






## Components of Achieving Competitive Advantage in Medical Universities

M. Hoseini Abardeh (PhD)<sup>\*1</sup> , S. Yazdani (MD)<sup>2</sup> , R. Sadegh Zarei (MSc)<sup>1</sup> ,  
E. Rostami Aroushaki (MSc)<sup>3</sup> , A. Koohpaei (PhD)<sup>4</sup> 

1.National Agency for Strategic Research in Medical Sciences Education, Ministry of Health and Medical Education, Tehran, I.R.Iran.

2.Department of Medical Education, School of Medical Education and Learning Technologies, Shahid Beheshti University of Medical Sciences, Tehran, I.R.Iran.

3.Department of Human Resource Management, School of Management and Accounting, Allameh Tabatabaei University, Tehran, I.R.Iran.

4.Department of Occupational Health and Safety Engineering, Faculty of Health, Qom University of Medical Sciences, Qom, I.R.Iran.

**\*Corresponding Author: M. Hoseini Abardeh (PhD)**

**Address:** National Agency for Strategic Research in Medical Sciences Education, Ministry of Health and Medical Education, Tehran, I.R.Iran.

**Tel:** +98 (21) 26292464. **E-mail:** hoseiniabardeh.maryam@gmail.com

Article Type	ABSTRACT
Review Paper	<p><b>Background and Objective:</b> Higher education plays a major role in the social and economic progress of a country, and with the increasing demand for qualified and socially responsible individuals in the labor market, the role of higher education becomes more unique, and higher education institutions, including medical universities, are forced to seek their competitive advantages. The present study was conducted to examine the factors affecting the achievement of competitive advantages by medical universities.</p> <p><b>Methods:</b> This qualitative study consists of two methods of integrative review and thematic content analysis. In integrative review, studies about the factors affecting universities' achievement of competitive advantage were examined and an interview guide was developed according to the identified themes. In qualitative content analysis, semi-structured interviews were conducted with six experts in this field and the main themes were identified.</p> <p><b>Findings:</b> The results of integrating the themes obtained from the integrative review and thematic content analysis led to the identification of four main themes: intellectual and human capital, research and innovation, resources and infrastructure, and internationalization.</p> <p><b>Conclusion:</b> According to the results of this study, intellectual and human capital, research and innovation, resources and infrastructure, and internationalization are important components of medical universities achieving competitive advantage. These components can help health managers and policymakers by creating a framework or tool for collecting information about the status of medical universities.</p> <p><b>Keywords:</b> <i>Competitive Advantages, Higher Education, Medical Sciences.</i></p>
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## Introduction

Higher education plays a key role in economic growth (1, 2), socio-economic development, innovation, reducing unemployment and improving the quality of human capital, improving research and development activities and increasing people's welfare (3), and contributes to the national and regional economic growth of a country through the empowerment of individuals (4). Globalization, the production of advanced technologies, the increasing demand for qualified human resources in the labor market (5, 6), and rising competition in national and international markets (7) force higher education institutions to seek innovative resources and methods to achieve competitive advantage (7, 8). Having a competitive higher education system is vital for a country (9), and higher education institutions are currently operating in a fiercely competitive landscape characterized by the evolving expectations of a diverse range of beneficiaries (10). Competitive advantages are a set of characteristics that enable universities to effectively carry out their core functions, act as a vital element in the economic framework, contribute to the socio-economic development of the country, and be able to participate in competition at different levels of the global educational market (11). Becoming competitive requires an institution to know what its competitive advantages are and how to manage them (12, 13).

While a general understanding of the concept of competitiveness and its implications for higher education institutions in particular is essential (14), policymakers are challenged to comprehend it (15). Furthermore, the development of specific capabilities and competencies requires an understanding of the sources and factors of competitive advantage (16). Competitive advantages describe the fact that an institution creates a product or service with higher value than its competitors and creates an additional advantage if these products are valuable, unique and non-substitutable (17). Competitive advantage is influenced by several factors, including business complexity, labor and product market efficiency, infrastructure, financial market complexity, higher education, innovation, technology and macroeconomics (18-20). Nowadays, increasing competition among educational institutions requires maintaining long-term competitive advantages by providing strong resources, improving management mechanisms, and identifying exclusive advantages to establish the institution's unique and leading position in the higher education system worldwide (9, 19).

Maintaining competitive advantages and achieving superior performance is not easy (21), and maintaining the existence of a university requires developing its competitive advantages and competitiveness (22). Therefore, if an institution is currently a market leader, it does not necessarily mean that it will be so forever (23). Therefore, public higher education institutions are required to gain competitive advantage in national and international markets (24) and use their resources to achieve this (25). Medical universities, as higher education institutions in the country, are no exception to this rule, and it is necessary to identify their competitive advantages. Today, Iranian medical universities are faced with the challenge of maintaining academic traditions and adapting to market-oriented competition, and they are under increasing competitive pressure not only to attract government funds and research resources, but also to attract students. Therefore, the aim of this study is to investigate the factors affecting the achievement of competitive advantages in medical universities.

