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REVIEW

Exploring Managerial Innovation in the University Context: an In-Depth Look through a Systematic Literature Review

Exploración de la innovación empresarial en el contexto universitario: una mirada en profundidad a través de una revisión sistemática de la literatura

Hanae Amrani[1], Zouheir Boussouf[2], Ahmed Aftiss[3]

[1]Faculty of Law Economics and Social Sciences, Sidi Mohammed Ben Abdellah University. Fez, 28810, Morocco.

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Corresponding author: Hanae Amrani

ABSTRACT

This article explores the evolution and growing importance of managerial innovation in the university context, based on an in-depth analysis of existing literature. In the face of globalization and higher education challenges, managerial innovation is crucial for modernizing pedagogical practices, enhancing teaching quality, and addressing students' needs. This systematic literature review evaluates key studies, including those by Xue & Wang (2024) and Chung & Espinoza (2023), to assess the impact of innovation on university management. The analysis focuses on trends from 2014 to 2024, drawing on works from the Scopus database. The study addresses four main questions: the relationship between managerial innovation and university education, their reciprocal interaction, the impact of innovation on higher education, and the gaps in current research. The article highlights key findings while stressing the importance of an ethical approach to implementing managerial innovation in universities. The structure includes the methodology, synthesis, analysis, and conclusions on future research directions.

Keywords: Managerial Innovation; University Management; Higher Education; Systematic Literature Review; Pedagogical Practices.

RESUMEN

Este artículo explora la evolución y la creciente importancia de la innovación en la gestión en el contexto universitario. A través de un análisis profundo de la literatura existente, se busca comprender el impacto de la innovación en la gestión universitaria. En la era de la globalización y los desafíos específicos de la enseñanza superior, la innovación se ha vuelto esencial para modernizar las prácticas pedagógicas, mejorar la calidad educativa y responder a las necesidades de los estudiantes. Esta revisión sistemática examina estudios, incluidos los de Xue & Wang (2024) y Chung & Espinoza (2023), para evaluar cómo la innovación influye en la gestión universitaria. El análisis, basado en trabajos clave de Scopus (2014-2024), identifica tendencias actuales y emergentes. Se estructuran cuatro preguntas clave: la relación entre innovación y educación universitaria, su interacción recíproca, el impacto de la innovación en la educación superior y los desafíos de la investigación actual. Se concluye resaltando la importancia de un enfoque reflexivo y ético en la adopción de la innovación.

Palabras clave: Innovación Gerencial; Gestión Universitaria; Educación Superior; Revisión Sistemática de la Literatura; Prácticas Pedagógicas.

INTRODUCTION

Managerial innovation plays a crucial role in higher education, where universities must continuously improve their processes to adapt to technological advancements and maintain academic excellence. The increasing significance of this topic is supported by recent studies that highlight the need for innovative management practices to enhance universities' competitiveness in a globalized environment. Historically, university management has evolved in response to contemporary challenges, shifting from traditional models to more adaptive and innovation-driven approaches. The rise of digital transformation and the changing expectations of university stakeholders call for a deeper exploration of how managerial innovation can improve the operational and academic performance of higher education institutions. However, significant knowledge gaps remain in understanding the interaction between university management and innovation. Several key questions are still unresolved:

1. What is the precise nature of the relationship between innovation and university management?
2. How do these two domains interact to optimize management practices?

The objectives of this article are to clarify this relationship, critically assess the current theoretical frameworks, and propose new research directions to bridge the existing gaps. The article is structured as follows: a literature review to establish the theoretical foundation, followed by a detailed description of the methodology, an analysis of the results, and a conclusion highlighting future research avenues.

RESULTS

This study conducted a systematic literature review to examine the intersection of innovation and management in the university context, primarily using the Scopus database to collect relevant data. Specific inclusion criteria were applied to filter the most pertinent articles. Initially, a search was conducted in Scopus focusing on titles and abstracts that included the terms "innovation" and "university management," resulting in 226 articles. A subsequent search, using the query TITLE-ABS-KEY (university AND managerial AND innovation), narrowed the selection to 125 articles. The search was further refined by focusing on conference articles in the management field, limited to English-language studies with specific keywords. This final search yielded 42 articles, with the following search query: TITLE-ABS-KEY (university AND managerial AND innovation), published between 2014 and 2024, limited to business and management subject areas and articles in English.

