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# Regional Development Through Industrial Tourism: A Systematic Literature Review

## Desenvolvimento Regional Através do Turismo Industrial: Uma Revisão Sistemática da Literatura

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### Abstract

This article contributes to a conceptual clarification and an understanding of how industrial tourism research has evolved. It is based on a literature review of scientific research produced over the past 25 years, focusing on its relation to regional development. The analysis was based on 51 scientific articles retrieved from the Scopus database. The growing interest in this theme, which is transversal to several research areas, is evident, adopting, in most cases, a qualitative methodology of case studies. As a promoter of regional development, industrial tourism has positive aspects, such as economic, social, and ecological benefits, among others, but also some constraints, such as excessive commercialization and loss of authenticity of the places. Thus, this work also contributes to identifying this product's impacts and development strategies in the territories.

*Keywords:* Industrial Tourism; Systematic Literature Review (SLR); Impacts; Development strategies; Regional development.

*JEL Code:* R00; Z32; R10

### Resumo

Este artigo contribui para uma clarificação conceptual e uma compreensão de como a investigação em turismo industrial tem evoluído. Baseia-se numa revisão bibliográfica da investigação científica produzida ao longo dos últimos 25 anos, centrada na sua relação com o desenvolvimento regional. A análise foi baseada em 51 artigos científicos identificados da base de dados Scopus. O crescente interesse por este tema, transversal a várias áreas de investigação, é evidente, adotando, na maioria dos casos, uma metodologia qualitativa de estudos de casos. Como promotor do desen-

volvimento regional, o turismo industrial tem aspetos positivos, tais como benefícios económicos, sociais e ecológicos, entre outros, mas também alguns constrangimentos, tais como uma comercialização excessiva e a perda de autenticidade dos locais. Assim, este trabalho contribui também para identificar os impactos e estratégias de desenvolvimento deste produto nos territórios.

*Palavras-chave:* Turismo Industrial; Revisão Sistemática da Literatura (RSL); Impactos; Estratégias de desenvolvimento; Desenvolvimento regional.

*Código JEL:* R00; Z32; R10

## 1. INTRODUCTION

One of the most widespread definitions of industrial tourism was given by Edwards and Llurdés, who stated “that industrial tourism is the development of tourism activities and industries in man-made sites, buildings and landscapes that have their origins in industrial processes of past periods” (Edwards & Llurdés, 1996:342). More recently, Rodriguez-Zulaica (2017) defined industrial tourism as any tourism activity developed in industrial sites and buildings, active or not, provided that its main activity is not or has not been tourism. Frequently, this broad definition of industrial tourism is associated with other types of tourism (Ionica et al., 2020), such as farm tourism (Veeck et al., 2010), farm stays (Shinners et al., 2019), working exhibitions, workplace tourism, factory tourism, sideline tourism (Ionica et al., 2020), and wine tourism (Salvado, 2016). However, these types of tourism have different characteristics and scopes, and as such, should be treated independently. As an example, in the case of wine tourism, if the tourism proposal of a wine farm is to present the industrial process of wine production, it will fit into the scope of industrial tourism. If it is about promoting wine tasting and selling, then it does not.

Moreover, according to Rodriguez-Zulaica (2017), industrial tourism in the English literature is associated with the recovery and enhancement of the industrial past of a city or region, using the term "industrial heritage tourism". Accordingly, the frequent translation of industrial tourism to Spanish and French appears in many documents as "industrial heritage tourism", a concept that is considered a subcategory of "heritage tourism", defined as including tourism activities linked to heritage, essentially cultural heritage. Rudd and Davis (1998: 85) stressed that "industrial tourism is a popular subsection of Industrial Heritage Tourism". Givental et al. (2019) consider that industrial tourism has become an essential part of cultural tourism, arguing that industrial heritage is a part of the culture and, as such, reflects the national character and national history. Therefore, industrial tourism can be defined as a type of tourism that includes visits to present, past or future industrial sites. Includes places that are no longer active in their industrial function, industrial companies currently in operation and locations of future industrial facilities. Also, it is related to visits to other sites whose theme is associated with the industry (industrial technology centres, museums, industrial tourist routes, schools and industrial laboratories and other similar) (Montenegro & Sousa, 2022). Thus, industrial tourism encompasses all kinds of tourist activities whose primary reason for visiting is related to industrial knowledge. According to Perfetto & Presenza (2017), the literature on industrial tourism heritage management still needs a deeper understanding. Nevertheless, these authors highlight the existence of three main strands in this field of research: tourism demand, local development and destination governance. Although this points to acknowledging a relationship between industrial tourism and regional development, there is a need to better understand the configurations that relationship can assume.

This paper aims to contribute to the scarce literature on industrial tourism and specifically address the relationship between industrial tourism and regional development. This work has two main goals: i) to map and analyse the literature on industrial tourism; and ii) to

explore its relevance and challenges in the context of regional strategies, that is, to understand the contributions of industrial tourism to regional development. The methodology was based on a Systematic Literature Review (SLR), and the bibliographic data were collected from the Scopus database. Fifty-one articles covering 25 years of published research were identified and characterized. Furthermore, based on content analysis, the articles were grouped according to their objectives and main conclusions regarding the relationship between industrial tourism and regional development.

## 2. RESEARCH METHODOLOGY

### 2.1. Research model

The SLR is frequently used to locate scientific studies in a given area of knowledge. It helps to select and assess contributions and analyse and synthesise data. Additionally, it provides an evidence report that allows for reasonably clear conclusions about what is known on a given topic or area of knowledge (Denyer & Tranfield, 2009). Performing an SLR in industrial tourism is particularly challenging, however necessary, given the fragmented nature of the topic.

This research followed Denyer and Tranfield's model, whose SLR includes five essential steps (Denyer & Tranfield, 2009):

- (1) Formulation of the research question,
- (2) Location of the studies to be included,
- (3) Selection and evaluation of the selected studies
- (4) Analysis and synthesis of the selected information
- (5) Describe and use the results collected in the previous steps.

The research questions are:

**What is state-of-the-art research on industrial tourism?**

**How can industrial tourism contribute to regional development?**

Afterwards, it was necessary to locate, select, and evaluate scientific articles that would answer the research objectives of the SLR. VOSviewer software is used for bibliometric analysis of citation, co-citation and bibliographic coupling analysis. A content analysis was performed manually, using an inductive approach.

### 2.2. Selection and evaluation of articles

In December 2021, the search was performed in the Scopus database to find articles that could answer the research questions, applying keywords and search conventions and adopting and combining Boolean operators with complex searches, as shown in table 1. For this purpose, the following keywords were used: "Industrial Tourism"; "Industrial Heritage Tourism"; "Factory Tourism". A comprehensive list of 196 articles (primary contributions) was obtained, which allowed addressing the research questions formulated earlier. After filtering according to document type, research area, and language, 100 remained, of which only 92 had a full text available online. Then, identification and ordering those 92 articles using the EndNote citation software tool. Following this, analysed the abstracts, to ensure their relevance to the study. At this stage, was identified some articles that did not fit the specific theme or contributed to answering the research objective. Thus, our final list for the SLR had 51 articles published between 1996 and 2021(appendix 1).

