

Research Article

Cite this article: Yirci, R., Agcam, R., & Durna, S. (2025). Mission of the Turkish Universities: Challenges and Overcoming Strategies. *Üniversitepark Bülten*, 14(2): 51-64.
<https://doi.org/10.22521/unibulletin.2025.14.2.4>

Received January 06, 2025

Accepted October 30, 2025

Keywords:

Graduate education, university mission, scientist, content analysis.

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Mission of the Turkish Universities: Challenges and Overcoming Strategies

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Abstract

Background/purpose. Universities are primarily expected to train qualified professionals through degree programs. They are also expected to produce knowledge through scientific research and to train scholars who can create new knowledge by using the existing knowledge for the development of societies. In Türkiye, the number of higher education institutions has increased significantly since 2005. However, to the best of the researchers' knowledge, the research concentrating on the achievement of the latter through graduate programs in these institutions is a bit scarce. Therefore, this particular study was intended to examine the quality of scientist training in Turkish universities from the perspectives of academics and graduate students, to identify the challenges encountered in the process, and to offer solutions to these challenges.

Materials/methods. For in-depth data collection, this qualitative study was grounded on a phenomenological research framework. The sample consisted of 21 academics (7 professors, 7 associate professors, and 7 assistant professors) and 21 graduate students enrolled in various graduate programs at a state university in Türkiye. The research data were collected using a semi-structured interview form developed by the researchers and subjected to content analysis using the NVivo software.

Results. The findings of the study indicated that the primary mission of the Turkish universities regarding scientific and social development are, respectively (i) the production of new knowledge and technology, (ii) training qualified workforce, (iii) responding to societal needs, (iv) supporting industrial production, and (v) providing education and knowledge transfer. It was also indicated that they primarily fulfill the mission of knowledge transfer and teaching and, in their current state, fall short of meeting other expectations.

Conclusion. The study concludes that the major challenge faced in training qualified scientists are unpleasant working conditions, a lack of practical application (overreliance on theoretical knowledge transfer), and a failure to prioritize merit. Recommendations for solution include promotion of talented individuals, ensuring merit-based recruitment in academia, appointment, and promotion processes, and improving physical infrastructure of the universities.



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1. Introduction

Higher education institutions play a critical role in the advancement of societies in science and technology and serve as a fundamental element in producing and disseminating knowledge, as well as developing a qualified workforce (Karataş, Özen, Gülnar, 2017). Through the high-quality education provided and the original scientific research conducted, universities contribute to the countries' production processes and advancement of universal science. In this context, their overreliance on human capital requires maintaining a strong educational and research environment supported by qualified academic and administrative staff (Baltacı, 2022). Indeed, they are important institutions not only for producing and disseminating knowledge but also for training qualified workforce, promoting innovation and entrepreneurship, and contributing to the economic and social development of their regions (Goldstein & Renault, 2004; Psacharopoulos & Patrinos, 2004). Reflecting this strategic importance, their efforts to strengthen sustainable development and research capacity are largely shaped by investments in human resources (Çivilidağ & Durmaz, 2022). They are also considered settings where education and instruction are conducted based on universal standards, where knowledge is generated, and where the goal is to contribute qualified workforce to the societies. Given the important role they play in social development and their mission to train qualified scientists, these institutions are, not surprisingly, expected to foster knowledge through scientific methods and nurture entrepreneurial, productive, and ethically grounded scientists.

The number of universities in Türkiye has significantly increased, particularly over the past 25 years. Namely, as of 2025, there are 203 universities—129 state-run and 75 foundation-run—along with 4 foundation-affiliated vocational colleges where students pursue various degree programs. It is reported that 445,363 students were enrolled in graduate programs in Türkiye during the 2024–2025 academic year (MA: 346,668; PhD: 98,695) (Council of Higher Education, 2025). As a matter of fact, most students pursuing doctoral studies seek to specialize in their fields and aspire to work as academics at higher education institutions in the future. However, there are serious debates regarding the extent to which the quantitative increase in the number of universities and graduate students mentioned truly contribute to the training of qualified scholars at these institutions.

Review of the relevant literature shows that research has been mostly conducted with a focus on the image of scientists and challenges faced by either academics or graduate students. According to the findings of a study by Bora et al. (2006), for instance, high school students believe successful scientists must always be open-minded, logical, unbiased, and impartial in their research, and that their family and social lives differ from those of others because of the demanding conditions of their work. Regarding the social structure of scientific knowledge, the participants stated that competition to secure financial support for their research from certain institutions and to be the first to make a discovery could lead to the theft of other scientists' ideas and violations of scientific principles. In a similar study examining the image of scientists in the minds of prospective teachers, Çermik (2013) found that participants typically depicted a scientist as an aged, short-statured person with glasses, a lab coat, and disheveled gray or white hair. The stereotypical scientist image was illustrated as intellectually driven and persistent but socially withdrawn, working in a messy, poorly lit laboratory crowded with equipment, reading materials, and handwritten notes and equations. Concluding that this image generally lacks a realistic basis, the researcher recommended that teacher training efforts help prospective teachers form realistic perceptions of scientists.

