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Review Article

MEGATRENDS AND HIGHER EDUCATION SCENARIOS, A CASE STUDY: ISLAMIC REPUBLIC OF IRAN

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ABSTRACT
In today's world comprehensive development of a country remains proportionate to its generation, application and propagation of science. In other words, it is related to the capability of the society to manage science and knowledge. If we accept this principle and believe in it, we will come to this understanding that we need precise planning and a national will to institutionalise the management of science in our country. This explains why the producers of knowledge and science, particularly the higher education system with its universities and research centres, gain crucial importance. A brief review of the higher education philosophy in the world and developed countries reveals the influential role of universities in social issues due to their potentials and the specialized capabilities. Higher education contributes to development in areas such as provision of the required specialized human resources for various sectors; solutions for social problems; promotion of culture; establishment of research centres; professional teacher training; transfer of civil capital and generation of science and innovation. Basically, universities were established aiming at transfer of knowledge as well as provision of education based on teaching science, vision and up-to-date expertise. Universities have been considered as the centres for creation of new knowledge based on the research made via basic sciences since 19th century. In 20th century, the university was the centre of social transformation while it was playing its role as the underlying institution for theory-making and propagation of new knowledge.

Keywords: *Megatrends, University, Research Centre, Scenario*

INTRODUCTION
Research and knowledge generation are among basic needs of every society and count as the first planning priority of policy-makers in developed world. As long as the planners and decision-makers of a society acknowledge this fact, they can better assist the development of their society. Generation of science depends on basic research closely and moves forward in proportion with equality of conditions for research, teaching and learning.

The fact is that our country like many other developing countries faces some problems on its way towards science and research. The present study aims to review the history, economy and the future of Higher Education in order to recognize its status and importance in the world in general, and in Iran, in particular. It also attempts to clarify the role of higher education in economy; economic growth and development; the relation between the government, industry and university; the status of science, technology and innovation in Iran and other countries; and eventually, the driving forces, challenges, mega trends and the future of Higher Education. Institutions called universities depend on the experiences and transformations of the modern world. They do not go back far and are a few centuries old. Paris University is the oldest which dates back to 1200 AC.

Shortly, after its establishment, the universities of Oxford, Napoli and Cambridge emerged. These universities offer special courses such as science, art, law, medicine and theology. All of them were dominated by the rituals and culture of Christianity (Gaul, 1977).

Such dominance prevented any changes until the 15th century when the courageous criticisms found their way into universities and new ideas were discussed against the traditions, churches, the dominant socio-cultural thoughts, and most importantly, the scientific fundamentals. From 1540 to 1773, the Christian colleges where ideology-oriented and could control the society. However, new rivals gradually appeared as new thoughts emerged. They put an end to the Christian dominance in the 18th century.

After the 1789 revolution and with harsh critics like Rousseau, the ideas and attitudes saw major modifications and the church universities vanished. Colleges and universities took the first steps towards what we see today. About 100 years later, Davidson (1897) acknowledged the change. "This is the time when everything needs to be experimented. No thought, practice, tradition, custom or ritual is so sacred that cannot be questioned", he said. Everybody felt that the future belongs to scientific thoughts. When the scientific approach was adopted for experiments through measurement and observation, each subject which could be repeated, re-examined and precisely measured was labelled as science.

The Evolution of Higher Education in Iran

University has a long history in Iran and played a significant role in development and the progress of science in the world. Some civilizations in southwest of Persia had had their eminent scientific centres in the third Millennium BC. When civilizations flourished in Mesopotamia, Susa, and Elamite culture. It should be noted that the scientific sphere was limited to temples and circles of temple ministers (Farshad, 1986).

The First Era: The Delay Age (12-18 Centuries AC)

This period lasted for 7 centuries. Whereas new universities such as Oxford, Sorbonne, Cambridge and the like were evolving around the world, Iran was hibernating, despite its potential, to fall behind and delay its progress. Due to cultural structures, the philosophical and scientific movements in higher education institutions encountered recession, dogmatism, backwardness and absolutism (Sohrabi *et al.*, 1997).

