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Centro de Investigación, Desarrollo e Innovación en Tecnologías de la
Información y las Comunicaciones
Grupo de Investigación sobre bibliometría y acceso a la información científica
abierta (UBICA)

Análisis de las publicaciones Open Access integradas en SCOPUS afiliadas a la Universidad Tecnológica de Panamá

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Introducción

La ciencia abierta es una cultura científica que ha sido potenciada a través de los años por la digitalización de los contenidos y el acceso a internet siendo sus principales características, el acceso y apertura de las publicaciones, donde los investigadores comparten sus resultados de manera casi inmediata con una mayor cobertura (OCSDNet, 2018). Como señala (Vidal Ledo & Zayas Mujica, 2018), “La ciencia abierta es un movimiento que fomenta las investigaciones científicas, metodologías y datos obtenidos a partir que ellas puedan ser distribuidas, reutilizadas y accesibles por todos los niveles de la sociedad de forma gratuita y libre”.

(Masuzzo & Martens, 2017) mencionan que la ciencia abierta se sostiene sobre cuatro (4) pilares: datos abiertos, código abierto, revisión abierta y acceso abierto, estos pilares destacan el acceso a resultados de investigación intercambio de resultados y datos de estos resultados (Sánchez Vargas, 2017). Otros autores como (Anglada & Abadal, 2018) manifiestan que la ciencia abierta es un cambio de paradigma en la forma de hacer ciencia, asegurando que el cambio no está en lo que se hace, sino en cómo se hace, donde la ciencia abierta se enfoca en hacer que el proceso científico sea más abierto e inclusivo a todos los actores del ecosistema de ciencia (COLCIENCIAS, 2017).

Como uno de los pilares de la ciencia abierta, el acceso abierto (Open Access en inglés, OA) es una práctica de proporcionar acceso en línea a información científica de forma libre, gratuita y sin restricciones. (Santillán-Aldana, 2012). Según (De Filippo & D’Onofrio, 2019) el OA quiere conseguir la difusión libre de derechos de los contenidos científicos. Este objetivo, no obstante, no colisiona con la legislación en derechos de autor ya que todas las acciones que se llevan a cabo respetan la legalidad vigente (Abadal, 2012)

En el año 2018 con la frase acuñada “Queremos más ciencia y la queremos abierta” se lleva a cabo en la ciudad de Panamá, la Declaración de Panamá sobre Ciencia Abierta, en la cual participaron Integrantes de la academia y organizaciones de la sociedad civil de América Latina y el Caribe, esta iniciativa se fundamenta sobre la necesidad de la actual sociedad que demanda la idealización de nuevos modelos de colaboración, por lo tanto esta declaración hace ineludible el papel de la ciencia como motor de la democracia, la libertad y la justicia social en el actual momento histórico. La declaración está conformada en base a siete (7) principios claves, que a su vez están contenidos en el “Manifiesto de ciencia abierta y colaborativa: hacia una ciencia abierta e inclusiva por el bienestar social y ambiental” (*Declaración de Panamá Sobre Ciencia Abierta*, 2018).

La declaración de Panamá dentro de sus principios resalta el uso de repositorios institucionales y portales de revistas OA como herramientas del acceso a la información científica abierta, sobre todo para visibilizar los contenidos académicos y científicos

generados por las instituciones de educación superior (Richardson & Wolski, 2012), sin embargo, no todos los documentos generados de investigación se pueden visibilizar sino aquellos que han sido publicados en revistas de acceso abierto (tipo dorada), híbridas o en repositorios preprints (Leng et al., 2016), por lo que existen limitantes en acceder a los trabajos publicados en revistas indexadas donde se paga un cargo por procesamiento o ACP y no pueden ser visibles en otras plataformas.

El objetivo de este documento es identificar, listar y analizar las publicaciones en acceso abierto indexadas en la base de datos de SCOPUS de la Universidad Tecnológica de Panamá así como mostrar las diferentes características de estas publicaciones, áreas de publicación, afiliaciones, fuentes, autores, años de publicación, tipos de documentos y contextualizar el porcentaje del acceso abierto de la UTP en un contexto mundial y regional utilizando la plataforma COKI.

Resultados

a. Resumen de datos de UTP en SCOPUS

- Número de Publicaciones: 820
- Número de Publicaciones OA: 280
- Periodo:2003-2023

Datos de publicaciones OA

- Idiomas: 238 inglés, 38 español, 1 portugués
- Áreas de la ciencia cubiertas: 23
- Afiliaciones: 200
- Autores: 205
- Países: 60
- Publicaciones por año: 27.8
- Tipos de publicación: Article 183, conference paper 73, Review 16, otros 4
- Fuentes de publicación: 115
- Total de citas: 1983
- Promedio de citas: 9.7
- Promedio de páginas por documento: 12