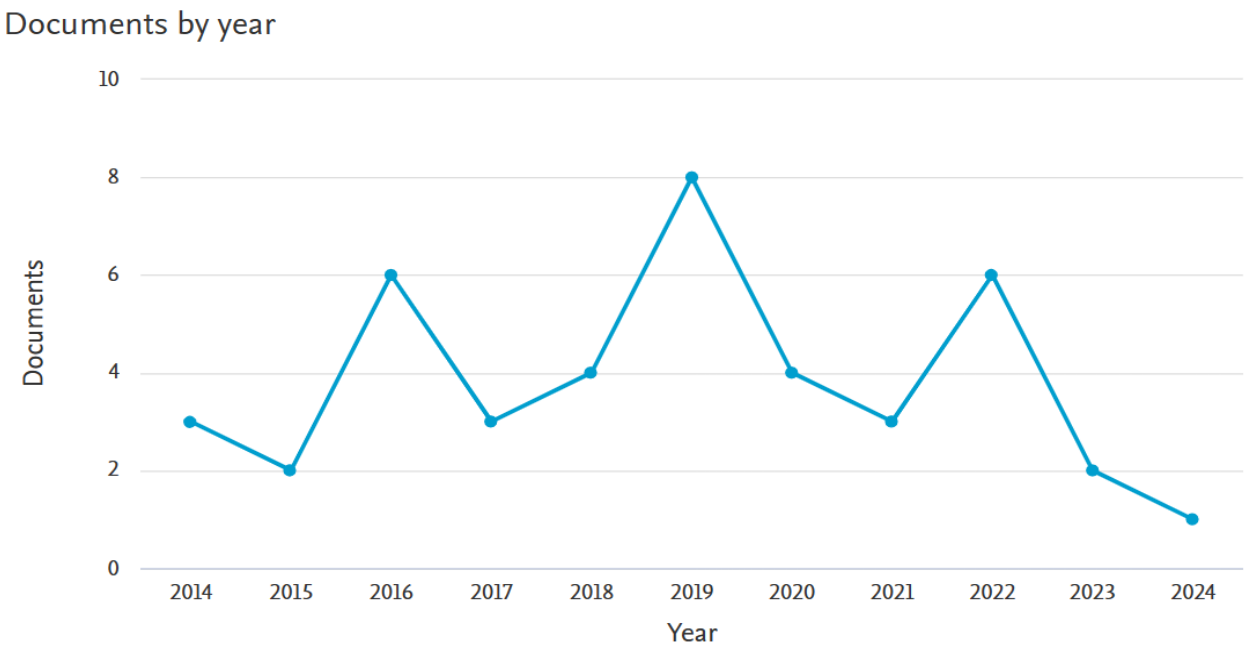

Figure 1. Chronological evolution of research on innovation and university management

This figure shows the evolution of research on "Innovation" and "University Management" from 2014 to 2024. Initially, there was limited research on the topic, but interest steadily increased from 2016, with notable peaks in 2016, 2019, and 2022. Despite some fluctuations, the growing importance of this subject in universities is evident, underscoring the need for further research. The following 42 studies are summarized in the table below based on the reviewed works.

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Table 1. Summary of selected studies

