

ENHANCING THE ORGANIZATIONAL FRAMEWORK AND POLICYMAKING OF RESEARCH UNIVERSITIES IN TÜRKIYE: AN EXPLORATION OF DOKUZ EYLÜL UNIVERSITY'S TRANSITION IN 2023

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Abstract

The expanding discourse surrounding the prominence of research universities in Turkey's higher education system has identified these institutions as pivotal drivers of economic and societal growth. Establishing and sustaining research universities presents unique challenges, though their influence on knowledge creation, innovation, and regional development is indisputable. The transformation of Dokuz Eylül University into a research university in 2023 exemplifies the evolving landscape of higher education in Turkey. This paper offers a comprehensive exploration into the formation, obstacles, and optimization of research universities, with a specific focus on Dokuz Eylül University's strategic development roadmap and comparative analysis. The analysis reveals opportunities for enhancement in areas such as scientific and technological research competence, intellectual property pool, interaction and collaboration, and economic and societal contribution. Additionally, the study highlights the importance of harnessing strategic collaborations between small and medium-sized enterprises (SMEs) and research universities to boost global competitiveness and technological innovation. Through this investigation, informed policy decisions can be made to strengthen Turkey's burgeoning research university system in pursuit of sustainable socioeconomic development.

Keywords: research universities, higher education, innovation, entrepreneurship, intellectual property rights

1. INTRODUCTION

In recent years, there has been a surge in discussions regarding the emergence and pivotal role of research universities in Turkey's higher education landscape. These institutions have become focal points for societal and economic development, driving knowledge creation, innovation, and the progression of information-based economies. The insights shared in the resources underscore the challenges inherent in establishing and sustaining these universities, emphasizing their significant socio-economic value (Altbach, 2011; TAÜG, 2016). Moreover, the recent designation of select universities, including the noteworthy transition of Dokuz Eylül University as a research university in 2023 by the Higher Education Council (YÖK), underscores the dynamic shifts occurring within Turkey's higher education sphere. Understanding the nuances, challenges, and transformative processes within these institutions, particularly against the backdrop of Dokuz Eylül

University's recent milestone, is essential. This introduction aims to contextualize the exploration into the formation, challenges, and optimization of research universities, aligning with the outlined scope in your guidance.

1.1. Research Question

Building upon the insights gleaned from the resources and your guidance, the central question guiding this exploration is: How can the structural transformation and developmental strategies of research universities in Turkey, including the recent transition of Dokuz Eylül University in 2023, be optimized to bolster their role in societal transformation, economic advancement, and global competitiveness? This research inquiry seeks to delve into the multifaceted nature of research universities, specifically delving into the implications of Dokuz Eylül University's transition, aiming to comprehensively evaluate their formation, challenges, and opportunities within the evolving landscape of higher education in Turkey. The study aims to provide actionable insights and recommendations aligned with enhancing the organizational framework and policymaking surrounding research universities, considering the recent developments and the broader goals outlined in your guidance.

