Doi: 10.30473/idej.2024.71719.1206 **ISSN:** 2588-4476

Iranian Distance Education Journal

Vol. 6, No. 1, winter- Spring 2024 (P 157-172), Payame Noor University

Original Article

Assessing the E-Learning Readiness and Capability Levels of Payam-e-Noor Centers During the Covid-19 Crisis

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Received: 2023/06/22 **Accepted:** 2024/04/22

Abstract

The concept of distance learning has changed from a choice to a requirement and even a compulsion in educational systems around the world during the COVID-19 pandemic crisis. Despite the challenges faced by this sudden change, in all countries, including Iran, learning institutions, whether general education or higher education, and even skill training institutions, had to turn to e-learning by using the existing educational platforms to keep their education flowing. In this paper, we tried to assess the readiness and capability levels of e-learning systems of the most experienced Iranian Open University, Payam-e-Noor University, during the COVID-19 epidemic. For this purpose, a questionnaire for evaluating the readiness level based on nine criteria and 45 measures and a questionnaire for examining their capability level based on eight criteria and 47 indices have been compiled and distributed among the educational centers of Payam-e-Noor University. Findings indicate that at the beginning of the COVID-19 pandemic, the e-learning readiness level of 31 participating centers was weak. In addition, after the crisis period, the e-learning capability level of 15 associated centers is above average. In conclusion, despite the growth of the university's status (from "weak" to "above average" during the two years of the disease epidemic), the educational system, the support system, and the research infrastructure criteria with the weak level score should be urgently paid attention by the planners and policymakers of higher education; As the same way, below average level criteria such as regulatory system, the supervisory system, and learning infrastructure should be on the agenda of rapid improvement and the quality of the administrative system criteria with above average level score should be on the agenda of gradual improvement.

Keywords

E-learning readiness, E-learning capability, COVID-19 crisis, Distance education, Evaluation, Payam-e-Noor University.

Introduction

The idea of creating ease and expanding people's access to science and knowledge, implemented for the first time in the world about 165 years ago, was also considered in Iran about half a century ago as the foundation for Aburihan Biruni University in 1972. They used both face-to-face and correspondence methods for teaching and holding exams. The Azad University of Iran was the second university established to increase the capacity of training specialized and efficient human resources. Because the acceptance of students in Iran's higher education centers had only increased four times compared to ten years before, it was not adequate for the growing higher education demand (Farajollahi & Farozan Sharif, 2018). In the beginning, due to the lack of specialist staff, the officials of this university used the consulting services of foreigners, and self-study textbooks and audio and video tapes were

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the main content of this university. In 1981, due to many problems, especially the lack of specialist employees, the university was closed without having any graduates (Payam-e-Noor University, 2023).

The second attempt of Iranian higher education to realize the idea of reducing time, place, and limitations in access to education by establishing Payam-e-Noor University in the form of part-time education systems, open and distance education, and realizing the slogan "Education for all, everywhere and every time" reached the stage of action (Parand et al.,2012). This state university, which today ranks sixth among open universities in the world and second in Asia, actually accepted the first group of students in 5 fields of study and in the remaining 28 centers from Aburihan Biruni University and Azad University of Iran from October of the academic year 1367-68. He started his educational activity. The educational method of this university is a combination of face-to-face and part-time, as well as open and distance learning. Structurally, Payam-e-Noor University has a central organization in Tehran and 31 provincial universities throughout Iran (Higher Education Research and Planning Institute, 2023). This university offers a wide range of different fields in different ways and currently has more than 500 centers across the country, which provide education in a non-attendance (self-study), part-time, and full-time manner and with the employment of nearly three thousand and five hundred full-time faculty members. There are about 395 thousand students (UNESCO, 2020).

With the beginning of the epidemic crisis of COVID-19 disease at the end of 2018 and its impact on various aspects of human lives and societies (which still has not been determined after about four years), the educational systems have also been forced to change from face-to-face to online (Jing, 2021). Meanwhile, open universities, established from the beginning based on non-attendance education, had an advantage and superiority over other universities (Bowles, 2005).

In Iran, during the COVID-19 disease crisis, e-learning was determined as the agenda of universities and higher education centers. In this research, the main question is whether the most experienced Open University of Iran has been able to face this crisis and whether the 20-year experience of Payam-e-Noor University paved the way for other Iranian universities to face this crisis.

