

# Innovation in saltpans of Aveiro: The academia role for touristic development

## Inovação nas salinas de Aveiro: O papel da academia no desenvolvimento turístico

ANDRÉ PEDROSA \* [pedrosa.andre@ua.pt]

FILOMENA MARTINS \*\* [filomena@ua.pt]

ZÉLIA BREDA \*\*\* [zelia@ua.pt]

CARLOS RODRIGUES \*\*\*\* [cjose@ua.pt]

**Abstract** | Over the last decade, the growth of new businesses is revitalizing the abandoned saltpans of Aveiro by transforming former salt production sites into touristic sites, where artisanal salt production, birdwatching, aquaculture, or other activities take place. The main goal of the study is to analyse the innovation process conducted by private initiatives considering the role of the University of Aveiro. Thus, an exploratory study is conducted using semi-structured interviews with owners/managers of tourism companies on saltpans as well as with University of Aveiro staff. The data collected is examined through a content analysis using the software NVivo 12. The main findings show that tourism supports distinctive uses for saltpans, for instance, aquaculture, recreational activities, accommodation, or the creation of a bathing area. Also, the collaboration between tourism companies on saltpans and other organisations seems to be weak and, particularly, with academia is limited to student's internships, fieldwork, and training courses. However, companies and academia agree that both would benefit from more regular interactions, which could be achieved through other knowledge transference channels.

**Keywords** | Innovation, knowledge transference, academia, tourism industry, saltpans of Aveiro

---

\* **Master in Tourism Management and Planning** from the University of Aveiro (Portugal). **Research fellow** in the Department of Environment and Planning of the University of Aveiro (Portugal)

\*\* **PhD in Environmental Sciences** from the University of Aveiro (Portugal). **Associated Professor** in the Department of Environment and Planning of the University of Aveiro (Portugal)

\*\*\* **PhD in Tourism** from the University of Aveiro (Portugal). **Assistant Professor** in the Department of Economics, Management, Industrial Engineering and Tourism of the University of Aveiro (Portugal)

\*\*\*\* **PhD in Social Sciences** from the University of Aveiro (Portugal). **Assistant Professor** in the Department of Social, Political and Territorial Sciences (Portugal)

**Resumo** | Na última década, o desenvolvimento de novos negócios tem revitalizado algumas das salinas de Aveiro, transformando esses espaços em locais turísticos onde se realizam atividades como a salicultura, a observação de aves, a aquacultura, entre outras. Este estudo exploratório tem como principal objetivo analisar esse processo de inovação desenvolvido pela iniciativa privada, considerando o papel da Universidade de Aveiro. Para isso, foram realizadas entrevistas com proprietários/gerentes de atividades turísticas nas salinas e com membros da Universidade de Aveiro. Os dados recolhidos foram analisados com recurso ao software NVivo 12. Os resultados demonstram que o turismo potenciou uma série de novos usos para as salinas, através de atividades de recreio, aquacultura, alojamento ou a criação de uma área de banhos. Por outro lado, a colaboração entre estas empresas e outras organizações é diminuta e, particularmente com a academia, baseia-se em estágios, disponibilização das salinas para trabalho de campo, e atividades de formação. No entanto, os entrevistados concordam que uma maior interação seria benéfica para todos, o que poderia ser conseguido com recurso a outros canais de transferência de conhecimento.

**Palavras-chave** | Inovação, transferência de conhecimento, academia, turismo, salinas de Aveiro

## 1. Introdução

In the second half of the 20th century, artisanal salt production in Europe started a declining process, which led to saltpans abandonment and degradation. Thereafter, saltpan's values have been threatened, namely their cultural heritage, e.g., artisanal salt production's equipments, infrastructures or know-how, and their natural heritage, e.g., landscapes, fauna or flora, as well as their economic value (Faganel & Trnavčević, 2012; Gauci et al., 2017; Hueso & Petanidou, 2011; Hueso Kortekaas, 2020; Martins et al., 2020; Rodrigues et al., 2011; Sainz-López, 2017). The artisanal salt production by itself is no longer a profitable economic activity neither to keep nor to rehabilitate currently abandoned saltpans (Rodrigues et al., 2011). Consequently, the owners/managers of saltpans have been attempting to add value to salt and salt-based products, to conduct complementary activities to salt production, and/or to focus on other activities supported by the tourism development on those sites (Hueso & Petanidou, 2011; Hueso Kortekaas, 2020; Kortekaas, 2004; Rodrigues et al., 2011). In fact, saltpans have become multi-

functional spaces (Hueso Kortekaas, 2020), providing a wide range of resources and opportunities for tourism development. Martins et al. (2020) categorised the most suitable activities for tourism development on saltpans, i.e., artisanal salt production, biodiversity, aquaculture, health and wellbeing, water sports, other recreation activities, and accommodation.

