


Analysis of Strengths, Weaknesses, Opportunities and Threats of E-learning from the Perspective of Experts in the Period of COVID-19 Pandemic

Mahdi Moeinikia^{1*}, PhD;  Shahram Mehravar Giglou², PhD; Salim Kazami¹, PhD; Meisam Mirzaei Shojakhanlou³, PhD candidate; Azim Omidvar¹, PhD

¹Department of Educational Sciences, Faculty of Psychology and Educational Sciences, Mohaghegh Ardabili University, Ardabil, Iran

²Department of Higher Education Management, Faculty of Psychology and Educational Sciences, Allameh Tabataba'i University, Tehran, Iran

³Department of English Language and Literature, Faculty of Persian Literature and Foreign Languages Allameh Tabataba'i University, Tehran, Iran

ABSTRACT

Background: Today, e-learning has become one of the basic components of education process, especially in higher education. Institutions and universities employ e-learning extensively in their educational operations. In light of this, the goal of the current research was to determine the advantages, disadvantages, possibilities, and dangers associated with e-learning in the Iranian higher education system.

Method: The present research is applied in terms of purpose and with a qualitatively exploratory approach. The participants of present study were experts in the field of e-learning in public universities of the Ministry of Science, Research and Technology in 2021. Using purposive sampling and snowball sampling methods, 16 e-learning experts were selected as the participants. Semi-structured interviews were used to collect data and thematic analysis was employed to analyze the obtained data.

Results: After analyzing the obtained data from the interview, the total number of 116 free codes were extracted from interviews content was 116 codes, which were classified in 18 concepts and finally were identified strengths (Use of office automation in universities, Establishment of information and communication technology centers in universities, Development of e-learning in universities, Familiarity of faculty members and students with virtual environments, The place of e-learning in upstream documents and university perspectives), weaknesses (Lack of proper infrastructure, equipment and facilities for e-learning, Lack of specialized manpower, Lack of formal regulations for e-learning in the field of higher education, Insufficient knowledge about e-learning), threats (Threats related to cost, facilities and time, Management threats, Threats to change the nature of the university, Threats related to interactions) and training opportunities (Increase access to e-learning, Expanding international and intercultural interactions, Environmental benefits, Providing economic opportunities, Development of educational justice) of e-learning in Iranian higher education system.

Conclusion: Considering the research findings, to develop educational justice and the possibility of more population access to the University of the Student community, reviewing existing approaches and educational methods and using e-learning as a new educational strategy for higher education system are necessary.

Keywords: Higher education, E-learning, Strengths, Weaknesses, Opportunities, Threats

*Corresponding author:

Mahdi Moeinikia, PhD;
Department of Educational
Sciences, Faculty of Psychology
and Educational Sciences,
Mohaghegh Ardabili
University, Ardabil, Iran
Tel: +98 4797595419
Email: m_moeinikia@uma.
ac.ir

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Introduction

The development of e-learning in recent years had a tremendous effect on the growth and the promotion of education and educational justice in different parts of the world. However, like other technologies, the introduction of this new technology requires bedding, training and creating an acceptable environment to provide and use its numerous facilities and capabilities, and various factors such as faculty support, system support, organizational commitment, system management, coaching competence, service delivery and infrastructure that affect the success of e-learning (1).

Emergence of COVID-19 In particular, the economic, political, social, and educational sectors have been impacted by the pandemic that has affected the whole planet. The higher education system was one of the most vulnerable sectors in this respect (2). Learners and instructors were always required to employ e-learning in different forms to cope with the effects of shutting educational facilities and ceasing educational activities (3). Furthermore, with the expansion of COVID-19 Pandemic has increased the movement towards online education because the only option left for schools and universities during COVID-19 Pandemic was e-learning (4).

The findings of Salimi and Fardin (5) indicate that the challenges of e-learning in the COVID-19 Pandemic era of Iran can be divided into three macro levels: lack of strategic thinking of managers and planners; unfavorable policy making, weak educational technology and inefficient management; at the intermediate level: the weakness of the introduced technologies, lack of independence and freedom in action, and raised disruption in budgeting, and at the micro level, the challenge was teacher. The results of study by Liana Ganavardaneh and Abu-shadi also show that online education has lowered expenses, boosted comprehensive education, and enhanced user access to material, in addition to having a positive impact on health (6). The study results of Sadati Nejad et al.

also show that the executive, infrastructural, ethical, interactive, and educational categories may be used to categorize the difficulties and potential of higher education in the global and Iranian coronavirus epidemic (1). The findings of Mahmoudi and Mastashiri also indicate that from perspective of faculty members: the low speed of electronic and online communications in the university, the malfunction and wear of university electronic systems in terms of usability, low proficiency of students in English, lack of necessary support of managers in higher education system to institutionalize e-learning and insufficient hardware and software infrastructure of the university are the most important obstacles to the development of e-learning in the higher education system (7).