According to the above points, this article aims to analyze and compare the level of "readiness" and "capability" of Payam-e-Noor centers using field data collected in two time periods in the first half of 2019 (the beginning of migration to non-attendance education in the higher education system) and the first half of the year 2021 (the end of non-attendance education). The remainder of the paper is organized as follows: Section 2 describes the e-learning readiness and capability assessment models, and Section 3 introduces the case studies. Section 4 explains the e-learning readiness and capability of participating university centers. Finally, in Section 5, the summary and conclusion are presented.

Materials and Methods

E-Learning Readiness and Capability Assessment

The readiness and capability assessment models have been developed in the theoretical texts of the e-learning field in the last twenty years to a maturity level. In these texts, "e-learning readiness" is mentioned as the degree of readiness of educational organizations (schools and universities) for the successful implementation of the e-learning system (Machado, 2007). Also, "e-learning capability" is defined as "the ability of organizations and the capacity of educational stakeholders (managers, key people, teachers, and learners) to participate in e-learning successfully" (Mertler & Reinhart, 2016).

Firstly, several models are already defined in the literature to evaluate an e-learning readiness (McConnel, 2000; WITSA, 2000; Rosenberg, 2001; Engholm & McLean, 2001;

Broadbent, 2002; Anderson, 2002; Haney, 2002; Schönwald, 2003; EIU, 2003; Kaur & Zoraini Wati, 2004; EIU, 2004; Worknowledge, 2004; Borotis & Poulimenakou, 2004; Colle, 2004; Kapp, 2005; Chapnick, 2005; Aydin & Tasci, 2005; Psycharis, 2005; Machado, 2007; Lopes, 2007; Akaslan & Law, 2011; Keramati et al., 2011; Darab & Montazer, 2011; Omoda & Lubega, 2011; Divjak & Begičević, 2011; Saekow & Samson, 2011; Alshaher, 2013; Oketch et al., 2014). Table 1 compares the dimensions used in the e-learning readiness models.

Table 1. Identified Dimensions of E-learning Readiness Evaluation Models

No	**Models**	**Technological Infrastructure**	**Content**	**Policy**	**Culture**	**Finance**	**Human Resources**	**Security**	**Laws & Regulations**	**Standards**	**Management**	**Supervision & Evaluation**	**Support**	**Pedagogy**	**Awareness**	**Organization**
1.	McConnel, 2000	✓					✓	✓			✓					✓
2.	WITSA, 2000	✓		✓	✓	✓										
3.	Rosenberg, 2001	✓			✓	✓	✓				✓					
4.	Haney, 2002	✓	✓			✓	✓				✓					
5.	EIU, 2003	✓	✓		✓											
6.	EIU, 2004	✓	✓		✓											
7.	Worknowledge, 2004	✓			✓	✓	✓				✓					
8.	Borotis & Poulimenakou, 2004	✓	✓		✓	✓	✓				✓		✓	✓		✓
9.	Cloete, 2004	✓	✓	✓	✓	✓	✓			✓	✓					✓
10.	Kaur & Zoraini Wati, 2004			✓			✓		✓							
11.	Chapnick, 2005	✓	✓		✓	✓	✓								✓	✓
12.	Aydin & Tasci, 2005	✓			✓	✓	✓								✓	
13.	Psycharis, 2005	✓	✓		✓	✓	✓				✓			✓		
14.	Machado, 2007	✓	✓	✓	✓		✓				✓					
15.	Lopes, 2007	✓	✓		✓	✓	✓			✓			✓			
16.	Akaslan & Law, 2011	✓	✓		✓		✓						✓	✓		
17.	Keramati et al., 2011	✓			✓		✓							✓		✓
18.	Darab & Montazer, 2011	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
19.	Divjak et al., 2011	✓	✓	✓	✓	✓	✓			✓	✓				✓	✓
20.	Saekow & Samson, 2011	✓		✓		✓	✓									
21.	Alshaher, 2013	✓	✓		✓		✓				✓		✓			✓
22.	Oketch et al., 2013	✓	✓		✓											
Total Frequency		**21**	**14**	**7**	**18**	**13**	**18**	**2**	**2**	**4**	**11**	**1**	**5**	**4**	**3**	**7**

As indicated, technological infrastructure (equipment & network) readiness, human resource readiness, and culture readiness are emphasized in almost all models. On the other hand, it is observed that none of the models covers all the dimensions simultaneously. For instance, merely a few models have emphasized supervision and evaluation readiness, Security readiness, and laws & regulations.