In the city of Aveiro, Portugal, the saltpans complex also known as *Salgado de Aveiro* went through this mentioned process, and the rehabilitation of saltpans begun when both the local university and the municipality council have taken part in *Ecosal Atlantis*, an INTERREG project concluded in 2013. In the scope of the project, saltpans were transformed for touristic purposes, namely *Santiago da Fonte* saltpan, owned by the University of Aveiro, and *Troncalhada* saltpan, owned by Municipality Council of Aveiro. Soon after, several private initiatives have taken place on saltpans of Aveiro by adapting them for tourism and leisure purposes associated with artisanal salt production, aquaculture, health and wellbeing or other recreational activities (Martins et al., 2020).

The purpose of this research is to outline the

tourism innovation process on new companies in salt pans of Aveiro, to understand how those new companies collaborate and to describe their interactions with the University of Aveiro, aiming to explore the role of academia in the innovation process. It addressed a lack of research concerning the innovation process in tourism, particularly, a need for a more detailed examination of different types of innovation and the link between innovation and knowledge transference (Hardy et al., 2018; Hjalager, 2010; Shaw & Williams, 2009). In addition, this study can give insights into the most effective way of generating awareness and engagement opportunities for academic researchers (Walters & Ruhanen, 2019), and the diffusion of academic knowledge among private companies (Hjalager, 2010).

Thus, this paper is divided into four sections. At first, a literature review addresses the concept of innovation and the interactions between academia and the tourism industry in knowledge production and dissemination processes. Second, in the methodology section is presented the study area, the Salgado de Aveiro, followed by the applied methods of data collection and analysis. Third, the results from the interviews are presented and discussed. Finally, the last section identifies the main conclusions, limitations, and future research paths.

## 2. Literature review

The concept of innovation has been studied over time and across different disciplines providing different views, although Joseph Schumpeter understanding of innovation is often used in tourism literature (Brandão & Costa, 2012; Hjalager, 1997; Pikkemaat et al., 2018). As explained by Brandão and Costa (2012), Schumpeter viewed innovation as “ [...] *the setting up of a new production, covering new commodities as well as new forms of*

*organisation.*” and “[...] *the carrying out of new combinations* [...] (p. 649)”. In the tourism industry, innovation is a knowledge-intensive process (Rodriguez-Sanchez et al., 2019), and it is determined by many drivers, for instance, relationship-level characteristics, network structure, touristic market, information technology, funding, institutional factors, or firm size, among others (Czernek-Marszałek, 2020; Divisekera & Nguyen, 2018; Liu & Nijkamp, 2019; Verreyne et al., 2019). Moreover, Hjalager (2010) described the main categories of innovation in the tourism field, namely Product or service, Process, Managerial, Management, and Institutional. Andrianto et al. (2021) propose a business model innovation process, the 5i: (1) identification, (2) ideation, (3) integration, (4) implementation, and (5) improvement in every stage. Besides, Williams et al. (2021) analysed the inherent risks and uncertainties during the innovation process in tourism, and Panfiluk (2021) identified categories of innovations implemented by tourism enterprises with division by industry branches in Poland.

The process of innovation has been explained by conceptual models of innovation systems, such as the Regional Innovation System (RIS) (Cooke, Uranga and Etxebarria, 1997) and the Triple Helix (Leydesdorff and Etzkowitz, 1996). Considering the particular case of tourism destinations and based on the conceptualisation of RIS, Brandão and Costa (2012) proposed the Regional Tourism Innovation System. The model presents two main groups of actors who constitute the tourism network, namely tourism firms and non-firms' organisations, which includes knowledge producers, business associations, and public authorities, among others. Also, the model illustrates the context of innovation within the destination, which is defined by its specific conditions, as well as identifies the processes of knowledge creation, knowledge sharing and collective learning within the network. Accordingly, the role of knowledge infrastructures, namely higher education institutes