## Methods

After approval by the Ethics Committee of the National Center for Strategic Research in Medical Sciences Education with the code 973117, two methods of integrative review and thematic content analysis were employed in this study. An integrative review combines the results of empirical and theoretical studies

to help understand a problem or phenomenon more comprehensively (26) and aims to evaluate, critically examine, and synthesize evidence on a topic in order to develop new frameworks and perspectives (27). This method consists of six steps: problem formulation, literature search, data evaluation, data analysis, presentation, and dissemination of findings (28, 29). The first stage began with the question "What are the factors affecting universities' achievement of competitive advantages?" In the second stage, the Web of Science, PubMed, ScienceDirect, and Google Scholar databases were searched for potentially relevant resources from 2010 to 2022 using the keywords "competitive advantages," "medical universities," and "higher education." This search yielded 163 results. The inclusion criteria included focusing on competitive advantages in higher education and medical universities and addressing factors affecting competitive advantages. The exclusion criteria included competitive advantages in other organizations and the impact of higher education on regional or national competitive advantages. Initially, review articles as well as duplicate and irrelevant articles were removed. In the next stage, abstracts of review articles and studies that had ambiguity about the relevance to the research topic were removed. A full-text screening process was performed on relevant articles, and finally, 12 articles were included in the study. Two researchers independently reviewed all literature for quality and relevance, and in cases where their opinions differed, debate and consensus were used to resolve disagreements.

**Thematic content analysis:** Participants in this study were selected through purposive sampling. The inclusion criteria included being an expert in the subject and having an executive position in the management of the University of Medical Sciences. The exclusion criterion included unwillingness to participate in the study. The participants included experts in this field and managers with real-world experience dealing with the research topic. Interviews were conducted with 6 senior managers of public universities under the Ministry of Health (Table 1).

**Table 1. Demographic characteristics of participants**

Participant code	Gender	Age (years)	Job position
1	Male	58	Manager at Ministry of Health
2	Male	55	Manager at Ministry of Health
3	Male	53	Vice President for Education
4	Male	48	Manager at Ministry of Health
5	Male	43	Vice President for Education
6	Female	42	Manager at Ministry of Health

A structured interview guide based on the results of the synthesis review was developed and used in this stage, and data were collected through semi-structured in-depth interviews. Informed consent was obtained prior to the interview to record the interview, to ensure anonymity and confidentiality of the information, and to ensure that the audio files would be deleted after transcription. In addition, withdrawal from the study was permitted at any time during the study. During the interview, each participant was asked for their opinion on each of the themes and their examples, and at the end, they were asked to state if there was anything that was not on the list of themes and that they thought could be considered as one of the components. The interviews were conducted in person at the university office or the Ministry of Health and Medical Education. First, the objectives of the study were explained to the participants. The duration of the interviews was 25-40 minutes. The interviews were transcribed and reviewed and coded several times by the researchers. First, the interview transcripts were separated into semantic units, then open coding was performed, and initial codes were sent to the participants via email for confirmation. The codes were compared and categorized based on differences and similarities. There was a continuous back and forth

between categories and subcategories. The next step involved discussion and revision of the initial classification to achieve agreement among the researchers.

**Trustworthiness:** The researchers have continuously considered four criteria of credibility, confirmability, dependability, and transferability. The collected data were verified by ensuring sufficient time for data collection and simultaneous data analysis, establishing effective communication with participants, interviewing participants at their preferred locations, confirming the implemented text and initial codes by participants, describing the details of the study process, reviewing the extracted codes by colleagues, and reaching consensus and confirming the codes by an independent observer.

After performing the first and second methods of the study, the obtained themes were merged and presented in the conclusion section.

## Results

In this study, the results of reviewing 12 selected articles led to the identification of five themes; intellectual capital, innovation, information technology, human resources, and internationalization (Table 2). In the thematic content analysis, the participants included 5 men and one woman. In total, four themes, 10 categories, and 240 initial codes were extracted from the analyses. The results of this analysis led to the change of the information technology theme to resources and infrastructure and the innovation theme to the research and innovation theme, and the integration of the themes of intellectual capital and human resources. Eventually, four themes of intellectual and human capital, research and innovation, resources and infrastructure, and internationalization were identified as the four final themes.

**Table 2. Studies included in the meta-analysis**

Row	First author, year, (reference)	Country	Type of study	Identified components
1	Marulanda-Grisales, 2022, (10)	Turkey	Meta-analysis	Intellectual capital
2	David, 2021, (22)	Indonesia	Mixed method	Innovation in Information Technology
3	Gryshchenko, 2021, (30)	Ukraine	Quantitative (Factor Analysis)	Innovation
4	Yazdani, 2021, (31)	Iran	Qualitative	Prominent scholarly activities, expanding action and outreach in the surrounding environment, fundamental impact at the disciplinary level, and resources and infrastructure
5	Sadq, 2020, (32)	Iraq	Survey	Human capital
6	Lo, 2019, (33)	Hong Kong	Survey	Innovation
7	Soliman, 2020, (16)	Malaysia	Review	Organizational resources
8	Maulani, 2019, (34)	Indonesia	Quantitative	Information Technology
9	Abu-Rumman, 2018, (35)	Jordan	Survey	Human capital
10	De Silva, 2018, (12)	Sri Lanka	Qualitative (Grounded theory)	Maintaining a good reputation, having a high rank, and maintaining proper indexing
11	Widodo, 2015, (21)	Indonesia	Quantitative (Structural equations)	Commitment, shared vision, communication quality, knowledge sharing, human capital
12	De Haan, 2014, (36)	Holland	Qualitative	Internationalization