b. Datos de Base de datos Scopus

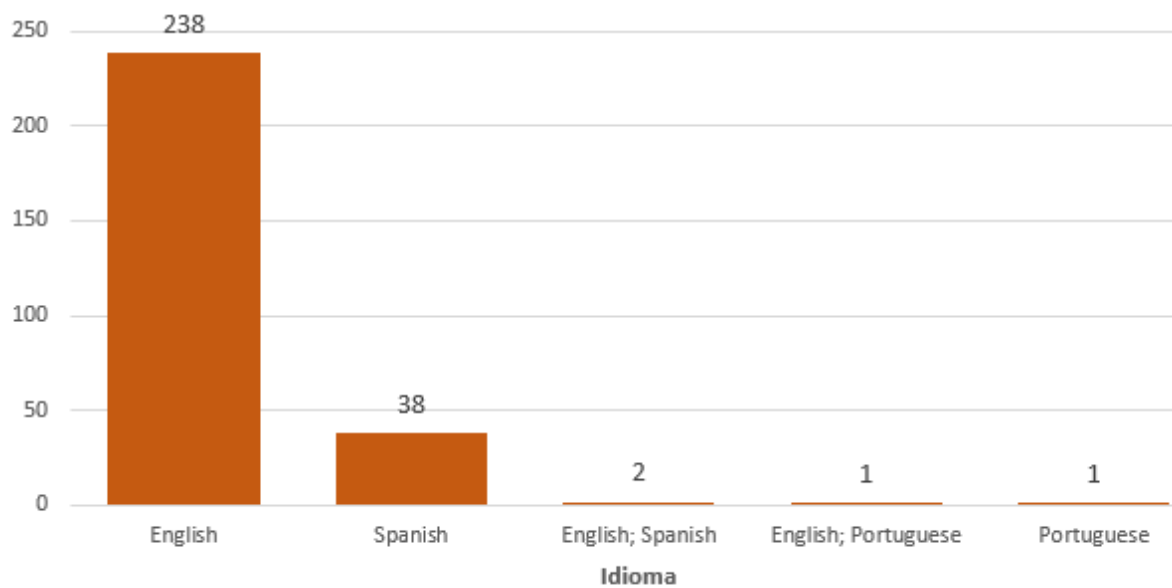
El realizar una búsqueda en la base de datos de SCOPUS con afiliación de la Universidad Tecnológica de Panamá, se identificaron 820 publicaciones generadas desde el año 2003 al 2023. De estas publicaciones se identificaron 280 publicaciones en OA con diferentes tipos de acceso, dorado, hibrido, bronce y verde.

Este número de publicaciones OA en SCOPUS representa el 48% de las publicaciones OA identificadas en la plataforma COKI. Las otras publicaciones en COKI son publicaciones pueden ser publicaciones en revistas indexadas en Web of Science o publicaciones de revistas científicas OA integradas en el Portal de revistas de la UTP las cuales utilizan el identificador persistente DOI.

b.1. Publicaciones OA por Idioma

De las 280 publicaciones OA seleccionadas estas han sido publicadas en tres idiomas, 238 están en el idioma inglés, 38 en español, y tres publicaciones, en inglés-español, inglés-portugués y portugués mostrado en la figura 1. El 69.7% de las publicaciones en inglés son artículos de revistas indexadas en SCOPUS, de las publicaciones en el idioma español, el 60.5% son de publicaciones publicadas en conferencias.

Figura 1. Idioma de las publicaciones OA de la UTP en SCOPUS



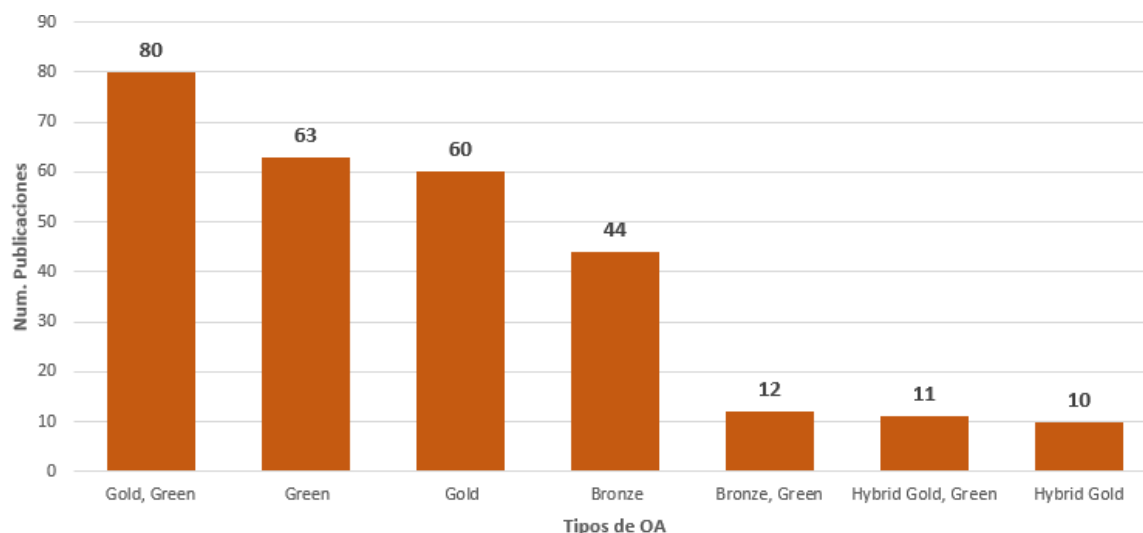
b.2. Publicaciones OA por tipo de acceso abierto

En el entorno OA las publicaciones pueden ser categorizadas en cuatro tipos, Gold (Dorada), Hibrid Gold (Dorada Hibrida), Bronze, Green las cuales junto con su definición se muestran en la tabla 1. En la figura 2 muestra que el tipo de OA con más publicaciones es Gold- Green con 80, que indica que estas publicaciones han sido publicadas en revistas y también han sido integradas en repositorios OA, con 63 el tipo Green, donde una versión del manuscrito está en un repositorio, 60 del tipo Gold las cuales solo están publicadas en revistas OA. Se resalta 21 trabajos con el tipo Hybrid Gold, donde estos autores pagaron un APC para que su documento estuviera en OA.

Tabla 1. Tipos de documentos Open Access

Tipo OA	Definición
Gold	Versión publicada con licencia Creative Commons, disponible en plataforma editorial. Los documentos están en revistas que solo publican acceso abierto
Hybrid Gold	Las revistas cobran a los autores un APC para hacer que los artículos publicados individuales estén disponibles gratuitamente en revistas de acceso abierto.
Bronze	Versión publicada de libre lectura en las páginas de la revista, pero sin una licencia abierta explícita que permita su distribución y reutilización.
Green	Versión publicada o manuscrito aceptado para publicación, disponible en repositorio. Los documentos también pueden estar disponibles en Gold u otra plataforma gratuita de publicaciones.

