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PREFACE

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CHAPTER 1

BIBLIOMETRIC ANALYSIS OF TELEPARALLEL AND SYMMETRIC TELEPARALLEL GRAVITY THEORIES

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INTRODUCTION

General relativity explains gravity as a result of the curvature of spacetime. It is still one of the most important theories in modern physics. However, some problems such as the accelerated expansion of the universe, dark energy, the early universe, cosmological tensions and quantum gravity have led researchers to look for new explanations beyond general relativity. In this context, modified gravity theories have become an important research area not only for developing alternatives to general relativity, but also for reinterpreting the geometric nature of gravity through different variables (Cai et al., 2016; Bahamonde et al., 2023).

The teleparallel gravity approach is based on describing the geometry of gravity through torsion rather than curvature. While gravity is represented by Riemannian curvature in general relativity, in the teleparallel equivalent of general relativity the gravitational interaction is formulated through the torsion scalar. In this approach, gravity can be interpreted as a gauge theory associated with the translation group, and torsion is regarded as the fundamental geometric carrier of the gravitational interaction (de Andrade & Pereira, 1997; Aldrovandi & Pereira, 2013). The teleparallel formulation also offers the possibility of reconsidering some of the difficulties in classical general relativity, particularly the definition of gravitational energy-momentum density, within a different geometric framework (de Andrade et al., 2000). Although the teleparallel equivalent of general relativity produces results dynamically equivalent to general relativity at the level of field

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teleparallel gravity is concentrated in journals related to theoretical physics, cosmology, gravitation, and mathematical physics. Journals such as *Physical Review D, European Physical Journal C, International Journal of Geometric Methods in Modern Physics, Physics of the Dark Universe, and Classical and Quantum Gravity* appear as important publication platforms in this field.

The keyword and thematic analyses show that the field is shaped around concepts such as teleparallel gravity, modified gravity, dark energy, cosmology, energy conditions, torsion, general relativity and symmetric teleparallel gravity. These concepts show that the literature has both a theoretical side and a strong connection with current cosmological problems. The co-citation network also supports this result. It shows that the field is based on classical studies in teleparallel gravity, important works on modified gravity and cosmic acceleration, and recent studies on alternative geometric descriptions of gravity.

The results indicate that teleparallel and symmetric teleparallel gravity theories form an active and growing research area in gravitational physics. The field has moved from basic theoretical discussions such as torsion, tetrad structure and gravitational energy-momentum toward broader topics such as cosmology, dark energy, compact objects, black holes, energy conditions and observational tests.

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CHAPTER 2

DESIGN COMPETITIONS AS A FIELD OF KNOWLEDGE: A BIBLIOMETRIC READING OF ARCHITECTURE AND INTERIOR ARCHITECTURE LITERATURE

Aydın ARMAN [1]
Sabiha SEVGİ [2]

INTRODUCTION

Design competitions have long been regarded as critical instruments in the disciplines of architecture and interior architecture in terms of project production, professional visibility, and the development of innovative design approaches. These structures, which bring together different actors, scales, and expectations, contribute to the transformation of the discipline not only through resulting products but also through the production of process, method, and discourse. However, despite these multifaceted functions, the structural and epistemological role of design competitions within academic knowledge production is often addressed as a secondary or indirect subject in the literature. This situation necessitates reconsidering competitions not merely as professional competitive environments, but as critical domains concerning how knowledge is produced, circulated, and legitimized.

When examining the existing literature, it is observed that studies on design competitions are predominantly addressed through competition results, award-winning projects, the relationship of competitions with design education, or their effects on professional practice. While these studies render visible the impact of competitions on design thinking and pedagogical approaches, they re-

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Finally, encouraging interdisciplinary research that centers the critical, political, and cultural dimensions of design competitions will enhance the theoretical maturity of the field. Addressing competitions not only as mechanisms that produce creative outputs but as knowledge production regimes, representation politics, and ideological apparatuses carries the potential to transform academic discourse.

This study has aimed to systematically map the current state of the literature on design competitions, rendering visible both thematic concentrations and silent areas. It is considered that the findings obtained provide a strong starting point particularly for critical, comparative, and interdisciplinary studies that center interior architecture competitions.

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CHAPTER 3

DIGITAL TRANSFORMATION IN STRUCTURAL MONITORING: A BIBLIOMETRIC ANALYSIS OF THE USE OF UAV AND LIDAR PHOTOGRAMMETRY IN ENGINEERING STRUCTURES

Selçuk YORULMAZ[1]
Ali YİĞİT[2]

INTRODUCTION

It is of vital importance that engineering structures remain safe throughout their lifecycle, that potential damage is detected at an early stage, and that structural integrity is maintained (Azimi et al., 2020; Sarrafi et al., 2018). Buildings, bridges, dams and civil infrastructure systems suffer a decline in performance over time due to factors such as environmental influences, increasing loads, natural disasters or material ageing (Azimi et al., 2020; Spencer Jr. et al., 2019). The traditional observation methods, manual measurements and sensors in direct contact with the structure that have been widely used to date for monitoring the condition of these structures present a number of challenges (Sony et al., 2019). Visual inspections relying on human factors are time-consuming, costly processes that pose safety risks, particularly in areas that are difficult to access (Spencer Jr. et al., 2019). Similarly, the installation and ongoing maintenance of contact-based sensor networks mounted on structures is labour-intensive, and the fact that these devices generally provide only limited and localised data makes it difficult to assess large-scale infrastructure holistically (Sony et al., 2019; Spencer Jr. et al., 2019).