and research centres, is to produce scientific knowledge and to share it in a way that is understandable for the community, eventually leading to innovation (Brandão & Costa, 2012). On the other hand, formal research and development (R&D) activities are mostly developed by large firms, and Small and Medium sized Enterprises (SMEs) tend to not participate in R&D activities with higher education institutes (HEI), instead, they develop research informally and based on internal sources (Booyens & Rogerson, 2017; Lopes et al., 2021). Thus, Lopes et al. (2021) suggested the 'Triple Helix in Tourism Context' model, in which regional governments act as a mediator to converge SMEs and HEIs. By analysing the tourism innovation networks in a RIS, South Tyrol in Italy, Kofler, Marcher, Volgger, & Pechlaner (2018) identified that companies tend to collaborate at a destination level and to establish cross-sectoral ties. Also, it is suggested that innovation in tourism comes from other sectors and that the tourism sector is limited in terms of innovativeness and shows a high degree of imitation within a destination (Kofler et al., 2018). Likewise, other studies mentioned the importance of sectors from outside of tourism for tourism innovation (Booyens & Rogerson, 2017; Rodriguez-Sanchez et al., 2019). According to Brandão et al. (2018), "[...] *tourism destinations characterised by diversified networks, i.e. networks comprising actors from different geographical locations and with distinct typologies, are in a better position to achieve a higher innovation performance* [...]" (p. 33). By doing so, they can capture new knowledge, which is vital for innovation, and prevent a locked-in scenario. Nevertheless, the networks at destinations support the knowledge transference in tourism, a type of knowledge mainly tacit and sticky (Shaw & Williams, 2009), particularly the formal network linkages which are valuable for innovation purposes (Booyens & Rogerson, 2017).

Cooper (2006), based on Rogers (1995), stated that the process of knowledge transference repre-

sents the communication of innovation or a new idea among the members of a social system. In the literature, there are several studies on knowledge transference in tourism, which analyse different stakeholders, e.g., Destination management organisations (DMOs), academia, or firms, at different scales, from local to international scale (Booyens & Rogerson, 2017; Brandão, Costa, Breda, & Costa, 2020; Carson, Carson, & Hodge, 2014; Duxbury et al., 2020; Kim & Shim, 2018; Liu, 2018; Lopes et al., 2021; Makkonen, Williams, Weidenfeld, & Kaisto, 2018; Pikkemaat, Peters, & Chan, 2018; Raisi et al., 2020; Sanz-Ibáñez, Lozano, & Anton Clavé, 2019; Valeri & Baggio, 2021; Weidenfeld, Williams, & Butler, 2010; Werner, Dickson, & Hyde, 2015; Zach & Hill, 2017). Nevertheless, Cooper (2006) identified issues of knowledge management in tourism, particularly related to the interaction between academia and industry, e.g., differences in cultures of researchers and practitioners, the past failure of researchers to engage in knowledge codification or the barriers to transferring research to operational adopters. In fact, poor linkages are related to specific characteristics of tourism, such as the dominance of family-owned SME's, where tacit knowledge prevails and people are reluctant to share their knowledge in actions of cooperation; high fragmentation across a variety of activities, based on companies' sizes, structures, needs, etc.; and the nature of tourism employment, e.g. jobs seasonal character or the low qualifications of employees (Brandão et al., 2020; Cooper, 2006; Czernek, 2017; Hjalager, 2002; Lopes et al., 2021; Williams et al., 2021). Additionally, academic knowledge is occasionally viewed by tourism firms as "[...] *tangential, unnecessarily complex and communicated in a manner that is inaccessible*. (Thomas, 2012, p. 559)", and there is an unawareness of its potential (Elnasr Sobaih & Jones, 2015). On the other hand, Thomas and Ormerod (2017) mentioned the use of social media and networks with the tourism industry to increase the non-academic impact of tourism acade-

mics. Furthermore, Walters and Ruhanen (2019) suggested that “[...] *if academics want to better engage with industry for research collaboration purposes and impact, it is crucial that they position their research agendas in accordance with the needs, usage and benefits sought by industry*” (p. 11).

