Personal branding and marketing in science: promoting scientific entrepreneurship

Branding personal y marketing en la ciencia: una revisión para impulsar el emprendimiento científico

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Abstract

This article examines the impact of personal branding and marketing in science, and the need for scientists to communicate effectively in an increasingly competitive and accessible environment. The study used a systematic literature review methodology to analyse the key strategies, tools and components of personal branding in the sector. The results show the importance of authenticity and consistency in building a personal brand, and the crucial role of social media in enhancing the visibility of scientific work. The study concludes by noting that effective, responsible communication not only boosts researchers' careers but also improves public perception of science and contributes to scientific literacy in society.

Keywords: personal branding, science marketing, entrepreneurship, scientific literacy, visibility, research impact, academic identity

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Resumen

Este artículo examina el impacto del branding personal y el marketing en la ciencia, abordando la necesidad de que los científicos se comuniquen eficazmente en un entorno cada vez más competitivo y accesible. Se emplea una metodología de revisión sistemática de literatura para analizar las estrategias, herramientas y componentes clave del branding personal en el ámbito científico. Los resultados destacan la importancia de la autenticidad y la coherencia en la construcción de una marca personal, así como el papel fundamental de las redes sociales en la visibilidad del trabajo científico. Se concluye que una comunicación efectiva y responsable no solo potencia las carreras de los investigadores, sino que también mejora la percepción pública de la ciencia y contribuye a la alfabetización científica en la sociedad.

Palabras clave: branding personal, marketing científico, emprendimiento, alfabetización científica, visibilidad, impacto de la investigación, identidad académica

1. INTRODUCTION

In an increasingly interconnected and competitive world, scientists must position themselves and communicate their work effectively. Personal branding and marketing are familiar concepts in the business domain, but their application in science is still emerging. As scientific information becomes more accessible through digital platforms and social networks, researchers must build a unique identity that reflects their academic achievements, values, and contributions to society (Mohammed & Steyn, 2016).

The concept of scientific entrepreneurship gains particular relevance in this context, as it requires scientists to produce knowledge and learn how to commercialize and effectively position it. This approach involver promoting discoveries and products and building a personal brand that enables scientist to stand out in an increasingly competitive academic and professional environment. This article analyzes marketing targeted at scientist in general and marketing for scientific entrepreneurs, who, by applying their discoveries to create innovative products, services, or companies, must learn to use marketing tools to connect with their audiences and amplify the impact of their work.

Historically perceived as a domain reserved for experts, science faces the challenge of becoming more accessible and relevant to the general public. This shift in perception requires scientists to adopt a proactive approach to communicating their work. Building a strong personal brand becomes a key strategy to influence

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public perception and promote scientific literacy (Dziedzic & Sułkowski, 2023). Moreover, effective personal branding can create opportunities for collaborations, funding, and carrer advancement, transforming how sctientist engage with their community (Philbrick & Cleveland, 2015).

This article aims to explore the role of personal branding and marketing in science, analyzing their components, tools, and strategies applicable to scientific entrepreneurs. The study primarily focuses on the pure sciences, as entrepreneurs in this field face unique challenges related to the visibility of their research, the protection of intellectual property, and the commercialization of their innovations. Nonetheless, it also addresses the implications of marketing in the social sciences, recognizing the significant societal impact of this field and the need for social scientists to communicate their findings effectively. The article examines the ethical implications and social responsibility associated with these practices through a systematic literature review. The methodology includes a critical analysis of peer-reviewed articles, emphasizing the importance of marketing education in preparing scientist to fulfill their roles as effective and responsible communicators.

This review aims to enhance the understanding of how personal branding and marketing can drive scientific entrepreneurship while reflecting on the challenges and opportunities that arise in this process. The objective is to strengthen researchers' careers and improve the public perception of science in a global context where trust in scientific knowledge is increasingly critical.

2. THEORETICAL FRAMEWORK

2.1 Personal branding strategies in science

 Personal branding in science refers to the strategic process of building and communicating a unique and authentic identity that highlights the researcher's values, knowledge, and achievements (Mohammed & Steyn, 2016; Khedher, 2014). Unlike branding in the business sector, scientific branding must address specific challenges such as maintaining academic integrity, presenting complex concepts in an accessible manner, and balancing self-promotion with professional ethics (Philbrick & Cleveland, 2015; Thompson-Whiteside et al., 2018). This dynamic process requires continuous reflection on the scientist's role and constant adaptation to the evolving expectations of society and the academic environment (Dziedzic & Sułkowski, 2023).