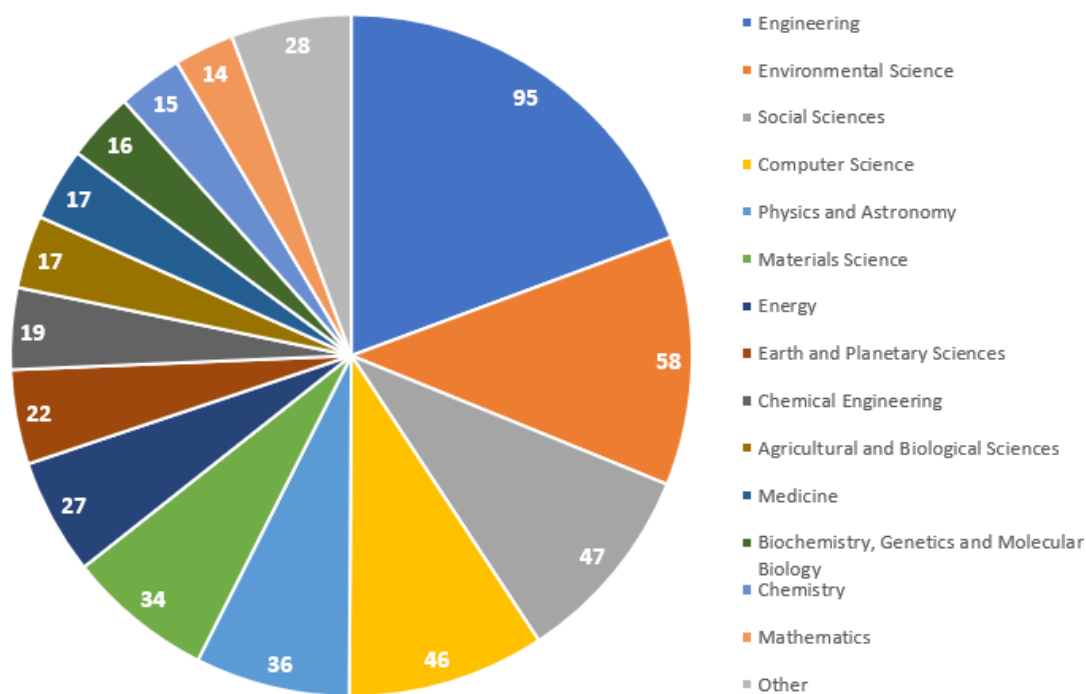
Figura 2. Número de publicaciones OA en SCOPUS de la UTP por tipo de acceso abierto



b.3. Publicaciones OA por área de la ciencia

Las publicaciones OA identificadas en SCOPUS de la UTP cubren 23 áreas. En la figura 3 se muestran las 14 áreas con más publicaciones, siendo las cinco áreas con más publicaciones, Engineering con 95 publicaciones, Environmental Science con 58, Social Sciences con 47, Computer Science con 46, Physics and Astronomy con 36. Del área de Engineering el 57.9% provienen de artículos en revistas, en el área de Environmental Science el 75.8% de artículos de revistas, pero en área de Social Sciences el 57.4% proviene de artículos en conferencias

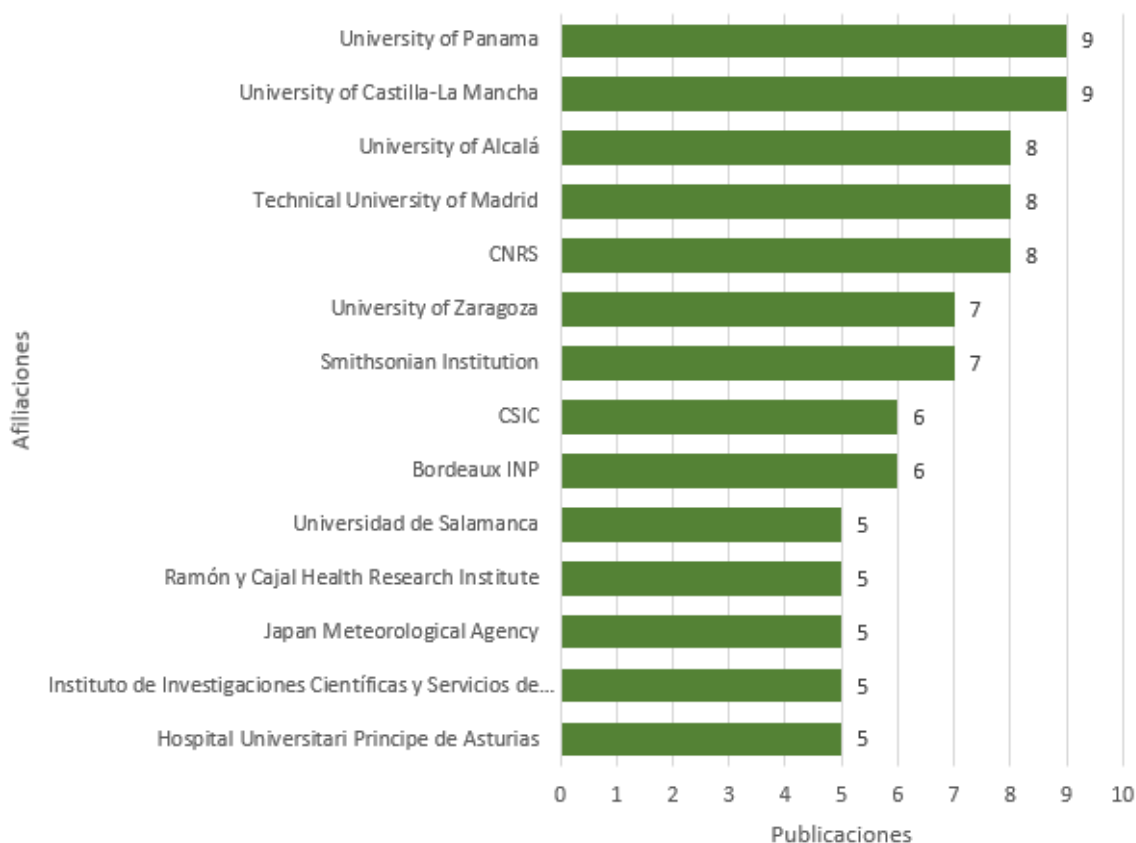
Figura 3. Número de publicaciones OA de la UTP en SCOPUS por área



