Identifying the Components of the Fourth Generation University to Improve the Quality of Education and Research in Islamic Azad Universities

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Abstract

Purpose: The aim of this research was identifying the components of the fourth generation university to improve the quality of education and research in Islamic Azad universities.

Methodology: This study in terms of purpose was applied and in terms of implementation method was mixed (qualitative and quantitative). The research population in the qualitative section was expert professors of educational sciences in Mazandaran province in 2019 year which according to the principle of theoretical saturation, 15 of them was selected by snowball sampling method. The research population in the quantitative section was faculty members of Islamic Azad universities of Mazandaran province in 2019 year with number of 1487 people which according to Cochran's formula, 305 people were selected by cluster sampling method by observing the ratio of the number of faculty members in university units. For data collection in the qualitative section were used from text review and semi-structured interview and in the quantitative section were used from 83 items researcher-made questionnaire that their psychometric indices were confirmed. Data were analyzed by methods of open, axial and selective coding and exploratory factor analysis in Maxqda2018 and SPSS-22 software.

Finding: The findings of the qualitative section showed that the fourth generation university to improve the quality of education and research had 83 open codes, 16 axial codes or component and six selected codes or categories, which were included categories and components of causal conditions (with three components of scientific-social responsibility, environmental dynamics and organizational mission), contextual conditions (with three components of organizational values and structure, facilities and equipment and motivation), axial phenomenon (with one component of the role play of fourth generation university), interventions conditions (with three components of relationship with industry, organizing educational content and library empowerment), strategies (with four components of inclusive quality management, development of fields and mutual cooperation, faculty members participation in decision-making and interaction and teamwork) and outcomes (with two components of quality of educational and quality of research). The findings of the quantitative section showed that the fourth generation university to improve the quality of education and research had 16 components were included of scientific-social responsibility, environmental dynamics, organizational mission, organizational values and structure, facilities and equipment, motivation, role play of fourth generation university, relationship with industry, organizing educational content, library empowerment, inclusive quality management, development of fields and mutual cooperation, faculty members participation in decision-making, interaction and teamwork, quality of educational and quality of research which all of them had a good factor load and they together could explain 85.37% of the total variance.

Conclusion: According to the results, higher education specialists and planners can design and implement programs to improve the quality of education and research in Islamic Azad universities by promoting the components of the fourth generation university.

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Introduction

Today, we are witnessing the expansion of educational and research institutions around the world with new paradigms that are in fact tied to the fate of all human beings. At the heart of this decision-making are usually the universities, which are the engine of science, research and technology. These have created new expectations for academics as theorists, streamers, cosmologists, and accelerators of new sciences and programs. Higher education can respond to these challenges when students, staff and faculty are capable, educated and aware of the necessities and requirements of higher education in the third millennium (Fazel, Kamalian & Rowshan, 2018).

Universities based on approaches and executive structures corresponding to four generations, including first generation universities (education-oriented universities), second generation universities (research-oriented universities), third generation universities (innovative, technology and entrepreneurial universities) and fourth generation universities (Capability-oriented, value-creating and wealth-creating universities) are divided (Lapteva & Efimov, 2016). From 2009 onwards, a new approach to education called capability education entered the higher education system. Capability-oriented education believes that the best way to fill the gaps between routine higher education and labor market needs is to change the approach of universities from offering knowledge-based to capability-based courses; So that students can enter the job market directly and have already acquired the skills needed for employment in various job positions at the university (Lukovics & Zuti, 2015).

In the first generation, universities emphasize manpower training and education, in the second generation, universities emphasize the educational, research and research function, and in the third generation, universities emphasize knowledge-based economics and knowledge-based economics. In recent years, the fourth generation of universities has been added to the literature of the higher education system, and a fourth generation university is entrepreneurial, opportunistic, creative and progressive in nature and can help solve social problems (Duc, Chung, Huy, Lan, Lieu, Thuy & Loc, 2018).