Authors	Context	Objectives	Methodology	Results
(1)	Radical green innovation strategy for sustainable development in the VUCA context.	Understanding the impact of proactive cross-border research on radical green innovation.	Resource-based theory of vision, data analysis of 294 manufacturing companies in China.	Positive impact of proactive research on green innovation, with organizational resilience as a mediator and megadata analysis as a moderating factor.
(2)	Network management for eco-innovation in the manufacturing sector.	Assess critical network factors for eco-innovation.	Delphi methodology, survey of 116 triple helix experts.	63 factors were identified, with key ones being environmental concern, innovative strategies, and contract integrity standards.
(3)	Knowledge management in Peruvian public universities.	Examine the impact of transformational leadership on knowledge management.	Analysis of regression models with interaction terms, online survey of 370 managers.	Positive effect of transformational leadership on knowledge management, with organizational culture as moderator.
(4)	Collaboration between companies and universities.	Identify factors mitigating concerns about knowledge spillovers.	Analysis of co-authorship data between 157 pharmaceutical companies and 400 top universities.	Intra-company collaboration strengthens co-author links with universities, underlining the role of internal collaboration.
(5)	University-industry relations, joint university-industry laboratories.	Exploring the dynamics of joint university-industry laboratories.	Exploring four dimensions in the context of mixed laboratories.	Identified challenges in managing mixed laboratories and the need for further research.
(6)	Preferences of business university graduates on the job market.	Identify and test the selection criteria of preferred employers.	Case study of higher education institutions in the Czech Republic, survey of 238 graduates.	Notable differences in employer selection criteria based on age, gender, and education level.
(7)	Collaboration between design and business students.	Identify opportunities for joint ventures within a company.	Analysis of a survey of design and business students.	Shared understanding of organizational goals despite group differences, enabling effective collaboration.
(8)	Stakeholder management by technology transfer offices (OTTs).	Examine how OTTs define, classify and deal with their stakeholders.	Exploratory analysis of OTT at 5 Flemish universities.	Ad hoc rather than structured approaches, lack of strategic focus.
(9)	Maker Space and collaborative innovation.	Analyze the evolutionary stability strategy of collaborative innovation behavior.	Evolutionary game theory, numerical simulation.	Different managerial strategies are vital for collaborative decisions and the growth of incubated start-ups.
(10)	Diffusion of Industry 4 (I4.0) knowledge in industrial districts (ID).	Examine the diffusion of I4.0 knowledge, explore diffusion mechanisms.	Pesaro ID case study, 18 individual interviews.	Complexity of I4.0 requires a combination of traditional and innovative mechanisms, major evolutions in diffusion and cooperation.
(11)	The impact of leadership on knowledge sharing and innovation in higher education in Indonesia.	Understanding how leadership influences knowledge sharing and innovation.	Survey of 500 academic staff at Indonesian universities in South Kalimantan, using structural equation modeling.	Leadership enhances innovation via knowledge sharing, with a new model promoting well-being.
(12)	Collaboration between universities and industry.	Understanding the factors that stimulate or hinder collaboration between universities and industry.	Exploratory and conceptual framework based on asymmetries in expectations, benefits, capabilities, etc.	Proposal of a preliminary framework of collective actions to facilitate collaboration between Proposed a preliminary framework for collective actions to enhance university-industry collaboration.
(13)	Strategic university-industry partnerships.	Identifying how companies' human capital facilitates collaboration with universities.	10 qualitative case studies.	Proposed a two-dimensional framework on human capital and managerial roles in university-industry partnerships.

