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Bridging Research and Practice: The Impact of Scientific Research on Tourism and Handicrafts

Amine MEKIDECHE[1], Sihem LAGGOUN[2], Khaled BOUAZA[3]
[1] Bordj Bou Arreridj University, Algeria
[2] Batna 1 University, Algeria
[3] Bordj Bou Arreridj University, Algeria

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Abstract
The study examines the pivotal role of scientific research in advancing the tourism and traditional industries sectors, focusing on the challenges and opportunities inherent in transferring knowledge from research institutions to practical applications. The research analyzes the impact of scientific findings on these sectors and investigates strategies to bridge the gap between academia and industry. The paper's main aim is to highlight the significance of fostering collaboration between researchers and industry stakeholders to enhance innovation and drive sustainable economic growth. The study identifies critical barriers such as organizational resistance, funding constraints, and communication gaps that impede effective knowledge transfer. To address these challenges, it proposes a framework of participatory strategies, including improved funding mechanisms, development of knowledge-sharing platforms, and skill enhancement for knowledge transfer personnel. The findings underscore the transformative potential of integrating scientific research outputs into industry practices, aiming to foster a culture of innovation and collaboration for sustainable development in tourism and traditional industries.
Keywords: Academia-industry collaboration, knowledge transfer, scientific research, tourism industry, traditional industry

ملخص

تتناول هذه الدراسة الدور المحوري للبحث العلمي في النهوض بقطاعي السياحة والصناعات التقليدية، مع التركيز على التحديات والفرص الكامنة في نقل المعرفة من مؤسسات البحث إلى التطبيقات العملية. ويحلل البحث تأثير النتائج العلمية على هذه القطاعات ويبحث في الاستراتيجيات الرامية إلى سد الفجوة بين الأوساط الأكاديمية والصناعة. والهدف الرئيسي من هذه الورقة هو تسليط الضوء على أهمية تعزيز التعاون بين الباحثين وأصحاب المصلحة في الصناعة لتعزيز الابتكار ودفع النمو الاقتصادي المستدام. وتحدد الدراسة الحواجز الحرجة مثل المقاومة التنظيمية، وقيود التمويل، وفجوات الاتصال التي تعيق نقل المعرفة الفعال. ولمعالجة هذه التحديات، تقترح الدراسة إطارا من الاستراتيجيات التشاركية، بما في ذلك تحسين آليات التمويل، وتطوير منصات تبادل المعرفة، وتعزيز المهارات لموظفي نقل المعرفة. وتؤكد النتائج على الإمكانات التحويلية لدمج مخرجات البحث العلمي في ممارسات الصناعة، بهدف تعزيز ثقافة الابتكار والتعاون من أجل التنمية المستدامة في السياحة والصناعات التقليدية.
الكلمات المفتاحية: التعاون بين الأوساط الأكاديمية والصناعة، نقل المعرفة، البحث العلمي، صناعة السياحة، الصناعة التقليدية

Emails: [1]amine.mekideche@univ-bba.dz, [2]siham.laggoun@univ-batna.dz, [3]khaled.bouaza@univ-bba.dz

Introduction

Scientific research has always been the best way to explore the depths of knowledge and expand the horizons of human thinking. One of the most important tools that contribute to driving innovation and productivity growth in the long term in various economic sectors (Fabien, 2023). An OECD analysis has shown that science, technology, and innovation play an important role in economic performance (OECD, 2000). Tourism services and traditional industry sectors are some of the most important axes of economic activity, as they form an integral part of the cultural and economic heritage of societies. Hence, scientific research is a vital element in improving the quality of tourism services and the development of traditional industry, as it contributes to opening new horizons to optimize resources and adopt modern and sustainable methods.

However, scientific research faces many serious challenges, which constitute obstacles to the progress of the development and innovation process in these vital sectors, including financial constraints, poor study design, high research costs, as well as the need to identify priorities and direct efforts towards the most important and vital areas (Fokunang et al., 2011). Identifying and addressing these challenges is also a necessary step to ensure the continuation and enhancement of the role of scientific research in achieving sustainable development in this field.