2. LITERATURE SURVEY

2.1. Transformative Insights into Research Universities: Catalyzing Innovation and Socioeconomic Growth"

In the intricate landscape of higher education, research universities emerge as dynamic entities, serving as pivotal engines for catalyzing innovation and propelling socioeconomic advancement. They stand apart with distinctive foundations, operational paradigms, and overarching goals that set them on a divergent trajectory compared to traditional universities (Erdoğan, 2018). Delving deeper into the metamorphosis of Turkish research universities, an urgent inquiry surfaces regarding their future trajectory, administrative strategies, and adaptive structures. Erdoğan (2018) underscores the pressing need for legislative reforms and a comprehensive evaluative study to illuminate the essential transformations requisite for state universities to transition into research-centric entities. The pervasive lack of public awareness concerning these transformative shifts further complicates the overhaul of non-research-oriented universities (Erdem, 2015:6-7). Erdem (2015) introduces a stratified categorization of universities, differentiating between micro and macro academic strategies. This stratagem advocates for a classification framework segregating universities into Research Universities, Regional Universities, and Mass Education Universities, highlighting their distinct academic orientations and contextual relevance within national higher education strategies. The profound impact of research universities on societal well-being and economic development is underscored by their repository of knowledge, skilled human capital, and initiatives in knowledge dissemination (Özer, 2012). Beyond their primary mandate of scientific inquiry, these institutions serve as veritable pillars of global higher education, nurturing economic growth while fostering an environment conducive to critical intellectual discourse (Altbach and Salmi, 2012:1-9). Internationally, research universities align with national agendas for technological progress, becoming integral components of macro-level initiatives. In Turkey, the advent of transformative policies like the Regional Development-Oriented Mission Differentiation and Specialization Project in 2016 signified a paradigm shift. The subsequent establishment of new research universities marked a monumental stride in reshaping the Turkish higher education landscape (Erdoğan, 2018). However, the global distribution of research universities unveils a stark disparity. While countries like the U.S., India, and China boast a substantial number of such institutions, Turkey, with its 211 universities, counts only 20 as research-centric (Statista, 2020). This chasm emphasizes the unique and selective approach nations take in nurturing these specialized institutions.

2.2. University Rankings by Academic Performance

According to the 2023 data from URAP, Dokuz Eylül University in Turkey stands 17th and is positioned at 1193 globally. Comparatively, Hacettepe University ranks first in Turkey at 554 worldwide. This revelation prompts a critical analysis of Dokuz Eylül University's standing, indicating a perceived disparity in its global position that necessitates attention and strategic intervention.

2.3. Entrepreneurial and Innovative University Index

The Entrepreneurial and Innovative University Index, a pioneering assessment initiated by TÜBİTAK in 2012, unveiled its latest rankings on April 1, 2023. Dokuz Eylül University secured the 23rd position in Turkey and 3rd in Izmir, trailing behind Izmir Institute of Technology and Ege University, while Middle East Technical University clinched the top spot. Notably, Dokuz Eylül University's deviation from the leading position in areas of "Scientific and Technological Research Competence," "Intellectual Property Pool," "Collaboration

and Interaction," and "Economic and Societal Contribution" signifies areas for strategic enhancement and recalibration. The transformative influence of research universities on socioeconomic growth is unequivocal, particularly in catalyzing regional innovation and bolstering global competitiveness. Their role in incubating R&D centers, entrepreneurship hubs, and technology parks significantly influences economic dynamism and innovation (Çetin, 2007:224-228). Nonetheless, Turkey's alignment with global trends in fostering research universities may have faced delays, as evidenced by earlier initiatives like the Cambridge Science Park in the UK, dating back to 1970, reflecting early synergies between academia and industry (Wissema, 2009:35). In the context of international competition, strategic collaborations between small and medium-sized enterprises (SMEs) and research universities emerge as imperatives. These alliances leverage intellectual property rights and R&D activities, granting SMEs a competitive edge and optimizing national resources (Seki, 2013:2-3). While patents serve as crucial indicators of scientific output, their conversion rate into practical applications remains modest (Erdem, 2015:10). Nevertheless, they play a pivotal role in safeguarding products in the global market and fostering innovation (Jordan and Jones, 1997:393). The recent surge in patent applications by Turkish universities reflects a burgeoning interest in intellectual property rights and innovation. However, these institutions still lag behind leading global counterparts in this domain (Destek Patent, 2020). The intricate nexus between research universities and industry is poised to give rise to innovative research alliances and global collaborations (Mohrman et al., 2008:6). Turkey's strides in creating a collaborative ecosystem among universities, research institutions, and industries signify a transformative shift in the university-industry interface. The Ministry of Industry and Technology's role in incentivizing R&D collaboration between the private sector and universities heralds a new era of technological innovation and entrepreneurship (Ministry of Industry and Technology, 2020). In fact, the ascendancy and consolidation of research universities in Turkey mark a significant evolutionary phase in higher education. They serve as progressive platforms driving economic growth, nurturing technological innovation, and fostering entrepreneurial ventures, thus steering the nation toward a future steeped in progressive higher education and sustainable socioeconomic development.