Aydoğan (2008) identifies the most significant distinction between scientists and teachers as the former's primary objective being to think, question and analyze rather than to educate and teach. The scientist's stance and role, which sustains their expertise in these fields and transforms it into a way of life, is realized by viewing their students as natural elements of a livable life rather than individuals to be taught and educated. Investigating the views of graduate students on educational administration and supervision in Türkiye, Sezgin et al. (2011) revealed that these students face

particular challenges in bridging theory and practice, applying research methods and techniques, conducting interdisciplinary research and studies addressing national issues, disseminating the knowledge they produced at national and international platforms, and mastering a foreign language. They also harbor high expectations of faculty members regarding the resolution of these issues. In a similar study, Gömleksiz and Yıldırım (2013) noted that graduate students face challenges such as financial difficulties, insufficient advisor support, and a lack of practical experience. They emphasized the need to conduct program courses in a more organized and effective manner. Erdem (2012), on the other hand, argues that academics who are assigned with the responsibility of training scientists are obligated to fulfill their research education duties in the following areas effectively: (i) education and instruction, (ii) supervision of theses/dissertations, and (iii) serving as scientific committee members and journal reviewers.

Evaluating the views of research assistants working in the College of Education regarding the training of scientists, Yalçınkaya et al. (2014) demonstrated that the process fails to achieve its objectives due to factors such as course load, financial constraints and promotion criteria. The researchers also highlighted that the training of scientists is perceived as a routine process that is not adequately supported, that graduate education programs are not well suited to training scientists, and that students are not instilled with the ideal qualities of a scientist.

Kahraman and Bakırcı (2010) identified the challenges faced in graduate education in Türkiye as inadequate number of faculty members, financial constraints, concerns with library services, foreign language barriers, administrative challenges, and inadequate physical infrastructure. According to the researchers, these challenges cause deficiencies in the content and methodology of the theses/dissertations produced in graduate programs. They called our attention to the fact that newly established and underdeveloped universities attempting to provide graduate education with inadequate number of academics reduce the quality of graduate education as the faculty members with heavy course loads at the undergraduate programs are unable to devote sufficient time to the production of theses/dissertations of the graduate students. The researchers also noted that quality is not considered in the initiation of graduate programs and/or assignment of faculty members as thesis advisors.

In a study on the quality of graduate education in Türkiye, Bozan (2012) noted that although the country has experienced a substantial increase in the number of scientific publications since 1980, this increase has not been mirrored by similar improvements in publication quality and impact. The study identified several structural and functional problems in graduate education, including insufficient capacity, graduate institutes' dependence on faculties and lack of institutional autonomy, and the relatively low contribution of the social sciences to scientific output. The researcher also argued that a lack of academic freedom and a sufficiently democratic environment for open discussion can restrict the production of new ideas, particularly in the social sciences.

A significant portion of the research on graduate education in Türkiye has addressed issues within a general framework, focusing on identification of the problems related to academics, students, educational programs, academic units, and conditions, and on the development of solutions (Karaman & Bakırcı, 2010; Sevinç, 2001). By contrast, studies based on student perspectives have mostly examined students' academic problems in samples limited to a single institute or university (Güven & Tunç, 2007). Appreciating the significance of these research findings, it is seen that no research has previously examined the degree of universities' fulfillment of their mission of "training qualified scientists" from the perspectives of both academics and graduate students by presenting a comparative analysis of their views.

Since the process of training scientists involves interconnected dimensions—ranging from the advisor-student relationship to program structure, and from research culture to institutional

support—it is important to evaluate the experiences of the key stakeholders together in order to identify challenges and develop realistic solutions for these challenges (Arıcı, 1997). In that regard, the current study aimed to bridge this gap by examining the role of the Turkish universities in training qualified scientists, the challenges faced, and solutions proposed based on the perspectives of academics and graduate students. Accordingly, it primarily investigated the quality of the scientist training system in the Turkish universities based on academics and graduate students' views. With this objective in mind, the following research questions were addressed:

1. What are the views of academics and graduate students on the mission of the Turkish universities regarding scientific and social development?
2. What are the views of academics and graduate students on the fundamental roles mostly fulfilled by these universities?
3. What are the fundamental challenges encountered in the process of training qualified scientists at Turkish universities?
4. What solutions could be proposed to address the challenges encountered in the process of training qualified scientists at Turkish universities?

The present study is of high significance as it delves into the current approach to scientist training at Turkish universities in light of the findings and proposes overcoming strategies for the challenges encountered from the perspective of both academics and graduate students.

2. Methodology

This study was grounded on a qualitative approach and a phenomenological design by examining stakeholders' perspectives on the graduate education process in depth. Considering that the phenomenological design aims to reveal individuals' experiences, interpretations, and perceptions of a specific phenomenon, central phenomenon was taken as the universities' mission to "train qualified scientists" in this study.