By asking many researchers and decision-makers about integrating the outputs of scientific research and how they can be effectively achieved, this research seeks to explore and shed light on how to apply these outputs, especially in the field of tourism and traditional industry, and to draw lessons and guidance that can be adopted to address these challenges and achieve the best results for the development of these sectors as a major contributor to their growth and promotion. Therefore, the following problem was raised:

- How can the effectiveness of the transfer of scientific research outputs in the fields of tourism and traditional industry be enhanced?

The study also seeks to achieve a set of objectives represented in highlighting the impact of scientific research in the development of traditional industry and the quality of tourism services, identifying the challenges and opportunities facing scientific research in the field of tourism and traditional industries, providing insights and suggestions to enhance the transfer of scientific research knowledge to the tourism and traditional industries sectors. The main focus of this study is to show the need for scientific research as a source for the development of traditional industry and raising the quality of tourism services.

The qualitative descriptive approach was relied on to conduct a comprehensive analysis of the impact of scientific research on traditional industries, especially in the tourism and manufacturing sectors, in addition to reviewing the literature and the latest published studies, as an attempt to understand the relationship between the transfer of research knowledge and its impact on the tourism sector and traditional industry. The study begins with a comprehensive literature review, drawing on a wide range of sources to create a theoretical framework, which refers to multiple studies, reports, and data points to provide contextual background and justify the importance of scientific research in driving innovation and efficiency in traditional industries. The study then presents quantitative data to emphasize the economic importance of research and development. It also uses qualitative analysis to explore the nuances of how scientific research affects various sectors and discusses emerging trends in tourism.

Literature Review

The theoretical framework plays a pivotal role in shaping our understanding of scientific research and its impact on the field of tourism and traditional industry from various aspects, ultimately contributing to informed decision-making to advance these practices. Here are some sources of this concept:

The Concept of Scientific Research

It is a systematic process used by scientists to study different phenomena using certain methods of data collection, analysis, and interpretation. It is also an essential tool for producing knowledge and driving innovation in various sectors (Spade, 2023). Scientific research includes systematic investigation, experimentation, and analysis that is conducted to expand knowledge and understanding in various fields. Its role is essential in driving progress, promoting innovation, and addressing complex challenges across industries, which ultimately leads to tangible economic and societal benefits (Celeste et al., 2014) and plays a vital role in advancing economic sectors, such as tourism services and traditional industry, by stimulating long-term productivity growth and addressing societal challenges (Rull, 2014).

The Importance of Scientific Research in Advancing Development

Scientific research is of paramount importance in the production of knowledge and the advancement of societal progress, as it plays a vital role in the development of new ideas, technologies, and innovations, which contributes to the advancement of various fields such as health care, education, technology, social policy, and even the economy. It is essential for finding solutions to problems, expanding knowledge, and enhancing our understanding of the world (Spade, 2023). It also leads to the creation of new products and services, revolutionizing industries, and improving living standards (Preethi & OAG, 2022). Scientific knowledge gained through scientific research is valued by society because it helps to meet basic human needs and improve living conditions (Rull, 2014). It is crucial for innovation, meeting global challenges, and promoting sustainable development, as confirmed by the UNESCO Open Science Recommendation on the importance of making scientific knowledge available and producing transparently and comprehensively (UNESCO, 2023). Scientific research not only expands our understanding of the world but also drives innovation and contributes to the improvement of society.

Recent Scientific Research Trends

Recent trends in scientific research have shown a significant impact on economic development, and the scientific achievements and technological progress of many societies and economies have promoted scientific visions that are improving rapidly can drive technological breakthroughs, which in turn affect productivity and lead to economic growth (Joel, 2018), and the disruptions that have occurred in recent years such as fears of global inflation and climate change have accelerated digital transformation, affecting various industries and directing companies during periods of continuous disruption to research more (GS1, 2023).