An effective personal brand must integrate internal identity (how the scientist perceives themselves) with external perception (how peers and society perceive them). Key components include defining a unique value proposition, selecting

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appropriate communication channels, and engaging with the audience to reinforce the scientist's credibility and relevance (Calvo & Arquro-Avilés, 2020; González-Solar, 2018). In the digital era, where a presence on social networks and digital media is essential, personal branding becomes a crucial tool to enhance the visibility and positioning of scientists (Ruiz-Real et al., 2020; Mantulenko et al., 2020).

2.1.1 Definition and components of scientifc personal branding

The literature defines personal branding in science as a comprehensive process that involves creating, managing, and communicating a unique identity that highlights the scientist's professional expertise, personal values, and purpose (Mandiá & López, 2021; Hotez, 2018). Unlike other fields, in the scientific context, personal branding must be authentic, transparent, honest, and focused on presenting achievements, challenges, and lessons learned throughout the research journey (Thompson-Whiteside et al., 2018).

Mantulenko et al. (2020) emphasize that personal branding in science is not static but evolves and enriches over time. It includes visual components, such as professional imagery, graphic design on social media, and auditory elements, like sonic branding (Spence & Keller, 2024; Tifferet & Vilnai-Yavetz, 2018). On platforms like LinkedIn, Twitter[2], and Google Scholar, how scientists present their expertise, achievements, and personality plays a crucial role in building their brand.

Personal branding also involves reflexivity, where scientists evaluate their identity and adapt to feedback from the academic community and society (Dziedzic & Sułkowski, 2023). In this context, personal branding takes shape through a straightforward narrative that integrates the values and impact of the scientific work.

2.1.2 Common branding strategies for scientist

The proliferation of social networks and digital platforms has transformed personal branding strategies, enabling scientists to engage directly with a global audience. Social media platforms such as Twitter, LinkedIn, Facebook, and ResearchGate have become key tools for building a brand (Cheplygina et al., 2020; Ioanid et al., 2017). Scientists can share relevant content, participate in discussions, and build a community around their work. Consistency, frequency in posting, and active audience engagement are essential elements for sustaining attention and recognition (Illingworth, 2017).

Storytelling is an effective strategy for emotionally connecting with the audience, humanizing science, and making content more accessible (Mandiá & López Ornelas,

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[2] For this article, the term "Twitter" will continue to be used, although the platform has been renamed "X" since 2023.

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2021). Scientists can share personal experiences, achievements, and challenges to highlight the human dimension of research. Additionally, participating in scientific events and webinars and creating multimedia content such as infographics and videos strengthens personal branding and simplifies explaining complex concepts (Spence & Keller, 2024).

Twitter stands out as a versatile tool for personal branding. Cheplygina et al. (2020) provide practical recommendations, such as tweeting about relevant topics, engaging with other researchers, and using strategic hashtags to boost visibility. Academic platforms like ORCID and ResearchGate are also essential, enabling scientists to showcase their academic output and connect with other professionals (Dziedzic & Sułkowski, 2023).

2.1.3 Impact of branding on the carrers of scientific entrepreneurs

Effective personal branding significantly impacts the professional development of scientists. Visibility on social networks and creating a loyal community around the personal brand open opportunities such as collaborations, funding, and recognition within the scientific community (Philbrick & Cleveland, 2015). Additionally, well-managed personal branding can positively influence the public perception of science, enabling scientists to serve as authoritative and trustworthy voices on socially relevant issues (Hotez, 2018).

Personal branding benefits the scientist and influences the identity and reputation of their affiliated institution (Dziedzic & Sułkowski, 2023). The way a scientist is perceived impacts the reputation of their university or research center, potentially creating a virtuous cycle where personal branding and organizational identity reinforce each other. Consequently, the reflective and strategic development of personal branding advances the scientist's career and strengthens the organizational culture.

2.2 Marketing for scientific entrepreneurs

Marketing for scientific entrepreneurs is a multidimensional approach that involves not only promoting discoveries and products but also building personal brands that reflect scientists' identities and values. This process encompasses various tools and strategies essential for achieving visibility and success in the scientific domain.