The goal of the analysis and synthesis phase is directly related to how we break down individual articles into compatible parts and the extent to which each part relates to the other, and thus to be able to gauge associations between data (Denyer and Tranfield, 2009). To identify key contributions, articles were reviewed carefully before being summarized individually. In addition, based on the "nine-ball" technique approach (Noy, 2008), two articles not identified during the search process were integrated. These two articles, shown in table 2, were published in journals indexed in the Web of Science database and are in line with the study on the evolution of the literature on regions and industrial tourism.

**Table 1. Structure of the search criteria**

Selection criteria	Results
Database	Scopus
Search field	Article title, Abstract, Keywords
Keywords	"Industrial Tourism"; "Industrial heritage tourism"; "factory tourism"
Search date	06/12/2021
Years	1996-2021
Total number of documents	196
Selection of document type	Scientific article
Number of scientific articles	136
Selection of research areas	Social Sciences / Business, Management and Accounting, Economics, Econometrics and Finance
Total number according to research areas	106
Selection of language	English; Portuguese, Spanish
Total number according to language selection	100
Duplicate articles	0
Unavailable articles	8
Abstract analysis	92
Out of scope	41
<b><u>Final number of scientific articles for analysis</u></b>	<b>51</b>

**Table 2. Articles to be included in the analysis**

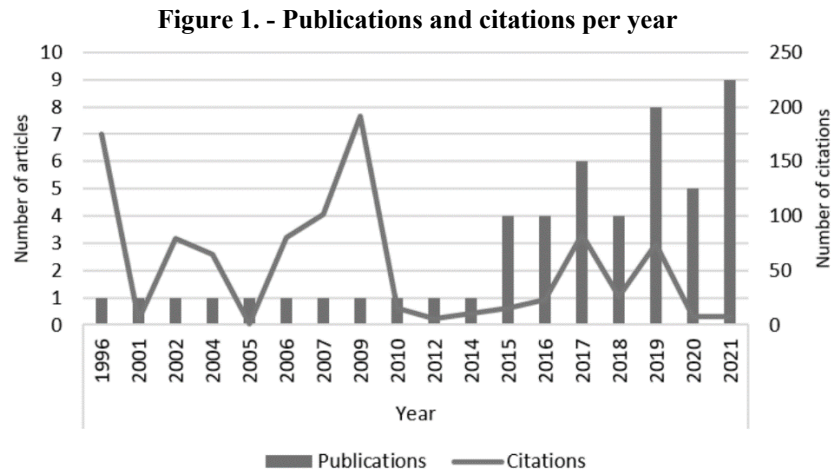
Authors	Title	Year
Botella, MDP	The heritage of the industry: a tourist referent to explore in the Region of Murcia	2018
Rodrigues, JCM	The route of the industrial heritage in the vale do ave (north of portugal) in a new trend of the tourism	2019

### 3. BIBLIOMETRICS

Industrial tourism has been growing in the last 25 years. Its approach maintains an empirical, qualitative, and somewhat fragmented nature, possible to verify in the predominance of case studies and by the diversity of studies presented in different scientific areas, such as geography, archaeology, social and political sciences, and architecture, among others. From sustainability to management, government, innovation, heritage, stakeholders, and authenticity, among many others, we can stratify the various themes studied over the years. The emphasis on territorial development and community approach is particularly relevant to this research.

#### 3.1. Evolution of publications and citations

Figure 1 shows the number of articles published per year, which reflects the increasing trend over the years, with its most significant focus in the years 2017, 2019 and 2021.



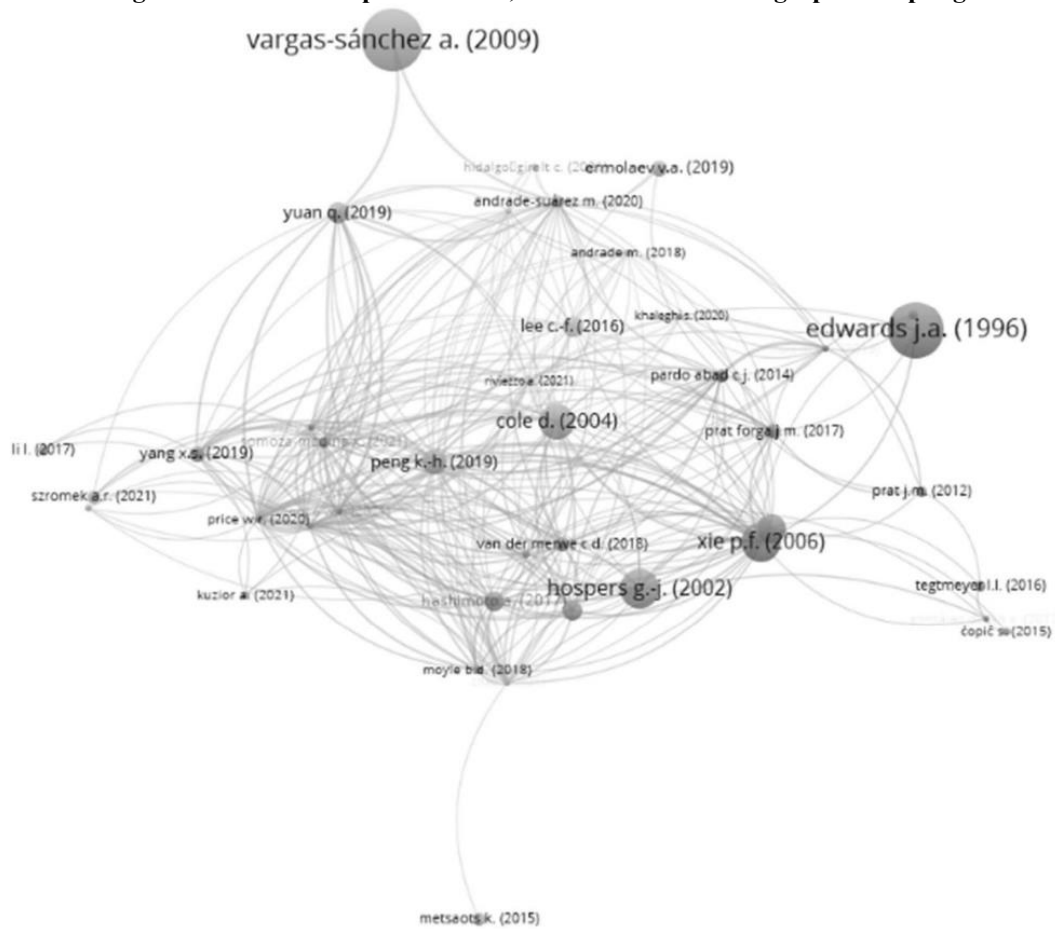
Although the first publication dates from 1996, the following two decades had limited publications, which only began to grow sustainably in 2015. Regarding citations, 2009 stands out with the highest number, even though only one article was published this year. Table 3 shows the most cited articles, where the article with most citations was published 12 years ago. Two relatively recent articles from 2019 already appear in the top cited articles list.