On the other hand, it was found that basic scientific research affects more sectors in a larger number of countries, for a longer period of applied research, plays a greater role in innovation and provides potential solutions to societal challenges (Philip et al., 2021), and

efforts to develop improved measures of scientific progress and technological progress continue, leading to a better understanding of the roots of economic growth and social change (OECD, 2000); and the performance of research and experimental development in the United States reached $667 billion in 2019, reflecting the increasing importance of research and development in driving growth (Boroush & Guci, 2022).

Scientific research has several recent trends in the field of tourism and traditional industry, where the tourism industry is undergoing continuous transformation due to the desire of travelers to obtain new experiences, rapid global technological progress, climate change, and other dynamics. Experiential and transformational travel is one of the emerging trends that provide new opportunities for companies to renew their business and go through different experiences (Trifon, 2023). In the traditional industry, commercial, academic publishing is a very profitable industry, with revenues reaching 25 billion US dollars (ScienceTalks, 2021). In addition, there is an increasing need for evidence-based decisions in the field of tourism development, which emphasizes the importance of scientific research in these areas (Zhang et al., 2023). Therefore, these trends show the great impact of scientific research on economic development and the possibility of driving innovation, addressing societal challenges in the tourism and traditional industry sectors, and shaping a future that contributes to raising social welfare.

Outputs of Scientific Research in the Tourism and Traditional Industry Sectors

The Impact of Scientific Research on the Tourism Sector

Scientific research has a significant impact on the tourism sector by driving innovation and addressing societal challenges. Recent trends in scientific research have shown that the tourism industry is constantly evolving due to the desire of travelers to diversify their experiences, rapid global technological progress, and climate change. One of these emerging trends is experimental and transformative travel[1], which provides new opportunities for companies to renew their business and experience success (Wiesław & Winiarski, 2005). In addition, there is an increasing need for evidence-based decision-making in the field of tourism development to emphasize the importance of scientific research in this field (WTTC, 2017).

Scientific research can also significantly affect the tourism sector in different ways, as technological innovation and development in the tourism industry can have a positive contribution to the growth and sustainability of the sector (Zimeng et al., 2023), as the Covid-19 pandemic led to a major transformation in the sector and highlighted the development of tourism and the possibility of innovation to reshape its future (Ahmad et al., 2023), in addition to that digitization has greatly affected the economic sustainability of tourism, which has had implications for the experience of tourists, information technology and data, and made it a research hotspot (Jiang & Phoong, 2023).

A study on the contribution and interaction of the development of the tourism industry and technological innovation at the informatics level revealed that technological innovation and the development of the tourism industry have a positive contribution to this sector (Zimeng et al., 2023). Moreover, the economic impact of the travel and tourism sector is confirmed, according to the World Travel and Tourism Council. The sector contributed 7.6% to the global GDP in 2022, which indicates a significant increase from the previous year and also emphasizes the importance of strong evidence from research reports to support policy-making and investment decisions in the tourism sector (WTTC, 2017).