b.4. Publicaciones OA por afiliación

Las afiliaciones son las instituciones a las cuales los autores se vinculan en una publicación, en las publicaciones OA en SCOPUS de la UTP se identificaron 200 afiliaciones de coautores, donde 14 instituciones mostradas en la figura 1 muestran más de cinco participaciones en publicaciones siendo la Universidad de Panamá la que tiene más participación en publicaciones con la UTP con 9, seguido de la Universidad Castilla de la Mancha también 9, la Universidad de Alcalá y la Universidad Técnica de Madrid con 8, siendo estas tres de España.

Figura 4. Afiliaciones UTP de publicaciones OA en SCOPUS con más de 5 publicaciones

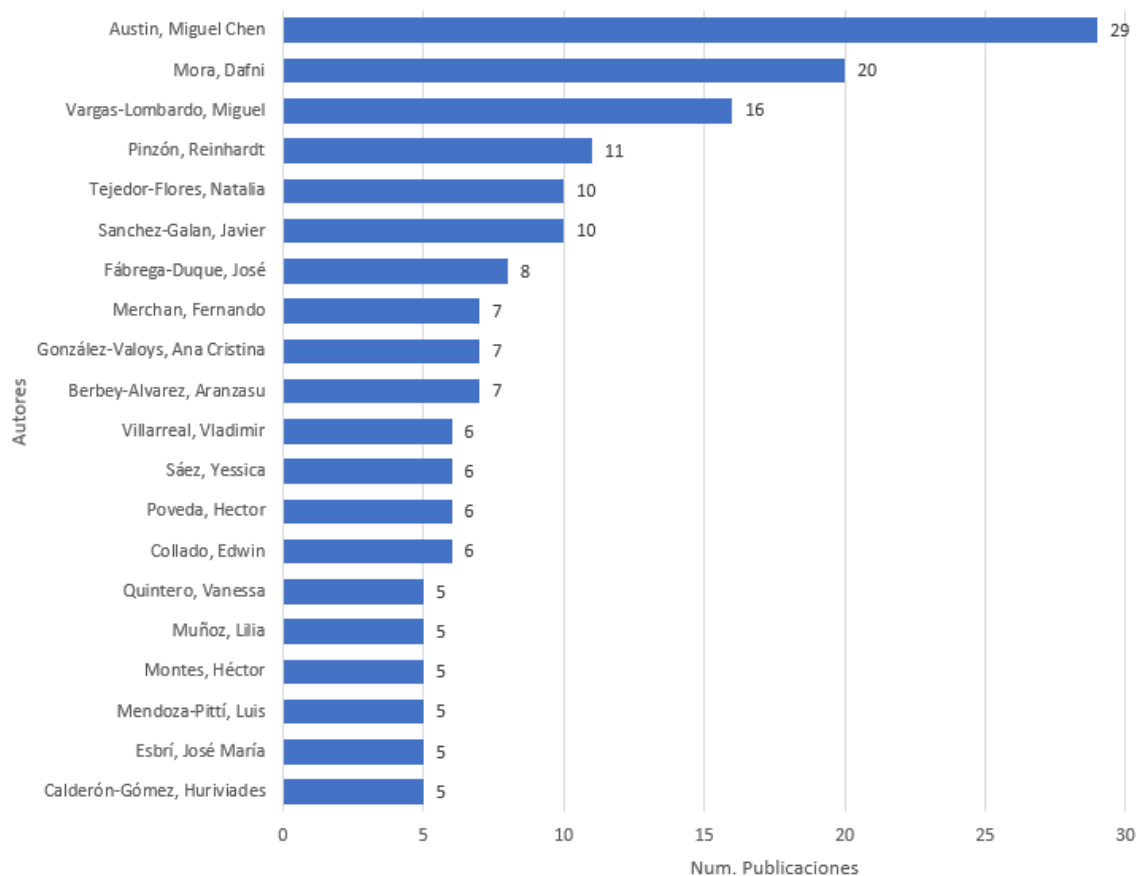


b.5. Publicaciones OA por autor

EL número de autores con las publicaciones OA en SCOPUS de la UTP fue de 205, con autoría o coautoría y una media de 3.2 publicaciones realizadas. En la figura 5, se listan los 20 autores con más de cinco publicaciones, siendo el Miguel Chen Austin con 29 publicaciones el que ocupa la primera posición, seguido de la Dafni Mora con 20, ambos del Grupo de Investigación en Energética y Confort en Edificaciones Bioclimáticas (ECEB) de la Facultad de Mecánica en la UTP.

Aunque no es parte de este estudio, resaltamos que entre los autores de la figura 5, están cuatro investigadores doctores, miembros del Sistema Nacional de Investigación (SNI) además de ganadores del premio al investigador del año, en diferentes años: Miguel Chen Austin (2022), Miguel Vargas Lombardo (2018), Vladimir Villarreal (2016), Lilia Muñoz (2021), actual Vicerrectora de Investigación, Postgrado y Extensión de la UTP.