Third and fourth generation universities are knowledge-based, education-oriented and research-oriented universities that seek to create wealth and value creation by developing effective knowledge and entrepreneurship (Etuk, 2015). The fourth generation of universities is wider than the third generation. Third-generation universities are generally entrepreneurial and based on entrepreneurship and community problem-solving with a scientific approach and in relation to the environment, but fourth-generation universities actively shape their social and economic environment and its role in society can be based on services. Through which it contributes to the development of the environment and society, be evaluated (Oztel, 2020).

Today, improving the quality of education and research is one of the main concerns of the higher education system in most countries of the world, and the higher education system in general and universities in particular have always sought to improve the quality of their education and research (Duc, 2020).

One of the necessities of creating a fourth generation university is to review and design the optimal curriculum system and pay attention to the elements of the curriculum. In other words, one of the main tasks of the university and the goals of higher education is to coordinate the elements of the curriculum with the specialized developments and requirements of the society (Sepehri, Liaghatdar & Esfijani, 2021).

Emphasis and realization of entrepreneurship, wealth creation and transformation in fourth generation universities requires that courses be designed under this approach and have a set of capabilities that the student has acquired after completing the course to be able to work in different industries and classes. Provide (Yarris, Simpson & Sullivan, 2013).

Little research has been done on fourth generation universities and no research has been found to improve the quality of teaching and research. For example, Sepehri et al. (2021) while researching approaches and methods of teaching and learning in fourth generation universities concluded that its most important components include the application of practice-based education approach, facilitating simulated learning opportunities, attention to methods Collaborative learning was an educational approach based on peer

education, exploratory learning methods based on exploratory learning, self-directed and self-directed learning, application of teaching methods such as combining information technology and information and communication technology in curriculum teaching and learning methods. The results of Nithyanandama (2020) research showed that if students' attitudes toward learning are not changed positively, only a small percentage of students will acquire the necessary skills for employment, for which purpose student participation and engagement, teacher-student interaction and attention to The needs of students and industry and the relationship between them are essential.

Alami, Ansarifar & Akbari (2020) while researching the quality of educational and research services from the perspective of students, including the physical components, accountability, reliability, empathy and guarantee. Also, Mirzaie, Soltani & Motaharinezhad (2018) introduced the characteristics of the third generation university including skills, entrepreneurship, all-round independence, university interaction with society and creativity of ideas, none of which has been fully realized in Shahid Bahonar University of Kerman. . Fazel, et al (2018) while researching the dimensions and components affecting the empowerment of academic human resources with emphasis on third and fourth generation universities include three individual dimensions (with knowledge, intelligence, emotional arousal, religious knowledge and insight, motivation and attitude, having Model of successful people, physical ability, skill, personality, self-confidence, satisfaction and respect, security of mind, feeling effective, creativity, innovation and productivity, individual independence, risk-taking, value creation and wealth creation, and the nature of decision-making and responsibility), organizational (With components of appreciation, reward and salary, type of leadership, managerial actions, training and maturity, information and interactions, organizational trust, performance appraisal, organizational justice, clear organizational goals, organizational structure, workforce diversity, job structure, entrepreneurial culture and Value creation and re-engineering of processes) and environmental (with components of environmental change, union of employees, labor laws and regulations, social and cultural status, continuous analysis of the environment, economic status, environmental status, community-university relationship, official support, commercialization, parks Scientific and creating a lawful business environment) Ned.

In another study, Zuti & Lukovics (2017) reported that modern economic development requires the expansion of the university's social and economic commitments alongside its traditional activities, and that high-quality education can provide the basis for economic development. High and the use of research outputs of the economic body of the country is also necessary to achieve value-creating and wealth-creating universities.

If we consider the first generation of universities as educational, the second generation as research, the third generation as entrepreneur, and the fourth generation as value-creating and wealth-creating, we must admit that we have not yet been able to fully create the third generation in the country's universities. The relationship between industry and academia is not good, and universities have become document production companies in many fields. Many universities only claim to be entrepreneurial and often do not think about cultivating practical skills (Sadeghi, Niazazari & Taghvaie Yazdi, 2019). Little research has been done on fourth generation universities and no research has been found to improve the quality of teaching and research. As a result, considering the importance of fourth generation universities and their role in improving the quality of education and research and improving the status of students after graduation, the purpose of this study was to identify the components of fourth Generation University to improve the quality of education and research in Islamic Azad universities of Mazandaran province was.