These limitations inherent in traditional monitoring and inspection methods have made it necessary to integrate remote sensing and modern spatial data

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try-based methods are utilised in different engineering structures. Furthermore, analyses conducted on specific sub-topics such as crack detection, deformation monitoring, damage classification and 3D modelling could make methodological differences in the literature more apparent.

In the specific context of Turkey, priority research areas could include rapid post-earthquake damage assessment, the documentation of historic structures, the monitoring of bridges and viaducts, the tracking of dam deformations, and the 3D modelling of urban regeneration areas. Research in these areas will hold direct practical value for both Surveying Engineering and Civil Engineering. Furthermore, ensuring that studies produced at a national level gain greater visibility in international indices could enhance Turkey's academic contribution in this field.

Finally, research in this field must not focus solely on data collection technologies. It is crucial to integrate artificial intelligence, deep learning, image processing and decision support systems to transform the high-volume data obtained from UAVs, LiDAR and photogrammetry into meaningful results. Therefore, future research should establish stronger collaborations between the fields of surveying engineering, civil engineering, computer science and data science. This will enable the development of faster, more reliable and more practical digital monitoring approaches for the monitoring of engineering structures.

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CHAPTER 4

QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION: QUALITY GOVERNANCE, ACCOUNTABILITY AND TRANSFORMATION IN HIGHER EDUCATION (2005–2025)

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Ramazan BAYINDIR [2]
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INTRODUCTION

Quality assurance (QA) and accreditation have become central instruments of governance in contemporary higher education systems. Over the past two decades, the expansion of higher education, the intensification of cross-border mobility, and the increasing reliance on performance-based evaluation have significantly transformed how universities are monitored, evaluated, and regulated. In this setting, QA and accreditation serve as both technical evaluation processes and policy instruments that affect institutional responsibility, legitimacy, and performance (Barbato et al., 2022; Krooi et al., 2024). Conceptually, QA refers to systematic processes for monitoring, evaluating, and improving the quality of teaching, learning, research, and institutional governance (Hybertsen & Stensaker, 2024; Stensaker, 2020). Accreditation, in contrast, represents a formal recognition mechanism through which institutions or programs demonstrate compliance with predefined standards (Seyfried & Pohlenz, 2019). Although analytically distinct, these mechanisms function in a complementary manner. QA emphasizes continuous improvement and internal reflection, whereas accreditation focuses on external validation and public accountability. Together, they constitute a mul-

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tional strategies. Rather than viewing accreditation as a compliance requirement, universities should integrate QA mechanisms into continuous improvement processes and institutional governance structures.

Program Directors and Curriculum Committees: At the program level, the results highlight the growing importance of outcome-based education and curriculum alignment. Academic programs should clearly define learning outcomes, implement systematic assessment practices, and ensure that educational content remains responsive to evolving labor market demands.

Researchers: For scholars, the study provides a comprehensive overview of the intellectual structure of QA and accreditation research. The identified thematic clusters offer a foundation for future studies investigating emerging issues such as digital governance, institutional quality culture, and international accreditation systems.

Future Research Directions

Future research should explore QA and accreditation practices in underrepresented regions and institutional contexts. Comparative studies examining different higher education systems may provide deeper insights into how accreditation frameworks operate across diverse policy environments. Methodologically, future bibliometric studies may benefit from integrating additional analytical techniques, such as topic modeling and co-word analysis. Combining multiple bibliographic databases, such as WoS and Scopus, could also enhance the comprehensiveness of future analyses. Emerging topics identified in the trend analysis, such as digital transformation, artificial intelligence, and online education, also represent promising areas for further investigation.

Call to Action

As higher education systems continue to evolve, QA and accreditation mechanisms must adapt to changing institutional and technological environments. Strengthening evidence-based research on QA systems is therefore essential for informing policy development and institutional practice. Developing a coordinated research agenda that integrates bibliometric insights, policy analysis, and institutional perspectives can contribute to more effective and adaptive quality governance in higher education.