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(14)	Open Innovation (OI) in companies.	Understand how companies use structural properties to manage internal OI challenges.	Unique case study.	Multiplicity, redundancy and loose coupling help manage IO's organizational and cultural challenges
(15)	Global Competitiveness Index (GCI) for EU-28 countries.	Identify the main drivers of the GCI.	Using GCI for the periods 2014-2015 and 2017-2018, correlation analysis and regression.	GCI is positively correlated with innovation, business sophistication and university-industry collaboration.
(16)	Organizational culture, innovation and knowledge sharing in Southern African universities.	Understanding the influence of organizational culture on innovation and knowledge sharing.	Structured questionnaire of 277 university staff.	Significant relationship between organizational culture, innovation and knowledge sharing.
(17)	Co-creation in sports entertainment.	Examining common interests and conflicting tensions in customer-company co-creation in the context of sports entertainment.	Qualitative approach based on cases from a major US university, including interviews and observations.	Co-creation creates interdependent emotional and symbolic value, managed through various strategies.
(18)	Discourses and processes of innovation in organizations.	Illustrating how innovation can be a vector of organizational violence.	Stories from a curriculum redesign workshop from different angles	Innovation can be a source of struggles for control and conformity, leading to patterns of domination and problematic Innovation can trigger control struggles, leading to domination and problematic institutionalization.
(19)	Knowledge management in smart cities.	Examine the role of universities in governance and knowledge management in smart city projects.	Exploratory case study of 20 smart city projects.	Universities play various roles, such as mediators, custodians, providers and evaluators of knowledge, in the management of knowledge in smart city projects.
(20)	Market scope for early-stage technologies.	Examine management activities aimed at identifying market space for early-stage technologies.	Analysis based on an extensive multi-year database of e-mail traces and archival documents.	Proposes an initial theory of market scope, highlighting the importance of managers' market framing mindset and its impact on commercialization decisions
(21)	Innovation-oriented social networks within technology incubators.	Understanding the formation of innovation-oriented social networks in technology incubators.	Data from five incubators in Minas Gerais analyzed with Ucinet and Netdraw.	Despite informal communication, idea exchange is rare, with rigid task division and coordination led by professors.
(22)	Project leader leadership in university-industry R&D collaborations.	Examines project leader's impact on R&D knowledge and performance, and the mediating role of university resources.	Survey of companies collaborating with Ritsumeikan University in Japan.	Effective project leadership boosts R&D knowledge and performance, with university resources mediating the impact.
(23)	Emergence of the fourth industrial revolution (Industry 4.0) and its sub-revolutions.	Clarifying the identity and movements underlying the fourth industrial revolution.	Qualitative exploration using practical case narratives and theoretical data.	Key movements of FIR include triple management theory, scaling agility, university-business cooperation, and triple helix partnerships.
(24)	Entrepreneurship education in traditional South African universities.	Comparing entrepreneurship education in traditional South African universities with existing frameworks.	Quantitative and qualitative exploratory research based on data from eleven traditional South African universities.	Some entrepreneurship modules exist but receive little credit. Little attention is paid to the development of essential entrepreneurial skills such as perseverance and resilience.
(25)	Propensity of companies to adapt their R&D collaboration portfolio.	Examines how existing R&D collaborations influence new partnerships and how competitor collaboration impacts others.	Analysis of a large panel of innovative Spanish companies over the period 2004-2011.	Prior R&D collaboration fosters new partnerships, while innovative firms avoid competitors to prevent knowledge leakage.

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(26)	Impact of knowledge management (KM) on innovation (INNO) in a university environment.	Explores the impact of knowledge management on innovation in Vietnamese universities.	Survey data from 30 public universities in Vietnam, analyzed using SEM to test relationships between KM and innovation.	Knowledge management broadly impacts technical innovation in academia, but not all components affect administrative innovation.
(27)	National innovation system and university integration in Russia.	Study the impact of higher education institutions on the national innovation system in Russia and identify inequalities in integration.	Qualitative analysis of Russia's national innovation system and university integration levels.	While universities contribute to the national innovation system, integration inequalities remain, necessitating improvement efforts.
(28)	Evolution of scientific research within large companies.	Documents the decline of in-house research in large corporations and its impact on innovation.	Analysis of corporate financial data, publications, patents, and acquisitions from 1980 to 2006.	Decline in scientific publications, with stable patent value, showing a shift to developing existing knowledge over creating new.
(29)	Academic entrepreneurship and competitiveness in emerging countries.	Exploring the entrepreneurial intention of academics and its impact on the valorization of research and the competitiveness of emerging countries.	Study based on the entrepreneurial intention of a population of academics participating in a business start-up competition.	The external environment and personal skills strongly impact academics' entrepreneurial intentions, highlighting their importance in fostering academic entrepreneurship.
(30)	University-firm governance styles and SME performance.	Study the impact of university-business governance styles on innovation and performance in SMEs.	Empirical analysis based on a questionnaire administered to a sample of 600 Spanish SMEs	University-company contracts directly influence SME innovation, while relational ties support and enhance these activities.
(31)	Impact of university incubators on the innovation quality at research-intensive US universities.	Impact of university incubators on innovation quality at research-intensive US academic institutions.	Analyzes the impact of university incubators on innovation quality and licensing revenues.	University incubators lower innovation quality and reduce licensing revenues, using peer incubators as a reference.
(32)	Roles of university spin-offs (USOs) in inter-firm resource interaction	Identify and map the different roles of USOs within business networks.	Mapping based on five USO cases using an industrial network approach to business markets.	Identified three main USO roles: resource mediator, recombiner, and renewer.
(33)	Emerging models of entrepreneurial universities in today's social and economic landscape.	Examining the role of entrepreneurial universities as drivers of innovation and entrepreneurship.	Overview of the overall framework and analysis of contributions in a special issue.	Outcomes: Emphasize entrepreneurial universities' role in innovation and propose future research agenda.
(34)	Evaluating cutting-edge scientific research projects in innovative organizations.	Investigates the "intellectual distance" between research proposal knowledge and evaluator expertise.	Randomized grant application process at a leading research university	Reviewers score proposals lower when they are close to their expertise or highly innovative.
(35)	Use of innovation by Greek manufacturing SMEs.	To examine the impact of trade cooperation and export activity on the use of innovation by SMEs.	Empirical analysis based on a survey of 158 Greek manufacturing SMEs.	Inter-firm cooperation promotes innovation activity and improves sales performance at home and abroad.
(36)	Internal and external factors influencing innovation in the Italian food industry.	Examines internal and external factors impacting food industry innovation, compared to pharmaceuticals in Italy.	Use of probit and bivariate probit models with data from the Italian Community Innovation Survey.	I Innovation in both industries relies on in-house R&D. Pharmaceuticals mix internal and external R&D, while food depends on external tech.