The Second Era: The Age of Preparation (1798-1901)

Having a spent seven centuries of hibernation, Iran belatedly joined the modernization orbit to initiate development and innovation.

In almost half a century, Iran started preparation to inviting teachers from abroad; sending the students to foreign universities; making the foundations for the first modern higher education institutions; translation of books and their publication and licensing religious minorities to open their own institutions. These attempts led to establishment of Darul-Fonoon University and the Ministry of Science (Dolat Abadi, 1997).

The Third Era: The Evolution Age (1901-1934)

Seven centuries of delay and one century of preparation ended in evolution age when despite political tensions and the structural weaknesses of both public and private sectors, the science-friendly members of parliament passed some bills to institutionalize modern and higher education. Moreover, the Ministry of Theology and Related Industries provided that the educational system to be divided into three levels of primary, secondary and higher education. This Ministry was in charge of supervising higher education; sending students abroad; and international cooperation in the fields of science, technology and their propagation.

This age suffered from some weaknesses and vulnerabilities including a strong dependency of higher education to public budget; dominance of government bureaucracy; inequality in education for women; concentration of higher education institutions in the country's political centre as well as slowness of cultural and social acceptance of science due to incompatibility of modern higher education with old educational traditions and institutions.

The Fourth Era: The Formation Age (1934-1946)

This period started with the establishment of Tehran University and continued with its gradual development. University turned into a centre for training specialized human forces as well as teaching, research and science generation. It was funded by the government and through self-financing (Sediq, 1973).

Humanities attracted the most attention with 51.7% of students at first and 62.8% later and 52.4% in the end. Medicine ranked second with 39% at first and 30.2% in the end. The main obstacles on the way of dynamism and growth of universities included the gap between tradition and modernity; low number of students (12.7 students for each 100000 people); as well as disproportionate share of different fields (52.4% humanities against 7.2% basic sciences; 5% engineering and the 3% agriculture).

The Fifth Era: The Age of Proliferation (1946-1973)

Despite political unrest and government's attempts to restrain universities, this period witnessed gradual maturity of university structures. Universities moved towards institutionalization and upgrading civil principles in economic, social and cultural aspects and tried to enhance economic growth based on Western patterns. We can mention the establishment of the Ministry of Science and Higher Education and its separation from the Ministry of Education in 1968 as one of the main events in this period. The number of students rose from 12.7 to 400 in every 100000 population; the share of women participation rose from zero to 30%; the share of other cities except Tehran went up to 43.8% in 24 towns. University gained an outstanding status in macro management of the country. Yet, it faced challenges such as lack of nationwide equilibrium in higher education (56.2% participation just in Tehran); imbalance of growth of various fields (49% humanities, 10% medicine and 4% agriculture); weakness of non-governmental sectors (excess tendency to 70% investment in humanities); and eventually, the single source economy reliant on oil revenues.

The Sixth Era: The Age of Incomplete Development (1973-1978)

The 6th era coincided with the implementation of the Fifth Development Plan which emphasized quality development in universities and focused on quality teaching, expansion of scientific thinking; innovation and invention; more cooperation between universities and manufacturing or service sectors; and international cooperation in research and science. The main developments in this era include the increase of number of students to 486.5 in every 100000 population; 1374 courses in 26 universities, 87 colleges and 228 higher education centres; and 32% share of women in higher education (with 40-50% increase in private institutions).

The main challenges and vulnerabilities included a mismatch between 16.8% capacity and several hundred thousand applicants; severe infrastructural dependency on government; weakness of non-governmental sector; the conflict between private sector participation and the government dominance and free education for all; and finally, the long-delayed economic, social and cultural development.

