An Assessment of Turkey's Scientific Productivity in the Field of Computer Science and Information Systems Research

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Abstract

The research field of Computer Science and Information Systems has been gaining increasing importance in modern society. Numerous information systems are being integrated into our daily lives, addressing various needs. Research in this domain forms the foundation of technological advancements and contributes to the development of innovative solutions across multiple industries [1,2,3]. Moreover, bibliometric studies serve as valuable tools for assessing knowledge dynamics, particularly in rapidly evolving fields such as Computer Science and Information Systems. They facilitate the evaluation of scientific productivity at the national, institutional, and individual researcher levels, thereby enabling the formulation of strategic policies for national scientific output [4,5,6].In this study, we analyze research articles published in the "Computer Science, Information Systems" category between 2000 and 2024 with a focus on Turkey, utilizing bibliometric methodologies. The dataset was collected from the Web of Science (WoS) Core Collection on March 3, 2025. The analysis was conducted using VOSviewer and the R Bibliometrix Biblioshiny package. Additionally, various preprocessing and database-related analyses were performed using PHP programming language, Microsoft Power BI, and Oracle database systems.Between 2000 and 2024, a total of 1,261,121 documents were indexed in WoS within this research area. Of these, 43.63% (n=550,318) were research articles. The number of documents affiliated with Turkey (Turkey: 9,646 and Türkiye: 2,060) was 11,706, placing Turkey 28th worldwide in terms of scientific output. The top three countries in terms of publication volume were China (n=332,042, 26.32%), the United States (n=240,665, 19.08%), and India (n=71,838, 5.69%).The distribution of Turkey-affiliated documents by type is as follows:Articles (n=6,706),Proceedings papers (n=5,087),Review articles (n=150),Book chapters (n=131),Editorial materials (n=91).The top three journals publishing Turkey-affiliated research in this domain are: IEEE Access (n=1,342, 22.08%),Information Sciences (n=303, 4.98%),Multimedia Tools and Applications (n=256, 4.21%)The total number of citations received by Turkey-affiliated publications is 110,022, with an average citation per document of 18.11 and an h-index of 122. The five most productive institutions in Turkey in this field are: Istanbul Technical University (n=468, 7.70%),Middle East Technical University (n=376, 6.18%),Boğaziçi University (n=289, 4.75%),İhsan Doğramacı Bilkent University (n=263, 4.32%),Yıldız Technical University (n=225, 3.70%). Turkey has a young and dynamic population [3]. However, despite the presence of numerous computer science programs in almost all universities, the international impact of many Turkish institutions remains significantly limited. The discrepancy between Turkey's global ranking and the uneven distribution of scientific output among institutions highlights the urgent need to reassess higher education policies in the field of computer science. Given the strategic importance of this field across all industries and its critical role in global competitiveness, strengthening national policies and enhancing research output should be a priority.

Keywords: Computer science; information systems; bibliometrics; higher education politics, Turkiye.

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