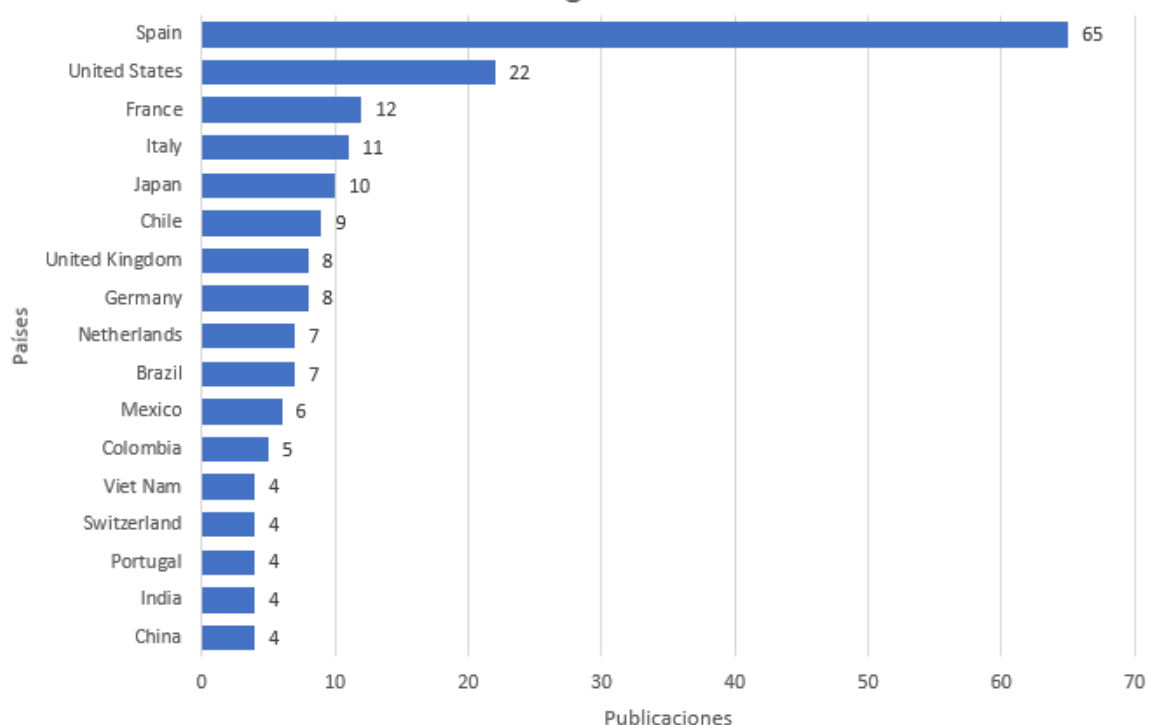
Figura 5. Autores UTP con más publicaciones OA en SCOPUS



b.6. Publicaciones OA por país

Las publicaciones OA de la UTP en SCOPUS han tenido participación de 60 países de las instituciones con afiliación en las publicaciones por parte de los autores, donde Panamá es el país con más autores afiliados, con 280. En las afiliaciones externas, España ocupa la segunda posición en participación en publicaciones que según la figura 2, a participado en 65 publicaciones, seguido de Estados Unidos con 22, Francia con 12, de Latinoamérica, Chile con nueve, México con seis y Colombia con cinco participaciones en las publicaciones UTP.

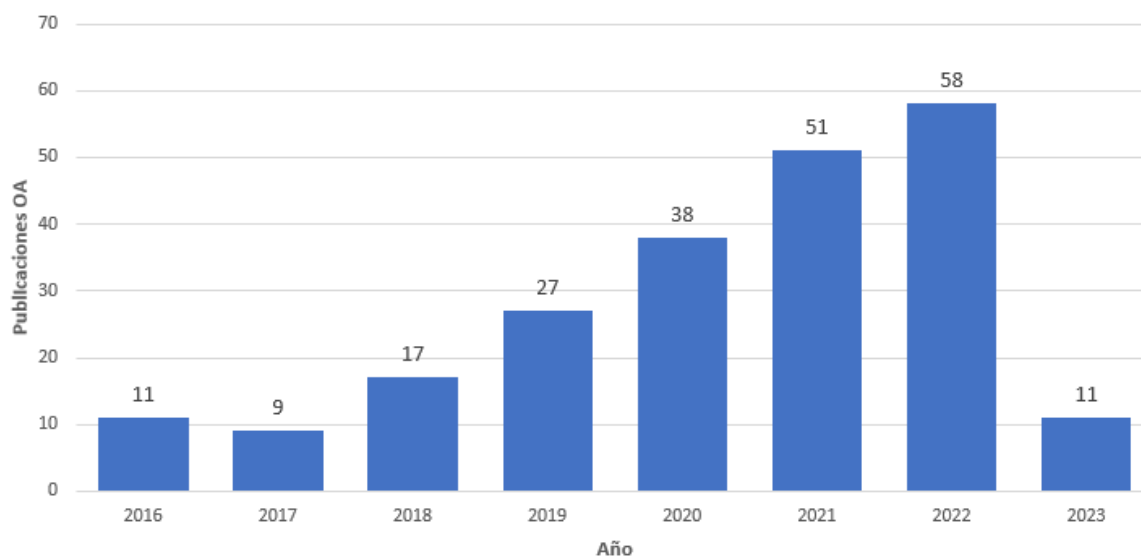
Figura 6. Países de instituciones afiliadas a publicaciones OA de la UTP en SCOPUS



b.7. Publicaciones OA por año

En el número de publicaciones OA por año en SCOPUS, la figura 3 muestra el número de publicaciones desde el año 2016, con un incremento sostenido hasta el 2022, siendo precisamente el año 2022 con más publicaciones OA con 58, con un promedio por año desde el 2003 de 27.8 publicaciones OA. Antes del 2016 se contabilizaron 58 publicaciones de la UTP en OA pero con variaciones en los años con un promedio de 4.8 publicaciones.