The Suspension Era (1978-1988)

This age starts with the Islamic Revolution and coincides with political and ideological tensions between various groups. Universities were closed at first and after their reopening, the centralized planning and management replaced at the old semi centralized one. The Supreme Cultural Revolutionary Council provided that the curriculum design to be separated from university duties. Education, teaching and university management were all re-designed based on new political, ideological considerations (Ferasatkhah, 2000).

The Eighth Era: The Reconstruction Age (1989-Following Years)

Universities and other higher education institutions were in better conditions to pursue the process of development and transformation of higher education after the imposed war and at the start of the reconstruction age. Universities were given new powers and the idea of the self-financing gained momentum. Remote education was prioritised and eventually, MA and PhD courses received more attention (Ferasatkhah, 2004).

The Historical Trend of Educational Goals in Iran

Based on the 1967 legislation, the goals of higher education in Iran are as follows;

1. Development of scientific research throughout the country and direction of individual and collaborative research
2. Expansion, development and propagation of science and technology throughout the country
3. Comprehensive planning by higher education and scientific research in order to train the required specialised skillful human forces
4. Making required arrangements for propagation of science, direction and guidance of research, supporting researchers and provision of facilities for research activities
5. Making grounds for training teachers and pedagogical experts for public education institutions

Iranian Constitution, especially articles 3 and 43, numerate the main duties and missions of higher education institutions as below (Hallaj Yusefi *et al.*, 2011);

1. Generalisation of higher education to all people
2. Promotion of research, curiosity and innovation in all areas
3. No discrimination in distribution of higher education activities and facilities in various regions
4. Providing the grounds for personality growth and stronger faith among the youth
5. Completion of human learning; meeting the real needs of society and taking the upper hand in science
6. Conducting research aiming at removing the boundaries for science, knowledge and technology

Based on 2003 legislation, the main goals of higher education in Iran include the following;

1. Providing the grounds for personality growth and purification of the youth as well as their ability to contemplate in divine verses and Islamic principles
2. Completion of human learning
3. Responding to real needs of society and raising living standards for the poor
4. Expansion of and dominance on science, technology and research aiming at pushing back the boundaries of science and knowledge

In the guideline of "Plans for Research and Higher Education (1989-1993)" issued in June 1989 by the planning committee in the Ministry of Culture and Higher Education, the following items are numerated as the main goals of higher education for 1989-1993.

1. Development and promotion of science and technology
2. Training required specialists for country
3. Providing the grounds for development, research, innovation, transfer and attracting technology
4. Improving the quality indicators of higher education
5. Compatibility of curricula with special needs of society and requirements arising from development of science and technology
6. Simultaneity of teaching and research in all higher education levels to respond to fundamental research needs of the country
7. Regional and individual equality regarding distribution of educational facilities and opportunities
8. Establishment and expansion of interaction between higher education institutions and other sectors in scientific, cultural and industrial areas

The goals of higher education in Iran while establishing the Ministry of Culture and Higher Education included recognition, expansion and promotion of science and technology in Iran; training required experts for the country; providing the necessary ground for development of research, innovation, transfer and attraction of technology; growth and deepening of Islamic thinking via harmonising teaching and purification in universities and research centres; securing and solidifying cultural and scientific independence; planning for and making coordination in development of higher education (Naeini, 2010).

The law of Goals, Duties and Organisational Structure of the Ministry of Science, Research and Technology was ratified in 2004 to organize the administrative and policy-making affairs in the science, research and technology system of the country. In its 20-year Vision, Iran is supposed to gain features of which some parts are related to the mission of higher education. For example, division stipulates, " Iran is a developed country with the first economic, scientific and technological position in the region; an Islamic identity; inspiring in the Islamic world; constructive and influential interactions in its international relations; advanced science; capability to generate science and technology; reliance on top human resources as well as social capital in its national production; emphasis on software and science generation, fast and continuous economic growth; relative promotion of per capita income; full employment; morality; new thinking and social dynamism; influence on Islamic and regional convergence based on Islamic principles and Ayatollah Khomeini's teachings '.