Secondly, there are various theoretical evaluation studies of e-learning systems from the point of view of implementation effectiveness or key success factors. In Table 2, these models of e-learning capability evaluation are compared.

Table 2. Identified Dimensions of E-learning Capability Evaluation Models

No	*Models* / *Dimensions*	Technology	Learning Environment	Participation Level	Human Resources	Service Quality	Knowledge Management	Information Quality	Regulation System	Supervision & Evaluation	Support System	Pedagogy	Educational System	Organization
1.	Engholm & McLean, 2001	✓			✓				✓		✓			✓
2.	Bradbent, 2002	✓			✓						✓			✓
3.	Anderson, 2002	✓			✓						✓	✓		✓
4.	Schönwald, 2003	✓							✓					✓
5.	Kapp, 2005	✓						✓			✓	✓		✓
6.	Omoda & Lubega, 2011	✓			✓							✓	✓	✓
7.	Rodrigues et al., 2019		✓										✓	
8.	Chopra et al., 2019	✓	✓			✓		✓						
9.	Priatna et al, 2020	✓	✓		✓									✓
10.	Aali et al., 2020	✓	✓									✓		
11.	Al-Fraihat et al, 2020	✓	✓			✓		✓			✓		✓	
12.	Alqahtani & Rajkhan, 2020	✓	✓	✓	✓		✓	✓			✓	✓	✓	
13.	Mathivanan et al., 2021	✓	✓				✓		✓			✓		
14.	Mastan et al., 2022	✓	✓		✓	✓				✓		✓	✓	
Total Frequency		**13**	**8**	**1**	**7**	**3**	**2**	**4**	**3**	**1**	**6**	**7**	**5**	**7**

According to this table, technology capability is mentioned in most of the frameworks. On the contrary, none of the models covers all the dimensions. For example, a small number of these models have included Participation Level capability and supervision and evaluation capability.

In this section, based on the summation of the "e-learning readiness and capability assessment" literature reviews and experts' opinions, the most important criteria and measures of e-learning readiness and capability in the context of Iran have been selected (Table 3).

Table 3. Criteria of E-Learning Readiness and Capability Evaluation Models

Readiness Criteria	Importance Percent	Capability Criteria	Importance Percent
Administrative Policies	11/9	Regulatory System	13/3
Educational System	11/9	Educational System	13/1
Supervisory System	11/3	Supervisory System	12/8
Communication Infrastructure	11/3	Technical Infrastructure	12/6
Culture	10/9		
Incentive System	10/9		
Learning Infrastructure	10/7		
Research Infrastructure	10/6		
Administrative Support	10/5	Administrative System Quality	11/8
		Learning Environment	12/4
		Support System	12/1
		Information Infrastructure	11/9

The importance of criterion and measures have been calculated by a five-point Likert scale (from a scale of 1 for "completely disagree" and a scale of 5 for "completely agree") regarding the opinion of experts. This questionnaire has been given to more than 60 experts familiar with e-learning and higher education. In the next stage of analysis, using the experts' opinions, the importance of each criterion is determined based on the T-test (with a T-value of 3 equivalent to the mean of the responses) (Montazer et al.,2023).

It is worth mentioning that about 80% of the measures are the same in both readiness and capability models; however, their structural position under the criterion is different for more than 60% of them. Also, there are "Culture" criteria and its measures only in the e-learning readiness assessment model. In addition, the measures such as "Social networks" and "Average duration of using social networks" from the information infrastructure criteria, "Order of the university in non-attendance education programs", "Flexibility in choosing the teaching time in online classes" and "Guidance of the teaching assistant in the online environment" from the support system criteria, "The amount of e-learning budget" from the regulatory system criteria, "The number of non-attendance theoretical classes of the university per semester (simultaneous/non-simultaneous)" from the educational system criteria, and "Measurement of students' satisfaction with online learning" from the supervisory system criteria, exist exclusively in the e-learning capability evaluation model (Qamar, 2002).

Case Studies

Based on the two readiness and capability evaluation models designed in the previous section, two groups of questionnaires were developed to evaluate Payam-e-Noor University units in the country, and their information was collected through an online survey as described below.

In the survey to measure the level of e-learning readiness of Payam-e-Noor at the beginning of the COVID-19 crisis from May to July 2019, the data from 31 centers was collected by a simple sampling method. Table 4 shows the statistical information on the participating centers in this survey.