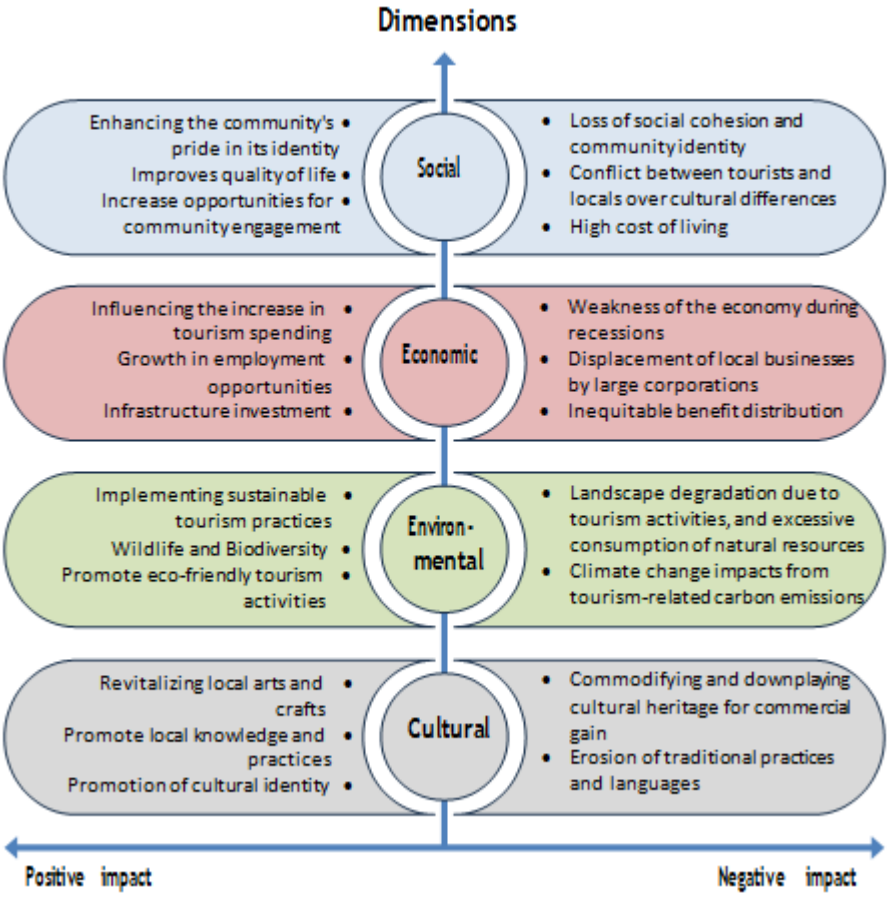

Figure 1. Impact of scientific research dimensions on the tourism sector

Source: Prepared by the researcher

Figure One shows a diagram illustrating the impacts and factors influencing sustainable tourism development during the transfer of research knowledge, which is divided into four main dimensions: economic, social, cultural, environmental and institutional; the economic dimension includes aspects such as creating jobs, generating income for local communities, promoting small and medium-sized enterprises, and generating revenues for the national economy; the social and cultural dimension includes factors such as preserving cultural heritage and traditions, promoting intercultural exchange and understanding, providing opportunities for cultural revitalization, and ensuring community participation in tourism activities; the environmental dimension focuses on reducing negative impacts on natural resources, promoting environmental conservation and education, promoting sustainable use of resources, and reducing waste and pollution levels; on the other hand, the social dimension highlights the importance of effective policies and regulations, stakeholder cooperation, ensuring safety and security for tourists, and enhancing transparency and accountability in tourism operations; the diagram emphasizes that the process of knowledge transfer for sustainable tourism development requires a balanced study of all these dimensions to achieve positive economic effects and responsible management of cultural, environmental and social resources.

Leveraging Scientific Research to Enhance Tourism Services

Scientific research can significantly improve tourism services by providing insights and solutions to enhance marketing and operations. Here are some examples of how research can contribute to the tourism industry:

- Health tourism: such as medical tourism and spa tourism, research in this area helps policymakers, tourism planners, and researchers to understand successful trends and opportunities in the health tourism sector (Roman et al., 2023);
- Tourism and ecological sustainability: A study investigated the relationship between tourism development and environmental sustainability, identified a balance between commercial and environmental interests in preserving the ecotourism framework, and highlighted the importance and necessity of sustainable tourism practices (Baloch et al., 2023);
- Tourism and economic growth: By examining the links between American tourism and economic growth and environmental pollution using industry-wide data for sustainable policy development, a study confirmed the need for policymakers to integrate environmental, social, cultural, agricultural, public health, and other factors into tourism policies to promote sustainable economic growth is critical (Khan et al., 2023);
- Tourism and Hospitality Education: The bibliometric analysis identified current and future research topics for tourism and hospitality education, especially after COVID-19, and highlighted the importance of research-based learning in the process of indoctrinating tourism and hospitality, and supporting the development of sustainable tourism practices and policies (Menon et al., 2022).

These examples demonstrate how scientific research can improve tourism services by providing valuable insights, identifying trends, and promoting sustainable practices in the field.