International statistics show that since the outbreak of Coronavirus, 194 countries have been forced to make changes in their higher education in terms of COVID-19 Pandemic and have switched their method to e-learning and online learning (8). The COVID-19 Pandemic caused universities in Iran to move their educational programs online and into blended learning environments, as well as via social networking sites. These trainings were initially offered sporadically, but as time went on, universities were forced to use the Navid system (special learning software), platforms like BigBlueButton and Skyroom, and Adobe Connect as a centralized training system. As a result, training in these universities became virtual and scheduled (9). After the COVID-19 Pandemic, it was not possible to carry out educational activities in person and universities had to carry out all educational activities online. In this regard, in terms of the lack of electronic learning infrastructure in the universities, many of them encountered problems.

Therefore, there is a need to identify the strengths, weaknesses, opportunities and threats of e-learning in universities. Moreover, COVID-19 Pandemic has exposed the world's higher education to major crises and unforeseen challenges and numerous conferences, meetings and specialized

meetings being held at various universities around the world to address these challenges. Since there was no preparedness to face such crises in universities, this has led to major problems in education. The present study aims to address the pathology of e-learning in the Iranian higher education system and provides policy solutions and recommendations in order to improve the quality of e-learning in Iran's higher education system. This is because of the aforementioned points and the significance of e-learning during the COVID-19 Pandemic.

Methods

Study Design

The present research is an applied study with qualitatively exploratory approach

Participant Selection

The participants of current study were experts in the field of e-learning in public universities of the Ministry of Science, Research and Technology. The study period was the academic year 2021-2022. Regarding the nature of qualitative research, purposive sampling and snowball sampling methods were used. In qualitative research, the interviewees were also requested to suggest additional experts who are knowledgeable in this area, a process known as snowball sampling. In this procedure, the second sample unit was identified and chosen after the first expert and expert were identified or chosen. Other sample units were found and chosen in a similar manner. A list of these experts was created based on these requirements in order to make the appropriate preparations for the interview's scheduling and execution. The interviews continued until the theoretical saturation took place. When no new data was added to the interview findings to develop a category, in other words, similar data were extracted from the interviews, it was considered as theoretical saturation. Interviews were conducted face to face at the participants' workplace for one hour.

Those with a doctorate in educational technology and a background in e-learning research were eligible to participate in this

study. The study was gathered via 16 interviews of theoretical saturation. Five participants were women, whereas eleven were men. Seven participants were educational technology faculty members from public institutions affiliated with the Ministry of Science; four were assistant professors and three were associate professors. Thus, 6 were selected as PhD graduates in educational technology and 3 as experts in this field who had a research background related to the research topic.

Data Collection and Interview

Data collection methods include in-depth and semi-structured interviews (formal and informal interviews) that were individually done with each member. Data were collected from July 2021 to March 2022. Each interview lasted between one and one and a half hours, and the interviewees answered the following questions during the interview: What are the strengths of e-learning in Iran's higher education system?, What are the weaknesses of e-learning in Iran's higher education system?, What are the e-learning opportunities of Iran's higher education system?, What are the threats to e-learning in Iran's higher education system?. The interviews were recorded using a professional tape recorder.

The study outlines four ethical guidelines in qualitative research: informed consent (voluntary participation of individuals and informing them of their right to withdraw from the study at any time); Confidentiality and anonymity (confidentiality of participants' private reforms); Consequences (description of possible consequences of participating in the study for the participants) and the role of the researcher (researcher's moral commitment and sensitivity and commitment to ethical issues and practice) were used to observe the ethical principles in the present study.

Data Analysis

The data in this research were analyzed using a thematic approach. The participants were initially given access to the categories to assess the researcher's perspective and analysis in order to verify the veracity of the data.