Table 4. Information of Payam-e-Noor Centers Participating in the E-Learning Readiness Assessment Survey

No.	**Payam-e-Noor**	**Province**	**Number of Faculty members**	**Number of Students**
1.	Ilam	Ilam	468	2546
2.	Bafq	Yazd	15	391
3.	Borujen	Chaharmahal and Bakhtiari	23	850
4.	Birjand	South Khorasan	234	1978
5.	Takistan	Qazvin	n/a	n/a
6.	Saqqez	Kurdistan	60	1736
7.	Sanandaj	Kurdistan	169	3160
8.	Tabas	South Khorasan	29	770
9.	Farsan	Chaharmahal and Bakhtiari	11	1027
10.	Ferdows	South Khorasan	34	579
11.	Qazvin	Qazvin	230	4355
12.	Maragheh	East Azerbaijan	20	1650
13.	Marivan	Kurdistan	11	1782
14.	Ardal	Chaharmahal and Bakhtiari	3	300
15.	Asadieh	South Khorasan	12	270
16.	Baaneh	Kurdistan	2	800
17.	Boshruyeh	South Khorasan	12	140
18.	Boldaji	Chaharmahal and Bakhtiari	14	91
19.	Junaqan	Chaharmahal and Bakhtiari	5	15
20.	Hajiabad	Hormozgan	5	250
21.	Khazari Dasht Beyaz	South Khorasan	18	250
22.	Khosf	South Khorasan	21	109
23.	Divandarreh	Kurdistan	55	700
24.	Zahan	South Khorasan	15	120
25.	Saman	Chaharmahal and Bakhtiari	4	45
26.	Sairan	South Khorasan	6	61
27.	Sarbisheh	South Khorasan	5	48
28.	Farrokh Shahr	Chaharmahal and Bakhtiari	8	300
29.	Firuraq	West Azerbaijan	1	n/a
30.	Lordegan	Yazd	59	1299
31.	Nehbandan	South Khorasan	28	220

Fifteen centers of Payam-e-Noor University participated in the e-learning capability assessment survey from January to February 2021. Table 5 shows the summary of the information collected from these centers.

Table 5. Information of Payam-e-NOOR Centers Participating in the E-Learning Capability Assessment Survey

No.	**Payam-e-Noor**	**Province**	**Number of Faculty members**	**Number of Students**
1.	Miandoab	West Azerbaijan	52	1779
2.	Khoy	West Azerbaijan	28	2151

3.	Khansar	Isfahan	8	646
4.	Hashtgerd	Alborz	15	1818
5.	Ilam	Ilam	n/a	7819
6.	Gonbad-e Kavus	Golestan	11	1563
7.	Bafq	Yazd	10	442
8.	Khalkhal	Ardabil	7	840
9.	Givi	Ardabil	1	237
10.	Dolat Abad	Isfahan	n/a	4500
11.	Khorasgan	Isfahan	95	2207
12.	Kalat	Razavi Khorasan	33	320
13.	Arsenjan	Fars	3	440
14.	Sheshdeh va Ghare Bolagh	Fars	32	251
15.	Sarpol-e Zahab	Kermanshah	65	800

Results

In this section, to measure the level of readiness and capability of e-learning, the information obtained from the questionnaires was analyzed and the readiness or capability level of each criteria was calculated based on the total score of the sub-group measures of that criteria and the importance of that criteria. In the same way, the score of each measure was calculated.

In addition, the "standard deviation distance from the mean" method [12] was applied to determine the readiness and capability level of Payam-e-Noor centers. The intervals considered for analyzing the level of readiness and capability of universities are as follows:

A= Weak: $A \leq$ Mean- Standard deviation (Sd)

B= Medium: Mean- Sd $< B \leq$ Mean

C= Good: Mean $< C \leq$ Mean + Sd

D= Excellent: Mean + Sd $< D$

In the following, the results of the evaluation of Payam-e-Noor University's e-learning readiness and capability are presented separately.

A. Payam-e-Noor centers' e-learning readiness at the beginning of the COVID-19 crisis

As mentioned, taking into account the score and the importance coefficient of each index and the sum of their multiplication, the overall preparedness score of Payam-e-Noor University at the beginning of the Covid-19 crisis was 2.4, which according to the ISDM method, Payam-e-Noor University centers from The level of preparation for the full implementation of e-learning systems has been at the "weak" level.