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[37]	Analytical and strategic dimensions of university incubation.	Identifies new dimensions and strategic drivers of business incubation in a KI incubator case study.	Identified seven key incubation components and six strategic drivers of business incubation.	The KI incubator is a strategic player in value creation beyond incubation.
[38]	Evolution and functioning of innovative SMEs.	Formulates change management recommendations for entrepreneurs of innovative SMEs.	Authors' practical experience from implementing a research program at the University of Economic Studies, Bucharest.	Identifies challenges for innovative SMEs and offers recommendations for implementing change management.
[39]	Multidimensional innovation networks.	Investigating the nature of innovation networks, focusing on the types of knowledge exchanged and the roles of actors within clusters.	Data collected at company level in an Italian aerospace cluster and analysis of social networks.	Different types of knowledge circulate in different ways in innovation networks.
[40]	Challenges of open innovation in R&D.	Identify the specific challenges faced by individuals in the day-to-day pursuit of open innovation, and propose organizational practices to support them	Experience of R&D professionals.	Identifies four challenges and coping strategies in open innovation, proposing practices to support external engagement.
[41]	Entrepreneurial function of major Russian universities.	Examines the evolution and challenges of Russian universities' entrepreneurial role.	Survey of tech transfer and innovation managers at 18 research universities.	The entrepreneurial university emerges in Russia, facing challenges from limited managerial skills and poor infrastructure.
[42]	Impact of managerial links on open innovation in high-tech industries.	Determine how different types of managerial relationships influence open innovation in high-tech industries in Malaysia.	The data were collected by means of a questionnaire survey of 339 middle and senior managers working in four high-tech industries in Malaysia.	University and government ties boost open innovation in high-tech industries, while company links are less impactful.

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The table highlights various aspects of innovation in university management, emphasizing the importance of knowledge management, leadership, radical green innovation, and academic integration. The research stresses the need to adopt innovative practices, promote knowledge sharing, and foster entrepreneurship to enhance the innovation ecosystem in universities. In the initial analysis, Nvivo 10 was used to generate a word cloud (figure 2), visually representing the predominant themes and word frequency across the 42 articles.