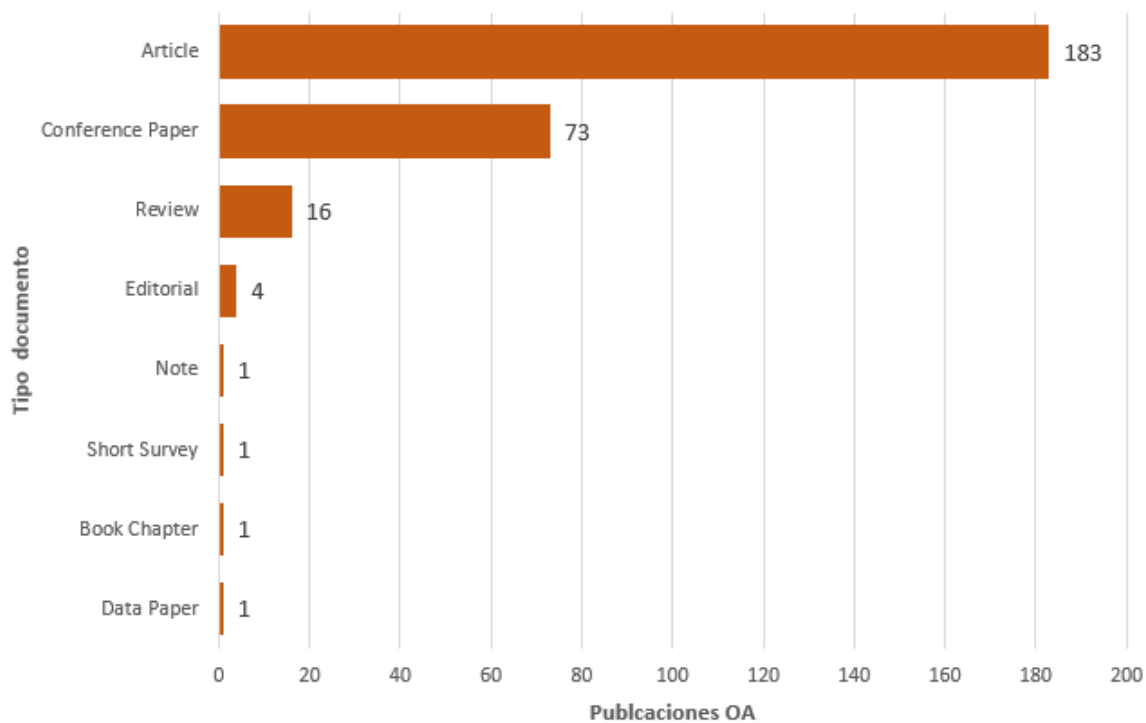
Figura 7. Publicaciones OA de la UTP en Scopus por año desde 2016



b.8. Publicaciones OA por tipo de publicación

De las 280 publicaciones OA en SCOPUS se identificaron ocho tipos de documentos en que SCOPUS ha agrupado las publicaciones, el mayor número de esta publicación corresponde al tipo *Article* con 183 (publicados en 117 Journal indexados), seguido de *Conference paper* con 73 publicaciones (publicados en 31 conferencias) y *Review* con 16 (publicados en 14 revistas y conferencias), según figura 4, que también indica otros tipos como, editorial (4), Note, Short Survey, Book Chapter y Data paper con uno.

Figura 8. Publicaciones OA de la UTP en Scopus por tipo de publicación



b.9. Publicaciones OA por fuente de publicación

El total de fuentes donde se han publicados los artículos OA de UTP en SCOPUS es de 115, la tabla 2 muestra el listado de las fuentes con más de dos publicaciones. Los documentos publicados en el Congreso *Proceedings of the LACCEI international Multi-conference for Engineering, Education and Technology* con 27, es la fuente con más publicaciones, seguidos de los Journals, *Sensors* con 12, *Applied Sciences* con 9 *Air, Soil and Water Research* y *Sustainability* con 7 publicaciones. De las publicaciones en LACCEI, todas son del área de Engineering and Social Science cuyo tipo de OA es Bronce

Tabla 2. Listado de las fuentes con más publicaciones OA de la UTP en SCOPUS

Fuentes	Pub.
Tipo: Conference Paper	73
Proceedings of the LACCEI international Multi-conference for Engineering, Education and Technology	27
E3S Web of Conferences	7
Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)	3
Proceedings of SPIE - The International Society for Optical Engineering	2
Emerging Trends in Mobile Robotics- Proceedings of the 13th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines, CLAWAR 2010	2
Proceedings of the Annual Conference of the Prognostics and Health Management Society, PHM	2
WIT Transactions on Ecology and the Environment	2
Proceedings - Winter Simulation Conference	2
WIT Transactions on the Built Environment	2
Procedia Computer Science	2
Journal of Physics: Conference Series	2
Tipo: Article	183
Sensors (Switzerland)	12
Applied Sciences (Switzerland)	9
Sustainability (Switzerland)	7
Air, Soil and Water Research	7
International Journal of Environmental Research and Public Health	6
IEEE Access	5
Energies	4
Biomimetics	4
Journal of Chemical Thermodynamics	4
Optics Express	3

Análisis de las publicaciones Open Access integradas en SCOPUS afiliadas a la Universidad Tecnológica de Panamá

Astronomy and Astrophysics	3
RIAI - Revista Iberoamericana de Automatica e Informatica Industrial	2
Microprocessors and Microsystems	2
Waste Management	2
International Journal of Energy and Environmental Engineering	2
Hydrological Research Letters	2
Science of the Total Environment	2
WIT Transactions on Ecology and the Environment	2
Atmosphere	2
Environmental Geochemistry and Health	2
Ecosistemas	2
Expert Systems with Applications	2
Journal of the Acoustical Society of America	2
International Journal of Advanced Robotic Systems	2
Review	16
Acta Informatica Medica	2
Biomimetics	2

b.10. Publicaciones OA por número de citas

Al evaluar el impacto de las 280 publicaciones OA de la UTP a través de las citas, el 72.5% de estas tiene al menos una cita, siendo el total de citas 1983, con una media de citas es de 9.7 citas por publicación. En la tabla 3 se muestran las publicaciones con más de 15 citas, siendo la publicación más citada con 186, *Time-reversal imaging with multiple signal classification considering multiple scattering between the targets*, publicada en el 2004, por los autores Gruber F.K., Marengo E.A., Devaney A.J., en el *Journal of the Acoustical Society of America*.