In the score analysis of the indicators (Figure1), the highest score belongs to the "administrative support" index (with a score of 7.5) at the "good" level, and the indicators of "supervisory system", "learning infrastructure" and "executive policies" have the lowest score (zero) are estimated at the "very weak" level.

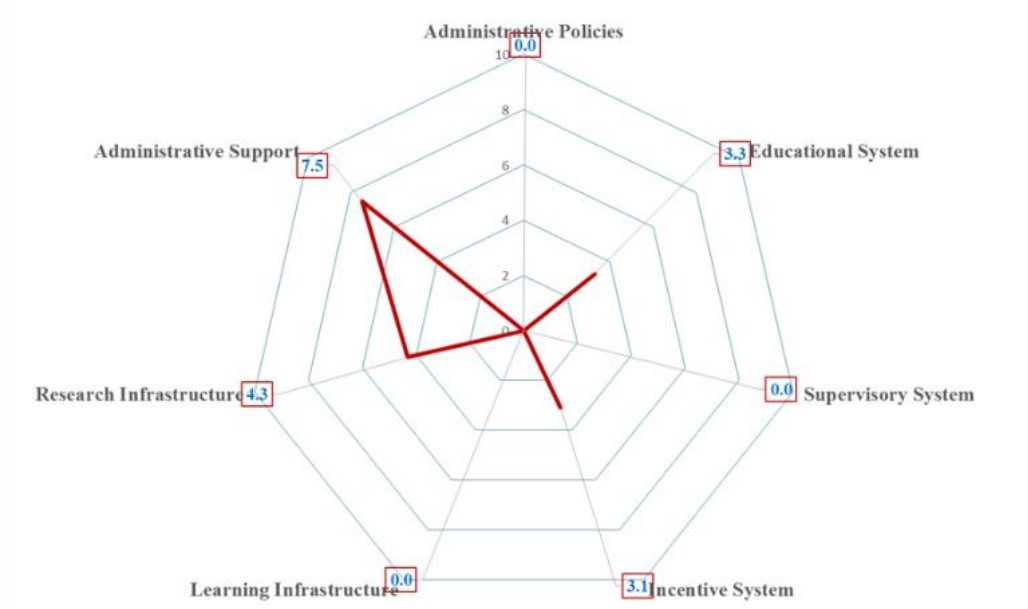

Figure 1. E-learning Readiness of Participating University Centers

Also, the results of measuring the readiness of Payam-e-Noor University at the level of model metrics are presented in Table 6.

Table 6. The Readiness Level of Payam-e-Noor Centers at the Level of Model Measures

Readiness Criteria	Readiness Measure	Measure Score
Administrative Policies	The existence of an e-learning policy document	۰
	Development of an action plan for implementing policy document	۰
	The existence of an approved organizational structure for the e-learning unit	۰
	Legal mechanism of e-learning unit	۰
	The existence of a special budget for e-learning	۰
	Designing e-learning regulations in the university	۰
Administrative Support	The existence of a special interactive messenger network for the university	4/8
	The existence of an administrative automation system	8/4
	The possibility of holding administrative meetings of the university over the network	8/7
	The existence of an educational automation system	8/4
Incentive System	Providing computer software for professors	5/2
	Reimbursement of professors' Internet costs	3/9
	Reimbursement of students' internet costs	4/2
	Reimbursement of the cost of communication and computer equipment for students	0/6
Educational System	The existence of self-learning training courses for professors	5/8
	The existence of training courses for students	5/5
	The existence of training courses for employees	2/9
	The existence of electronic simulators for educational	۰

	workshop environments	
	The existence of network groups/forums for professors to group thinking	4/8
	Signs of e-learning used by universities	
	Having previous experience in e-learning	0/5
Supervisory System	The existence of documentation mechanisms for e-learning previous experience	۰
	The existence of recording mechanisms for teaching performance	۰
	The existence of recording mechanisms for academic performance and evaluating students	۰
Culture	The main advantage of e-learning	
	The main disadvantage of e-learning	
Communication Infrastructure	Annual Internet cost (million Rials)	
	Internet provider type	
	Type of communication infrastructure	
	Electronic messengers of universities	
Research Infrastructure	The existence and facilities of the digital library	6/5
	The possibility of electronic receipt of the book file	5/5
	Online access to scientific publications and general journals	5/2
	Online access to the thesis	5/5
	Online access to electronic scientific documents	5/8
	Online access to multimedia resources	4/8
	The existence of e-laboratories	۰
	The existence of virtual laboratories	۰
	Access to university processing systems	5/2
	The possibility of holding online seminars and thesis defense	3/5
Learning Infrastructure	The existence of an e-learning management unit	۰
	The existence of an e-learning management system	۰
	The existence of an educational messenger system	۰
	Existence of e-learning operators	۰
	The existence of an independent internal network for e-learning in the university	۰