Being selected using a maximum diversity sampling method, the participants were 21 academics (7 professors, 7 associate professors, and 7 assistant professors) who were teaching graduate courses in the Institutes of Social Sciences, Natural Sciences, and Health Sciences at a Turkish state university and 31 students pursuing graduate studies at these institutes. Demographics of the participants are presented in Table 1.

Table 1. Socio-demographic features of the participants

Gender	Faculty members (N)	Age Interval	Seniority	Student (N)	Age Interval
Female	7	33-50	2-19	17	25-37
Male	14	35-59	2-26	13	28-39

The research data were collected using a semi-structured interview form and analyzed through content analysis using NVivo. During the data recording process, academics were identified anonymously by their respective designations, namely Prof. 1, Assoc. Prof. 2, Asst. Prof. 3, and so forth. Master's degree students were designated MA1, MA2, and so on, while doctoral students were labeled PhD1, PhD2, and so on. At the time of data collection, more than half of the academics were not involved in scientific research projects. With the exception of one associate professor at the Institute of Health Sciences, no academics had participated in a TÜBİTAK project. The underlying reasons could be investigated in a further study.

The interview form was developed by three academics with specialization in educational sciences and experience in qualitative research, and finalized taking expert opinion from two academics specializing in Turkish Language and Literature. It included a couple of close-ended items designed to elicit demographic information of the participants and four open-ended questions. The participants

were requested to answer each in as much detail as possible, and no time limit was imposed during the process in concern. The following are the open-ended questions mentioned.

- 1) What do you think should be the primary mission of the Turkish universities regarding scientific and social development?
- 2) Which responsibilities do you think are mostly fulfilled by the Turkish universities?
- 3) What are the challenges to training qualified scientists at Turkish universities?
- 4) What solutions do you propose to address the challenges in training qualified scientists?

The interview responses were transcribed and analyzed using content analysis in NVivo. The categories, themes, and codes generated in NVivo were compiled into a report, and notable participant comments were quoted verbatim. The findings are presented in the following section.

3. Findings

The first question was designed to identify the views of the participating academics and graduate students regarding the primary mission of the Turkish universities in terms of scientific and social development. Their responses revealed 71 distinct perspectives, as presented in Figure 1.

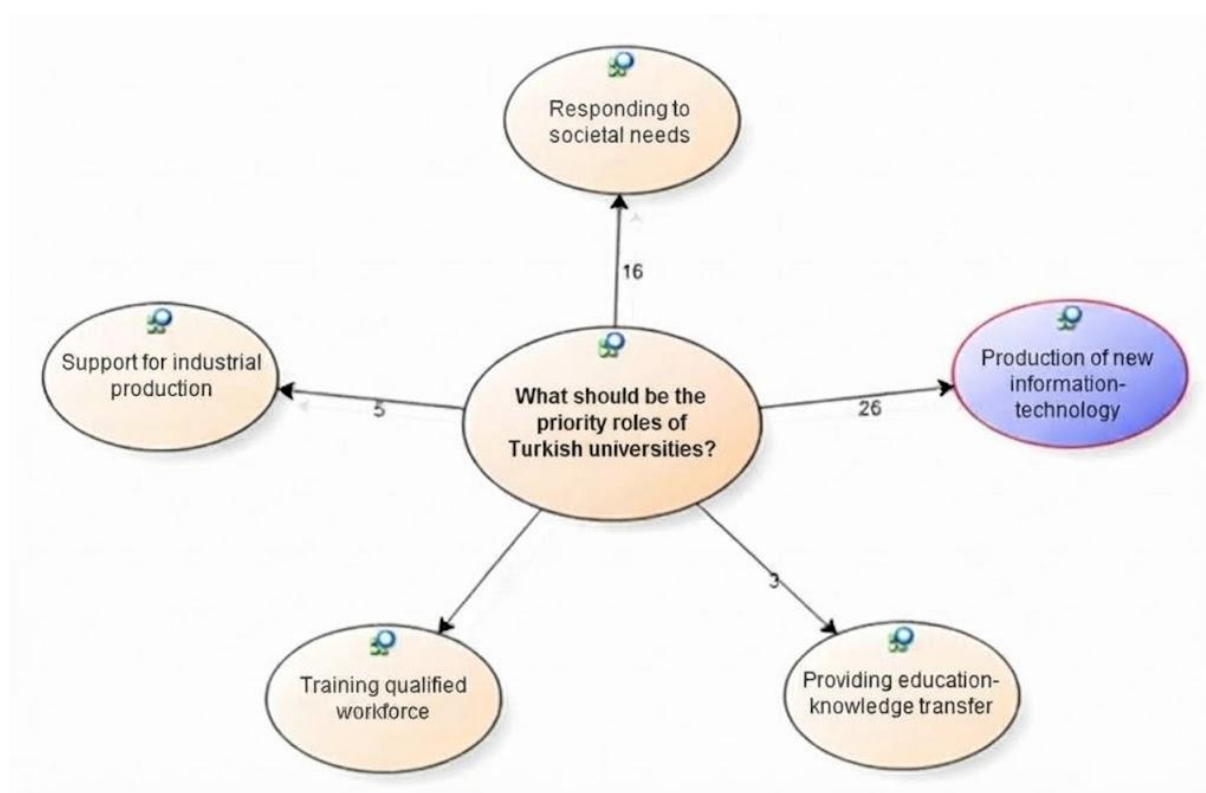


Figure 1. Primary responsibilities of the Turkish universities for scientific and social development

Based on the analysis results, the participants' views were grouped into five headings: (i) production of new information and technology, (ii) development of a qualified workforce, (iii) responding to societal needs, (iv) support for industrial production, and (v) education and knowledge transfer. Some of the participants' views are presented below.