Methodology
This study was applied in terms of purpose and mixed in terms of implementation method (qualitative and quantitative). The research population was in the qualitative section of expert professors of educational sciences in Mazandaran province in 2019. According to the principle of theoretical saturation, 15 of them were selected by snowball sampling method. In this method of sampling, researchers selected some experts from the field of educational sciences based on their knowledge of them and asked them to introduce the experts to the researchers. These experts were selected as the sample if they had the characteristics of at

least 20 years of teaching experience in the fields of educational sciences, nobility to the transcendental university approach, nobility to the methods of teaching methods and nobility to the topics of educational and research quality. The research population in the quantitative part of the faculty members of Islamic Azad universities of Mazandaran province in 2019 was 1487 people. According to Cochran's formula, 305 people were selected by cluster sampling method by observing the ratio of the number of faculty members in university units. In this method, sampling was performed among the faculty members of 14 academic units of Islamic Azad universities of Mazandaran province, after preparing their ratio in the same proportion and with a cluster method from the community. In the cluster method, a number of groups were randomly selected from different groups.

To conduct this research, after reviewing the texts related to fourth generation universities and their role in improving the quality of education and research and consulting with supervisors and consultants, a number of questions were designed to interview experts (Table 1). Then, a list of experts was prepared and the conditions of each of them were reviewed according to the entry criteria mentioned above and they were invited for an interview in person or by phone, and while making this call, they were asked to introduce other experts. The interview took place at the specified time and place, and the average duration of the interview with each person lasted about 30 to 40 minutes, and the key points were noted. Also, with the permission of the experts, all interviews were recorded so that some of the information would not be lost so that they could be re-examined. To conduct research in a quantitative section, first coordination was done with the directors and deputies of Islamic Azad universities of Mazandaran province and then a list of all educational groups was prepared and a number of groups were randomly selected from different educational groups as a sample and a sample was asked. To respond to a researcher-made questionnaire based on a review of texts and interviews with experts. It should be noted that for the samples, the purpose, importance and necessity of the research were stated and they were assured about the observance of ethical points.

Table1. Interview Questions

Row	questions
1	In your opinion, what factors lead to the role of the fourth generation (transcendental) university on the quality of education and research of Islamic Azad universities in Mazandaran province?
2	In your opinion, what are the underlying factors that affect the role of the fourth generation (transcendental) university on the quality of education and research of Islamic Azad universities in Mazandaran province?
3	What are the organizational and non-organizational barriers and challenges that affect the quality of education and research of Islamic Azad universities in Mazandaran province on the role of the fourth generation (transcendental) university?
4	What are the measures that facilitate the process of playing the role of the fourth generation (transcendental) university on the quality of education and research of Islamic Azad universities in Mazandaran province?
5	In your opinion, what are the small and large measures that can be taken to improve the role of the fourth generation (transcendental) university on the quality of education and research of Islamic Azad universities in Mazandaran province?
6	What results can be expected if the measures facilitating the process of playing the role of the fourth generation (transcendental) university on the educational and research quality of Islamic Azad universities in Mazandaran province are used?
7	In your opinion, what can be effective in improving the role of the fourth generation (transcendental) university on the quality of education and research of Islamic Azad universities in Mazandaran province?

Qualitative data collection tools included text review and semi-structured interviews. The validity of the interview was reported through the coefficient of coding agreement between the two desired coders. The data collection tool in the quantitative part included a researcher-made questionnaire. The questionnaire

had 83 items that were scored using a five-point Likert scale (1 = very low, 2 = low, 3 = medium, 4 = high and 5 = very high), and a higher score indicated that the conditions were more favorable. The content validity of the instrument was confirmed by experts, the content validity ratio of items was higher than 0.70 and the construct validity were confirmed by heuristic factor analysis and its total reliability was obtained by Cronbach's alpha method of 0.81. Data were collected by the above tools and analyzed by open, axial and selective coding methods and exploratory factor analysis in Maxqda2018 and SPSS-22 software.