Zero-point **m**easures	Weak-level measures	Medium-level measures
Good-level measures	Excellent-level measures	Qualitative measures

As shown in Table 6, the formulation and implementation of a policy document, the existence of an approved organizational, legal, and budgetary structure, as well as taking into account the academicians' performance recording mechanism, are considered fundamental components of conducting education electronically, but in Payam-e-Noor University, it is at a "very weak" level and is estimated to be zero. On the other hand, in terms of the technical and infrastructural requirements necessary for the effective delivery of electronic education, things such as the electronic education management unit and system, educational messaging system, and independent internal network are necessary for electronic education in the university, which according to the zero score of the "learning infrastructure" index This university also seems to have lacked the necessary preparation in terms of technical infrastructure.

In a closer look, without taking into account the measures related to executive policies, which did not exist in practice in any of the participating universities, at the beginning of the epidemic crisis, the centers of Payam-e-Noor University scored 7.8 points in holding administrative meetings in line with very good preparation and scoring points. 0.6 in compensating the cost of students' digital tools and 0.5 in the presence of previous e-learning experience have shown poor preparation.

In the meantime, the important point is the indicators of the "Culture" indicator, which was removed from the analysis due to the lack of response from the mentioned centers, which itself indicates that at the beginning of the crisis of e-learning and education, it was not believable in the view of the stakeholders at the macro level of Payam-e-Noor University. In practice, considering that only 6 of the 31 centers in question have reported having previous experience with this type of education at a very limited and small level, it can be seen that before the start of the COVID-19 crisis, due to the lack of the necessary culture, special efforts were made. Also, this university did not take advantage of the electronic education system and only correspondence education was enough.

B. Payam-e-Noor centers' e-learning capability at the end of the Covid-19 crisis

By obtaining a score of 5.6, Payam-e-Noor University was able to achieve an "above average" capability in providing electronic education after gaining experiences of non-attendance education during the crisis. At the level of indicators, "Technical infrastructure" with 10 points at the "excellent" level and "Educational system" with 1.6 points are estimated at the very poor level (Figure 2). Also, the results of measuring the readiness of Payam-e-Noor University at the level of model metrics are presented in Table 7.

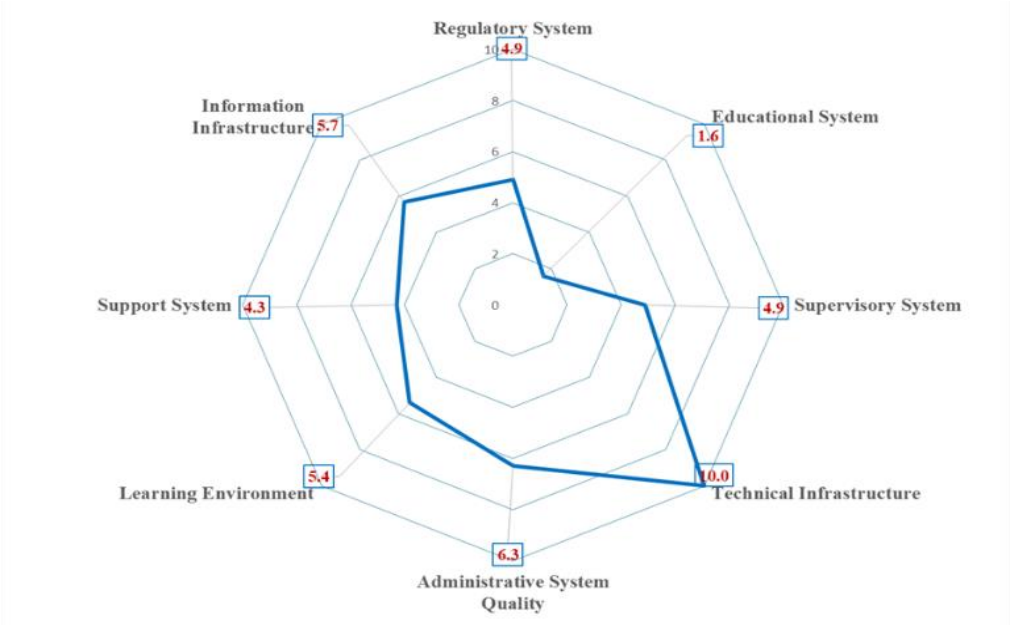

Figure 2. Also, the results of measuring the readiness of Payam-e-Noor University at the level of model metrics are presented in Table 7.