According to a bill passed in Parliament in 2004, the main goals of higher education in Iran include the following;

1. Development of science, research and technology; encouragement of research, curiosity and propagation of creative thinking; and promotion of culture
2. Upraising the educational, scientific and technical ranking of the country

3. Deepening and expansion of knowledge, theology and human and Islamic values; highlighting the artistic symbols and the ancient scientific heritage of Islamic Iranian civilization
4. Training the required specialised human forces and developing human resources
5. Promoting knowledge and technical expertise; spreading the concept of scientific thinking in society
6. Maintaining and solidification of scientific freedom; independence of universities and scientific research centres

According to the plan proposed by the Ministry of Science, Research and Technology in 2005, the main goals of the universities in Iran include, inter alia, the following;

1. Deepening of religious beliefs and values; divinely attitudes in science, research and technology
2. Expansion of higher education throughout the country based on equality in access especially for impoverished areas
3. Upgrading the country in the fields of science and technology in order to reach the first ranking in the region
4. Encouraging the software movement and research
5. Macro management of science and technology in the country in order to realize the goals of the 20-year Vision
6. Playing the key role in sustainable development of the country
7. Encouraging research and thought-based spirits in universities with an emphasis on the talented youth
8. Directing, supporting and continuous supervision of universities and higher education institutions
9. Establishing solid relations between industry and universities; employing the university capabilities in all administrative affairs
10. Reviving the status of science and protecting the dignity of the academicians
11. Training specialized human forces for top scientific and administrative positions

Based on the contents of the Comprehensive Scientific Map of the country, both Ministry Of Science, Research and Technology and Ministry of Health and Medical Education are responsible for realization of the following objectives;

1. Science production, it transfer to the next generation; and spread of knowledge
2. Expansion of higher education throughout the country based on quality and equality in access
3. Training the required specialists for top scientific and administrative positions; solidification of the ties between universities and industry
4. Reaching the standardized global level in knowledge and expertise of the labour force in order to respond to the needs of domestic and international labour markets
5. Taking the first ranking among Islamic world universities and an eminent position among the world universities
6. Arriving at an optimal ratio of higher education students to total students based on the levels of universities and needs of the country
7. Institutionalisation of commitment, social discipline; law obedience behaviour; and attempts to upgrade justice, welfare and health in society among alumni with the help of faculty members
8. Orchestrating education, research and technology towards problem solving; responding to really needs of the economy with regard to the country's conditions and its different regions; and making innovation in science aiming at turning Iran into a scientific reference
9. Training and empowering human capital with an emphasis on training people who are religious, entrepreneurial, self-reliant, creative and able to generate knowledge, science and innovations proportionate to Islamic values and requirements of the society
10. Making the mechanisms for coordination between teaching and research activities of faculty members and their moral role in universities and higher education institutions
11. Organizing and making the necessary rules for political and cultural activities of the alumni aiming at promotion of religious thought and understanding