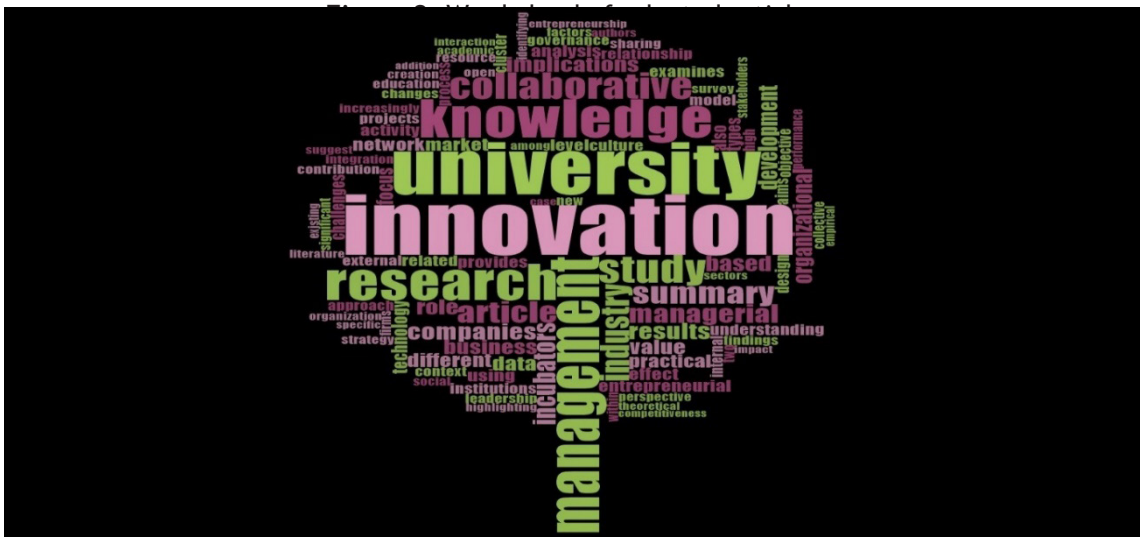

Figure 2. Word cloud

The word cloud generated with Nvivo 10 centers on innovation, emphasizing terms like 'university management,' 'technology,' 'management,' and 'data,' which highlight the managerial and collaborative aspects of innovation. The analysis underscores the role of information technology in university management. The selected articles explore the theoretical, practical, and strategic significance of innovation, particularly in crisis contexts. A word frequency graph validates these findings, with 'innovation' as the most frequent term, followed by 'university,' 'management,' 'knowledge,' 'research,' and 'collaboration,' reflecting the synergy between university management and innovation.

DISCUSSION

The analysis reveals a complex relationship between university management and innovation. Radical green innovation is crucial for organizations in VUCA (Volatility, Uncertainty, Complexity, Ambiguity) environments. Proactive research, supported by organizational resilience and megadata analytics, drives this innovation. Eco-innovation also plays a key role in addressing environmental challenges, with network management promoting its adoption, particularly in the manufacturing sector. Transformational leadership positively influences knowledge management, especially in universities, where organizational culture acts as a moderating factor. Business-university collaborations further enhance innovation through partnerships. The interaction between university management and innovation is shaped by collaborative efforts and boundary-spanning activities. Effective partnerships between academic institutions and companies foster innovation and preserve knowledge. Human capital is essential, emphasizing robust knowledge management and sharing practices. Innovation improves university management by promoting green practices, enhancing resilience, and enabling megadata analysis. Network management supports eco-innovation and interdisciplinary collaboration, while transformational leadership strengthens knowledge management. Knowledge sharing serves as a key mediator, linking leadership to innovation. However, research gaps remain, particularly in the integration of eco-innovation and network management. Current studies often rely on quantitative or case study methods, with few addressing cultural and geographical factors. Further research is needed to refine and validate conceptual frameworks, exploring the dynamic interactions between universities, companies, and networks.

CONCLUSION

This study has demonstrated the critical role of managerial innovation in improving university management practices. By addressing the interaction between university management, innovation, and transformational leadership, it highlights the significant contributions of green innovation and university-business collaboration to organizational and economic development. Strengthening knowledge management and integrating entrepreneurship education are crucial for universities to adapt to emerging challenges. However, limitations remain. The exclusive use of the Scopus database and potential keyword interdependence may have influenced

the scope of the results. Future research should consider expanding to additional databases such as Web of Science or IEEE Explore, and explore more comprehensive theoretical frameworks. A comparative approach would deepen the understanding of the dynamics between innovation and university management, offering better guidance for institutional policies in this field.

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CONFLICT OF INTEREST

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AUTHORSHIP CONTRIBUTION

Conceptualization: Hanae Amrani, Zouheir Boussouf, Ahmed Aftiss.
Research: Hanae Amrani, Zouheir Boussouf, Ahmed Aftiss.
Methodology: Hanae Amrani, Zouheir Boussouf, Ahmed Aftiss.
Software: Hanae Amrani, Zouheir Boussouf, Ahmed Aftiss.
Drafting - original draft: Hanae Amrani, Zouheir Boussouf.
Writing - proofreading and editing: Hanae Amrani, Zouheir Boussouf.