Table 7. The Capability Level of Payam-Noor Centers at the Level of Model Measures

Capability Criteria	Capability Measure	Measure Score

Regulatory System	The existence of a policy document for e-learning	8/3
	Developing an action plan for the implementation of the policy document	3/4
	The existence of an approved organizational structure for the e-learning unit	7/5
	Legal mechanism of e-learning unit	
	Subcategories of e-learning unit	
	Mechanisms of e-learning unit	
	The existence of a special budget for e-learning	6/5
	The amount of the e-learning budget	5
Support System	Flexibility in choosing the teaching time in online classes	10
	Guidance of the teaching assistant in the online environment	۰
	Providing computer software for professors	1/7
	Reimbursing the cost of internet for teachers in online education	5
	Reimbursement of students' internet costs	3/3
	Reimbursing the cost of communication and computer equipment for students	7/1
	Reimbursing the cost of communication and computer equipment for employees	۰
	Reimbursement of employees' Internet costs	۰
	Granting authority to professors to choose teaching method	**3/3**
	Arrangements to inform about the physical and mental health of students	**6**
	Provisions to replace students' cultural activities	5/7
Quality Administrative System	The existence of a special interactive messenger network of the university	۰
	The existence of an administrative automation system	6/8
	The possibility of holding administrative meetings of the university over the network	10
	The existence of an educational automation system	5/7
	The possibility of remote access to the administrative system of the university for students, professors, and staff	
Supervisory System	The existence of documentation mechanisms for e-learning previous experience	7/6
	The existence of recording mechanisms for teaching performance	3/8
	The existence of recording mechanisms for academic performance and evaluating students	**8**
	The level of motivation and cooperation of professors in promoting online education programs	۰
	Measuring students' satisfaction with online education	**3/3**
Educational System	The existence of self-learning training courses for professors	۰
	The existence of training courses for students	۰
	The existence of training courses for employees	۰
	The existence of electronic simulators for educational workshop environments	7/1
	The existence of network groups/forums for professors to group thinking	**4**

	Signs of e-learning used by universities	
	The main disadvantage of e-learning (in different types such as simultaneous, asynchronous, intelligent, and massive)	
	The main advantage of e-learning (in various types such as simultaneous, asynchronous, intelligent, and massive)	
	Are there any specific activities in the university that have been completely stopped during the crisis?	**5**
	Participation and cooperation with other universities in the field of transferring experiences during the crisis	**5/2**
	The position of e-learning after the end of the disease crisis and the resumption of face-to-face education	
	Having previous experience in e-learning	
Technical Infrastructure	Internet provider company	
	Internet connection type	
	Internet Broadband	
	The average annual cost of internet	
	Internet speed for providing online training (GB network traffic per second)	
	The existence of network security procedures and protocols	**10**
	Type of firewall	
Learning Environment	The existence of an e-learning management unit	**9**
	The existence of an e-learning management system	**10**
	The existence of an educational messenger system	**۰**
	Existence of e-learning operators	**5/2**
	The existence of an independent internal network for e-learning in the university	**5**
Information Infrastructure	The existence and facilities of the digital library	**8/7**
	The possibility of online deposit and receipt of e-book files (outside the university)	**5**
	The possibility of online access to scientific publications and general journals	**4**
	The possibility of online access to university theses	**8**
	The possibility of online access to scientific documents	**8**
	The possibility of online access to audio-visual multimedia resources	**5**
	Access to virtual laboratories	**3/3**
	Access to e-laboratories	**۰**
	Access to university processing systems	**2**
	The possibility of holding online seminars and thesis defense	**10**
	The possibility of holding various online scientific meetings at the university	**10**

Discussion and Conclusion

In this article, the results of the evaluation of the e-learning readiness and capability of Payam-e-Noor University at the beginning (early 2019) and at the end (late 2014) of the COVID-19 epidemic period were presented based on the designed evaluation models. They participated in the evaluation of the readiness of 31 centers and the evaluation of the capability of 15 Payam-e-Noor centers.