3. DESCRIPTIVE ANALYSIS OR DATA

The "Üniversitelerin Alan Bazlı Yetkinlik Analizi" (University Competence Analysis by Field), conducted by the Turkish Scientific and Technological Research Council (TÜBİTAK), constitutes a crucial aspect of this paper's data analysis. This comprehensive study, initiated in 2016 and continuously updated with the latest data, serves a dual purpose. Firstly, it allows for a comparative evaluation of universities based on their performance in various research fields. Secondly, it facilitates an in-depth examination of each university's relative competence across the diverse spectrum of research areas it actively engages in. The outcome of this analysis provides invaluable insights and forms a cornerstone for informed decision-making processes in developing national policies, crafting regional strategies, and defining institutional objectives. This rigorous analysis encompasses 132 sub-research areas, and pertinent data were available for 130 areas, meeting the minimum criteria for graph preparation. The selection of these research areas was a result of meticulous evaluations conducted by TÜBİTAK's advisory and steering committees, alongside assessments from research centers and institutes' domain experts. These assessments were based on multifaceted criteria, including the ASJC classification, current national requirements, critical areas for national security, and the universities' educational focus. Utilizing a framework grounded in both volume and quality indicators, this analysis assigns a significant weightage to quality indicators, amounting to 60%, while volume indicators constitute the remaining 40%. These indicators encompass various facets such as relative citation impact, publications within the top 10% most cited globally, academic research productivity, quality of R&D and innovation projects, publications cited by patents, and contributions to internationalization. In parallel, the volume dimension includes key factors such as contributions to global knowledge, academic value creation within Turkey, R&D project volume, and the university's relative focus within specific Turkish fields. The results of this meticulous analysis were meticulously visualized through graphs and diagrams representing competence levels across research areas and universities. These visual representations, accompanied by detailed data analysis, substantiate the objectivity of the findings and serve as an invaluable resource for comprehending universities' strengths and proficiency within specific research domains. Furthermore, integrating URAP Center rankings alongside these analyses provides a comprehensive perspective on universities' standings in academic performance globally and within Turkey. The juxtaposition of these rankings against the competence analysis enriches the contextual understanding of universities' positions in various aspects, thereby aiding in informed decision-making and policy formulation. Charts, diagrams, and other visual aids will be incorporated to present the study's findings in a visually compelling and comprehensible format, enhancing the clarity and accessibility of the information presented in this paper.