2.2.1 Marketing tools applied in the scientific field

Digital marketing tools, such as academic networks (ORCID, ResearchGate, Google Scholar) and SEO techniques, are essential for promoting and increasing the visibility of scientists (Calvo & Arquero-Avilés, 2020; Mandiá & López, 2021). Implementing

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content strategies, optimizing profiles, and using keywords enhances the reach of publications and improves the scientist's positioning within the academic environment. Additionally, leveraging social media analytics facilitates impact measurement and allows for adjustments to communication strategies (Pawlak et al., 2023).

Chawdhary (2019) emphasizes that marketing extends beyond advertising; it involves understanding key concepts such as environmental analysis, consumer behavior, market research, and marketing strategy. For scientific entrepreneurs, a market-oriented approach that considers the perspectives of customers, competitors, and resource coordination is essential for developing an effective strategy. This analysis enables scientists to position the product effectively in the market and design launch strategies highlighting its attributes and benefits (Alonso, 2017).

Additionally, Ojo et al. (2018) emphasize that scientists must proactively identify stakeholders' needs and use marketing methods to develop products aligned with those needs. The "4Ps +1 Marketing Plan" offers a valuable framework for structuring effective strategies in science.

2.2.2 Use of social media and digital platforms

Social media platforms like Twitter and LinkedIn are essential for building and maintaining personal branding. Regular content posting, interaction with other scientists, and the strategic use of hashtags and mentions help create a network of contacts and increase the visibility of their work (Ioanid et al., 2017; Cheplygina et al., 2020). Content should be diverse, including updates on research, discussions, educational material, and multimedia elements.

Maresch et al. (2016) suggest that entrepreneurship education should be tailored to the specific contexts of science students, integrating social media use as part of communication strategies. Harris (2024) reinforces this approach, emphasizing that, like commercial brands, scientists must learn to communicate and persuade the public about the value of their work.

2.2.3 Communication and positioning strategies

Effective personal branding relies on a clear and consistent communication strategy. Scientists must craft a narrative that integrates their values, expertise, and contributions to their field. Using visual, auditory, and narrative elements, such as sonic branding and storytelling, enhances the brand experience and strengthens the connection with the audience (Spence & Keller, 2024).

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Alonso (2017) highlights the importance of Principal Investigators (PIs) developing a clear product profile that emphasizes technical features and communicates the product's value and necessity in the market. Casati and Genet (2012) stress that researchers acting as scientific entrepreneurs must take on intermediary roles, employing communication strategies that enable them to influence scientific communities and effectively position their discoveries.

2.3 Marketing education science

Marketing education for science becomes an essential component in preparing scientists for entrepreneurship. This education must provide a deep understanding of marketing practices and the ability to communicate effectively within the scientific environment.

2.3.1 Integration of marketing in scientific entrepreneurship programs

Integrating marketing into education for scientific entrepreneurs is essential for preparing students to commercialize their discoveries and products. Maresch et al. (2016) highlight that entrepreneurship education (EE) significantly impacts the entrepreneurial intention (EI) of students in science and engineering. EE must be tailored to the specific context of the students, addressing their perceptions and attitudes toward entrepreneurship and marketing.

Langer (2014) emphasizes the importance of training in bio-entrepreneurship, highlighting programs that focus on teaching students how to apply marketing, management, and financial strategy principles within the context of biotechnology. Maharsak and Pundak (2005) underline the importance of viewing students as "clients" and actively understanding and addressing their needs and expectations throughout the educational process.

2.3.2 Teaching methodologies and indentified outcomes

Teaching methodologies must align with the students' disciplines. For science and engineering students, Maresch et al. (2016) suggest an approach that encourages pro-entrepreneurial attitudes and mitigates the negative influence of subjective norms. This can include practical approaches such as the Lean Startup method.

Casati and Genet (2012) propose that Principal Investigators (PIs) should develop competencies in practices such as "intermediation" and "shaping new trajectories." Scientific marketing education teaches these practices through case studies and simulations, enabling students to design strategies to shape and position their scientific work. This approach ensures that students not only understand the concepts but are also capable of applying them in real-world scenarios.

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Maharsak and Pundak (2005) also emphasize that active learning methods are essential to address students' challenges and foster a deeper understanding of scientific concepts.

2.3.3 Challenges and opportunities in scientific branding education

One of the challenges in marketing education for science is addressing the perceptions and subjective norms that influence students' entrepreneurial intention in science and technology (Maresch et al., 2016). Education must promote an entrepreneurial identity aligned with the values of the scientific community, leveraging successful role models to demonstrate how marketing and entrepreneurship can be integrated into a scientific career.

