and distance learning will require a holistic approach that encompasses various success factors. Starting with building a robust technology infrastructure, adopting appropriate pedagogical approaches, setting clear learning objectives, supporting instructors and students, implementing effective assessment strategies, and ensuring quality assurance are critical for successful online learning experiences. By addressing these key factors, educational institutions can maximize the potential of online learning to provide accessible, engaging, and effective education for students in the digital age.

Limitations & Scope of Future Research

This study had certain limitations. Firstly, the research was confined only in Muscat and covered only Higher Educational institutes. Secondly, the respondents were not experts in the field, instead were a combination of working and non-working population. Thirdly, the variables used in the research for our analysis were limited and could be further explored in future research to obtain a more holistic area of study, together with using other statistical tools for finding additional and fresh solutions to the challenges facing the eLearning sector.

References

Al-Fraihat, D. J. (2017, June). *Identifying Success Factors for e-Learning in Higher Education*. Retrieved from Researchgate: https://www.researchgate.net/publication/320299615

Al-Balushi, S., & Al-Balushi, H. (2023). Identifying Success Factors for Effective Online/Distance Learning Implementation in Higher Education: A Review of the Literature.

Alberth. (2011). Critical Success Factors in Online Language Learning. TEFLIN Journal, 22(1), 16–33. https://doi.org/10.15639/teflinjournal.v22i1/16-33

Almaiah, M. A.-K. (2020). xploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Springer Link - Education and Information Technologies (2020)* , 25:5261–5280.

Barclay, C., Donalds, C., & Osei-Bryson, K. M. (2018). Investigating critical success factors in online learning environments in higher education systems in the Caribbean*. Information Technology for Development, 24(3), 582–611. https://doi.org/10.1080/02681102.2018.1476831

Basuony, M. E.-B. (2020, Dec 14). *The factors affecting student satisfaction with online education during the COVID-19 pandemic: an empirical study of an emerging Muslim country*. Retrieved from Emerald Insight: https://www.emerald.com/insight/content/doi/10.1108/JIMA-09-2020-0301/full/html?utm_source=rss&utm_medium=feed&utm_campaign=rss_journalLatest

Bocar, A.C, Khan, S.A, Epoc, F. (2022). COVID-19 Work from Home Stressors and the Degree of its Impact: Employers and Employees Actions. *International Journal of Technology Transfer and Commercialisation, 19 (2), 270-291*. https://dx.doi.org/10.1504/ijttc.2022.124349

Castelo, M. (2020, Mar 25). *Factors to Consider When Preparing for E-Learning*. Retrieved from EduTech - Focus on K-12: https://edtechmagazine.com/k12/article/2020/03/factors-consider-when-preparing-e-learning-perfcon

Elkaseh, A., Wong, K. W., & Fung, C. C. (2015). A review of the critical success factors of implementing E-learning in higher education. International Journal of Technologies in Learning, 22(2), 1–13. https://doi.org/10.18848/2327-0144/cgp/v22i02/49160

Firat, M. B. (2020, July 20). *Variables affecting online learning readiness in an open and distance learning university*. Retrieved from Taylor and Francis Online: https://www.tandfonline.com/doi/abs/10.1080/09523987.2020.1786772

Huntington, D. R. (2021, Jan 5). *The Pros and Cons of Remote Learning*. Retrieved from The Huntington Learning Center: https://huntingtonhelps.com/resources/blog/the-pros-and-cons-of-remote-learning-2021

Khan, S.A. & Magd. H. (2021). Empirical Examination of MS Teams in Conducting Webinar: Evidence from International Online Program conducted in Oman. *Journal of Content, Community and Communication, Vol.* 14 Year 7, December - 2021. https://dx.doi.org/10.31620/JCCC.12.21/13

Khan, S. A., & Magd, H. (2023). New Technology Anxiety and Acceptance of Technology: An Appraisal of MS Teams. *In Advances in Distance Learning in Times of Pandemic, 105-134. CRC Press, Taylor and Francis.* https://doi.org/10.1201/9781003322252-5

Loayza, N. P. (2020, March 26). Macroeconomic policy in the time of COVID-19: A primer for developing countries. *World Bank Research and Policy Briefs No. 147291*, p. 1.

Lu, H. S. (2020, Feb 12). *Outbreak of pneumonia of unknown etiology in Wuhan, China: The mystery and the miracle*. Retrieved from PMC - US National Library of Medicine - National Institute of Health: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7166628/

Maheshwari, G. (2021, March 4). Factors affecting students' intentions to undertake online learning: an empirical study in Vietnam. *Springer Link*, p. 3.

Mohapatra, B.P.; Nanda, S.S. & Hiremath, C.V. & Halagatti, M. & Das, S.C.& Das, A. (2023). Factors Influencing the Success of Online Education during COVID-19: A Case Analysis of Odisha. *J. Risk Financial Manag.* 2023, *16*, 141. https://doi.org/10.3390/jrfm16030141

Mbodila, M., Mkabile, B., & Ndebele, C. (2019). JOURNAL OF GENDER , INFORMATION AND DEVELOPMENT IN AFRICA (JGIDA) Critical Success Factors for the Effective Implementation of e-Learning in South African Higher Education Institutions Munienge Mbodila * Bulelwa Mkabile ** Clever Ndebele *** Introductio. 4276, 229–251.

McKibbin, W. F. (2020, March 2). *The global macroeconomic impacts of COVID-19: Seven Scenarios.* Australia: Australian National University.

McPherson, M., & Baptista Nunes, M. (2006). Organisational issues for e-learning: Critical success factors as identified by HE practitioners. International Journal of Educational Management, 20(7), 542–558. https://doi.org/10.1108/09513540610704645

Mustafa, F. K. (2020). Factors influencing online learning of university students under the covid-19 pandemic. *Internaltional Journal of Educational Research and Innovation*, 344,345.

Noorulhasan, Q., Muhammad, A., Sanober, S., Rafik, M., & Shah, A. (2017). A Mixed Method Study for Investigating Critical Success Factors (CSFs) of E-Learning in Saudi Arabian Universities. International Journal of Advanced Computer Science and Applications, 8(5), 171–178. https://doi.org/10.14569/ijacsa.2017.080522

Oblinger, D. G. (2005). *Educating the Net Generation.* Retrieved from Digital Commons@Brockport: https://digitalcommons.brockport.edu/cgi/viewcontent.cgi?article=1278&context=bookshelf

Odunaike, S. A., Olugbara, O. O., & Ojo, S. O. (2013). E-learning implementation Critical Success Factors. Lecture Notes in Engineering and Computer Science, 2202, 560–565.

Olson, P. (2005). Significant success factors in distance education. *International Journal of Case MEthod Research & Application (2005) XVII, 2*, 1.

Pokhrel, S. C. (Jan 2021). A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning. *SAGE Journals*, 2,3.

Stacey, E., & Gerbic, P. (2008). Success factors for blended learning. ASCILITE 2008 - The Australasian Society for Computers in Learning in Tertiary Education, 964–968.

Wijekumar, K. F. (2006, Nov 2). *Problems with assessment validity and relilability in web-based distance learning environments and solutions*. Retrieved from LearnTechLib: https://www.learntechlib.org/p/6259/

Contact emails: Nivedita.Ram@mcbs.edu.om
Ahmed.Nzomkunda@mcbs.edu.om
Hesham.Magd@mcbs.edu.om