**Table 3. Articles with most citations**

Authors	Title	Year	Journal	Cited by	Average Quotes / Year
Vargas-Sanchez, A; Plaza-Mejia, MD; Porras-Bueno, N	Understanding Residents' Attitudes toward the Development of Industrial Tourism in a Former Mining Community	2009	Journal of Travel Research	191	16
Edwards, J.A., Llundés I Coit, J.C.	Mines and quarries: Industrial Heritage Tourism	1996	Annals of Tourism Research	175	7
Ballesteros, E.R., Ramírez, M.H.	Identity and community - Reflections on the development of mining heritage tourism in Southern Spain	2007	Tourism Management	101	7
Xie, P.F.	Developing industrial heritage tourism: A case study of the proposed jeep museum in Toledo, Ohio	2006	Tourism Management	80	5
Hospers, G.-J.	Industrial heritage tourism and regional restructuring in the European union	2002	European Planning Studies	79	4
Cole, D.	Exploring the sustainability of mining heritage tourism	2004	Journal of Sustainable Tourism	65	4
Frantál, B., Urbánková, R.	Energy tourism: An emerging field of study	2017	Current Issues in Tourism	39	10
Peng, K.-H., Tzeng, G.-H.	Exploring heritage tourism performance improvement for making sustainable development strategies using the hybrid-modified MADM model	2019	Current Issues in Tourism	28	14
Yuan, Q., Song, H., Chen, N., Shang, W.	Roles of tourism involvement and place attachment in determining residents' attitudes toward industrial heritage tourism in a resource-exhausted city in China	2019	Sustainability (Switzerland)	19	10
Hashimoto A., Telfer D.J.	Transformation of Gunkanjima (Battle-ship Island): from a coalmine island to a modern industrial heritage tourism site in Japan	2017	Journal of Heritage Tourism	16	4

Figure 2 represents the relationship between citations, co-citations, and bibliographic coupling between authors.

**Figure 2. - Relationship of citations, co-citations and bibliographic coupling**



As for the relationship between the various authors through citations, the influence of Edwards and Llude's I Coit (1996) is noteworthy as the authors who gave the kick-off to this theme. Other authors, such as Hoppers G.J. (2002), Cole D. (2004), Xie P.F. (2006) and Vargas-Sánchez (2009), also appear with higher relevance and influence over the remaining authors.

### 3.2. Countries, types of studies and methodology

As for the authors/institution's countries, first of all, the country to which the study refers was identified. In cases it was impossible to determine the country, the nationality of the authors was identified. There are four articles where it was identified more than one country. Table 4 shows that the country with the most publications is Spain (10), followed by the United States of America (4) and China (4). Overall, Europe has the most publications, accounting for 63%, followed by Asia with 21%.

Most articles present a qualitative case study methodology (Figure 8 and 9), following the approach adopted by the first article published in 1996. In total, about 84% refer to case studies. Thus, this theme has been primarily explored empirically, lacking studies addressing a more general and conceptual approach.

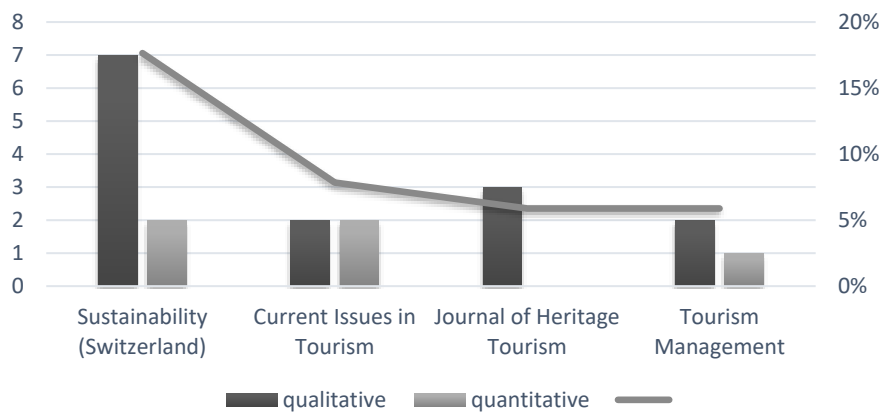
**Table 4. Distribution studies per country (with 2 or more published articles) and types of study**

	Articles	Type of Study			%
		Misto	Quantitativo	Qualitativo	
Spain	10	2	3	5	19,61%
China	4		1	3	7,84%
USA	4			4	7,84%
Japan	3			3	5,88%
Poland	3		2	1	5,88%
Italy	2	1		1	3,92%
Wales	2				3,92%
Czech Republic	2			2	3,92%
Russia	2			2	3,92%
Taiwan	2	1	1		3,92%
Portugal	2	1		1	3,92%
Countries with 1 published article	11	1		14	21,57%
articles involving several countries	4	1		1	7,84%
	<b>51</b>	<b>7</b>	<b>7</b>	<b>37</b>	

### 3.3. Journals

The articles are published in 36 journals. Figure 3 shows a list of journals with more than one publication.

**Figure 3 - Journals with more than 1 publication and types of studies**



*Sustainability* (Quartile 1) has nine publications, followed by *Current Issues in Tourism* (Quartile 1) with four and *Journal of Heritage Tourism* (Quartile 2) with three, totalling 37.25% of total publications. The remaining 62.75% of the published articles are scattered, with each article corresponding to a different journal.

The selected articles are generally spread over numerous journals from different areas, including Tourism and Hospitality, Culture, Regional Studies, Economics and Management, Law, Geography, Archaeology, Marketing and Social Sciences.

#### **4. CONTENT ANALYSIS: INDUSTRIAL TOURISM AND REGIONAL DEVELOPMENT**

The regions, their development and their relationship with industrial tourism are the main aspects addressed in the content analysis. Accordingly, it is possible to identify two main topics of research: i) the impacts (both positive related to opportunities and negative related to challenges) of industrial tourism on the development of regions, and ii) the strategies used to overcome the region's industrial tourism challenges.

##### **4.1. Impacts of industrial tourism on regional development**

Tourism, in which priority is given to the responsible use of industrial heritage, can provide new development opportunities for territories, avoiding the degradation and deterioration of resources (Moral-Moral & Fernandez-Alles, 2019). It is considered a way to recover the investment attractiveness of a region and can provide economic and ecological development, preservation of historical heritage, development and enhancement of local culture, and improvement of quality of life (Kuzior et al., 2021; Andrade-Suárez & Caamaño-Franco, 2020). Therefore, industrial tourism brings opportunities for the sustainable development of regions, affecting the three dimensions of the triple bottom line: economic, social and environmental (Elkington, 1994).