Findings

The participants were 15 in the qualitative section and 305 in the quantitative section, whose absolute frequency, percentage of gender frequency and service history were presented in Table 2.

Table2. Absolute frequency and percentage of gender and service history of research samples in both qualitative and quantitative sections

Variables	Dimensions	Qualitative part		Quantitative part	
		absolute frequency	Frequency	absolute frequency	Frequency
Gender	Man	10	66/67	199	65/25
	Female	5	33/33	106	34/75
Years of service	10 years and less	-----	-----	19	6/23
	15-11 years	-----	-----	63	20/66
	20-16 years	-----	-----	82	26/88
	25-21 years	8	53/33	74	24/26
	30-26 years	7	46/67	67	21/97

According to the results of Table 2, most of the samples were in the male qualitative section (66.67) with a history of 21-25 years (53.33) and in the quantitative male section (65.25) with a history of 16-20 years (٪ 88). / 26) were. The results of open, axial and selective coding for the fourth generation university to improve the quality of education and research were presented in Table 3.

Table3. Results of open, axial and selective coding for the fourth generation university to improve the quality of education and research

Selective coding	Axial coding	Open coding
Ali conditions	Scientific-social responsibility	1. Commitment to increase hope and quality of life, 2. The need for realism and impartiality in challenging issues, 3. The need to link scientific freedom to scientific responsibility, 4. Respect for fundamental rights such as scientific and research freedom, and 5. Emphasis on social mission And the sociability of the university to educate citizens
	Environmental dynamics	1. Advancing the pace and pace of change and turning doubts into opportunities, 2. The need to find appropriate answers to deal with increasing dynamism, 3. Avoiding stagnation for success and even survival in today's dynamic environment, and 4. Meeting a wide range of needs Educational and research
	Company assignment	1. Serving the community through pursuing education and research at the international level, 2. Accountability of academics to the community and urban institutions at the local, national and global levels, 3. Creating an academic environment for the continuous activity of world-renowned students and scientists, 4. Advancing ideas New and sustainable knowledge promotion, 5. The need to develop people's understanding of the world and

		future technologies and 6. The need for intellectual and social transformation and reproduction of meaning
Background conditions	Organizational structure and values	1. Flexible and horizontal structures to interact with the inside and outside space, 2. Decentralization of knowledge instead of epistemological centralism and acceptance and sharing in plurality, 3. Creation and expansion of the most elite meanings and knowledge, 4. Academic, cultural and social rationality instead Instrumental rationality, 5. Thinking about academic independence and governance of society with a combination of internal and external stakeholders; and 6. Self-regulating and self-directed structure instead of external regulation.
	Facilities and equipment	1. Holding supplementary and applied research training courses, 2. Existence of numerous research institutes, 3. Using new technology for interaction between student and professor and student conflict with content, and 4. Scientific and administrative support units
	Motivation	1. Motivate people by strengthening internal resources such as a sense of competence, 2. Existence of interest in skills training in students, 3. Existence of motivation for scientific progress in professors and 4. Existence of motivation to produce and spread knowledge in managers and employees
Axial phenomenon	Playing the role of the fourth generation university	1. Movable, flexible, debatable, open and editable orientations, 2. Conscious, research, critical and fractional formation to the environment, 3. Expansion of intellectual, communication and social capital, 4. Attention to the social impact of the university in sustainable development, 5. The constructive role of knowledge and academic thinking and 6. The role of the facilitator professor in learning experiences and knowledge reproduction
Intervention conditions	Communication with industries	1. The level of cooperation of professors, students and universities with industries, 2. Regular invitations of industry experts to evaluate the quality of curricula, 3. Introduce students to industries and organizations for internships, and 4. Design training courses based on job needs in industries
	Organizing educational content	1. Deep learning with the opportunity of frequent and constant practice, 2. Proportion to literacy, academic degrees and ability of learners, 3. High correlation in terms of breadth, unity, novelty and integration, 4. Content preparation based on Objectives resulting from determining educational needs and 5. Avoiding dense content and emphasizing challenging content
	Empowering libraries	1. Access to modern equipment and fast internet, 2. Documenting the scientific achievements of scholars and knowledge management, 3. Existence of a calm, comfortable and attractive space for individual activity and instilling a sense of study, 4. Proportion of working hours and library resources to the needs of clients, 5. Documenting work and service procedures and 6. Developing a space to record and publish new ideas
Strategies	Inclusive quality	1. Correction and repair with appropriate interventions, 2. Stop