Table 1. URAP Ranking of Turkish Universities

World Rank	University	Country	Article	Citation	Total Document	AIT	CIT	Collaboration	Total
554	Hacettepe University	TURKIYE	61.66	73.14	37.29	47.05	55.56	53.1	327.8
783	Istanbul Technical University	TURKIYE	56.88	63.53	32.64	44.01	49.6	41.08	287.75
799	Istanbul University	TURKIYE	51.16	67.22	35.26	43.78	45.36	42.76	285.53
800	Ankara University	TURKIYE	53.88	64.58	34.76	44.12	46.94	40.99	285.27
868	Middle East Technical University	TURKIYE	49.45	61.43	30.87	43.73	50.13	42.43	278.03
920	Koc University	TURKIYE	48.72	60.42	28.54	43.63	47.87	43.33	272.51
990	Istanbul University - Cerrahpasa	TURKIYE	48.61	59.02	30.3	36.27	43.46	47.34	265.01
995	Gazi University	TURKIYE	53.02	61.32	33.54	37.96	42.92	35.96	264.71
998	Ege University	TURKIYE	50.81	60.99	32.67	40.22	42.74	37.07	264.49
1016	Near East University	TURKIYE	43.35	56.36	27.42	44.68	45.93	43.97	261.69
1038	Firat University	TURKIYE	44.82	57.94	27.91	37.33	47.68	43.68	259.35
1084	Yildiz Technical University	TURKIYE	49.28	56.97	29.42	35.22	44.13	38.17	253.19
1109	Ataturk University	TURKIYE	49.57	59.6	30.31	35.87	40.03	35.12	250.49
1119	Erciyes University	TURKIYE	48.74	56.65	29.77	35.5	40.93	37.69	249.28
1138	Marmara University	TURKIYE	46.94	58.55	31.35	37.96	38.45	33.74	246.98
1157	Selcuk University	TURKIYE	45.5	56.07	29.57	36.66	40.49	36.43	244.72
1193	Dokuz Eylul University	TURKIYE	43.43	56.34	30.27	35.89	39.9	34.69	240.52
1205	Ihsan Dogramaci Bilkent University	TURKIYE	34.8	52.3	23.46	37.26	46.14	45.33	239.29
1245	University of Health Sciences Turkey	TURKIYE	54	56.47	36.58	31.53	30.77	25.86	235.21
1276	Akdeniz University	TURKIYE	42.57	53.12	28.85	32.56	38.96	35.42	231.49
1314	Cukurova University	TURKIYE	43.82	51.47	29.67	34.31	36.89	31.78	227.95
1339	Cankaya University	TURKIYE	29.38	51.38	20.18	37.59	44.24	43.88	226.64
1353	Sakarya University	TURKIYE	39.72	51.27	26.22	30.35	39.55	37.43	224.53
1395	Bogazici University	TURKIYE	32.66	48.68	25.42	36.89	40.44	36.27	220.36

This table delineates Turkish universities' URAP rankings, encompassing articles, citations, AIT, CIT, collaboration, and total scores. It offers a nuanced perspective on each institution's global research impact, aiding stakeholders in strategic decision-making for academic planning and international positioning (URAP, 2023).

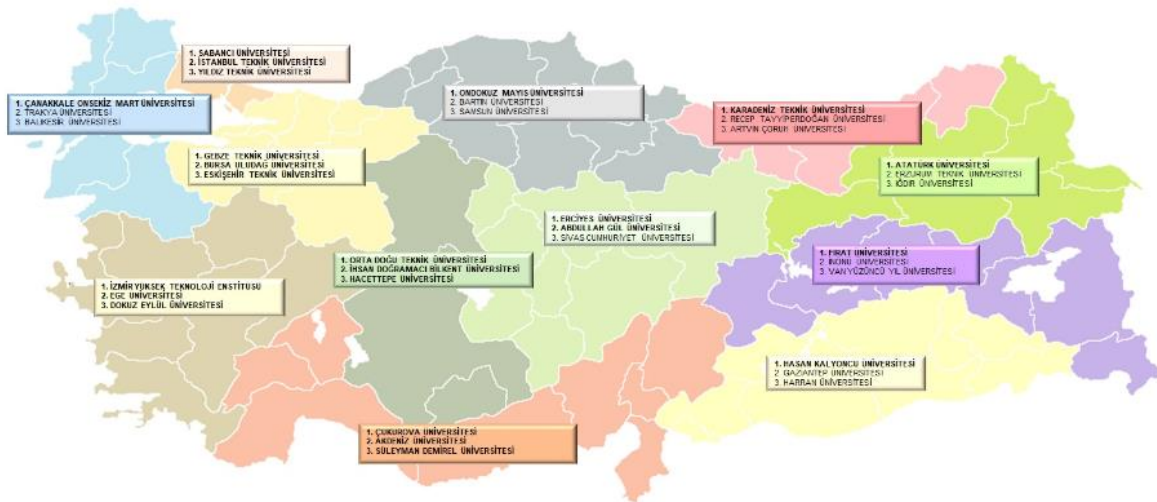


Fig. 1. Classification of Statistical Regional Units with Universities in the Top 3 Rankings by Level 1. Illustration of the hierarchical classification of statistical regional units, featuring the positioning of universities within the top 3 rankings at Level 1 (TÜBİTAK, 2023).