Tabla 3. Listas de publicaciones OA de la UTP en SCOPUS con más citas

Titulo de la Publicación	citas
Time-reversal imaging with multiple signal classification considering multiple scattering between the targets	186
IMAGES: II. A surprisingly low fraction of undisturbed rotating spiral disks at $z \sim 0.6$ the morpho-kinematical relation 6 Gyr ago	61
Edge computing, iot and social computing in smart energy scenarios	60
Operating conditions of lead-acid batteries in the optimization of hybrid energy systems and microgrids	57
How was the Hubble sequence 6 yr ago?	56
IdMAS-SQL: Intrusion Detection Based on MAS to Detect and Block SQL injection through data mining	49
IMAGES IV: Strong evolution of the oxygen abundance in gaseous phases of intermediate mass galaxies from $z \sim 0.8$	46
Viscosity and density measurements of aqueous amines at high pressures: MDEA-water and MEA-water mixtures for CO ₂ capture	39
Systematic literature review: Integration of additive manufacturing and industry 4.0	38
The effect of biomass physical properties on top-lit updraft gasification of woodchips	36
S-MAS: An adaptive hierarchical distributed multi-agent architecture for blocking malicious SOAP messages within Web Services environments	34
Multisensory system for fruit harvesting robots. Experimental testing in natural scenarios and with different kinds of crops	32
The mental health continuum-short form: The structure and application for cross-cultural studies—A 38 nation study	32
High infestation of invasive Aedes mosquitoes in used tires along the local transport network of Panama	31
Combination of RGB and multispectral imagery for discrimination of Cabernet Sauvignon grapevine elements	31
Adoption of good virtual education practices in higher education [Adopción de buenas prácticas en la educación virtual en la educación superior]	27

Biogeography and conservation status of the pineapple family (Bromeliaceae)	27
Automatic detection of field-grown cucumbers for robotic harvesting	26
AIIDA-SQL: An Adaptive Intelligent Intrusion Detector Agent for detecting SQL injection attacks	24
Analysis of short-term steel corrosion products formed in tropical marine environments of Panama	23
A Planning and Optimization Framework for Ultra Dense Cellular Deployments	23
Overall equipment effectiveness: Systematic literature review and overview of different approaches	21
Measurement Invariance of Personal Well-Being Index (PWI-8) Across 26 Countries	20
Distribution of Plastic Debris in the Pacific and Caribbean Beaches of Panama	19
Inactivation of <i>Pseudomonas aeruginosa</i> and Methicillin-resistant <i>Staphylococcus aureus</i> in an open water system with ozone generated by a compact, atmospheric DBD plasma reactor	19
Using a communication model to collect measurement data through mobile devices	19
Reliable, built-in, high-accuracy force sensing for legged robots	18
Radiation of Dynamic Toroidal Moments	18
MCMC Techniques for Parameter Estimation of ODE Based Models in Systems Biology	18
An experimental platform for autonomous bus development	18
Density and viscosity measurements of aqueous amines at high pressures: DEA-water, DMAE-water and TEA-water mixtures	17
Telemonitoring System for Infectious Disease Prediction in Elderly People Based on a Novel Microservice Architecture	16
Assisting visually impaired people in the public transport system through rf-communication and embedded systems †	16
Nitrous oxide fluxes from a commercial beef cattle feedlot in Kansas	16

b.11. Publicaciones OA por número de páginas

De los documentos con más de 4 páginas se identificaron 132 documentos con un promedio de 12 páginas, siendo el documento más extenso, según tabla 4, *Denitrification Modeling using Natural Organic Solid Substrates as Carbon Sources* [Modelación de desnitrificación usando Sustratos Sólidos Orgánicos Naturales Como Fuentes de Carbono], con 37 páginas, publicado en el 2021 por de León E.M.D en la revista *Tecnología y Ciencias del Agua* en el idioma español.

Tabla 4. Listado de publicaciones OA de la UTP en SCOPUS con más páginas

Título de la Publicación	Páginas
Denitrification Modeling using Natural Organic Solid Substrates as Carbon Sources [Modelación de desnitrificación usando Sustratos Sólidos Orgánicos Naturales Como Fuentes de Carbono]	37
Design and implementation of a low-cost IoT-based agroclimatic monitoring system for greenhouses	32
A new approach for combining time-of-flight and RGB cameras based on depth-dependent planar projective transformations	28
Profit maximization with customer satisfaction control for electric vehicle charging in smart grids	27
A Multiobjective Optimization Approach for Retrofitting Decision-Making towards Achieving Net-Zero Energy Districts: A Numerical Case Study in a Tropical Climate	27
Publish/subscribe protocol in wireless sensor networks: Improved reliability and timeliness	25
University-company collaboration in Panamá: A proposal for the problem solutions in key sectors of the economy [Colaboración universidad-empresa en Panamá: Propuesta para la resolución de problemas en sectores clave de la economía]	24
Systematic literature review: Integration of additive manufacturing and industry 4.0	23
Sentiment Analysis of Public Social Media as a Tool for Health-Related Topics	22
Definition of future scenarios on the capacity for innovation in Panama: Prospective study [Definición de escenarios futuros sobre la capacidad de innovación en Panamá: Estudio prospectivo]	22
Modelling operative and routine learning curves in manoeuvres in locks and in transit in the expanded Panama Canal	22
Vis-NIR, SWIR and LWIR imagery for estimation of ground bearing capacity	21
Combination of RGB and multispectral imagery for discrimination of Cabernet Sauvignon grapevine elements	21
A new species of mud turtle of genus kinosternon (Testudines: Kinosternidae) from the pacific coastal plain of northwestern Mexico	20
Reliable, built-in, high-accuracy force sensing for legged robots	19
Using a communication model to collect measurement data through mobile devices	19
Multi Skin Lesions Classification using Fine-tuning and Data-augmentation Applying Nasnet	19