	management	dependence on many inspections, 3. Retrain managers and staff according to new management methods, 4. Support management with appreciation and encouragement of promotion teams, and 5. Commitment of senior managers and take over Quality management responsibility
	Development of disciplines and mutual cooperation	1. Involvement of thought and inclusive research by combining interdisciplinary skills, 2. Development and removal of barriers to teaching applied and interdisciplinary disciplines, 3. Development of interdisciplinary colleges, 4. Mutual use of educational and research spaces, and 5. Cooperation between universities, research centers and industries for Execution of plans
	Faculty participation in decision making	1. High level of knowledge, intellectual maturity, understanding of social needs and responsibility, 2. Key role in university programs and improving the quality of education and research, 3. The impact of faculty on how to provide public services and training of specialized personnel and 4. Sufficient freedom to implement Activities by transforming the participatory approach
	Interaction and teamwork	1. Finding creative and new ways for complex issues as a team, 2. Creating and exploiting multiple skills and spreading the spirit of cooperation and collaboration, 3. Helping to draw a clear vision and common goals, 4. Encouraging the participation of individuals and cooperation and coordination of units Organizational and 5. Approach to team building to improve the performance of students and staff
consequences	Educational quality	1. Paying the desired salary to the educational staff of scientific centers, 2. Quality of educational technology and suitable spaces, 3. Achieving the goal with accepted standards, 4. Social status and top professions of the educational staff of scientific centers, 5. Quality of learners such as abilities and talents, 6. Quality and method of active teaching of the teacher and active learning and 7. Promoting single-cycle to multi-cycle learning
	Research quality	1. Classify and apply research results, 2. Determine research priorities and accept and implement research needed by society, 3. Creativity, innovation and use of scientific methods to create new knowledge, 4. Allocation of funds for scientific research in universities, 5. Providing a suitable platform for training researchers, 6. Establishing a balance between basic and applied research and development, and 7. Increasing the volume of research investment to maintain position and superiority in international competitions.

According to the results of Table 3, the fourth generation university had 83 open codes, 16 pivotal codes or components and six selected codes or categories to improve the quality of education and research. Organizational conditions), contextual conditions (with three components of organizational structure and values, facilities, equipment and motivation), pivotal phenomenon (with a component of playing the role of a fourth generation university), intervention conditions (with three components of industry relations, organizing educational content and library empowerment Strategies (with four components of total quality management, discipline development and mutual cooperation, faculty participation in decision-making and interaction and teamwork) and outcomes (with two components of educational quality and research quality).

Before analyzing the data by factor analysis, the KMO sample adequacy index with a statistic of 0.86 and Bartlett test with a statistic of 1960/40 and a significance of 0.001 indicated that the conditions for factor analysis were appropriate. In other words, the data were sufficient and correlated to perform factor analysis. The results of exploratory factor analysis to identify the components of the fourth generation university to improve the quality of education and research were presented in Table 4.