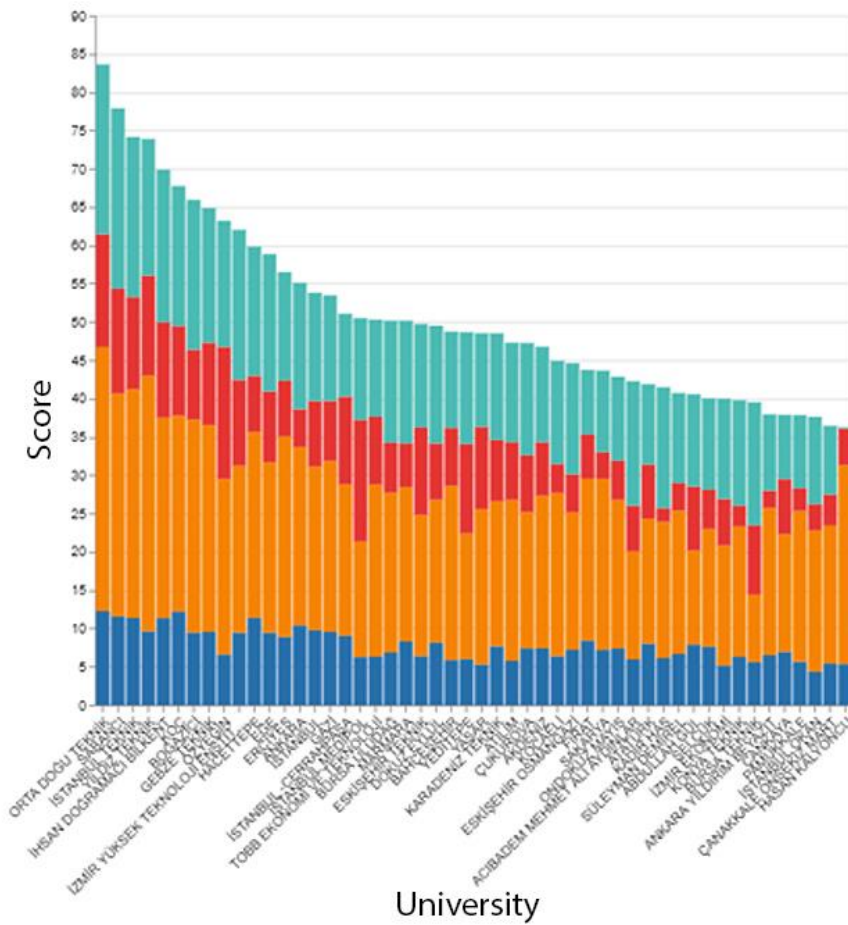


Fig. 2. Dimension-Based Column Chart, this chart, derived from data available on tubitak.gov.tr, depicts the relative contributions of scientific and technological research competence (15%, blue), economic and social contribution (40%, orange), intellectual property pool (20%, red), and collaboration and interaction (25%, green). Each dimension is an integral component of the comprehensive evaluation framework (TÜBİTAK, 2023).