Table 1: Categorization of findings

Main category	Subcategory	Codes extracted from interviews
Strength	Use of office automation in universities	The automation of student affairs (1, 6, 9)/ Registration and administration through automation (1, 5, 10) / Ability to quickly search of documents (16)/ online and offline Support of users / Provide instructions for user guidance (3, 4) / Educate users for proper use (8, 10, 12, 14) / Perform university administration through automation (15).
	Establishment of information and communication technology centers in universities	The presence of e-learning specialists in universities (5, 12, 13) / Existence of IT technical experts in most universities (1, 4, 6, 8, 11) / Establishment of technology centers in universities (2) / Providing solutions to replace bureaucracy with electronic systems in university offices by the technology unit (9, 14) / Providing technical advice for using advanced servers of various applications in the university (7, 9)/ Facilitate access of students and professors to the required software (7, 15) / Existence of LMS infrastructure in most universities of the country (3, 5, 9).
	Development of e-learning in universities	The establishment of e-learning in the country's universities (5, 9, 13)/ Existence of specialized teams for electronic content production in the university (14) / High attention of university administrators to the development of e-learning (8, 9, 13) / Development of e-learning journals in the field of university education and presentation of scientific results for its use (2, 7, 11)/ Digital library (1, 2, 6, 7, 13) / electronic access to Student theses and dissertations (2, 14, 15) / Expanding the use of webinars in universities / Holding online scientific meetings (9, 11, 13, 14) / Holding virtual workshops (7, 8). Facilitating Learning by Multimedia (13).
	Familiarity of faculty members and students with virtual environments	Students' close relationship with electronic technology and cyberspace (6, 13, 14, 15) / Most students, faculty members use smartphones (9, 10, 11) / Presence of students and faculty members in cyberspace (11, 16) / Familiarization of faculty members and students with virtual environments (3, 4, 7) / Public access to the Internet (4, 15)/ Attendance of Faculty members to international academic networks (4, 11) / Exchange of faculty and student information via email, What's app, Telegram and other media (12, 14)/ Faculty members use the web to find new resources (4, 8, 9, 11).
	The place of e-learning in upstream documents and university perspectives	Emphasis on the need to use e-learning in upstream documents (5, 11, 16) / Positive attitude of university administrators towards e-learning (7, 9)/ High position of technology in the university's visions and missions (8, 9, 13) / Special attentions to e-learning in upstream documents in order to access to equal educational opportunities (11).
Weaknesses	Lack of proper infrastructure, equipment and facilities for e-learning	Lack of proper hardware facilities in the field of Internet and technology on campus (13) / Lack of access to all books in university libraries virtually (1, 2, 3)/ Lack of up-to-date university electronic systems (9, 10, 15) / Lack of technology infrastructure in most universities, especially start-ups (13) / Restrictions on access to international databases (2, 12, 14) / Low campus internet speed (1, 3, 6, 12, 14, 15)/ Slow virtual communication lines (11, 14).
	Lack of specialized manpower	Lack of experienced managers to manage e-learning systems (9, 10) / Lack of e-learning specialists in most universities (4, 6) / Lack of experienced and specialized human resources in the field of e-learning (5) / Insufficient knowledge of faculty members in the field of e-learning (7) / Low media literacy of the academic community (9) / Lack of trained and skilled personnel to perform electronic affairs in the university (3, 16).