The Impact of Scientific Research on the Traditional Industry Sector

Scientific research significantly affects traditional industries as well as other industries in different ways, as it can lead to the development of new products, processes, and technologies, thus driving innovation and improving efficiency in traditional sectors, in addition to helping integrate modern scientific knowledge with traditional practices, as in traditional medicine, in which this integration leads to the development of new drugs and treatment methods, benefiting both the healthcare industry and traditional medicine practitioners (Hall, 2019); moreover, cooperation between science, technology and engineering is essential in transforming industries and driving progress (Utilitiesone, 2023b). By combining scientific knowledge with technological progress and engineering expertise, advanced innovations become possible, ultimately affecting traditional industries (Utilitiesone, 2023c). Scientific research, therefore, plays a crucial role in developing traditional industries and driving economic growth. The impact on traditional industries can be summarized as follows:

- Innovation and efficiency: Scientific research leads to the development of new products, processes, and technologies, leading to innovation and improved efficiency in traditional sectors (Hall, 2019);
- Integration of traditional and modern practices: Scientific research can help integrate modern scientific knowledge with traditional practices, such as traditional medicine, leading to the development of new drugs and treatment methods, and this can be applied in the field of traditional industries as well (Hall, 2019);
- Science, Technology, and Engineering Collaboration: It is essential in transforming industries and driving progress by combining scientific knowledge with technological advances and engineering expertise to make advanced innovations possible, ultimately affecting traditional industries (Utilitiesone, 2023c).

Scientific research, therefore, has a profound and multifaceted impact on traditional industries and an important drive for innovation, efficiency, and the integration of traditional and modern practices.

Leveraging Scientific Research to Drive Technological Innovation in Traditional Industries

- Scientific research has a significant impact on traditional industries, including the development of new technologies, and promotes efficiency, sustainability, product development, and safety within traditional industries. Engineers are constantly working to develop new materials that improve product performance and longevity (Utilitiesone, 2023a). Technology-based automation, big data, and artificial intelligence are all technologies associated with scientific research and have a significant impact on every industry and sector of economic activity (JumpStory, 2020). For example, the integration of science, technology, and engineering revolutionized traditional industries and led to significant developments and opportunities (Utilitiesone, 2023a). Technology has affected manufacturing industries, whether directly or Sustainable tourism practices: The results of scientific research are used in the development of sustainable tourism practices, which leads to the adoption of initiatives such as ecotourism, community tourism, and sustainable heritage tourism. Research on sustainable tourism development in cultural heritage sites, for example, has led to the implementation of strategies to preserve the historical importance of these sites while promoting responsible tourism (Buckley, 2012);

- Enhancing visitor experience: The results of scientific research are used to enhance the overall visitor experience by understanding consumer behavior, preferences, and patterns, leading to the development of customized tourism products and services; research on tourist behavior and preferences has guided the design of in-person experiences and the development of niche tourism offerings, such as culinary tourism and adventure tourism (Jamal & Robinson, 2009);

- Preservation of culture and heritage: Scientific research contributes to the preservation and promotion of cultural and heritage assets, leading to the revitalization of traditional industries such as handicrafts, folklore, and cultural performances; ethnographic research on traditional crafts and cultural practices has provided initiatives aimed at preserving intangible cultural heritage and revitalizing traditional craft skills, which has helped to develop sustainable cultural tourism (Smith, 2014);

- Destination management and planning: Scientific research provides insights on destination management and planning and influences policies related to infrastructure development, absorptive capacity, and sustainable tourism management. Research on destination absorptive capacity has contributed to the enrichment of tourism planning and management strategies, leading to the implementation of visitor management systems and sustainable tourism infrastructure (McKercher & Du Cros, 2002).