**Intellectual and Human Capital Theme:** Intellectual and human capital has been identified as one of the most important factors affecting competitive advantage in medical universities. Participants believed that “faculty members who have studied at one of the top 100 universities based on global rankings or professors who are among the top 1% of scientists in the world and are members of international scientific societies in their respective fields can act as a competitive advantage for the university” (Participant 1). “Faculty members who are members of international scientific societies or are members of boards are the intellectual capital of medical universities and can be considered as a competitive advantage of a university” (Participant 3).

**Research and Innovation Theme:** One of the themes identified in this study is research and innovation. In this regard, some participants stated: “Innovation in providing medical services can create a competitive advantage for the university” (Participant 2). “The inventions of a university are also important. It’s important to know which university has registered more domestic and foreign inventions” (Participant 4). “Knowledge-based companies affiliated with the university or science and technology parks of each university are also an important factor” (Participant 1).

**Resources and Infrastructure theme:** The resources and infrastructure of any university have a great impact on the competitive advantage of that institution. In this regard, Participant 6 believed that “the issue of how many active laboratories there are in the university and whether the laboratories are strong enough is also important”. “Information technology and technologies of a university can also create competitive advantage, but they themselves are the resources and infrastructure of a university” (Participant 3).

**Internationalization theme:** The university's efforts to internationalize and achieve world recognition are also considered as a competitive advantage. In this regard, participants stated: “A university that accepts foreign students or has foreign professors teaching at that university is an advantage” (Participant 1), “If a university has a joint academic program with foreign universities, it should be considered as an advantage for that university” (Participant 5).

## Discussion

In this study, which was conducted using an integrative review and qualitative content analysis method, four main themes were identified: intellectual and human capital, research and innovation, resources and infrastructure, and internationalization.

Human resources are the most prominent factor of an organization's competitive advantage and its most valuable asset, and one of the most important resources in achieving competitive advantage for institutions over their competitors (3, 12, 23, 37). One of the characteristics of human resources is human capital, which is defined as knowledge that belongs to the organization and is used to create value for it (21). It is also important to utilize human factors in implementing knowledge management strategies and maximizing human capital (35). In a knowledge-based economy, creating competitive advantages in higher education institutions relies on intangible assets of intellectual capital, which include teaching quality, research capabilities, innovation, organizational image, reputation, and stakeholder relationships (10). The results of this study on the importance of human capital as one of the components of achieving competitive advantage in universities are consistent with the results of studies conducted by Sadq et al. (32, 38). As Widodo et al. have shown, an organization with skilled and knowledgeable human resources is more likely to be innovative, create knowledge, and make appropriate decisions (21). In addition, competition in higher education is significantly influenced by the power of professors (23), and the presence of highly skilled teaching staff is one of the factors of competitive advantage in higher education institutions (3, 39), and these components have also been identified in our study.

The effects of innovation on maintaining the overall competitiveness of higher education institutions are well known (30), and the results of this study are consistent with the results of other studies that have emphasized the positive relationship between innovation capability and competitive advantage and have shown that investment in innovation improves competitive advantage (33). The innovative and research activities of universities have a significant impact on their competitiveness, and innovations allow organizations to produce cheaper and higher quality products compared to those produced by their competitors (19). The study by Yazdani et al. showed that one of the indicators of competitive advantage in universities is resources and infrastructure, which is consistent with the results of the present study (31). The results of other studies have also shown that modern materials, technical facilities, and infrastructure are factors in achieving competitive advantage (3, 39). According to resource-based theory, competitive advantage is achieved by identifying resources and using them against competitors (23). Creating goods and services to meet people's needs (21) and providing quality facilities and services is recognized as a competitive advantage in universities (24). In addition, the use of IT-based businesses also leads to improved competitiveness of institutions (34).

Attracting foreign students and foreign professors, international internships, student exchange programs, international research and an English-language university website are all part of the internationalization of universities (2). By improving the employability of students, increasing the quality of education and ensuring the survival and improvement of public higher education institutions, internationalization can contribute to competitive advantage (36). For universities to continuously train quality students who are ready to enter the labor market, their innovative curriculum must be aligned with industry needs and international standards (12).

Finally, the components identified in this study are important both for medical universities seeking to improve their position in the competitive higher education market and for policymakers who want to increase the efficiency of public spending allocation by identifying the competitive advantages of universities in specific areas. These components can help managers and policymakers create a framework or assessment tool to collect information about the status of medical universities. The present study helps decision makers to focus on the components and requirements for achieving competitive advantage and, as a result, helps the development of medical universities. Considering the results obtained in this study, it is suggested to design a dynamic assessment framework for continuous measurement of the competitive advantages of medical universities.

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