	Lack of formal regulations for e-learning in the field of higher education	Lack of binding regulations and incentives for virtual activities (12, 15) / Lack of emphasis and respect for higher education laws and regulations to use new educational technologies (7, 8, 13) / Lack of necessary support from managers and policy makers of the higher education system to institutionalize e-learning (2, 7) / Validity of qualifications Graduates of e-learning institutions (5, 11) / financial problems and lack of budget line for virtual education (4, 13)
	Insufficient knowledge about e-learning	Teachers' resistance to change and resistance to traditional teaching methods against new teaching methods (9, 11) / Students, faculty and staff are accustomed to traditional teaching (14, 15) / Some university professors are not interested in e-learning (3, 9) / Not so positive attitude towards e-learning in universities from some faculty members of university students and staff attitude (8) / Insufficient knowledge of faculty members about virtual education (9, 13) / Insufficient knowledge of experts and students about virtual education (8) / Students' reluctance to accept only online education (4, 6) / Poor media literacy (7, 12).
	Increase access to e-learning	Expanding Inclusive Internet Courses (8, 9) / Expanding Mobile Learning by Content of the World's Top Universities (3) / Accessing International Libraries and Databases (2, 7) / Development of educational justice (2, 3)/ Expansion of mobile learning (16)/ Easy access to educational content (7, 9) / Increasing development of new technologies and their use in society (3, 6) / Familiarization of the new generation with cyberspace (7)
Opportunities	Expanding international and intercultural interactions	Opportunity to expand knowledge across borders (13, 16) / Participate in classes of foreign professors and specialists (11) / Access to rich and diverse international databases (2, 15)/ Provide opportunities for free cultural exchange at home and abroad (13, 14)/ Possibility of communication between students and cultures with different ideas and experiences (2, 5) / Familiarity with international cultures and languages during interactions (1, 9, 11).
	Environmental benefits	Reducing traffic in the university and city environment (3, 5)/ Reduce traffic in the city through the expansion of virtual education (6, 7) / Reduce pollution / Reduce the consumption of energy resources such as water and electricity in the university (11, 12, 16) / Reduce the use of printed books (8, 10).
	Providing economic opportunities	Providing economic opportunities via virtual education courses (10)/ Reducing students' educational costs (11) / Selling educational content (6, 15)/ Reducing the cost of creating and maintaining educational space (4, 15) / Need to hire fewer staff (10, 13)/ Creating learning opportunities for people at any time and places with any budget (7, 11).
	Development of educational justice	The possibility of different people to access e-learning due to unrestricted time and place (3, 6, 16) / Public access to cyberspace (12, 13)/ study possibility for employed people (14) / the possibility of studying simultaneously in several fields (4)/ the possibility of access to more student population of the university (1, 2).
	Threats related to cost, facilities and time	Lack of technical equipment required by students (7) / High costs of the Internet in the country (9, 13)/ Inequality antennas of mobile operators in all parts of the country (3, 12) / Expensive internet packages (16) / Filtering of sites (14, 15) / Time-consuming set-up of national and local infrastructure of virtual teaching (11, 12, 13)/ Low speed of Internet for online education (1, 5, 8)/ Low speed of Internet for downloading textbooks and educational videos (4, 9).

Threats	Management threats	Lack of proper management for the production of electronic content in universities (12, 15)/ Lack of cyberspace and social networks management (2, 4, 7) / Lack of proper use of mobile phones (8, 9) / Lack of transparency in some indicators of evaluation and monitoring virtual packages (10) / Limited exchange of virtual education experiences in the national arena and international (10, 15)
	Threats to change the nature of the university	Facing non-native educational programs (1, 11) / threatening to change the nature of the university if e-learning continues (3, 6) / reducing the impact of the university on the development of students' scientific and cultural personality due to distance from the university environment (12, 15).
	Threats related to interactions	Teacher-student relationships become more formal (7) / facilitation of faculty-students interactions (9) / weakening interpersonal and intercultural interactions in higher education (12, 13, 15) / problems with intimacy and emotional relationships (3, 6, 7).

Two experts were also given access to the data and the findings analysis so that they could provide their professional insight and confirm that the first researcher's coding, component categories, and nominations had been verified by the second researcher. The interviews were recorded to strengthen the veracity of the results, and the correlation code between the two coders was 0.89.

Results

After analyzing the interview data, the total number of free codes which were extracted from interviews content was 116 codes, which were classified into 18 similar concepts, and finally the strengths, weaknesses, threats and opportunities of e-learning in the Iranian higher education system were categorized in 4 main themes. The categorization of the findings is presented in Table 1.

Strengths: The research findings showed that the strengths of e-learning in the Iranian higher education system are related to the categories of using office automation in universities, establishing information and communication technology centers in universities, and developing e-learning in universities, faculty and students are familiar with virtual environments and the place of e-learning in upstream documents. The respondents agreed that the aforementioned categories provide the Iranian higher education system the foundation it needs to institutionalize e-learning. **Weaknesses:** The research findings showed that the Iranian

higher education system faces obstacles to use e-learning. These weaknesses need to be strengthened. Interviewees, lack of infrastructure, equipment and facilities for e-learning, lack of qualified manpower, lack of formal regulations for e-learning in the field of higher education and insufficient knowledge about e-learning are the most important weaknesses of electronic education in the higher education system of Iran.

Opportunities: The interviewees identified the following categories as the most significant uses of e-learning in the Iranian higher education system: expanding access to e-learning; increasing international and intercultural interactions; providing environmental benefits; offering economic opportunities; and developing educational justice.

Threats: Respondents believed that the threats of e-learning in the Iranian higher education system were related to cost, facilities and time; changing the nature of the university, management and interactions between faculty and students.