Table4. Results of Exploratory Factor Analysis to Identify the Components of the Fourth Generation University to Improve Educational and Research Quality

Components	Number of items	Validity (AVE)	Reliability (Cronbach)	Reliability (composite)	Factor load	Percentage of variance
Scientific-social responsibility	5	0.61	0.78	0.86	0.73	
Environmental dynamics	4	0.67	0.84	0.89	0.79	
Company assignment	6	0.61	0.87	0.90	0.74	
Organizational structure and values	6	0.66	0.84	0.91	0.79	
Facilities and equipment	4	0.70	0.85	0.90	0.80	
Motivation	4	0.76	0.88	0.90	0.79	
Playing the role of the fourth generation university	6	0.72	0.89	0.93	0.81	
Communication with industries	4	0.66	0.83	0.88	0.79	85.37
Organizing educational content	5	0.64	0.86	0.90	0.75	
Empowering libraries	6	0.63	0.85	0.89	0.72	
Inclusive quality management	5	0.75	0.89	0.92	0.85	
Development of disciplines and mutual cooperation	5	0.62	0.80	0.87	0.76	
Faculty participation in decision making	4	0.74	0.88	0.92	0.80	
Interaction and teamwork	5	0.69	0.89	0.92	0.78	
Educational quality	7	0.59	0.88	0.91	0.70	
Research quality	7	0.60	0.87	0.90	0.74	

According to the results of Table 4 of the fourth generation university to improve the quality of education and research with 16 components including scientific-social responsibility, environmental dynamics, organizational mission, organizational structure and values, facilities and equipment, motivation, fourth generation university role, relationship with industry, organization The educational content was library empowerment, total quality management, discipline development and mutual cooperation, faculty participation in decision making, interaction and teamwork, educational quality and research quality. The validity of the components was confirmed based on the mean of the extracted variance due to being higher than 0.50 and their reliability was confirmed based on Cronbach's alpha and hybrid due to being higher than 0.70. In addition, all components had a good factor load and together they could explain 85.37% of the total variance.

Discussion

Fourth generation universities, if realized, can create a huge change in societies. It was the Islamic Azad University of Mazandaran Province. The results of the present study showed that the fourth generation university to improve the quality of education and research with sixteen components including socio-scientific responsibility, environmental dynamics, organizational mission, organizational structure and values, facilities and equipment, motivation, fourth generation university role, relationship With industries, organizing educational content, empowering libraries, total quality management, discipline development and mutual cooperation, faculty participation in decision-making, interaction and teamwork, educational quality and research quality had validity, reliability and appropriate factor loading. These results are in line with the research of Sepehri, et al (2021), Nithyanandama (2020), Alami, et al (2020), Mirzaie, et al (2018), Fazel, et al (2018) and Zuti & Lukovics (2017). It was in line.

In this study, the role of the fourth generation university was identified as a central phenomenon. In this complex age, with the rise of competition, complexity and globalization, the emergence of the fourth generation of universities is a response to a wide range of diverse educational and research needs. If we do not think about the fourth generation university and plan for it, we will lag behind the global competition as before, and the point is that due to the current backwardness and readiness for change, we should think about policy on how to enter these universities and implement the fourth generation university concept. Because the destructive effects of entering these universities without a plan can be no less than the effects of not paying attention to it. Therefore, in order to play the role of a fourth generation university, it must have flexible, debatable and editable approaches, shape the environment consciously, research-wise, critically and fractionally, develop intellectual, communicative and social capitals. The fourth generation university paid attention to sustainable development and always considered the constructive role of knowledge and thinking of the university and professors in the experiences of learning and recreating knowledge.

Socio-scientific responsibility, environmental dynamics and organizational mission as causal conditions have an effective role in the fourth generation university to improve the quality of education and research. In other words, one of the effective conditions in the realization of the fourth generation university to improve the quality of education and research is scientific-social responsibility, environmental dynamics and organizational mission, which in the component of scientific-social responsibility should be commitment to promote hope and quality of life. Realism and impartiality in challenging issues, the need to link scientific freedom to scientific responsibility, respect for fundamental rights such as scientific and research freedom and emphasis on the social mission and sociability of the university to educate citizens. With the process of change and turning doubts into opportunities, finding appropriate answers to face increasing dynamics, avoiding stagnation for success and survival, and responding to a wide range of educational and research needs, and in the organizational mission component should serve the community, Through education and research, academic response to society and urban institutions, creating an academic environment for continuous activity of world-renowned students and scientists, advancing new ideas and promoting sustainable knowledge, the need to develop people's understanding of the world and future technologies and the need for transformation Ray and social attention.