Casati and Genet (2012) highlight the importance of teaching scientists to assume various roles, such as "intermediaries" who build strategic alliances and influence networks. These skills are essential for developing and sustaining effective scientific branding.

2.4 Ethics and responsability in scientific marketing

2.4.1 Ethical debates in scientific promotion

Developing a personal brand in science raises ethical challenges. Scientists must balance the need for visibility with integrity and responsibility in communication (González-Solar, 2018; Elezaj et al., 2023). Authenticity and transparency are essential to avoid exaggeration or distortion of information, which can undermine public and academic trust. Personal branding should reflect the researcher's values and capabilities, aligning with the expectations of rigor and ethics in science.

Alonso (2017) emphasizes that the promotion of scientific products must be transparent, accurate, and aligned with the ethical values of the scientific community. Principal Investigators must consider their ethical responsibility when shaping new trajectories and promoting their work, ensuring that their actions do not compromise scientific integrity.

2.4.2 Ethicals recommendations for science marketing

Ethical promotion in science marketing includes transparency in communication and a commitment to shared knowledge. Scientists should leverage their brands to strengthen the connection between science and society, acting as ambassadors of knowledge (Dziedzic & Sułkowski, 2023). Additionally, they must remain aware of institutional policies and use their digital presence responsibly to ensure consistent

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promotion aligned with the values of the scientific community (Cheplygina et al., 2020).

Chawdhary (2019) recommends that scientific marketing focuses on applying knowledge and skills to benefit the consumer. This involves using communication strategies that aim to sell products, educate and inform, promote the adoption of scientific technologies, and ethically foster scientific literacy.

2.4.3 Social responsibility in scientific communication

Social responsibility in scientific communication requires scientists to be role models in disseminating knowledge. This involves making their communication accessible and understandable to the general public, promoting scientific literacy and interest in science, and striving to address socially relevant topics, ensuring that their research positively impacts society.

Social responsibility also encompasses ethics in communication, requiring scientists to avoid exaggerating their findings and to present their work transparently. This approach strengthens the relationship between science and society and builds public trust in scientific research. By acting as ambassadors of knowledge, scientists can shape public perception of science and foster a culture of learning and open dialogue.

Moreover, scientists must acknowledge the social implications of their research and commit to using their influence to address relevant social and environmental issues. Promoting responsible and ethical science is essential for building a future where scientific research serves the common good and supports sustainable development. In summary, personal branding in science is a continuous process that demands authenticity, consistency, and visibility to achieve effective positioning in the professional field.

3. METHODOLOGY

This research systematically reviews the literature on personal branding and marketing in the scientific context. This methodological approach is divided into several stages to ensure a thorough collection and analysis of the available information, guaranteeing the process's replicability and transparency at each investigation stage.

3.1 Search and selection criteria for literature

Clear criteria were established for the search and selection of literature. The search focused on articles explicitly addressing personal branding, scientific marketing, and their application in the research domain. Both empirical and theoretical studies were

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identified to provide diverse perspectives on the topic, enabling a comprehensive understanding of the impact of marketing on science. The selected articles were relevant to the disciplines of pure and social sciences, as both fields face common challenges regarding promoting and disseminating scientific discoveries.

3.2 Databases and keywords used

The information sources were selected from recognized and publicly accessible academic databases, including Google Scholar, Scopus, and Web of Science. These databases were chosen for their reliability, international coverage, and the relevance of the articles they provide.

To maximize the relevance of the results, specific keywords, such as "personal branding in science," "scientific marketing," "scientific communication strategies," "scientific entrepreneurship," and "social responsibility in science" were used.

Three hundred fifty articles were identified from the three selected databases. After a preliminary review of titles and abstracts, 100 articles were excluded because they needed to meet the inclusion criteria, primarily because they did not directly address branding or marketing in science. Subsequently, a more in-depth evaluation of the remaining articles was conducted, excluding 50 articles due to the lack of full-text access or their absence from peer-reviewed journals.

Finally, 50 articles were selected for complete analysis, providing a solid and representative foundation for the systematic review.

3.3 Inclusion and exclusion criteria

The inclusion criteria were as follows:

- Articles published in peer-reviwed journals within the last ten years.
- Research provides revelant information on branding and marketing strategies in the scientific context, encompassing thoery and practice.
- Studies addressing both the benefits and ethical challenges associated with scientific promotion.