Discussion

The high rate of global change and the high cost of traditional education have pushed universities and organizations into a major dilemma. Therefore, if the organization's management is not willing to pay for the ongoing training costs and constant updating of its staff, it will be doomed in today's changing world. The growth of personal

computers and the increase in IT literacy have created the circumstances for organizations to work toward an educational revolution via the virtual world in the rapidly changing world of today. E-learning is becoming more widely used as the primary way of staff training in organizations. (10). The e-learning is known in many countries of the world as a good solution to the existing problems of traditional education. The previous studies, such as (Demuyakor, (11); Ratten, (12); Sahu, (13); Sandars et al., (14); Tesar, (15)) largely examined the impact of Covid-19 on the overall higher education sector. Previous studies show that the emergency response to Covid-19 by many universities was mainly through closing all campuses (16) and postpone or cancel academic related activities (17) a decision which was followed by the implementation of remote learning (18). In light of the aforementioned considerations, the current study's objective was to determine the benefits, drawbacks, dangers, and prospects of e-learning in the Iranian higher education system. The research findings indicate that e-learning in the Iranian higher education system faces many strengths, weaknesses, threats and opportunities. Therefore, conducting qualitative research in this field can further reveal the hidden and generally neglected layers of this field. The findings of this study are in line with the findings of Salimi and Fardin (5), Liana Ganavardaneh and Abu-shadi (6), Sadati Nejad et al. (1) and Mahmoudi and Mostashiri (7) in terms of identified weaknesses and challenges. In the research of O'Keefe (19), Sahu (13), Azorín (20), Sarwar et al. (21) and Verawardina et al (22) issues related to connectivity, networking and the Internet were identified as the main problem in e-learning, which was considered. It is possible to state that the research's findings are important in terms of application because they can give university administrators a clear framework and perspective to use in infrastructure and evaluation methods, revise e-learning, and address the current issues that students and faculty members encounter when using the

e-learning system. This research is important from an empirical point of view because the researcher himself has experienced virtual classes and during his experiences and his interactions with other students and professors in the Corona era, many university students have been very dissatisfied with e-learning and in many cases they admit that attending in virtual classes of the current system of the university (e-learning system) has created problems for them and in some cases students in terms of the low quality of the e-learning system failed to attend in virtual classes. As a result, although having several strengths—some of which have been highlighted in this study—holding education electronically in the Iranian higher education system also has shortcomings, possibilities, and dangers. It would appear that employing e-learning only based on its benefits and quick generalizations without taking into account the risks, advantages, and disadvantages cannot be a sensible and successful choice. Furthermore, it is necessary to eliminate the identified weaknesses of this study before using e-learning, and change the threats of the field into opportunity, and after considering all aspects, appropriate decisions should be made to apply e-learning in the higher education system. Therefore, considering the findings of this study, it is recommended that all officials, policy makers and decision makers, especially planners and designers of e-learning in higher education increase the quality and better education. In the higher education system, consider the need to rethink and prepare appropriate mechanisms to reduce the potential effects, strengths and weaknesses.

Limitations and Suggestions

One of the most significant limitations of the current research was the lack of value from the perspectives of higher education policy makers and the absence of circumstances for conducting group interviews in focus groups to gather more accurate data. In this regard, the following suggestions are made for the successful usage of e-learning in the Iranian

higher education system:

-E-learning should be considered a strategic priority in the higher education development programs of the country.

-Providing high-speed internet and providing equipment and upgrading e-learning infrastructure can solve the problem of face-to-face communication between teachers and students.

- Considering the principles of free education in the country, students who have less financial ability should be identified and facilities such as providing the Internet and computer packages to attend online classes should be provided to them.

- Promoting and informing about the advantages and capabilities of e-learning through the holding of workshops, seminars, conferences, specialized meetings, and the development of specialized publications in the field of e-education is advised in order to establish a cultural context and get the university to accept it.

-Mandatory laws and regulations for using e-learning in universities should be developed by the Ministry of Science, Research and Technology and the Ministry of Health, Treatment and Medical Education.

Conclusion

Considering the research findings, to develop educational justice and the possibility of more population access to the University of the Student community, reviewing existing approaches and educational methods and using e-learning as a new educational strategy for higher education system are necessary.

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Authors' Contribution

M.M asked research questions and helped to analyze and interpret the results. SH.MG conducted research and interview questions with the participants and assisted in the analysis. S.K prepared the first complete draft of the manuscript and assisted his

colleagues in analyzing the findings. M. MSH made significant contributions to collect and analyze the data. He finalized the translation.M.M, A.O translated the article to submit. Contributed to the magazine with other authors. All authors endorsed the final article.

Conflict of Interest: None declared.

Ethical Considerations

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