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CHAPTER 5

DIGITAL TRANSFORMATION IN THE DOCUMENTATION AND STRUCTURAL ANALYSIS OF HISTORIC MASSIVE STRUCTURES: A BIBLIOMETRIC ANALYSIS (1997–2025)

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INTRODUCTION

Historic masonry structures, which constitute the most valuable components of cultural heritage, are tangible markers of human history and bearers of architectural identity. However, by their very nature, these structures possess highly complex geometries, heterogeneous material properties, and ambiguous internal structural details (Arias et al., 2007; Lubowiecka et al., 2009). When these structural uncertainties combine with the deterioration of the historic fabric over time and material fatigue, the preservation and transmission of these structures to future generations becomes a challenging engineering problem (Soleymani, Jahangir & Nehdi, 2023). In particular, the environmental degradation and alteration that natural stones—the primary load-bearing elements of these structures—undergo over time directly threaten structural integrity, and the scientific interest in this field is clearly demonstrated by recent bibliometric studies (Ay et al., 2024a). For monumental structures, which are generally located in active seismic zones, structural assessment and seismic risk analysis have emerged as critical necessities (Barbieri et al., 2013; Brando et al., 2017; Sevieri et al., 2020).

Conservation approaches based on traditional surveying and manual measurement techniques have now given way to a "digital transformation" process shaped

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- Static "as-built" models must be transformed into "Dynamic Digital Twin" structures that provide a continuous data stream by integrating with sensors (accelerometers, inclinometers, etc.) installed on the structure. The lack of standards regarding the real-time processing of sensor data in relevant data transfer protocols (e.g., IFC) must be addressed.
- The vast majority of studies in the literature have focused solely on seismic hazards. Future research should develop integrated risk frameworks that encompass not only earthquakes but also extreme weather events related to climate change, floods, wind, and long-term material degradation (carbonation, corrosion).

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CHAPTER 6

MAPPING METAVERSE RESEARCH IN TOURISM AND HOSPITALITY: TRENDS, THEMATIC EVOLUTION, AND FUTURE RESEARCH FRONTIERS

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INTRODUCTION

The tourism sector, like many other industries worldwide, is continually evolving and adapting to technological advances. The widespread adoption of Industry 4.0 technologies, such as augmented reality (AR), virtual reality (VR), and artificial intelligence (AI), has led to significant changes in how tourism services are produced and consumed. As part of this transformation, metaverse technology has emerged as an experiential environment that integrates the physical and digital worlds, allowing users to interact with one another through avatars in three-dimensional virtual spaces (Garip & Köker, 2023).

When examined in the context of tourism, the metaverse offers new opportunities for applications such as virtual exploration of destinations, experiential presentation of hotels and tourism products, and the organization of virtual events. Through this technology, tourists can experience their intended destinations in virtual environments prior to travel, create digital content, and construct immersive fictional worlds that diversify and enrich tourism experiences (Buhalis & Karatay, 2022). From the perspective of tourism businesses, the metaverse also enables the adoption of innovative and technology-aligned marketing practices. In this regard, the metaverse is increasingly viewed as a significant concept that aligns tourist experiences with digital technologies and provides tourism and hospitality enterprises with a potential source of competitive advantage.

Considering these developments, the metaverse has increasingly emerged as a topic of interest for tourism stakeholders and researchers. Recent studies in-

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However, the literature still appears to contain several significant research gaps. First, it is noteworthy that studies focusing specifically on metaverse-based tourism experiences remain relatively limited. For this reason, future research should place greater emphasis on topics such as metaverse tourism, virtual destinations, and digital tourism platforms. In addition, examining the effects of VR and AR technologies on tourism experiences across different tourist segments and various types of destinations may provide valuable contributions.

Future research is also encouraged to examine the relationship between immersive technologies and emerging themes such as sustainable tourism, smart tourism destinations, and digital tourism ecosystems. In this context, studies exploring how technologies such as artificial intelligence, big data analytics, and metaverse platforms transform tourism experiences are expected to make significant contributions to the literature.

In conclusion, this study evaluates the current state of the field holistically by revealing the developmental dynamics of research on immersive technologies in the tourism literature. The findings indicate that digital and immersive technologies are increasingly occupying a central position in tourism research and suggest that this research domain is likely to expand further in the future.

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CHAPTER 7

A BIBLIOMETRIC ANALYSIS OF THE LITERATURE ON SMART CITIES, SMART INFRASTRUCTURE AND URBAN PLANNING

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INTRODUCTION

The transformation of cities in the twenty-first century is shaped not only by classic urban challenges such as population growth, spatial sprawl and pressure on infrastructure, but also by digitalisation, data generation, the energy transition and fundamental shifts in governance models. The concepts of the smart city, smart infrastructure and smart networks lie at the heart of this transformation; they shift urban planning from a technical activity reduced to the organisation of physical space into a strategic decision-making arena that establishes multi-layered relationships between data, technology, institutions, citizen participation and sustainability. In this context, the literature on smart cities has developed on the assumption that cities can be made more efficient, liveable, competitive and sustainable through information and communication technologies; however, over time, this optimistic technological approach has shifted to a more critical ground, alongside debates on social justice, participation, data governance, urban inequality and market-driven urban development.

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obtained from different databases will more clearly highlight the global and local trends within the urban planning and smart infrastructure literature.

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