This touristic product is often linked to regional economic development, offering the opportunity to generate income and create jobs for the local population (Kuzior et al., 2021; Khaleghi et al., 2020; Ronck & Price, 2019; Hashimoto & Telfer, 2017). It is particularly felt in regions where the industry has declined or disappeared, considered as a source of revitalisation (Pretes, 2002; Del Pozo & Gonzalez, 2012). This deindustrialisation process is regarded by Kandžija et al. (2017) as a natural process (a result of economic growth) in developed countries, marked by the decline of industry and industrial employment, with a simultaneous increase in the importance of the service sector. Deindustrialisation provides empty spaces that, due to non-use, begin to deteriorate, which promotes the loss of meaning, recognition and importance, generating an economic loss in the region (Custódio & dos Santos, 2020). In these contexts, the role of industry in shaping urban space has diminished (Gieranczyk, 2005), and industrial tourism is considered an element of positive diversification: the discovery of a new economic function, based on leisure activities, applied in former manufacturing areas is advantageous for the region (Custódio & dos Santos, 2020; Ruíz et al., 2019). Industrial heritage as a tourism resource is often considered a last resort when these traditional manufacturing sectors have reached a stage of irreversible decay - or even disappeared - and alternative revitalisation measures have already proven impractical or failed (Coit, 2001). Several authors report that industrial tourism activities stimulate other local support services and generate employment (Hospers, 2002; Vargas-Sanchez et al., 2009; Kuzior et al., 2021), acting as an overall dynamic factor for the area (Vargas-Sanchez et al., 2009; Alonso et al., 2010). However, there is debate in the literature about the actual economic impacts of industrial tourism. Some authors point out that income and employment levels are much lower than those of former industrial activities (Edwards & Llurdes, 1996; Xie, 2015). In this context, Andrade & Caamaño-Franco (2018) report that the improvement in job creation will be moderate since it is a type of tourism that does not generate large flows of visitors with a specific demand. Other authors have noted that post-industrial communities may have few economic options that are more viable than tourism; even a moderate economic impact is arguably better than the alternatives (Ronck & Price, 2019).

The literature also stresses the social impacts of industrial tourism, namely by revitalising community development (Hashimoto & Telfer, 2017; Harfst et al., 2021) and promoting social cohesion (Ruíz et al., 2019). Čopić & Tumarić (2015) report that cities affected by deindustrialisation use this type of tourism both for economic and social revitalisation. Reopening brownfield sites to tourists encompasses a variety of purposes and perspectives. The site can provide an opportunity to learn about the past by respecting and preserving memories (Hashimoto & Telfer, 2017; Ruíz et al., 2019) and building a collective memory (Ronck & Price, 2019). Industrial tourism has an important educational function and helps to reinforce the local population's sense of belonging to an industrial community (Prat & Valiente, 2012; Khaleghi et al., 2020) and territorial identity (Ruíz et al., 2019). It also preserves the native culture of the region (Khaleghi et al., 2020). Moreover, it implies the dissemination and knowledge of industrial values and traditions, allowing the enjoyment of this



heritage by the whole society (Moral-Moral & Fernandez-Alles, 2019). According to Custodio & dos Santos (2020), revitalising de-industrialised areas promotes social reconnection, recognition, identity, and attachment to the environment.

Additionally, industrial tourism can provide the impetus for environmental improvement in denuded post-industrial areas (Conesa et al., 2008) and land use (Ronck & Price, 2019). The European Parliament emphasises that developing Europe's industrial heritage could contribute to achieving a more sustainable tourism sector through the preservation, transformation and rehabilitation of industrial sites (Custodio & dos Santos, 2020). This development is essential because it promotes sustainability by reusing the space, constructing a historical narrative and social representativeness and converting abandoned buildings into visitor centres (Hashimoto & Telfer, 2017). On the other hand, investment in these revitalised regions is mainly supported by the European Union's public policies, and the industrial heritage is a crucial tool for tourism promotion and integration of the European Union (Custodio & dos Santos, 2020).

However, scholars warn that industrial tourism does not have the same impact in all territories (Ruíz, del Pozo, & Ruiz-Valdepeñas, 2019). The positive impacts should be assessed from a long-term perspective or even on an intangible basis. It includes replacing the traditional industrialised image with a more attractive one for potential foreign investors (Coit, 2001, 2004) as well as on a regional and local level, allowing for an improved destination image (Tegtmeyer, 2016; Prat, Forga & Cànoves Valiente, 2017; González Durán, 2017; Andrade & Caamaño-Franco, 2018;) and a strengthening of the local community's identity (Tegtmeyer, 2016; Prat & Valiente, 2012, 2017; Andrade & Caamaño-Franco, 2018; Ruíz, del Pozo, & Ruiz-Valdepeñas, 2019; Custodio & dos Santos, 2020). Moreover, some scholars have a more nuanced vision of the positive impacts of industrial tourism on regional developments, arguing that it is not a panacea for regions facing industrial decline. According to Coit (2001), industrial heritage tourism initiatives should not be seen as the only solution to the problems of industrial areas facing decline since other forms of tourism can be much more profitable in terms of income and employment. In a more critical perspective, Hospers (2002) considers that it is unlikely that the effects of heritage tourism will be large enough to rejuvenate an entire declining industrial region. This author argues that, in theory, industrial heritage tourism could be an interesting new combination for industrial areas in the European service economy.

However, in practice, its effects on regional restructuring may be limited. Hospers (2002) suggests reusing industrial heritage for other economic activities besides tourism, stating that the contribution of industrial heritage tourism to regional renewal in the EU may be somewhat disappointing for several reasons. Some of these reasons are the relatively low impact on regional employment (Hospers, 2002) and the fact that it does not directly contribute to improving workers' skills in the tourism sector (Andrade & Caamaño-Franco, 2018). Therefore, industrial heritage tourism is only part of the solution to many problems faced by (former) industrial regions (Harfst et al., 2021). Harfst et al. (2021) agree that the economic impacts of industrial heritage tourism on the transition to more sustainable regional development are pretty low. Also, according to Somoza-Medina & Monteserín-Abella (2021), industrial tourism may have sustainability problems when implemented outside the significant economic development centres. Especially in the cases of places that depend on this specific product's success for their economic development. From a more critical perspective, there is evidence that industrial tourism may bring some adverse effects and be related to some challenges for regional development. Tegtmeyer (2016) states that transforming the post-industrial city into a tourist attraction has not solved socio-economic problems but commodified them. It is necessary to reflect on how tourism shifts from a leisure activity to a marketing strategy and the importance of tourism in urban development. Another issue to analyse is how destinations will react to increased tourist flows. According to Ermolaev et al. (2019), opening businesses to visitors and creating tourist attractions will stimulate the modification of regions and loss of authenticity, especially if the tourist flow is excessive. Likewise, Ruíz, del Pozo, & Ruiz-Valdepeñas (2019) report that experiences of enhancing industrial heritage tourism are not always successful and that the boundaries of industrial tourism are blurred. These authors warn about the convenience of evaluating the economic impact and other intangible aspects of social interest or territorial potential. According to Somoza-Medina & Monteserín-Abella (2021), industrial heritage tourism has not generated that much progress or innovation in some cases. It is mainly based on exhibition centres that are visited chiefly through school groups on educational visits or by older people for recreation. They are not

seen as engines of innovation or benchmarks for the regeneration of the productive fabric of these places, nor produce structural changes in a territory unless accompanied by many other public and private initiatives (Somoza-Medina & Monteserín-Abella, 2021).

