

Original Article (Quantified)

# Identifying the dimensions and components of the application of new technologies in the fourth generation university

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**Abstract**

The purpose of the current research is to identify the dimensions and components of the use of new technologies in the fourth generation university. According to its purpose, the research method is applicable in terms of purpose, and qualitative in terms of implementation; type of descriptive and thematic analysis. The statistical population of this research includes 10 higher education specialists; prominent professors familiar with research work in the studied field. A targeted non-random sampling method of the available type was used. Semi-structured interviews were used to collect information. Data analysis was done with open, axial and selective coding and using MAXQDA2020 software. According to the analysis carried out using thematic analysis method to determine the dimensions and components of the use of new technologies in the fourth generation university, 5 dimensions, 13 components, and 47 indicators have been identified and confirmed. The dimensions include educational requirements (interaction with other virtual educational groups, devoting more hours to entrepreneurship education in the university, flexibility, management components), aesthetic requirements (technological factors, online limitation reduction capabilities), content requirements (learning management system electronic, appropriate course content), process requirements (quality of behavior of virtual education supervisors, application of virtual education standards), requirements of extra-organizational participation (virtual education system infrastructure, service delivery system quality, perceived support quality).

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## Extended abstract

### Introduction

The university plays a very important role in the progress or stagnation of a society by directly affecting the flow of production, adaptation and reproduction of social systems and market mechanisms (Tang, 2013). Applying a model in the development of graduate education that covers all these functions in a balanced way can make it possible to reach social goals (Raza et al, 2018). Ignoring the functions of the university may lead to emergent consequences that put graduate education development strategies at risk of futility (Clark & Jackson, 2018).

One of the main concerns of universities is to be among the top universities in the world and create the necessary conditions to become a fourth generation university. In our country, most universities are in the first generation and a limited number of them are in the second generation, and yet, the third and fourth generation of universities in Iran has not been seriously discussed. Accordingly, many graduates do not succeed in the market due to lack of entrepreneurial skills (Goudarzvand Chegini, 2018). In fact, the third and fourth generation universities are knowledge-based, teaching and research-oriented universities that seek to create wealth and value by developing knowledge and effective entrepreneurship (Barrioluengo & Benneworth, 2019). Based on this, the researcher asked the main question: what is the use of new technologies in the fourth generation university?

### Theoretical Framework

#### Information technologies

The increasing development and progress of information and communication technology and its potential capacity in improving education have prompted researchers in the field of education to prioritize the use of technology as a competitive advantage in the education process. On the other hand, the need of developing societies for optimal use of time and facilities and flexible development of education has led to a greater tendency to use new technologies (Larchenko & Barynikova, 2021). These technologies have played a very important role in the scientific development and competitiveness of universities for reasons such as saving time and money, enabling distance learning, facilitating the educational evaluation system, direct access to digital educational resources, and creating equal educational opportunities (Kalbali, 2018).

#### Fourth generation universities

In the fourth generation of universities, value is defined on the basis of strategic partnership, entrepreneur training, and the degree of absorption of income from external sources and guidance and leadership, as well as the degree of influence on other factors in societies. Education is done based on the needs of society and students, and solving society's challenges is considered as the basis of research. International partnerships are an important part of the entrepreneurial university. Promoting risk-taking culture, creating a sense of belonging to entrepreneurship, academic freedom, valuing culture, talent management, creating a suitable entrepreneurial environment, teamwork culture, introducing entrepreneurial faculty members as role models and their participation in decision-making and policy-making, attention and Valuing entrepreneurial students are some the components of entrepreneurial culture (Khodabakhsh & Taghi Pur, 2023).

Khoshnejad et al, (2022) carried out a research entitled the presentation of the fourth generation university model (case study: Islamic Azad University). The axes have been identified through three stages of coding (example, main theme, sub-theme). Key relationships including university-society relationship, alignment of university mission and

society goals, and university-industry relationship were identified based on the research results. In addition, background factors, influencing factors and outcomes were also identified. The outcomes were investigated including internal and external outcomes.

PourMohammadBagher et al, (2022) discussed in their research entitled review of the use of metaverse systems in education. In this article, by reviewing new technologies and referring to educational fields and some principles related to teaching methods, a better insight is provided to teachers in the field of education and training for technology-based educational design. According to the principles of metaverse, the virtual learning environment can simulate the law of dynamic evolution in natural phenomena and its processing process. Education of students in the virtual body occurs through sensory channels such as visual, auditory, tactile, olfactory, etc. Then they can explore and do individual activities or collaborate in a virtual environment. As a result, in the learning scenario based on the metaverse, learning is in a deeper form where insight occurs.

### **Research methodology**

The research method is applicable in terms of its purpose, and qualitative in terms of implementation, a descriptive and thematic analysis type. The statistical population of this research includes 10 higher education specialists, prominent professors who are familiar with research work in the studied field. A targeted non-random sampling method of the available type was used. Semi-structured interviews were used to collect information.

### **Research findings**

Data analysis was done with open, axial and selective coding; using MAXQDA2020 software. According to the analysis carried out using thematic analysis method to determine the dimensions and components of the use of new technologies in the fourth generation university, 5 dimensions, 13 components and 47 indicators have been identified and confirmed. The dimensions include educational requirements (interaction with other virtual educational groups, devoting more hours to entrepreneurship education in the university, flexibility, management components), aesthetic requirements (technological factors, online limitation reduction capabilities), content requirements (learning management system electronic, appropriate course content) process requirements (quality of behavior of virtual education supervisors, application of virtual education standards), and requirements of extra-organizational participation (virtual education system infrastructure, service delivery system quality, perceived support quality).

### **Conclusion**

The current research was conducted with the aim of identifying the dimensions and components of the application of new technologies in the fourth generation university. The results of this research are in agreement with the results of Khoshnejad et al, (2022), PourMohammadBagher et al, (2022), Yadollahi Dehcheshmeh et al, (2021), Azar (2021), Larchenko & Barynikova (2021), Asgari et al, (2021), and Ahmadian Chashemi et al, (2020). Yadollahi Dehcheshmeh et al, (2021) have discussed in their research under the title of compiling the fourth generation university model (social university) for Iranian universities. The findings showed that the component of value-creating responsibility-oriented university as a central phenomenon, transformability and adaptability as causal factors, responsible leadership, development of professional competencies of human capital and educational and curriculum development as action strategies, components of specialized and professional policymaking, responsible innovation culture and transformative structure were identified as background conditions and academic independence and developing financial models as



intervention components of the fourth generation university. The main consequence of the interaction of all the mentioned components is the development of the region, which plays a vital role in the development and growth of the local and national society in three cultural-social, economic, and environmental fields.

According to the obtained results, it is suggested that:

According to the develop of developments in the field of new technologies, the universities of the country can provide the possibility of transferring new findings to the beneficiaries by creating a foundation for the development of technology, which leads to the development of technological businesses, turning knowledge into wealth and employment for graduates, and finally, it creates new sources of income. While examining the current and future global trends and identifying the strengths and weaknesses of the society, the fourth generation university should guide the country's political, economic, cultural and social paths in the direction that countries can gain their proper place in the region and the international system. Building and developing specialized service centers for the general public, providing technical; consulting; and equipment support services to knowledge-based businesses, creating a communication network with elites; intellectuals and entrepreneurs to participate in policy making is suggested, and also academic researchers are suggested to identify local and regional issues and problems, determine the research priorities of academic disciplines based on solving the problems of the society, and formulate the dimensions of the curriculum of the higher education centers of each region based on the components of the fourth generation university.