12. Increasing productivity in universities and higher education institutions in the framework of Islamic education system
13. Designing the pattern for expansion of higher education in the country based on priorities, type of institutions, climate, social needs and graduate employment as mentioned in the Comprehensive Scientific Map of the country
14. Organization and integration in policy-making, supervision and value creation in higher education system of the country
15. Modification of attitudes, approaches and the curricula based on Islamic education and ideology in order to improve capabilities and enhance logical, creative and critical thinking among the students in accordance with Islamic teachings in individual, family and social aspects
16. Enhancing the independency of universities and higher education institutions in their management, administration, financing, costs and revenues, through empowering the boards of trustees and making them feel responsible
17. Enhancing the scholarship system for talented students aiming at upgrading the higher education system of the country
18. Design and reformation of curricula based on Islamic principles and in accordance with the needs of society and its demands
19. Establishment of an evaluation and admission system for students in higher education system of the country in order to co-ordinate and integrate various levels of policy-making, supervision and implementation
20. Supporting the participation of people, public and private institutions; encouraging donations in higher education while maintaining the policy-making and supervisory functions of the government
21. Encouraging research and entrepreneurship in higher education; active interaction with economic and social entities in curriculum design
22. Establishment of a national body for evaluation, credibility and quality control in higher education under the supervision of the High Cultural Revolution Council
23. Encouraging top universities to pay more attention to the quality of postgraduate courses
24. Making teaching research-based and research question-based in universities and higher education centres
25. Supporting the application of technology and modern teaching approaches in universities and higher education centres
26. Redefining the tenure system for the faculty based on quality, goals and values mentioned in Comprehensive Scientific Map of the country
27. Making suitable mechanisms to attract committed and talented faculty to universities and higher education centres
28. Making appropriate mechanisms for full-time presence of faculty members in universities and higher education centres; more interaction between faculty members and their students outside the classroom for better training of the students
29. Development of electronic teaching as well as IT and ITC infrastructures in universities
30. Encouraging scientific and research cooperation among researchers, faculty members, students and seminary students in various fields of science and technology
31. Supporting full-time employment of faculty members and PhDs students through provision of their welfare and living costs
32. Offering grants to postgraduates in order to finance their theses and research activities under the supervision of their advisors
33. Development of research skills in faculty and the students; access to data centres in higher education institutions
34. Providing supportive mechanisms; scholarships, research opportunities, and grants aiming at more interaction, cooperation and better presence in international scientific associations and networks

35. Development and expansion of an inspiring influential cooperation system between Iranian universities and their reputable counterparts all over the world, in particular, the Islamic world universities with an emphasis on postgraduate courses and common research
36. Employing the capabilities of the developed world universities in science and technology through exchange of students and teachers as well as holding joint courses in priority fields
37. Active participation in setting criteria and goals for rating higher education centres in the region and the Islamic world

Future Scenarios for Higher Education

The First Scenario

In future, companies like Apple will develop software and online programmes to create lessons. These arrangements will assist the experts all over the world to make their own personal lessons and make profits by selling them. The software packages offered to professional users by such companies will help them to design and develop their lessons quickly in a standardized 60-minute format and adaptable with all input and output sockets in various media. These lessons can hold the holograms of higher education centres. The students can score and modify them based on their own needs and tastes. (Thomas Frey, 2009).

This scenario considers a mushroom-like high-speed growth for lessons which means that users can sell their personal lessons to millions, tens of millions, and eventually, hundreds of millions of people in a 2-3 year period. Trade associations, professions and foreign students will be the first entities interested in such lessons. It is expected that both public and private colleges follow suit and develop their own software for lessons. At the same time, they will offer various approaches and policies to interact and work with such software and programmes (Thomas Frey, 2009).

These lessons may seem boring and unattractive at the beginning, but they will attract the attention of numerous users and a large audience. Future versions will employ the imagination of users and provide highly attractive and exciting contents to attract even larger audience.

Second Scenario

Faculty members who hold tenures in universities and higher education institutions will untie their professional link with their employers and tilt towards self-employment through design and sale of their own lessons. They will appear as trustworthy and reliable teachers while producing and distributing their teaching software under their personal brand all over the world (Thomas Frey, 2009).

These professors will serve as guest teachers and move from one university to another to develop and advertise their software. Some of them will ascend as superstars in teaching and will own businesses worth several million dollars.

Third Scenario

Special scoring systems will be developed for scoring and rating educational programmes. Honesty and trustworthiness will be included in their criteria. The main challenges will remain in accuracy and reliability of the content; though such challenges are not new and have a long history (Thomas Frey, 2009).

A large share of the materials which we learn in classrooms includes subjects such as gravity, evolution and others which are just theories and have not been proved completely. A society that seeks truth and reality will pay little attention to such theories. Meanwhile, each society maintains its own definition and interpretation of truth. For instance, scientific, religious and legal truth has different interpretations in various societies. That explains why the scoring system should be organized and structured as neatly as a control and balance system so that every individual will be able to create their own judgement and approver/disapprove certain lessons. These approval/disapproval labels count as the main features of such assessment and scoring systems.