Lastly, Li & Soyez (2017) industrial tourism products rarely use the “negative” side of industrialisation phases or patterns, that is, its disturbing histories of war, occupation, other forms of imposition of foreign influence, disasters, social unrest, and the suffering of individuals or groups triggered by crises, failures, relocations, and destruction.

Table 5 and 6 summarise the main perspectives on the possible benefits and main difficulties of implementing industrial tourism at the regional level.

**Table 5. Benefits of industrial tourism for regional development**

	<b>Benefits</b>	<b>Authors</b>
<b>Socio-cultural</b>	Educational function	Prat & Valiente (2012); Klempa, Bujok, Jelínek, Porzer, & Pavluš (2015)
	Experiencing industrial environments of different types	Klempa et al. (2015)
	Revitalize community development	Hashimoto & Telfer (2017)
	Social benefits	Harfst, Sandriester, & Fischer (2021); Ćopić & Tumarić (2015) ; Custódio & dos Santos (2020)
	Improve quality of life	Kuzior, Lyulyov, Pimonenko, Kwilinski, & Krawczyk (2021)
	Sense of belonging for the local population	Prat & Valiente (2012)
	Preserving the native culture of the region	Khaleghi, Hosseinzadeh, & Moridsadat, 2020; Hashimoto & Telfer, 2017; Ruíz, del Pozo, & Ruiz-Valdepeñas, 2019
	Preserving memories	Hashimoto & Telfer, 2017; Ruíz, del Pozo, & Ruiz-Valdepeñas, 2019
	Increasing community awareness	Khaleghi et al. (2020)
	Recognition, identity, and bonding with the environment	Custódio & dos Santos (2020)
	Offer options for increased participatory activity of the population	Metsaots, Printsman, & Sepp (2015)
	Considering non-locals, help improve integration issues	Metsaots, Printsman, & Sepp (2015)
	Enable the enjoyment of this heritage by the whole society.	Moral-Moral & Fernandez-Alles (2019=)
	Dissemination and knowledge of industrial values and traditions	Moral-Moral & Fernandez-Alles (2019)
<b>Economic</b>	Revitalizing the economy	Ćopić & Tumarić (2015 )
	Generating income	Kuzior et al. (2021); Khaleghi et al (2020); Hashimoto & Telfer (2017)
	Stimulate the formation of local service activities	Hospers (2002); Vargas-Sanchez et al. (2009); Kuzior et al. (2021); Rodrigues(2019)
	Investment in these revitalized regions is financed by European Union public policies	Custódio & dos Santos (2020)
	Recovering the investment attractiveness of a region	Kuzior et al. (2021)
<b>Environmental</b>	Preventing degradation and deterioration of resources, preserving historical heritage	Hashimoto & Telfer (2017); Moral-Moral & Fernandez-Alles (2019); Kuzior, Lyulyov, Pimonenko, Kwilinski, & Krawczyk (2021)

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	Providing impetus for environmental improvement in denigrated post-industrial areas	Conesa et al. (2008)
	Promote sustainability through reuse of space	Custódio & dos Santos (2020)
<b>Multi-dimensional</b>	To create employment	Kuzior et al. (2021); Khaleghi et al (2020); Hospers (2002); Vargas-Sanchez, Plaza-Mejia, & Porras-Bueno (2009); Kuzior, Lyulyov, Pimonenko, Kwilinski, & Krawczyk (2021); Hashimoto & Telfer(2017)
	New development opportunities for the territories	Moral-Moral & Fernandez-Alles (2019)
	Preserving cultural heritage and saving it from degradation for future generations	Szromek, Herman, & Naramski (2021); Józwiak & Sieg (2021)

**Table 6 -Difficulties of industrial tourism at regional level**

	Negative points	Authors
<b>Socio-cultural</b>	Relatively low impact on regional employment	Hospers (2002)
	Does not contribute directly to improving the skills of workers in the tourism sector	Andrade & Caamaño-Franco (2018)
	Current valuations of industrial heritage only rarely reflect the other side of the phases or patterns of industrialization, i.e., its disturbing histories of war, occupation, other forms of imposition of foreign influence, disasters, social unrest, and the suffering of individuals or groups triggered by crises, failures, relocations, and destruction.	Li & Soyez (2017)
	Experiences of enhancing industrial heritage in the service of tourism are not always successful and that the boundaries of industrial tourism are blurred	Ruíz, del Pozo, & Ruiz-Valdepeñas (2019)
<b>Economic</b>	Other forms of tourism can be much more profitable in terms of income and employment provision.	CoIT (2001)
	Little effect on the local economy	(Mans eld, 1992 citado por Hospers, 2002)
	Economic impact on the transition to more sustainable regional development are quite low.	Harfst, Sandriester & Fischer (2021)
	Even a moderate economic impact is arguably better than the alternatives	Ronck & Price (2019)
	that industrial heritage tourism experiences various obstacles, such as lack of funding and resources .	Giventalet al.(2019) e Alonso et al. (2010)
	IT has not solved socio-economic problems but instead commodified them	Tegtmeyer (2016)
<b>Multi-dimensional</b>	Its effects on regional restructuring may be limited.	Hospers (2002)
	The contribution of industrial heritage tourism to regional renewal in the EU may be rather disappointing, for several reasons, one of which is doubts about the appeal of industrial heritage to the public	Hospers (2002)
	Industrial tourism is not sustainable in locations distant from centers of economic development	Somoza-Medina & Monteserín-Abella (2021)
	It is unlikely that in practice the effects of heritage tourism will be large enough to rejuvenate an entire declining industrial region	Hospers (2002)

### 4.2. Identifying strategies to overcome the region's industrial tourism challenges

From the results discussed in the previous section, regional stakeholders need to form a realistic

frame of the potentials and limitations of industrial heritage tourism to create an overall sustainable development strategy (Harfst et al., 2021). The content analysis reveals many ways to develop and promote industrial tourism. According to Xie (2006), the information presented by Kotler, Haider, and Rein in 1993 captures the essence of the complexity of industrial heritage tourism, where two places will never implement development strategies in the same way, as each place has its own culture, resources and products. Places differ in histories, cultures, policies, leadership, and particular ways of managing public-private relationships (Xie, 2006). Therefore, leadership and strategic tourism planning are needed in developing a regional strategy (Van der Merwe & Rogerson, 2018). Other authors mention that the lack of financial resources is a critical issue in developing industrial heritage tourism experiences (Givental et al., 2019; Alonso et al., 2010). Van der Merwe & Rogerson (2018) reinforce that the capacity constraints at the local government level must be correctly addressed to maximize the potential of industrial heritage tourism. Price (2021) notes that developing industrial tourism requires a long-term financial commitment and effective coordination at multiple scales of governance. Moreover, reliance on industrial - and other forms of cultural heritage - as a central aspect of tourism identity and branding can lead to challenges for areas trying to move in new directions or seeking distance from the past. Therefore, regional stakeholders need to form a realistic picture of the potentials and limitations of industrial heritage tourism to create an overall sustainable development strategy (Harfst et al., 2021).

According to Ballesteros & Ramírez (2007), there is a tendency to think that the main explanatory factors to understand the development of heritage tourism (as for any tourism) are the market, its demand generation, and government intervention. However, these authors argue that endogenous factors of the host societies should also be considered to explain better why heritage tourism has developed in some areas and not in others. Tourism affects and builds identities, but identities can also build or obstruct tourism (Ballesteros & Ramírez, 2007).