"Universities must first and foremost develop their missions and visions so that they can contribute to both scientific and social development of the society. From a scientific perspective, they should facilitate research through a contemporary and innovative approach. It should support both students and academics engaged in research. In this way, it will pave the way for those who wish to advance science. From a societal perspective, it should prepare individuals for life by training

graduates equipped with academic knowledge and practical experience. Rather than merely training workers for the job market, a university should cultivate intelligent and forward-thinking students with world knowledge who are capable of generating new ideas. The survival of a society is, in a sense, written in the university lecture halls.” (Prof. 5)

“When prioritizing these missions, we must take into account the geopolitical and geostrategic characteristics of the countries. Türkiye is located on a critical geography. For this reason, Turkish universities must first prioritize producing munitions for military purposes (such as weapons, unmanned aerial vehicles, and military uniforms). (These efforts should not be limited to the works of ASELSAN or ROKETSAN.) On the other hand, they should focus on technological innovations for economic development and training of qualified personnel to use this technology. Türkiye needs to be at the forefront in this regard.” (MA 9)

“Fundamentally, efforts should focus on identifying and addressing the needs of both society and the country, both in the short and long terms. Tasks such as anticipating needs, generating ideas and knowledge regarding those needs, and subsequently conducting research in this direction should be prioritized.” (Prof. 11)

These findings largely coincide with Sezgin et al. (2011), who previously concluded that graduate students in Türkiye have high expectations of faculty members to help resolve the challenges they face in using research methods and techniques, conducting interdisciplinary studies, and sharing the knowledge they generate at both national and international levels.

The second research question aimed to identify the participants’ views on the missions fulfilled by the Turkish universities most effectively. Figure 2 displays the analysis results obtained.