Articles that did not meet these criteria and those addressing related topics without focusing on branding or marketing in the scientific context were excluded.

3.4 Critical content analysis

The content analysis was conducted reflectively, identifying the strategies and concepts discussed and evaluating their applicability and relevance in the current context. Special attention was given to emerging trends in using digital marketing tools and personal branding in science and gaps in the existing literature that may require further research.

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Additionally, the analysis explored how branding and marketing strategies can be adapted to different scientific contexts, considering the characteristics and needs of researchers in both pure and social sciences.

3.5 Critical reflection on the methodology

This review aimed not only to consolidate existing knowledge but also to question its effectiveness and practical applicability. The reflection focused on how various branding and marketing strategies can be adapted and applied in different contexts, considering their implementation's social and ethical implications. The need for scientists to adopt a proactive approach in promoting their work was also highlighted, recognizing that marketing is not merely an act of self-promotion but a responsibility to communicate science in an accessible, ethical, and responsible manner.

At the end of this process, it was concluded that while marketing strategies are essential for scientists' professional success, their implementation must be approached cautiously to ensure that scientific integrity and authenticity remain uncompromised.

4. RESULTS

4.1 Key findings on personal branding

Personal branding in science has become fundamental for researchers seeking to enhance their visibility and strengthen their impact within the scientific community and society. The findings indicate that scientists must craft a straightforward narrative that authentically and consistently communicates their values, contributions to the field, and purpose (Mohammed & Steyn, 2016; Dziedzic & Sułkowski, 2023). Integrating visual, auditory, and narrative elements is essential to enriching this personal brand and facilitating an emotional connection with the audience (Spence & Keller, 2024; Tifferet & Vilnai-Yavetz, 2018).

However, this process faces several challenges. The pressure to maintain an active presence on social media and the need to stand out in an increasingly competitive academic and scientific environment can lead to unethical practices or the distortion of scientific reality. As highlighted in several studies, it is essential to strike a balance between self-promotion and academic integrity, as the pursuit of visibility should not compromise the scientist's credibility or public trust in research outcomes (Jibril et al., 2019; Elezaj et al., 2023).

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4.2 Marketing strategies identified in the literature

Effective marketing strategies, including social media and academic platforms, were identified to enhance scientists' visibility. Implementing storytelling techniques and actively engaging on platforms such as Twitter and LinkedIn are crucial for establishing an emotional connection with the audience (Mandiá & López Ornelas, 2021; Cheplygina et al., 2020). These tools enable scientists to build a community of followers interested in scientific discoveries and the researcher's personal narrative.

Furthermore, it was observed that education in scientific entrepreneurship should include teaching marketing skills as a fundamental component of training. However, resistance persists among academics who view marketing as superficial or a distraction from scientific objectives. This reluctance is partly rooted in the perception that self-promotion may be seen as self-serving or contrary to the traditional values of science (Maresch et al., 2016; Hotez, 2018).

Nonetheless, there are practical examples demonstrating how scientists can effectively apply personal branding and marketing strategies:

Shots de Ciencia: This science communication project from Colombia has achieved remarkable visibility on social media, with over 230,000 followers on Instagram and 190,000 on TikTok. Through educational and entertaining content, its founders, Efraín Rincón and Ignacio Galán, have successfully democratized science by addressing everyday questions in an accessible manner. In addition to promoting learning, their approach has created a sustainable source of income through sponsored content (Mahtani, 2024). This example illustrates how scientists can leverage digital platforms to build a strong personal brand and create a significant societal impact.

María José López Galiano y Marcos de la Peña: These scientists appeared on the TVE program La Revuelta, where they highlighted the importance of science and the need for increased funding to provide job stability for researchers. Both shared their experiences working under temporary contracts and the precarious conditions of the scientific sector in Spain, emphasizing the need to improve conditions for young researchers. This example underscores how scientists can use public communication platforms to advocate for their interests and raise awareness about the challenges faced by the sector (Pascual, 2024).

Physia: This startup, based in the Science Park of the Universidad Miguel Hernández de Elche, has developed software to automate healthcare processes such as appointment management, clinical administration, and patient follow-up. The multidisciplinary team at Physia, led by Marcos Valera, has employed a marketing approach to position their product in the healthcare market, enhancing the

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efficiency of medical services and improving the quality of patient care. This case illustrates how scientists can use marketing to promote technological innovations that positively impact society (Europa Press Valenciana, 2024).