For Cole (2004), economically speaking, tourism should always be fully integrated with a broader holistic regeneration plan, ideally including providing training and monitoring to the local community. Besides, it should also address considerations of equity in the distribution of benefits, development of marketing programs linked to the industry, and possibly forming alliances that include the promotion of complementary attractions nearby or even between regions that share a similar history. One of the most preeminent challenges is balancing economic impacts with heritage preservation and sustainability concerns. In the long run, industrial tourism can provide sustainable and increasing economic growth (Sjaifuddin, 2018). The industry's history and decline can be valuable discursive tools in some tourism attractions (Price & Rhodes, 2020). In cases where industrial heritage benefits from the classification of cultural heritage after its closure, there is even more potential for industrial tourism development (Somoza-Medina & Monteserín-Abella, 2021). For tourism purposes, the existing heritage must be converted into a tourism resource, and tourism, on the other hand, as an economic activity, is subject to market convergence with relevant public legislation and involvement of local communities (Ballesteros & Ramírez, 2007). According to Peng & Tzeng (2019), decision-makers should prioritize the improvement of criteria such as "social utility," "resource integration," "destination policy and development," "economic development," "cultural linkages," "cultural learning," and "natural landscape resources" to achieve the aspired performance levels. Active management based on implementing sustainable programs and plans for the regions aims to ensure continued economic and social development without depleting existing resources while promoting respect for the environment (Moral-Moral & Fernandez-Alles, 2019). Local authorities should place more importance on strengthening residents' native emotional ties and focus on how to encourage residents to participate in tourism activities to help them form perceptions of positive impacts, deepen attachment to the place, and build a sustainable tourism industry (Yuan et al., 2019)

Therefore, tourism can be seen as a way to preserve cultural heritage and save it from degradation for future generations. Tourism must be based on facilities incorporating this heritage, which requires a specific business model transformation approach (Szromek et al., 2021; Józwiak & Sieg, 2021). The design of tourism activities for industrial heritage is a model that has emerged since the early days of its recognition and that takes as a reference point what has been done for cultural heritage, which can provide a new path for the conservation of this heritage (Botella, 2018). Additionally, the progressive reduction of the life cycle of tourism products has revolutionized territorial planning models, with more flexible offers that can reconcile the identity of tourism with the

capacity for constant renewal of territories (Prat & Valiente, 2012).

Some authors explore some examples of promising strategies being used in several regions. Andrade-Suárez & Caamaño-Franco (2020) address winemaking as a means of enhancing the heritage and memory of the wine industry. Wine tourism, as a form of industrial tourism, can be seen as a tool for regional development that favours the integration of various sectors, agriculture (primary), wine industry (secondary), and tourism (tertiary) (Andrade-Suárez & Caamaño-Franco, 2020). Other studies address diverse realities, such as:

(1) Ecomuseums and collective memory (Prat & Valiente, 2012).

(2) The marble industry in Sardinia and the strategic advantage of having all companies concentrated in a limited and homogeneous area of quarrying and processing activities (Careddu et al., 2017).

(3) The coal's contributions to Wales and the overall legacy of the resources (Price & Rhodes, 2020).

Most studies stress the need to involve several stakeholders in the process. Opinions of local inhabitants and tourists can benefit regional planning, revealing their needs and expectations. Xie (2006) argues that not only do industry and residents' interests need to be coordinated, but also that all stakeholders must be involved and collaborate for the well-being of industrial heritage. One positive side effect is the provision of options for increased participatory activity and considering non-locals could help improve integration issues (Metsaots et al., 2015). Cooperation among stakeholders is highly significant for the development of industrial heritage tourism. However, at the same time, it is somewhat difficult to achieve, and local governments have capacity limitations in tourism development, planning and management (Van der Merwe & Rogerson, 2018). According to Yang et al. (2019), the governments have different roles and interventions during this development process, being possible to identify three distinct phases. In the first phase, the government's part is essential in defining the path to take and allocating financial support. In the second phase, the private sector assumes a more important role, becoming the leading investor, increasing commoditization, and shifting the emphasis from heritage preservation to economic development in search of higher returns for capital investment. Later, the government gets involved again to control the excesses of commodification, creating plans to achieve a better balance between preservation and development.

The need to involve the local population and social authorities would show the value that industrial heritage can acquire (Botella, 2018) to achieve the tourism sustainability of a destination, involving the local population in managing their resources (Moral-Moral & Fernandez-Alles, 2019). Alonso et al. (2010) point out that the participation of academia in projects at industrial plants presents a wide range of benefits for both the educational institutions and the plant. Building relationships with government agencies is also essential to secure future funding for projects. Zhao & Liu (2021) studied the importance of initial conditions and stakeholder collaboration in promoting the development of industrial heritage tourism. They concluded that the participation of local communities, the application of new technologies, and strong support from national and local governments are vital to creating a new path for industrial tourism, believing that industrial heritage sites have the potential to become modern tourism destinations. From the analysis of the specific case of the mining industry, Givental et al. (2019) point out that the recognition and classification of industrial heritage by UNESCO is a critical valuation factor. However, before reaching this stage, it is necessary to improve the quality of domestic tourism sites and amenities before appealing to the international tourism community, seeking cross-sectoral cooperation of various stakeholders, including regional and local government, private companies, investors, and residents.

Pardo Abad (2014) addresses the importance of sustainability in achieving local development, with coordination between the various government administrations (Price, 2021), promotion of private initiative, and sustainable use of heritage wealth being fundamental objectives. It also reinforces the importance of integrating management projects in urban, regional, tourism and cultural policies, as well as in the economy and society of the receiving areas (Pardo Abad, 2014). Frequently, sustainable tourism has been understood only as a long-lasting form of tourism rather than referring to the viability of the activity without causing damage to the environment (Pardo Abad, 2014).

Zhao & Liu (2021) report that in the early stage of industrial tourism development, local business participation, pilot development, and government support play an essential role. Promoting industrial heritage can be a meaningful way to enhance places highly dependent on the original industrial enterprises (Yan et al., 2021). The conversion of industrial heritage into a cultural resource and a

tourism product requires, in most cases, the intervention of public initiatives to finance enterprises' costs. City councils have been the architects of the shift to tourism, applying local or regional government initiatives and using the technical capacity to boost tourism (Pardo Abad, 2014).

The uniqueness of industrial tourism is strongly related to a given region's culture and industrial heritage, depending, among others, on local social and cultural values and the relationships between the local population and the environment. To improve the sustainability of both architectural and cultural space, we should classify industrial heritage sites and implement different measures to preserve the manufacturing process equipment (Han et al., 2020), advising the creation of a database of industrial heritage resources for future reference and better management.