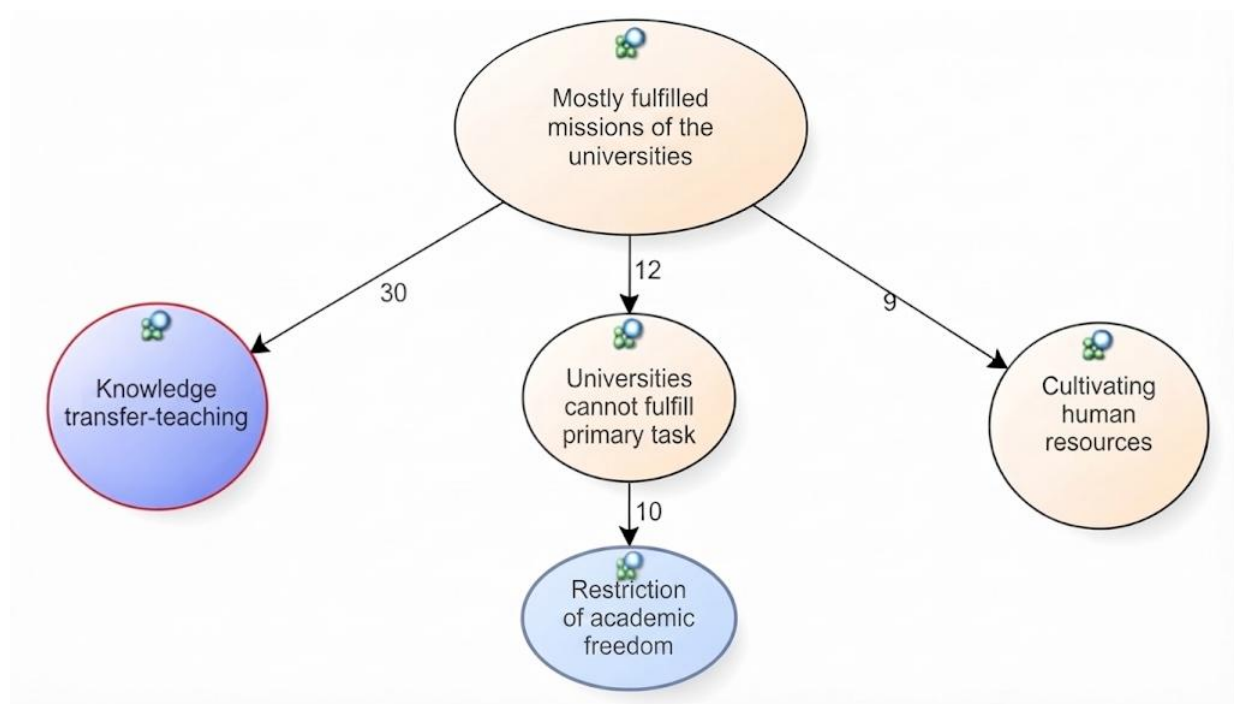


Figure 2. Missions mostly performed at the Turkish universities

In contrast to the views obtained through the first question (e.g. “production of new knowledge and technology” and “the training of qualified workforce” as the primary missions of the universities), the responses to this question demonstrated that the participants believe the Turkish universities primarily fulfill the mission of “knowledge transfer and teaching” while somewhat neglecting other missions. Corroborating this, some participants stated that universities fail to fulfill their primary mission, namely production of new knowledge and technology. As shown in Figure 2, another portion

of the participants emphasized that the universities fulfill the mission of training workforce in addition to knowledge transfer. The participants' relevant views are presented below.

"While universities should be the centers of research and development, they are becoming merely institutions that grant degrees. In other words, rather than fostering scientific progress, universities are training people as the workforce needed by the society. That is why, day by day, the number of unemployed young people with university degrees is increasing." (Prof. 8)

"Today's universities lack a plan in this regard. They merely provide a rudimentary education to the students enrolled in degree programs. Teaching is not given sufficient priority, which may contribute to the emergence of inadequately prepared generations who are increasingly disconnected from their cultural and social roots. It can be evidenced by the events in recent years." (Prof. 3)

"Universities are focusing more on their teaching responsibilities. With the increasing number of universities, more and more students are attending colleges. However, for these students, this is primarily about acquiring a profession. It is not very effective in fostering an interest in science or cultivating a scientific perspective." (MA 7)

The reported findings and the participants' views cited herein highlight the discrepancy between the ideal and reality, and align with Aydoğan (2008) who argued that a researcher's primary responsibility is not teaching and learning. Similarly, the findings support Yalçinkaya et al. (2014) who noted that the process of training scientists fails to achieve its purpose due to factors such as the excessive course load on faculty members, economic constraints, and promotion criteria. They are also consistent with those of Kahraman and Bakırcı (2010) who concluded that newly established and underdeveloped universities attempting to provide graduate education with insufficient faculty resources lead to a decline in the quality of graduate education.

Through the third question, the participants' views on the challenges faced in the process of training qualified scientists at Turkish universities were elicited and analyzed. The results are depicted in Figure 3.