Fourth Scenario

In order to commercialize and gain revenues from their projects, the research institutions may develop a series of lessons based on their various researches. Each project may contribute to a new lesson. Provided that such lessons are offered through online programmes, these research projects may attract more

attention and the relevant university or institution may absorb higher number of students (Thomas Frey, 2009).

Education software and teaching programmes may improve and empower the attempts related to technology. Educational software will evolve into large media which help everyone to receive information regarding new technologies and related opportunities.

Fifth Scenario

University campuses will transform into educational accommodations which cover a range of activities with the same theme. In this scenario, university management will be decentralized and divided between institutions with common interests. These institutions may also work as independent firms (Thomas Frey, 2009).

The incumbent educational terms and schedules are severely controlled by universities. However, project-based learning and teaching together with related activities will transform these arrangements. Those projects that are still in the earlier stages will utilise the experiences resulted from team-work-based learning. Those projects that are in the final stages will gradually move from theoretical into practical businesses which help students gain practical experience while learning (Thomas Frey, 2009).

Primary education will remain the main prerequisite for most projects. However, students may find their way through educational software long before they enter the projects. At the same time, universities may promote their brands through communication and interaction with other organizations and let their experienced students engage in such relations.

University dormitories will transform into short-term hostels where the students are allowed to stay in from one night to a whole year.

Classroom buildings will evolve into project spaces. Some classes will be used at conference halls, test centres for educational software or meeting halls for guest professors (Thomas Frey, 2009).

Sixth Scenario

University sports teams will be conglomerates that include various fields and practices. Each team is an independent body which functions like a sports club and prepares students for professional leagues. Team members will gain both sports credibility and a reasonable income (Thomas Frey, 2009).

Seventh Scenario

Educational centres will establish lifelong relations with their members. The traditional relation between universities and their students will fade down and new lifelong relations based on brands replace them. Membership will embrace all past and future alumni (Thomas Frey, 2009).

Since the number of young applicants will go down and most people will demand continuous non-stop education, universities will expand their coverage and try to penetrate the market as much as possible.

As an instance, Massachusetts Institute of Technology may offer a membership system using MIT brand with a membership fee of $1,000 per month. This membership helps the audience join MIT practices; access its software and educational programmes free of charge; participate in MIT research projects, clubs and social networks; sell their educational software and programs under MIT brand; take part in a sports event free of charge; enter tenders for MIT projects; receive special invitations to MIT events; and select their own tutors from amongst the most famous university professors (Thomas Frey, 2009).

Eighth Scenario

Educational accommodation will make much higher levels of achievement. New certificates and diplomas will be issued to recognize the new methods of learning and higher degrees. The traditional MA and PhD degrees will lose their value and will fall even lower than current graduate degrees (Thomas Frey, 2009).

Since learning will be much easier and more extensive in future and individuals can learn all through their lives, universities will initiate new investments on ways to distinguish certain people in society. It will be possible to issue totally personalized and configured certificates on demand. Such certification will motivate students to enroll in courses and generate more revenues or universities.

Summary and Conclusion

University is a part of the social institution of science which includes a set of functions and stabilized patterns for continuous generation of science and promotion of its application in social programmes

(Parchami, 2011). It is a system surrounded by economic, social, cultural and political macro-systems that both affect and are affected by it. As a long-established social institution, university is in charge of social, cultural, economic and political development of a nation and tries to fulfill its mission via transactions and relations with other national and international institutions (Bazargan *et al.*, 2010).
That is why it is considered as the most important centre for educating human capital while using all knowledge resources. It is also the main centre for research and innovation in various scientific and technological fields that paves the ground for social, cultural and political development; propagates ethics, knowledge and vision; and supports science-based foundations.
Based on the remarkable significance of higher education, eight scenarios were introduced for the future of Iran.

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