Another important aspect has to do with the ability of this product to attract visitors. Industrial heritage tourism can be a dynamizing phenomenon of the territory by offering differentiated goods and services to tourists with increasingly higher purchasing power and availability of free time. Consequently, regions should consider the preparation and successful implementation of special programs and initiatives to promote tourism (as a regional brand), minimizing its adverse effects (Ermolaev et al., 2019). Specific initiatives are suggested to boost industrial tourism, including marketing industrial tourism, encouraging industrial organizations to become a member of the regional tourism organization, and developing their tourism capacity and products (Moyle et al., 2018). Some case studies highlight that a lack of publicity and visibility can hamper industrial tourism development and its impact on regional development (Givental et al., 2019; Van der Merwe & Rogerson, 2018). For Alonso, O'Neill, & Kim (2010), physical proximity to highways or largely populated cities provides a decisive advantage in attracting visitors, as does the importance of access to an international airport (Nohara, Okamura, & Kawahara, 2016). Location is considered a critical success factor for industrial heritage tourism (Hollick, 2011). Another important aspect is related to the UNESCO World Heritage Site classification, which will obviously impact the industrial heritage sites that obtain such recognition (Hashimoto & Telfer, 2017). In this regard, the conservation of industrial monuments should be an important societal goal (Klempa et al. 2015). Large-scale campaigns may be needed to preserve active industrial heritage, with a rigorous management plan to maximize its cultural value and visitor appeal (Merciu et al., 2015). Nohara et al. (2016) consider it essential to promote cities through industrial tourism by working on regenerating attractive urban spaces in industrial cities. Therefore, urban renewal involves the enhancement of this heritage to develop industrial tourism (Laloyaux, 2016). For the conservation and reuse of industrial heritage sites, relevant policies, regulations, incentives, and plans are needed to clarify the use of industrial heritage to generate economic benefits from tourism (Peng & Tzeng, 2019). The level of reuse and access to industrial heritage sites should assume that no harm will be done to the cultural or natural landscape and that such landscape is incorporated to attract tourists (Peng & Tzeng, 2019). Moreover, there is a need for greater awareness, on the part of the population, of the importance of all the resources that make up the industrial heritage, as well as collaborative work and a long-term strategy that allows its conservation, improvement, promotion and tourism marketing (Andrade & Caamaño-Franco, 2018).

A lack of tourism infrastructure can hamper the region's potential to profit from industrial tourism (Givental et al., 2019). The economic potential of industrial heritage is a strong incentive for implementing several activities, such as information and education centres, visitor centres, museums, shopping centres, tourist accommodations, and sports facilities (Rodrigues, 2019). According to Hollick (2011), developing complementary facilities such as tourist accommodations is essential to increase the income associated with industrial tourism. Regarding tourism infrastructures, industrial tourism influences its improvement, although it is closely linked to the degree of tourism development. That is, as the degree of tourism development increases, the public and the private sector will also invest more in infrastructure (Andrade & Caamaño-Franco, 2018).

Another example of industrial tourism-related infrastructures and facilities are corporate museums, which can assume a central role in developing an agenda between industry, business and territory. Thus, corporate museums and other local institutions responsible for promoting local cultural heritage should cooperate to strengthen local identity while promoting synergies with tourism (Riviezzo et al., 2021). According to Lee (2016), on-site attractions, security and safety systems, and external access are the main dimensions in determining the attractiveness of industrial tourism.

Table 7 summarizes and identifies strategies to overcome the region's industrial tourism challenges

**Table 7 - Strategies to overcome the region's industrial tourism challenges**

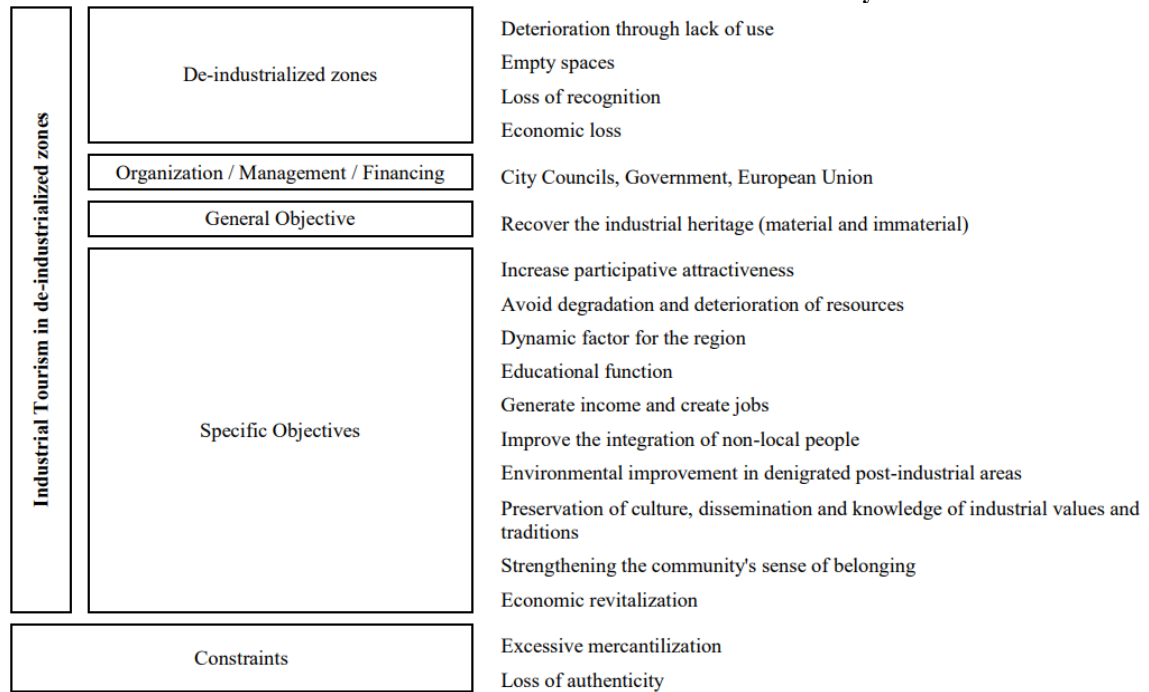
<b>GOVERNMENT</b>	Pardo Abad (2014)	Coordination between the various government administrations.
		Sustainability in the achievement of local development.
		Integrating management projects in urban, regional, tourism and cultural policies.
		Integrating management projects in the economy and society of the receiving areas.
		City councils has the architects of change for tourism.
		Applying local or regional government initiatives and using technical capacity to boost tourism.
	Van der Merwe & Rogerson (2018)	Leadership and strategic tourism in developing a regional strategy.
		Analyse the capacity constraints at the local government level to maximize the potential of industrial heritage tourism.
	Yang et al. (2019)	Government in controlling the excesses of commodification - preservation/development.
	Yang et al. (2019); Zhao & Liu (2021)	The government is essential in defining the path to take and allocating financial support.
Price (2021)	Effective coordination at multiple scales of governance.	
Zhao & Liu (2021)	Pilot development play an essential role.	
<b>SOCIETY</b>	Cole (2004)	Tourism integrated with a broader holistic regeneration plan.
	Ballesteros & Ramírez (2007)	The existing heritage must be converted into a tourism resource
		Tourism, as an economic activity, is subject to market convergence with relevant public legislation and involvement of local communities.
		Endogenous factors of the host societies - to explain why heritage tourism has developed in some areas and not in others
	Botella (2018)	Need to involve the local population and social authorities.
	Yuan et al. (2019)	Strengthening residents' native emotional ties and focus on how to encourage residents to participate in tourism activities to build a sustainable tourism industry.
	Cole (2004)	Equity in the distribution of benefits
	Andrade & Caamaño-Franco (2018)	Need for greater awareness, on the part of the population, of the importance of all the resources that make up the industrial heritage
Cole (2004)	Equity in the distribution of benefits.	
<b>MARKETING</b>	Cole (2004)	Development of marketing programs linked to the industry.
		Forming alliances that include the promotion of complementary attractions nearby or even between regions that share a similar history.
	Merciu et al. (2015)	Large-scale campaigns may be needed to preserve active industrial heritage.
	Lee (2016)	Attractiveness of industrial tourism - On-site attractions, security and safety systems
	Givental et al. (2019); Van der Merwe & Rogerson (2018)	Lack of publicity and visibility can hamper industrial tourism development.
	Ermolaev et al. (2019)	Special programs and initiatives to promote tourism (as a regional brand).