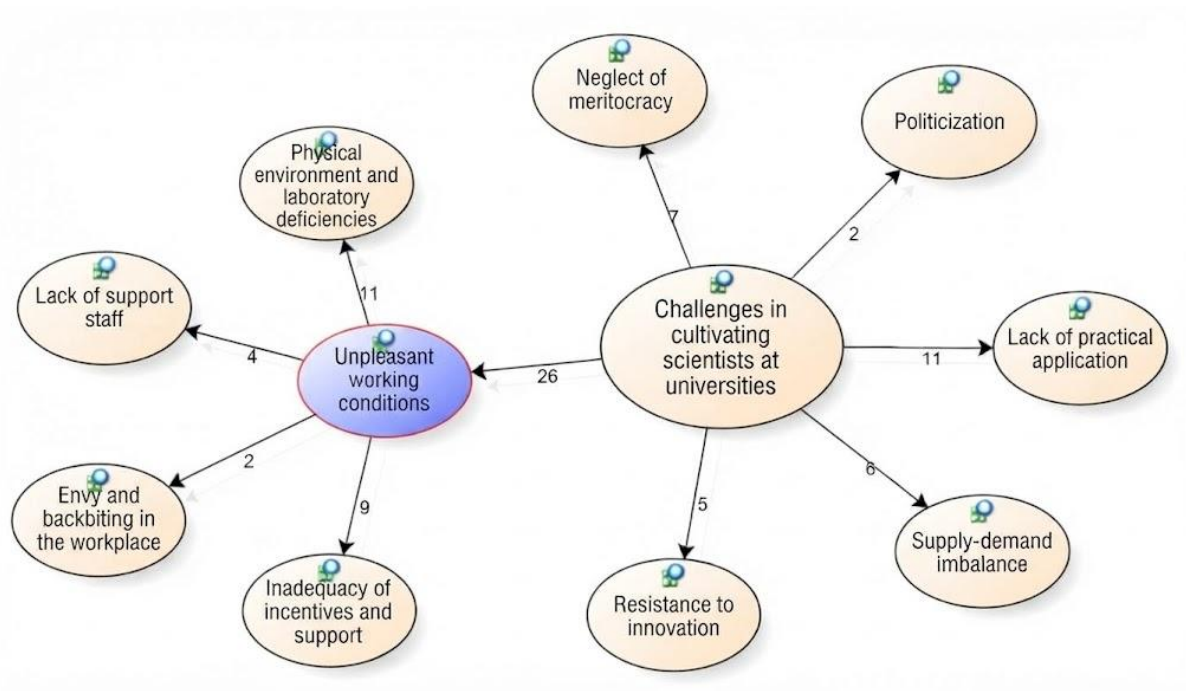


Figure 3. Challenges in training qualified scientists at Turkish universities

As shown in Figure 3, the participants' views on this topic cluster heavily around "unpleasant working conditions." Under this theme, the findings indicated that factors such as laboratory shortages, insufficient incentives and support—particularly highlighted in graduate students' views—and a lack of support staff (including a shortage of research assistants and specialists in laboratories) negatively affect working conditions. Based on the participants' views, other challenges include a lack of practical experience, disregard for merit, resistance to innovation, politicization, and an imbalance between supply and demand. These findings are consistent with those previously reported in Kahraman and Bakırcı (2010). Examples of the participants' views are provided below.

"We have a closed social structure that is far removed from scientific rigor and rationality. Ideological and dogmatic approaches cause this social structure to manifest itself in universities, just as it does throughout the country as a whole. In our country, where there are difficulties in meeting basic needs, knowledge and critical thinking do not seem particularly appealing." (PhD 1)

"(Challenges include...) Bureaucratic obstacles, social structure, inadequacy of scholarships and financial aid, the fact that science and technology are lagging, lack of goal-setting and follow-up, deprivation of free and creative thinking, the fact that our education system and curriculum are not based on experimentation and scientific rigor, the system's resistance to asking questions and critical thinking, and the integration of individuals educated within this system into society..." (MA 9)

"The recruitment of qualified staff and students at universities is not conducted objectively, merit is disregarded, and the quality of higher education consequently declines. During the admission process for 14 master's students at College in the 2014–2015 academic year, I was not admitted despite graduating first in my class, which I attributed to conflicts among faculty members. In 2017, however, I was admitted to a much higher-ranked university, where I ranked second." (MA 11)

As a response to the final question, the participants listed recommendations for training qualified scientists at universities. Analysis results revealed six themes and two subthemes, as shown in Figure 4.

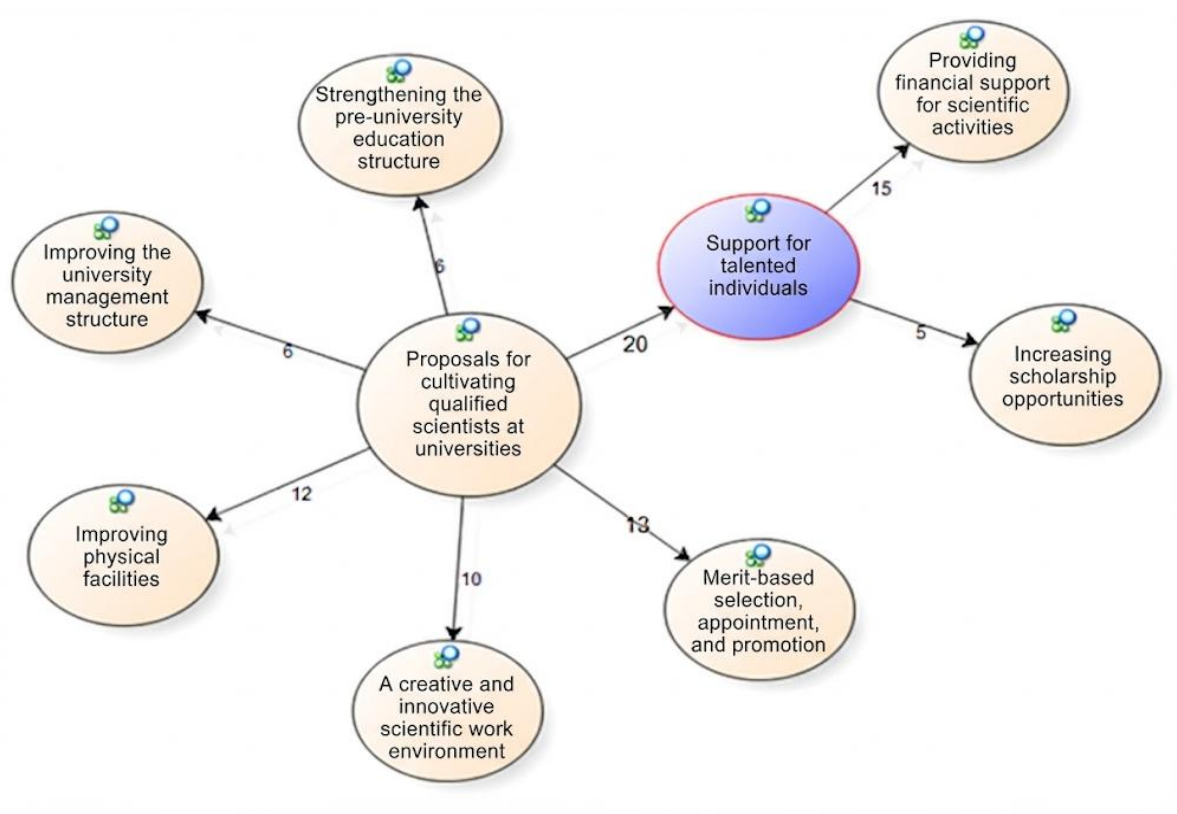


Figure 4. Recommendations for training of qualified scientists

As displayed in Figure 4, the participants predominantly recommended promotion of the talented individuals. Secondly, they recommended providing financial support for participation in scientific events and increased scholarship opportunities. They also emphasized the need to prioritize merit in selection, appointment, and promotion, to improve physical infrastructure, to provide settings for creative and innovative scientific work, to develop the university's administrative structure, and to strengthen the pre-university education system. The following are the participant views taken from the interview forms.