Organizational structure and values, facilities, equipment and motivation as ground conditions can be effective in the realization of the fourth generation university to improve the quality of education and research. In other words, effective conditions in the realization of the fourth generation university to improve the quality of education and research can be organizational structure and values, facilities, equipment and motivation that in the component of organizational structure and values should be flexible and horizontal structures to interact with Internal and external space, decentralization of knowledge and sharing in plurality, creation and expansion of the most elite meanings and knowledge, academic and cultural and social rationality instead of instrumental rationality, thinking about academic independence and self-regulated and self-directed structural design instead of external regulation. In the component of facilities and equipment, issues such as holding supplementary and applied educational and research courses, the existence of various research institutes, the use of new technology for student-professor

interaction and student engagement with content and scientific and administrative support units should be considered. Motivation should pay attention to motivating people by strengthening internal resources, the existence of interest and skills in students, motivating scientific progress in professors and motivating the production and dissemination of knowledge in managers and employees.

In addition, communication with industries, organization of educational content and empowerment of libraries as intervention conditions have an effective role in the fourth generation university to improve the quality of education and research. In other words, one of the effective interventions in the realization of the fourth generation university to improve the quality of education and research is the structure of relations with industries, organizing educational content and empowering libraries. In the component of relations with industries, professors, students and universities should cooperate with industries.

Regular invitations from industry experts to evaluate curricula, introduce students to industries for internships, and design training courses based on job needs in industry. , Scientific degrees and learners' ability to understand, high correlation in terms of breadth, unity, novelty and integrity, preparation and arrangement of content based on educational needs and avoidance of content congestion and emphasis on challenging content should be considered and in the component of library empowerment Access to modern equipment and fast internet, documenting scientific achievements, having a quiet, comfortable and attractive space for scientific and research activities, fitting working hours and library resources to the needs of clients, documenting work procedures and providing services And the development of a space for recording and disseminating new ideas, Also total quality management, field development and mutual cooperation, faculty participation in decision-making and interaction and teamwork as strategies to be effective in the realization of the fourth generation university to improve the quality of education and research. In other words, effective strategies in the realization of the fourth generation university to improve the quality of education and research include total quality management, development of disciplines and mutual cooperation, faculty participation in decision-making and teamwork and interaction in the component of total quality management. It is necessary to pay attention to correction and repair with appropriate interventions, stopping dependence on many inspections, retraining managers and employees with new management methods, supporting management with appreciation and encouragement of promotion and commitment teams of senior managers and taking responsibility for quality management.

Mutual cooperation should address issues such as the involvement of thought and inclusive research by combining interdisciplinary skills, development and removal of barriers to teaching applied and interdisciplinary disciplines, development of interdisciplinary faculties, mutual use of educational and research spaces and cooperation of universities, research centers and industries in implementing projects. According to the faculty, in the component of faculty participation in decision-making, a high level of knowledge, intellectual maturity, understanding of social needs and responsibility, a key role in academic programs and improving the quality of education and research, the impact of faculty b Attention should be paid to the provision of services and training of specialized personnel and the freedom to carry out activities by creating a change in the participatory approach. In the component of interaction and teamwork, such things as finding creative and new ways for complex issues as a team, It considered spreading the spirit of cooperation and collaboration, drawing a clear vision and common goals, encouraging the participation of individuals and cooperation and coordination of organizational units, and approaching team building to improve the performance of students and staff.

In addition, educational quality and research quality as consequences have an effective role in the fourth generation university to improve the quality of education and research. In other words, one of the consequences of the realization of the fourth generation university to improve the quality of education and research is the quality of education and the quality of research. Objective According to the standards, social status and top professions of educational staff of scientific centers, quality of learners, quality and method of active teaching and promotion of one-cycle to multi-cycle learning, and in the component of research quality should Research according to the needs of society, creativity and the use of scientific methods to create new knowledge, allocating funds for scientific research in universities, laying the groundwork for

training researchers, balancing basic and applied research and development and increasing research investment to maintain position And considered winning in international competitions.