	Givental et al.(2019); Hashimoto & Telfer (2017); Han et al. (2020); Somoza-Medina & Monteserín-Abella (2021)	Importance of classification of industrial heritage by UNESCO.
<b>STAKEHOLDERS</b>	Xie (2006)	Residents' interests need to be coordinated and stakeholders must be involved and collaborate.
	Moyle et al. (2018)	Encouraging industrial organizations to become members of the regional tourism organization, and developing their tourism capacity and products.
	Givental et al. (2019)	Improve the quality of national tourism sites and facilities before appealing to the international tourism community,
		Cross-sectoral cooperation - regional and local governments, private companies, investors and residents.
	Riviezzo et al. (2021)	Local institutions should cooperate to strengthen local identity while promoting synergies with tourism.
	Zhao & Liu (2021)	Participation of local communities, application of new technologies and strong support from national and local governments are vital to creating a new path for industrial tourism.
Harfst et al. (2021)	Need to form a realistic picture of the potentials and limitations of IT to create an overall sustainable development strategy.	
<b>FINANCIAL RESOURCES</b>	Alonso et al. (2010); Givental et al. (2019)	Financial resources is a critical issue.
	Pardo Abad (2014)	Intervention of public initiatives to finance enterprises' costs.
	Yang et al. (2019)	The private sector- becoming the main investor, increasing commoditization, and shifting the emphasis from heritage preservation to economic development.
	Price (2021)	Developing industrial tourism requires a long-term financial commitment.
<b>ACCESSIBILITY</b>	O'Neill, & Kim (2010); Hollick (2011); Nohara, Okamura, & Kawahara (2016)	Location is considered a critical success factor for industrial heritage tourism.
		Physical proximity to highways or largely populated cities provides a decisive advantage in attracting visitors, as does the importance of access to an international airport.
	Hollick (2011)	Developing complementary facilities such as tourist accommodations.
	Lee (2016)	Dimensions in determining the attractiveness of industrial tourism - On-site attractions, security and safety systems, and external access.
<b>SUSTAINABILITY</b>	Cole (2004)	Balancing economic impacts with heritage preservation and sustainability concerns.
	Andrade & Caamaño-Franco (2018)	Collaborative work and a long-term strategy that allows its conservation, improvement, promotion and tourism marketing.
	Peng & Tzeng (2019)	Relevant policies, regulations, incentives, and plans - to generate economic benefits from tourism.
	Moral-Moral & Fernandez-Alles (2019)	Ensuring continuous economic and social development without exhausting existing resources, while promoting respect for the environment.
	Custodio & dos Santos (2020)	Industrial heritage is a crucial tool for tourism promotion and integration of the European Union.

From the analysis of the different perspectives, it was possible to identify the main challenges associated with industrial tourism development in "de-industrialized" areas, presented in figure 4.



**Figure 4 - The main challenges associated with industrial tourism development in "de-industrialized" areas. Source: elaborated from the several articles analysed**



Therefore, designing a strategy that captures the benefits of industrial tourism requires actions at several levels. According to Xie (2006), these levels can be summarized as follows:

- (1) Potential: Conduct an industrial screening to assess industrial areas' characteristics and decide which tourism programs to invest in.
- (2) Stakeholders: Industrial heritage tourism depends on a diversity of people who may operate in many fields (may include business leaders, planners, and coalition builders; active members in grassroots organizations, supporters, and multiple audiences, or users of facilities, among others).
- (3) Adaptive Reuse: Related to the space where industrial cities recycle degraded buildings and constructive but unglamorous histories into new uses and tourist attractions.
- (4) Economy: Tourism has become an essential means of minimizing the losses associated with economic changes from deindustrialization.
- (5) Authenticity: This attribute is an essential factor in determining the vitality of industrial heritage tourism (Cohen, 1988; Leary & Sholes, 2000; Xie, 2006).
- (6) Perceptions: Successful tourism development needs a common community perception.

## 5. CONCLUSIONS

The literature review on industrial tourism enabled to conclude that this topic was primarily explored empirically, lacking studies that analyse the theme in a more general and conceptual way. The selected articles are distributed among journals from different areas, including Tourism and Hospitality, Culture, Regional Studies, Economics and Management, Law, Geography, Archaeology, Marketing and Social Sciences.

Industrial tourism is frequently referred to as having social, economic and environmental benefits, thus contributing to regional sustainable development (Prat & Valiente, 2012). However, some disruptive perspectives also argue that there are better solutions to improving the regions than industrial tourism. Nevertheless, its tourism potential is primarily recognized, and the participation of public entities in the management, promotion and financing of industrial tourism is seen as essential for its success. Managing industrial heritage involves creativity, flexibility, networking, dynamism, advertising and information and communication technologies (ICT) that are difficult to reconcile with a traditional approach made by a high bureaucratization, static conservation and unilateral management (Perfetto & Vargas-Sánchez, 2018). Therefore, an adequate strategic plan is essential for the success of this tourism product, allowing strategic and collaborative action and identification of

possibilities and challenges. By combining heritage with industry and fostering synergies, it will be possible to create more awareness of this tourism activity. Namely through specific actions, such as more effective signage, better accessibility and more planned activities throughout the year, to reduce seasonality (Botella, 2018).

The limitations of this study are mainly related to the scope of the articles analyzed, as it was based exclusively on scientific journals present in the SCOPUS database, written in English, Spanish or Portuguese, not contemplating articles from other databases, in other languages, as well as documents in other formats (e.g., books, brochures). As a suggestion for future work, it is recommended a broader approach that relates the concept to different themes, such as the impact of industrial tourism in active companies (on the motivation and productivity of factory workers and as a source of innovation) and its role in the protection of living industrial heritage.

It is also essential to conduct more theoretical studies on topics such as managing and implementing industrial tourism in companies and regions, promoting a deeper conceptual and theoretical discussion. Nevertheless, empirical studies and case studies are critical, reinforcing the practical application of industrial tourism in different parts of the world.

Also, maintaining a dialogue with companies and listening to their needs may provide helpful insights for future research.

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