"The notion that 'the son of a scholar is a scholar' must come to an end in universities. Individuals who work hard, who are productive, and who are not complacent should be part of the educational system. Merit should be prioritized. I believe science should be closely followed, not merely pursued from a distance. In our country, there are a significant number of well-equipped and talented scientists, but due to adverse conditions, they are being lost through brain drain." (PhD 5)

"Universities must answer the question, 'How should scientists be trained?' They must demonstrate and teach this to their students. They should guide students who aspire to become scientists, provide them both financial and psychological support, and show genuine interest in their development. In this regard, the universities must improve themselves and create new sources of funding to support this goal." (Prof. 12)

"Scientists must be provided with an environment where they can think freely and creatively (by removing the pressures and obstacles imposed by social, political, and bureaucratic structures), and they must be allowed to receive education, conduct fieldwork, and conduct joint-work with the academics in more developed countries. Their participation in symposia, conferences, panels, etc., must be facilitated (Visa and travel facilitation for trips abroad, coverage of lodging and transportation expenses, and the removal of other financial barriers). Additionally, when selecting students for master's and doctoral programs, interview criteria must be clearly defined; if necessary, these sessions should be conducted with the assistance of a sociologist and a psychologist. Inquisitive individuals who enjoy doing research, who possess a critical perspective and who can think independently should be admitted to graduate programs." (Prof. 16)

The following section presents a discussion of the research findings.

4. Results and Discussion

This study aimed to investigate the relationship between job satisfaction and burnout among teachers while examining differences across demographic variables. The primary finding—a moderate-to-strong negative relationship between job satisfaction and burnout—aligns closely with existing literature. Studies conducted with educators across various institutional settings have similarly reported that higher job satisfaction is associated with reduced burnout (Acar & Karaaslan,

This study examined the universities' mission to train qualified scientists through the views of a group of academics and graduate students at a Turkish state university. Overall, the findings revealed discrepancies between the ideal and reality. Namely, the primary missions of the Turkish universities in terms of scientific and social development were respectively listed as (i) production of new knowledge and technology, (ii) training of qualified workforce, (iii) responding to societal needs, (iv) supporting industrial production, and (v) providing education and knowledge transfer. However, it was indicated that they primarily fulfill the mission of knowledge transfer and teaching rather than producing new knowledge and technology and training qualified workforce. This suggests a clear discrepancy between the "ideal" and "actual" missions of the universities in Türkiye.

The existing literature on higher education informs that universities must assume a multidimensional role that encompasses not only teaching but also knowledge production and engagement with industry and society. In a study conducted with the participation of five European

universities, Clark (1998) showed that universities are transforming into entrepreneurial structures to respond to changing environmental demands and outlined the institutional pathways of this transformation. Etzkowitz and Leydesdorff (2000), on the other hand, explain today's research system through the Triple Helix model, which centers on the relationships among universities, industry, and the state. Gibbons et al. (1994) also argue that a new form of knowledge production has emerged, characterized by reflexivity, interdisciplinarity, and heterogeneity. The participants' views on the mission of knowledge and technology production, and their responses to societal needs as their primary responsibilities, align with the contemporary expectations in concern. However, the apparent dominance of teaching and knowledge transfer suggests that the Turkish universities' current operations lag behind these expectations.

The view that universities' roles in supporting industrial production and addressing societal needs are weak is consistent with the findings of some studies on university-industry collaboration in Türkiye. Yardımcı and Müftüoğlu (2015), for instance, noted that the outcomes of the tools developed to facilitate university-industry collaboration have not met the desired level and that a sustainable collaboration system has not been established. Therefore, they stressed the need for institutional and incentive-based regulations. Korkmaz, Orhaner, Alkibay, and Sertoğlu (2012) addressed the managerial issues of technology parks within the framework of university-industry collaboration and proposed solutions, while Tunalı and Toprak (2017) evaluated university-industry collaboration in Türkiye alongside global examples by discussing the problems and potential solutions. Laredo (2007) critically examined the bureaucratic obstacles and institutional resistance universities face in fulfilling their missions related to community service, economic development, and technology transfer. Taken together, these studies show that university-industry collaboration is not merely an issue specific to Türkiye; it is rather a matter frequently addressed in various settings (Trencher et al., 2014) and sought to be resolved in the international literature.