Concerning the knowledge transference channels, Cohen et al. (2002) identified the main channels of communication used by universities regarding industrial R&D, i.e., published papers and reports, public conferences and meetings, informal information exchange, and consulting. Besides, by analysing the knowledge transfer activities in UK academia, D’Este and Patel (2007) understood that interactions are more likely to happen by channels such as the Creation of new physical facilities, Consultancy and contract research, Joint research, Training, or Meetings and conferences, than by patenting or spin-out activities.

### 3. Methodology

*Salgado de Aveiro* is a complex of salt pans in the region of Aveiro, in Portugal, and it is located inside the Aveiro lagoon, an area also known as *Ria de Aveiro*, which has a status of Special Protection Area and Site of Community Importance, respectively under Wild Birds and Habitat Directives of Nature 2000 network. Since the middle of the 20th century, a declining process of artisanal salt production has reduced the number of active salt pans, leading to saltpan’s abandonment. Recently, new public and private initiatives were developed relying on tourism and leisure activities (Figure 1) as a core business or a complementary activity and offering a diversity of products/services. This process emerged with the participation in the *Ecosal Atlantis* project of *Troncalhada* saltpan, owned by the Municipality council of Aveiro, and *Santiago da Fonte* saltpan, owned by the University of Aveiro, but currently there are also private initiatives, i.e., *Cale do Oiro*, *Ilha dos Puxadoiros*, *Noeirinha* and *Ostraveiro* (Martins et al., 2020).

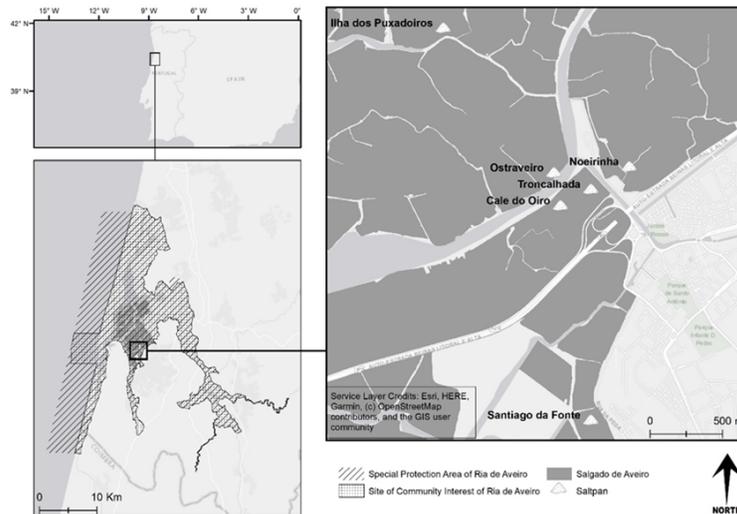


Figure 1 | Tourism activities in *Salgado de Aveiro*, Portugal  
Source: Own elaboration

This research applies a qualitative approach to understand the tourism innovation process in salt pans of Aveiro and how those private companies collaborate with other stakeholders, particularly with academia. Data collection was made through semi-structured interviews, which were held with owners or managers of companies developing tourism activities in salt pans of Aveiro, which were identified by Martins et al. (2020), i.e. *Cale do Oiro*, *Ilha dos Puxadoiros*, *Noeirinha* and *Ostraveiro*. Contacts were established by email or telephone using information available on their websites and Facebook pages. Only two companies showed interest in collaborating on this research, consequently, two semi-structured interviews were done in July of 2020. One interview was held with the owner of company A, an aquaculture production which nowadays also develops tourism activities, and another with the manager of company B, which transformed an abandoned salt pan aiming the development of tourism activities. Regarding the other two companies, after an initial contact aiming their participation in this study, both companies did not express interest in collaborating as they did not proceed with the dialogue to schedule the interviews.

The interviews focused on four different topics, such as the company's description, tourism innovations, cooperation with other actors, and interactions with the University of Aveiro (annexe 1). Additionally, the social media, particularly websites and Facebook pages, of those companies were consulted to confirm and complement the data collected during the interviews. The tourism innovations identified on interviews and social media analyses were categorised according to the five types of tourism innovations by Hjalager (2010), i.e., Product or service, Process, Managerial, Management and Institutional. Moreover, data collection was complemented by interviews with staff from the University of Aveiro, namely a researcher who has worked on two research projects related to salt pans development, and one science and tech-

nology manager regarding maritime issues, which includes our study area. Therefore, two additional interviews were made in November and December of 2020. Those interviews focused on interactions of the University of Aveiro and tourism companies operating on *Salgado de Aveiro* (annexe 2).