Application of Scientific Research in Tourism and Traditional Industry

Methods of Applying the Outputs of Scientific Research in the Field of Tourism and Traditional Industry

The results of scientific research are applied in the sectors of tourism and traditional industry in several ways, including:

Challenges Facing the Process of Transferring Knowledge from Scientific Research to Practical Application in the Field of Tourism and Traditional Industry

The process of transferring knowledge from scientific research to practical application faces many challenges, especially in the sectors of tourism and traditional industry, including:

- Lack of cooperation and partnerships: Many institutes and universities face difficulty in successfully transferring knowledge due to a lack of cooperation and partnerships between research centers, universities, and industry practitioners (Panagiota, 2023);
- Lack of skills and competencies of knowledge transfer staff, as well as the appointment of relatively inexperienced staff to these positions (Van Wijk et al., 2007);
- Divergence of objectives and priorities: Different objectives and priorities between research centers,

universities, and industry pose another challenge to knowledge transfer (Panagiota, 2023);

- Lack of incentives: Lack of incentives in research centers affects the motivation to innovate and disseminate knowledge (Panagiota, 2023);
- Organizational barriers: Structural barriers to knowledge transfer and exchange, such as limited access to databases and research findings, act as organizational barriers to knowledge transfer and exchange (El-Halabi et al., 2021);
- Funding constraints: Research funders invest a significant amount of money in the creation and transfer of research, so funding constraints can limit knowledge transfer activities (Lavis et al., 2003);
- Communication barriers: Communication difficulties between researchers, practitioners, and industry partners significantly hinder knowledge transfer and exchange of views (Panagiota, 2023);
- Lack of interdisciplinary understanding: The lack of interdisciplinary understanding among researchers and industry practitioners hinders the application of scientific knowledge in practical settings (Wu et al., 2019);
- Resistance to change: Industry resistance to change and the adoption of new scientific findings can be a significant barrier to the transfer of knowledge from research to practical application (Wu etal., 2019).

These challenges highlight the complex nature of knowledge transfer and the need for collaborative, communicative, and catalytic approaches to overcome it. However, scientific research has shown that institutionalizing knowledge transfer activities within collaborative efforts between industry and universities is effective in promoting knowledge transfer (Hardy et al., 2018; Lopes et al., 2021). Addressing these challenges can drive innovation, competitiveness, and growth in various sectors and regions, ultimately contributing to economic development.

Opportunities to Improve the Impact of Scientific Research in the Field of Tourism and Traditional Industry

The following are some of the opportunities for knowledge transfer in the field of tourism and traditional industry, including:

- Multidisciplinary collaboration: Encouraging collaboration between researchers from different disciplines is a great opportunity that can lead to holistic and innovative approaches to addressing industry challenges, fostering creativity and problem-solving (Specht & Crowston, 2022);
- Industry engagement: Enhanced collaboration between researchers and stakeholders can ensure practical industry needs, facilitating the implementation of viable solutions (Ahmed et al., 2022);
- Knowledge-sharing platforms: The creation of knowledge-sharing platforms, such as industrial-academic workshops or collaborative projects, can facilitate the transfer of research findings to practical applications within the tourism and traditional industry sectors (EuropeanUnion, 2021);
- Support policies: Alignment with government policies and incentives can encourage the integration of research-based practices into industry processes, promoting development in the field (McKercher & Du Cros, 2002);

- Collaborative research: Collaborative research between academia and industry can facilitate the transfer of knowledge from the informant to practical application (Hardy et al., 2018);
- Knowledge brokers: Knowledge brokers can act as a liaison between researchers and industry partners, facilitating the exchange of ideas (Lavis et al., 2003);
- Open dialogue and debate: Open dialogue and debate between government, industry, and academiacan facilitate the transfer of knowledge on best practices (Scott et al., 2017).

These opportunities provide avenues to enhance the impact of scientific research on tourism and traditional industries, offering the potential for further exploration and development.

Results

The study provides a comprehensive analysis of the impact of scientific research on the development of traditional industries, with a particular focus on the tourism and manufacturing sectors. It also identifies the different ways in which scientific research contributes to innovation and efficiency and integrates traditional and modern practices in these industries. In addition, the study identifies challenges that hinder the effective transfer of knowledge from research to practical application and suggests opportunities for improvement.