The greatest challenges against the Turkish universities' fulfilment of the mission to train qualified scientists have been identified as unpleasant working conditions, inadequacy of practical application (overreliance on theoretical knowledge transfer), and failure to prioritize merit. This finding is consistent with the existing literature. For example, in a qualitative study conducted with the participation of 10 research assistants in education faculties in İzmir, Yalçinkaya et al. (2014) found that the process of training scientists failed to achieve its objectives because of factors such as heavy course loads, financial constraints, and promotion criteria imposed. The study also revealed that the process was perceived as routine and lacked support, that graduate education programs were not sufficiently suited to training scientists, and that the ideal qualities of a scientist were not being instilled. These findings support the theme of unpleasant working conditions identified in the present study. However, because the sample in Yalçinkaya et al. (2014) was relatively small and restricted to a single field, the generalizability of this comparison remained limited. Karaman and Bakırcı (2010) also noted numerous concerns in graduate education in Türkiye regarding faculty members, students, educational programs, and working units and conditions. Güven and Tunç (2007), on the other hand, examined the academic challenges faced by the graduate students enrolled in the Institute of Educational Sciences at Ankara University. All in all, these studies showed that the challenges are not merely individual in nature but also have structural and institutional dimensions.

The emphasis on merit that stands out in the research findings is a critical aspect that warrants thorough consideration as it highlights the chronic structural problems in the Turkish higher education system. In the study by Yalçinkaya et al. (2014), participants similarly highlighted inadequate academic collaboration, concerns about academic titles, relationships based on obedience, lack of objectivity, and deviation from the fundamental purpose. Demirbilek and Çetin (2022) reported that merit is not fully prioritized in selection and appointment processes, although

an academic career merit platform for faculty hiring processes was established by the Council of Turkish Higher Education. Failure to prioritize merit in selection, appointment, and promotion can weaken talented individuals' motivation to remain in academia and pursue professional development. Therefore, participants' recommendations to support talented individuals and prioritize merit in academic selection, appointment, and promotion suggest that the problem is not limited to physical conditions alone but also relates to institutional culture and human resource management.

The finding that practical application is relatively neglected in higher education is consistent with the universities' focus on knowledge transfer. Programs based on theoretical knowledge may not sufficiently develop students' competence in conducting research, collecting data, producing publications, and solving problems. This situation may also undermine the universities' role in meeting industrial and societal needs as these roles require putting theoretical knowledge into practice. In their study of more than 4,000 doctoral students in the United States, Golde and Dore (2001) revealed a mismatch between students' goals, the doctoral preparation they received, and the careers they pursued. This finding shows that the mismatch between doctoral education objectives and its actual operation is a significant concern in the international literature.

5. Limitations and Practical Implications

This study is limited to the views of the participants who voluntarily took part in the research and to the data collection instrument used. Based on the findings, the following recommendations have been generated.

It is imperative to provide support to young scientists with talent and enthusiasm. In this context, the Overseas Doctoral Research Scholarship (YUDAB), launched by the Council of Higher Education in Türkiye (YÖK), is a commendable initiative in order to surmount the obstacles confronting knowledge production, which constitutes one of the primary missions of universities.

Universities must address the physical infrastructure deficiencies that entail unpleasant working conditions. In this regard, the number of laboratories and support staff could be increased.

The current strategy for training research assistants should be reviewed and research assistant positions should be made more attractive.

Placing greater emphasis on merit-based criteria in the selection of graduate students and academics will ensure that universities attract more qualified individuals. At some universities, GPA and proficiency exam scores may have varying degrees of influence on admission to master's and doctoral programs. Therefore, the admission requirements for master's and doctoral programs should be made more objective and measurable.

Based on the finding that academic staff took part in a very few scientific research projects including TÜBİTAK projects, information sessions should be organized for academic staff on the preparation of research projects, and the incentives offered to increase the number of projects, in particular, should be made more attractive. The underlying reasons of this particular finding should be investigated in greater depth.

In conclusion, this study revealed that the Turkish universities' ability to fulfill their roles in scientific production and social development cannot be explained solely by increased resources and physical facilities. The findings indicated that, beyond material and physical inadequacies, structural and cultural issues affecting academic processes and institutional capacity can also limit the fulfilment of the universities' scientific and societal functions. In this regard, supporting the academic development of talented individuals, strengthening the principle of merit as a decisive criterion in

academic selection and promotion processes, and developing universities' physical and technological infrastructure should be addressed as complementary elements rather than separate interventions.

DECLARATIONS

Author Contributions. All authors contributed to the literature review, conceptualization, methodology, data analysis, review-editing and writing, and original manuscript preparation. All authors have read and approved the published final version of the article.

Conflicts of Interest. All authors declared no potential conflicts of interest.

Funding. The authors received no financial assistance in preparing this article.

Acknowledgment: The preliminary findings of this study were presented as an oral presentation entitled "Examining the Mission of Turkish Universities: Challenges Encountered and Proposed Solutions in Training Qualified Professionals" at the 27th International Congress on Educational Sciences, held in Antalya.

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