These examples show that, like entrepreneurs in other sectors, scientists can build strong personal brands that increase their visibility, enable them to influence public discourse and mobilize resources for their research.

4.3 Educational practices and outcomes in scientific marketing

Teaching methodologies must align with students' disciplines, fostering pro-entrepreneurial attitudes and mitigating the negative influence of subjective norms (Maresch et al., 2016). Educational institutions must promote an environment that values the intersection of science and marketing. However, not all educational programs have successfully implemented these strategies, potentially limiting the development of essential competencies in the scientific field.

Therefore, developing and implementing training programs that effectively integrate marketing principles with scientific education is essential. This approach will benefit students and foster a more open and receptive culture toward scientific entrepreneurship. The challenge lies in ensuring that scientific education prepares students not only to conduct rigorous research but also to market and communicate their discoveries effectively (Langer, 2014; Casati & Genet, 2012).

4.4 Ethical considerations identified

Significant ethical debates were identified in scientific promotion, emphasizing the need to balance visibility with integrity (González-Solar, 2018; Elezaj et al., 2023). Authenticity and transparency are crucial for maintaining public trust in scientific research. This ethical dilemma raises the question: How can scientists promote their achievements without resorting to exaggeration or distortion of results? Scientific promotion lacking transparency and truthfulness could contribute to misinformation, jeopardizing public trust in science.

Personal branding must genuinely reflect the researcher's capabilities and values, aligning with science's expectations of rigor and ethics. However, the fear of being perceived as self-serving or unethical can discourage researchers from effectively building their brand. This conflict is evident in studies such as Jibril et al. (2019), which highlight that many researchers actively avoid personal branding because it might harm their academic reputation. Therefore, a reflective approach is necessary, enabling scientists to learn how to balance self-promotion with ethics and scientific rigor.

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5. DISCUSSION AND CONCLUSIONS

5.1 Synthesis of key findings

This systematic literature review on personal branding and marketing in the scientific field revealed that personal branding is a dynamic and multidimensional process beyond mere self-promotion. The findings suggest that building an effective personal brand requires continuous reflection on the scientist's identity and adaptation to the expectations of the academic community and the general public. Authenticity, transparency, and consistency have been identified as fundamental values that should guide this process (Mohammed & Steyn, 2016; Dziedzic & Sułkowski, 2023). Additionally, digital tools and social media have transformed how scientists build and maintain their personal brands. Platforms such as Twitter and LinkedIn have become critical spaces for interaction and the establishment of professional networks (Ioanid et al., 2017; Cheplygina et al., 2020). However, ethical concerns also arise regarding the distortion of information and the pressure to maintain an active presence on these platforms, which can lead to unethical practices or the exaggeration of scientific achievements.

5.2 Implications for education in scientific entrepreneurship

Integrating marketing principles into education for scientific entrepreneurs is essential to equip students with the skills to commercialize their discoveries effectively. The findings indicate that entrepreneurship education must be tailored to the specific needs of science and engineering students, addressing not only theoretical concepts but also providing practical and realistic experiences (Maresch et al., 2016; Langer, 2014).

Developing competencies in personal branding and marketing should be a central component of educational programs, as the ability to effectively communicate scientific work is critical in a world where misinformation is prevalent (Harris, 2024). This approach will not only strengthen the careers of emerging scientists but also enhance public perception of science, fostering greater interest and understanding. Additionally, it is essential to foster a culture where scientists feel comfortable promoting their work while balancing visibility with integrity. Training programs should include discussions on the ethical responsibilities inherent in scientific marketing, promoting a reflective approach that values academic rigor and transparency in communication.

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5.3 Limitations of the study and suggestions for future research

Despite this review's significant contributions, some limitations should be considered. First, the literature search was restricted to articles published in English and peer-reviewed journals, which may exclude relevant research in other languages or less prominent publications. This limitation could reduce the diversity of perspectives and approaches regarding branding and marketing in science.

Additionally, the ever-changing digital landscape and the rapid evolution of social media platforms mean that the strategies discussed could become obsolete over time. Therefore, future research should focus on longitudinal studies that assess the effectiveness of different personal branding and marketing strategies over time.

Finally, conducting studies that explore scientists' experiences in the practical application of branding and marketing strategies would be highly beneficial. Such research could analyze the barriers and facilitators encountered during implementation, providing deeper insights into how the theories and strategies discussed in the literature translate into practice. This approach would help identify areas for enhancing education and training in scientific marketing.

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