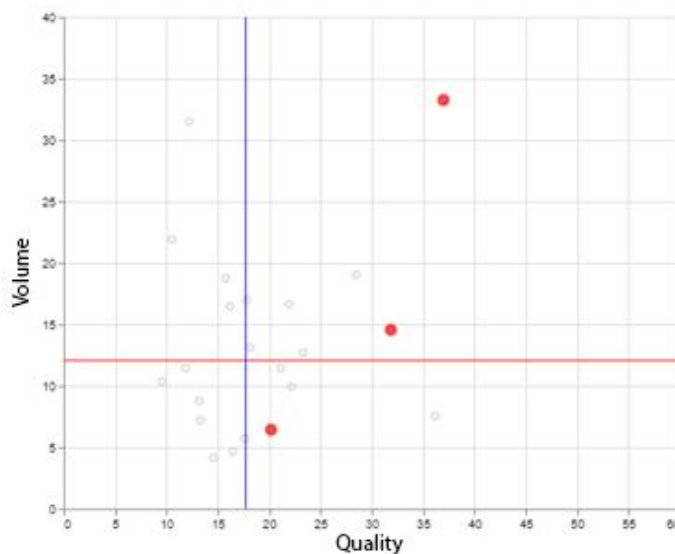


Fig. 3. Dokuz Eylul University Competency Graphs (1/3) A tripartite representation of Dokuz Eylul University's competency in physics disciplines: Top - Nuclear Physics, Middle - Experimental Physics, Bottom - Condensed Matter Physics (TÜBİTAK, 2023).

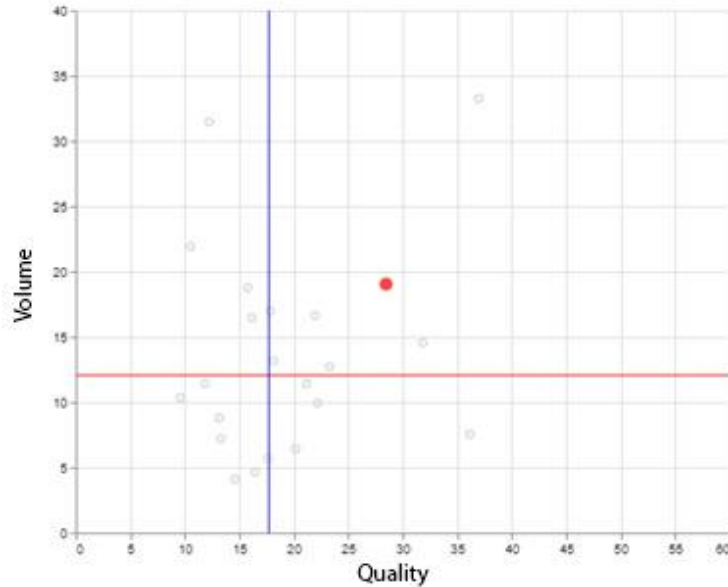


Fig. 4. Dokuz Eylul University Competency Graphs (2/3) Focused on the field of Mathematics; this graph showcases Dokuz Eylul University's expertise in the discipline (TÜBİTAK, 2023).

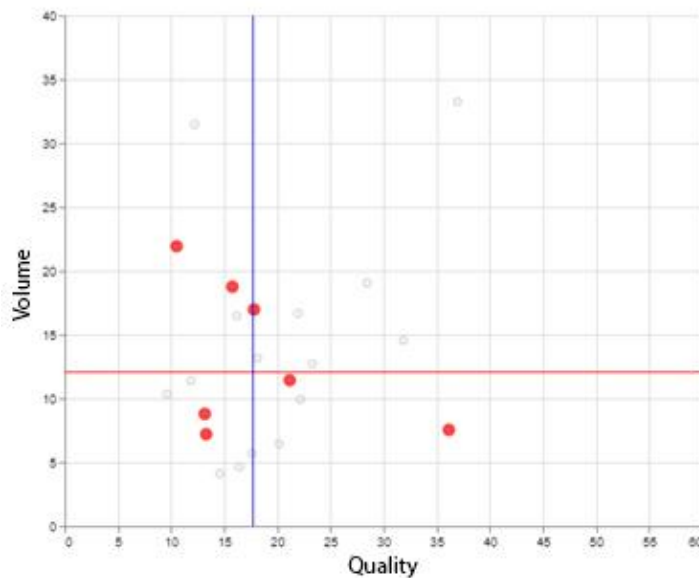


Fig. 5. Dokuz Eylul University Competency Graphs (3/3) This graph highlights Dokuz Eylul University's proficiency in Social Sciences and Humanities. Quality is depicted from top to bottom with expertise in Psychology, Art, Economy, and Sociology, while quantity is represented from left to right with strengths in Mass Communication, Urbanization, and Business (TÜBİTAK, 2023).