Every research has its limitations during implementation and one of the important limitations of the present research can be a small theoretical and research background about the fourth generation university and the difficulty of obtaining samples of the qualitative department or experts, which made sampling and interviews take several months to kill. Another limitation was the limitation of the qualitative community to the qualified professors of educational sciences in Mazandaran province and the quantitative community to the faculty members of the Islamic Azad universities of Mazandaran province. Another limitation and difficulty is the dispersion of the research community and the implementation of questionnaires in all fourteen academic units of the Islamic Azad University of Mazandaran Province. The last limitation is the prevalence of coronavirus and difficult access to research samples. Therefore, further research on the fourth generation university and its role in improving the quality of education and research and even its role in value creation and wealth creation is suggested. Another suggestion was to repeat this research on Islamic Azad universities in other provinces and even other universities, including government, non-profit and applied sciences. According to the results of the present study, specialists and higher education planners can design and implement programs to improve the quality of education and research in Islamic Azad universities by upgrading the components of the fourth generation university. For this purpose, planning and using meetings, symposia, conferences and national and international conferences and workshops to improve the components of scientific-social responsibility, environmental dynamics, organizational mission, organizational structure and values, facilities and equipment, motivation, role of the university Fourth generation, communication with industries, organization of educational content, empowerment of libraries, total quality management, development of disciplines and mutual cooperation, faculty participation in decision-making, interaction and teamwork, educational quality and quality of research are essential.

References

Alami F, Ansarifar M, Akbari S. (2020). From expectation to reality: An analysis of the quality gap between educational and research services from the viewpoints of university students in Tehran. Journal of Management and Planning in Educational Systems, 12(2): 295-318.

Duc NH, Chung NHT, Huy NX, et all. (2018). Towards the higher education 4.0 – characteristics and criteria. VNU Journal of Science: Policy and Management Studies, 34(4): 1-28.

Duc NH. (2020). The third generation university in the context of the fourth industrial revolution. VNU Journal of Science: Education Research, 36(1): 1-15.

Etuk GK. (2015). Innovations in Nigerian universities: Perspectives of an insider from a "fourth generation" university. International Journal of Higher Education, 4(3): 218-232.

Fazel A, Kamalian A, Rowshan A. (2018). Identification of effective dimensions and components on academic human resources empowerment, emphasizing the third and fourth generation of universities with fuzzy Delphi approach: Presenting a conceptual model. Educational Strategies in Medical Sciences, 10(6): 455-468.

Lapteva AV, Efimov VS. (2016). New generation of university: University 4.0. Journal of Siberian Federal University: Humanities & Social Sciences, 11(9)" 2681-2696.

Lukovics M, Zuti B. (2015). New functions of universities in century XXI towards "fourth generation" universities. Journal Transition Studies Review, 22(2): 33-48.

Mirzaie Z, Soltani A, Motaharinezhad H. (2018). Explaining the characteristics of the third generation university and examining their achievement in Iranian higher education: Shahid Bahonar University of Kerman case. Research and Planning in Higher Education, 24(3): 77-106.

Nithyanandam GK. (2020). A framework to improve the quality of teaching-learning process: A case study. Procedia Computer Science, 172, 92-97.

Oztel H. (2020). Fourth generation university: co-creating a sustainable future. In: Quality education. Encyclopedia of the UN sustainable development goals. Cham: Springer Publisher.

Sadeghi M, Niazazari K, Taghvaie Yazdi M. (2019). The impact of virtual approach substructures on competency based education towards fourth generation universities. Jundishapur Education Development Journal, 10(4): 363-375.

Sepehri Y, Liaghatdar MJ, Esfijani A. (2021). Approaches and methods of teaching and learning in fourth generation universities from the perspective of faculty members: A qualitative case study. Studies in Learning & Instruction, 12(2): 137-161.

Yarris LM, Simpson D, Sullivan GM. (2013). How do you define high-quality education research? Journal of Graduate Medical Education, 5(2): 180-181.

Zuti B, Lukovics M. (2017). Fourth generation universities and regional development. California: San Francisco Publisher.