The study emphasizes the important role that scientific research plays in driving innovation and enhancing efficiency in traditional industries. By promoting the development of new products, processes, and technologies, scientific research stimulates innovation and improves efficiency in sectors such as tourism and manufacturing. Moreover, the study highlights the importance of integrating modern scientific knowledge with traditional practices, such as traditional medicine, to develop new treatments. This integration not only benefits the healthcare sector but also has implications for other traditional sectors.

However, despite the potential benefits of scientific research, the study identified many challenges that hinder the effective transfer of knowledge from research to practical application. These challenges include the lack of cooperation and partnerships between research institutions, universities, and industries, as well as cultural differences between academics and industry practitioners. In addition, issues such as lack of skilled staff to transfer knowledge, divergent goals and priorities, organizational barriers, funding constraints, communication difficulties, and resistance to change exacerbate the problem.

Among the problematic aspects highlighted by the study is resistance to change within industries, which hinders the adoption of new scientific findings and technologies. This resistance can stem from various factors, including established practices, fear of disruption, and reluctance to invest in unfamiliar technologies. Overcoming this resistance requires concerted efforts to promote a culture of innovation and openness to new ideas within organizations. It also requires effective communication and cooperation between researchers, industry stakeholders, and policymakers to address concerns and facilitate the adoption of innovative solutions.

In conclusion, the study emphasizes the significant impact of scientific research on traditional industries, especially in sectors such as tourism and manufacturing. While scientific research holds enormous potential to drive innovation and enhance efficiency, overcoming the challenges associated with knowledge transfer remains critical to realizing its full benefits; by addressing issues such as barriers to cooperation, resistance to change, and funding constraints,

stakeholders can unleash the transformative power of scientific research and drive sustainable economic development in traditional industries.

Recommendations

To maximize the benefits of scientific research, this study recommends:

- **Investing in research funding** to support knowledge transfer initiatives.
- **Developing platforms for industry-academic collaboration**, such as joint projects and workshops.
- **Enhancing training programs** for knowledge transfer professionals to ensure effective communication and application.
- **Encouraging innovation in knowledge transfer processes** to sustain long-term development.
- **Institutionalizing knowledge-sharing activities** to solidify partnerships between academia and industry.

Implementing these strategies will enhance the practical application of scientific research, driving innovation and economic development in traditional industries.

Conclusion

This study aimed to explore the impact of scientific research on the development and application of new technologies in the tourism and traditional industry sectors, emphasizing the challenges and opportunities in knowledge transfer. The findings reveal that scientific research plays a critical role in driving innovation and improving operational efficiency within these sectors. However, the process is hindered by barriers such as funding limitations, resistance to change, and inadequate collaboration between academia and industry. Addressing these challenges requires fostering a culture of innovation, enhancing communication, and developing infrastructure that supports knowledge-sharing. By implementing strategies that promote collaboration and institutional support, stakeholders can bridge the gap between research outputs and practical applications, ultimately contributing to sustainable economic growth and technological advancement in traditional industries.

Endnotes

1. Experiential and transformative travel is a form of tourism in which people focus on effectively and purposefully experiencing a particular country, city, or place with its history, people, culture, food, and environment, with a focus on personal change and self-discovery (Amaro et al., 2023).

About the Authors

Amine MEKIDECHE is a researcher specialising in economics. His research interests include digital marketing in tourism. He is also interested in the use of artificial intelligence tools. https://orcid.org/0009-0008-5403-7374

Sihem LAGGOUN is a researcher specialising in economics. Her research interests include business management and human resources. https://orcid.org/0000-0003-1401-9936

Khaled BOUAZA is a researcher specializing in economics. He is a lecturer at the Faculty of Economics, Business and Management Sciences at the University of Bordj Bou Arreridj, Algeria. https://orcid.org/0009-0001-5766-0144

Statement of Absence of Conflict of Interest

The authors declare that there are no conflicts of interest related to the research, findings, or recommendations presented in this paper. All conclusions drawn are independent and unbiased.

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