4. ADDITIONAL GUIDANCE

Dokuz Eylül University has positioned itself as a distinguished institution, excelling in various realms of research, particularly in nuclear and experimental physics, condensed matter physics, mathematics, psychology, art, economy, and sociology. The faculty's unwavering commitment to cutting-edge research and collaborative endeavors has solidified the university's stature in these specialized domains. This commitment extends to social sciences and humanities, where the university maintains a balance between quality and quantity in research output. The university actively encourages participation in academic and personal development programs, offering specialized training in research methods, project and article writing, and fund application procedures. Initiatives like the Research School, Technology Transfer Office, and Technopark further support faculty and student research capabilities. In terms of technology transfer and commercialization, Dokuz Eylül University actively supports researchers in obtaining intellectual property

rights, emphasizing sustainability-oriented studies to integrate research results with societal needs. The university's multifaceted structure, spread across campuses and research centers, reflects its commitment to integration with the city of Izmir. The strategic development roadmap, outlined for 2021-2025, emphasizes the university's agility in emerging frontiers, exemplified by its foray into marine technologies. This involves prioritizing investments, acquiring specialized equipment, fostering interdisciplinary partnerships, and attracting top-tier talent. For social sciences and humanities, the roadmap advocates nurturing strengths and expanding research horizons through interdisciplinary initiatives, dedicated research centers, and international collaborations. In quantity-focused areas, strategic investments are proposed to establish centers of excellence, incentivize industry partnerships, and prioritize applied research for societal and economic advancements. Through the strategic leveraging of strengths across diverse research domains, Dokuz Eylül University aims to enhance its global academic standing, foster interdisciplinary collaborations, and drive impactful innovations essential for societal progress and economic development, solidifying its position as a dynamic hub for research and innovation.

5. CONCLUSION WITH POLICY IMPLICATIONS

The exploration into the multifaceted realm of research universities, coupled with the in-depth analysis of Dokuz Eylül University's rankings, unveils a narrative of immense potential, yet signaling crucial avenues for strategic enhancement. These institutions are not just educational bastions but pivotal entities propelling nations toward innovation, economic dynamism, and societal prosperity. The transformative capabilities of research-centric universities, as elucidated by Erdem and Erdoğan, underscore the significance of aligning administrative strategies, fostering innovation, and reshaping academic paradigms. Dokuz Eylül University, a prominent academic institution, stands poised to leverage its strengths and address areas highlighted by URAP and TÜBİTAK's assessments. Strategic realignment towards research-centric models, fortifying collaborations between academia and industries, nurturing innovation through patent utilization, and maximizing societal contributions from the crux of this evolution. Policymakers must consider allocating resources to enhance research competence, bolster intellectual property creation, and strengthen collaborative frameworks. This includes funding dedicated to R&D initiatives and innovation hubs. A careful strategic shift in administrative structures, academic programs, and research priorities within universities like Dokuz Eylül could amplify their roles as catalysts for innovation and socioeconomic advancement. Government policies encouraging and incentivizing collaborations between universities and industries are pivotal. These initiatives foster mutual growth, drive innovation, and accelerate technology transfer. Policies that support the transformation of patents into practical applications through infrastructural and financial support can further encourage innovation and entrepreneurship. Continued support from governmental bodies like the Ministry of Industry and Technology in fostering R&D partnerships between universities and the private sector is crucial. These alliances drive technological advancement and economic growth. Universities must align their strategic plans with national and global research agendas. Prioritizing strengths and investing in interdisciplinary research could augment global competitiveness and societal impact. In summary, the culmination of scholarly insights and empirical analyses underlines the transformative potential of research universities like Dokuz Eylül. Strategic interventions guided by these implications hold the promise of not only enhancing the university's global competitiveness but also driving societal development and innovation, thus strengthening Turkey's standing in the global academic landscape. This synthesis bridges theory and empirical findings, offering a roadmap for strategic evolution and impactful policy formulation.

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