The results of the evaluation of the readiness and capability of electronic education of the aforementioned universities have been compared at the level of evaluation indicators, as described in Table 8.

Table 8. Comparing the Assessment Results of E-Learning Readiness and Capability Criteria of Payam-e-Noor University Centers

Readiness Criteria	Readiness Score	Capability Score	Change		
			Type	Level	Chart
Regulatory System	0	0/49	Increasing	Very weak to medium	↗
Educational System	0/33	0/16	Almost unchanged	Weak	---
Supervisory System	0	0/49	Increasing	Very weak to medium	↗
Incentive System	0/31	0/43	Almost unchanged	Good	---
Administrative Support	0/75	0/63	Almost unchanged	Good	---
Learning Infrastructure	0/5	0/54	Almost unchanged	Medium	---
Research Infrastructure	0/43	0/32	Almost unchanged	Weak	---

As can be seen in Table 8, at the level of evaluation indicators, a significant number of dimensions did not have a specific change trend during the disease crisis, and only two indicators "executive policies" and "supervisory system" had an upward trend.

To take advantage of the lived experience during the Covid-19 pandemic and the continuation of electronic and hybrid education at Payam-e-Noor University, the policy proposals of this report are summarized in three sections as follows:

A. Less powerful indicators that should urgently be the focus of crisis management of policymakers and planners in the field of higher education.

A-1. The "Educational System" index, which was estimated at a weak level at the beginning of the Covid-19 epidemic and the end of this period with a relatively downward trend at a very weak level;

A-2. The "support system" index, which was estimated at a weak level at the beginning of the COVID-19 epidemic and the end of this period with a slight improvement but still at a weak level;

A-3. The "research infrastructure" index, which was at a weak level at the beginning of the COVID-19 epidemic, and at the end of this period, with a relatively downward trend, is still estimated at a weak level.

It is worth mentioning that in this group of indicators, the reasons for the lack of progress and decline in the level of the "educational system" and "research infrastructure" indicators during the COVID-19 disease crisis are very important and can be used as a basis for future policies.

B. Relatively powerful indicators that should be included in the agenda of policymakers and planners in the field of higher education for rapid improvement.

B-1. The "Regulatory System" index, which was estimated at a very weak level at the beginning of the Covid-19 epidemic, but at the end of this period, with an upward trend, was estimated at an average level;

B-2. The "monitoring system" index, which was estimated at a very weak level at the beginning of the COVID-19 epidemic, but at the end of this period, with an upward trend, was estimated at an average level;

B-3. The "learning infrastructure" index, which was at an average level at the beginning of the COVID-19 epidemic, and at the end of this period, is still estimated at an average level without any serious change.

C. More powerful indicators should be included in the agenda of gradual improvement of policymakers and planners in the field of higher education.

C-1. The "quality of the administrative system" index, which was estimated at a good level at the beginning of the Covid-19 epidemic, but at the end of this period with a decreasing trend, but still at a good level;

It is worth mentioning that in this group of indicators, the reasons for the decrease in the level of the "administrative system" index are very important and can be used as a basis for future policies.

It is worth noting that an index with a fully capable status has not been estimated in the present measurement.

Based on this summary, it can be concluded that Payam-e-Noor University, as the only university in the country with the special mission of promoting non-attendance education, has not been able to achieve this mission even at the level of its affiliated university units. The often weak and very weak level of preparation of the evaluation indicators of this university shows the lack of development of the required e-learning infrastructure even in its sub-units, which, as a rule, can help other universities in the country (with the mission of providing face-to-face education services) in the face of crisis. There was no covid-19. Passing through the aforementioned crisis period and the forced migration of universities to the electronic education system has brought only a moderate level of capability to this university, which naturally expects this university excludes to lead in non-attendance education and create an overflow from the technical, educational, and executive infrastructure of this university to other universities in the country.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Acknowledgment

A part of this article is extracted from the research project "Designing an evaluation model of e-learning capability in Iranian universities and measuring it during the Covid-19 disease pandemic" numbered 172/p/1401 dated 6/15/1401, which the National Research Institution of Scientific Policy (NRISP) as The employer supports it. For this reason, the authors of this paper know how to be grateful for the support of this research institution.

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