Multisensory system for fruit harvesting robots. Experimental testing in natural scenarios and with different kinds of crops	19
An approach for evaluating the bioavailability and risk assessment of potentially toxic elements using edible and inedible plants—the Remance (Panama) mining area as a model	19
The mental health continuum-short form: The structure and application for cross-cultural studies—A 38 nation study	18
Adaptive mechanisms of visual motion discrimination, integration, and segregation	18
Towards a Service-Oriented Architecture for the Energy Efficiency of Buildings: A Systematic Review	18
Development of a new green indicator and its implementation in a cyber–physical system for a green supply chain	18
Smart farming: A potential solution towards a modern and sustainable agriculture in Panama	18
Primary data priorities for the life cycle inventory of construction products: focus on foreground processes	17
RESILIENCE AND SUSTAINABILITY INDICATORS FOR PANAMANIAN URBAN HOUSING IN THE FACE OF CLIMATE CHANGE [INDICADORES DE RESILIÊNCIA E SUSTENTABILIDADE PARA A HABITAÇÃO URBANA PANAMENHA DIANTE DAS MUDANÇAS CLIMÁTICAS] [INDICADORES DE RESILIENCIA Y SOSTENIBILIDAD PARA LA VIVIENDA URBANA PANAMEÑA FRENTE AL CAMBIO CLIMÁTICO]	17
Embedding quasi-static time series within a genetic algorithm for stochastic optimization: the case of reactive power compensation on distribution systems	17
Proteomic fingerprinting of neotropical hard tick species (Acari: Ixodidae) using a selfcurated mass spectra reference library	17
A Hybrid System For Pandemic Evolution Prediction	17
Social projects management income housing [Gestão social na habitação social projectos de interesse] [La gestión social en proyectos de vivienda de interés social]	17
IMAGES IV: Strong evolution of the oxygen abundance in gaseous phases of intermediate mass galaxies from $z \sim 0.8$	17
A fuzzy logic-based approach for estimation of dwelling times of panama metro stations	17
Mapping the Intellectual Structure of Entrepreneurship Research: Revisiting the invisible college [A Estrutura Intelectual da Pesquisa sobre Empreendedorismo: Visita à escola invisível]	17
Predicting the appearance of hypotension during hemodialysis sessions using machine learning classifiers	16
Volumetric quantification and quality of water stored in a mining lake: A case study at Reocín mine (Spain)	16
IdMAS-SQL: Intrusion Detection Based on MAS to Detect and Block SQL injection through data mining	16

ANEXO

Tabla 5. Listado de publicaciones Open Access con afiliación UTP por tipo de publicación y año

Article
2023
A Machine Learning-Based Approach to Estimate Energy Flows of the Mangrove Forest: The Case of Panama Bay
https://doi.org/10.3390/su15010664
A Reference Framework for Zero Energy Districts in Panama Based on Energy Performance Simulations and Bioclimatic Design Methodology
https://doi.org/10.3390/buildings13020315
An approach for evaluating the bioavailability and risk assessment of potentially toxic elements using edible and inedible plants—the Remance (Panama) mining area as a model
https://doi.org/10.1007/s10653-021-01086-8
Analysis of the profiles of researchers from Panama and Google Scholar bibliometric indicators
https://doi.org/10.3989/redc.2023.1.1962
COVID-19 impacts on household solid waste generation in six Latin American countries: a participatory approach
https://doi.org/10.1007/s10661-022-10771-9
Evaluation of antimony availability in a mining context: Impact for the environment, and for mineral exploration and exploitation.
https://doi.org/10.1016/j.chemosphere.2022.137086
Evaluation of fault injection tools for reliability estimation of microprocessor-based embedded systems
https://doi.org/10.1016/j.micpro.2022.104723
Managing sustainable practices and logistics value to improve customer loyalty: importers vs. freight forwarders
https://doi.org/10.1007/s13437-023-00299-1
Microwaves can kill malaria parasites non-thermally
https://doi.org/10.3389/fcimb.2023.955134
Production and Characterization of Wild Sugarcane (<i>Saccharum spontaneum</i> L.) Biochar for Atrazine Adsorption in Aqueous Media
https://doi.org/10.3390/agronomy13010027
Trace elements in farmland soils and crops, and probabilistic health risk assessment in areas influenced by mining activity in Ecuador
https://doi.org/10.1007/s10653-023-01514-x
2022
A Hybrid System For Pandemic Evolution Prediction
https://doi.org/10.14201/adcaij.28093

A Multiobjective Optimization Approach for Retrofitting Decision-Making towards Achieving Net-Zero Energy Districts: A Numerical Case Study in a Tropical Climate
https://doi.org/10.3390/smartcities5020023
A Redesign Methodology to Improve the Performance of a Thermal Energy Storage with Phase Change Materials: A Numerical Approach
https://doi.org/10.3390/en15030960
Ambient Noise H/V Spectral Ratio in Site Effect Estimation in La Mesa de Macaracas, Panama
https://doi.org/10.1155/2022/6171529
Analyzing Spanish-Language Public Sentiment in the Context of a Pandemic and Social Unrest: The Panama Case
https://doi.org/10.3390/ijerph191610328
Assessment of Different Envelope Configurations via Optimization Analysis and Thermal Performance Indicators: A Case Study in a Tropical Climate
https://doi.org/10.3390/su14042013
Assessment of sediment profiles applying nuclear techniques: use of a nucleonic gauge in Panama Canal watershed
https://doi.org/10.1016/j.net.2022.06.022
Automatic Understanding and Mapping of Regions in Cities Using Google Street View Images
https://doi.org/10.3390/app12062971
Characterization of the soil and rock hosting an aquifer with possible uses for drinking water and irrigation in SE Panama City using Geotechnical, Geophysical and Geochemical parameters
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