During the interviews, both guides in the annexes were followed by the interviewer, which was the research first author. The interviewer had experience in this task from previous research projects, particularly interviewing salt pans owners.

All interviews were recorded and transcribed for further analysis using content analysis software NVivo 12. In the next section, the interviewees are identified by numbers according to the order of the interviews: owner of company A (1), manager of company B (2), academic researcher (3) and science and technology manager (4).

#### 4. Results

The tourism activities in both companies started in 2017, even though one has been in aquaculture production for over a decade. Besides, they are small enterprises with, respectively, 8 and 5 employees, and they occupy in total three salt pans.

Concerning the innovation in product or service, which is related to changes directly observed by customers and regarded as new (Hjalager, 2010), those companies have distinctive approaches. The main products of one company are artisanal salt production and a bathing area, whilst another focus on aquaculture production. The one producing salt tells visitors the history of the product in Aveiro and sells salt and salt-based products. As the interviewee mentioned: "*The idea was always to recover the salt of Aveiro which is the basis of this project*" (2). Additionally, the salt production pond has a division filled with hypersaline water where visitors can take a bath. Moreover, one salt pan is transformed into a bathing area,

an idea of its owner to offer tourists an alternative to the closest beach from Aveiro, which is located 10 km away from the city centre. In another company, people can visit an aquaculture production of oysters, clams, and other bivalves as well as to learn their history and taste their products. Additionally, visitors can go fishing by the saltpan, from the aquaculture ponds or the Aveiro lagoon canals, take a boat tour along Aveiro lagoon canals, and have Stand Up Paddle equipment available to those who spend a night there. Both companies promote cultural and recreational events and have an accommodation offer for visitors, the houseboats, which is the only kind of accommodation allowed in the Aveiro lagoon area by governmental authorities: “*We decided for the boats because we would not get a license to install bungalows (2)*”.

Similar to other salt production sites, such as Guerande, in France, or Secovlje, in Slovenia, some products or services in *Salgado de Aveiro* are based on guided tours on saltpans, nature-based activities, and health and wellbeing experiences (Albuquerque et al., 2015; Faganel & Trnavčević, 2012; Hueso Kortekaas, 2020; Kortekaas, 2004). Also, companies are adding value to salt through certification processes, and they produce *Fleur du Sel* and salt-based products (Hueso & Petanidou, 2011; Kortekaas, 2004; Rodrigues et al., 2011). This fact may be related to a high degree of imitation that drives processes of innovation and knowledge transference in tourism (Kofler et al., 2018; Werner et al., 2015; Williams et al., 2021). However, there are new uses for these sites, for instance, the connection between aquaculture and tourism or recreational activities, the accommodation in houseboats, and the transformation of a saltpan in a bathing area.

The innovation in processes is linked to backstage initiatives which aim at increasing companies efficiency and productivity, mainly through technological investments (Hjalager, 2010). During the interviews, one company highlighted the introduction of a QR Code menu due to the safety measures

adopted in the context of COVID-19.

Managerial innovation deals with new ways of organising internal collaboration, such as empowering staff or rewarding work with pay and benefits (Hjalager, 2010). One company mentioned employees training to perform guided tours on the saltpan and another underlined employees’ willingness to participate in training courses. These findings are in accordance with the literature concerning the characteristics of employees in the tourism industry, particularly the lack of qualification and training (Brandão et al., 2020; Czernek, 2017; Hjalager, 2002).

According to Hjalager (2010), management innovations are associated with the introduction of new marketing concepts on those companies, which in those cases are essentially the usage of social media, i.e., Facebook, Instagram, and company’s websites, as tools to interact with costumers and potential customers, and to manage bookings. Nevertheless, one company is thinking about implementing a client card that will benefit regular visitors.

Finally, institutional innovation includes embracing a new collaborative/organisational structure or legal framework (Hjalager, 2010). For instance, the certifications to ensure food security as well as to add value to their products, such as the biological production of *Salicornia* or the artisanal salt production. Another example is the participation of one company on a formal network of people and entities who exploit economically the Aveiro lagoon, the *Associação Laguna de Aveiro*.

However, regarding the participation in the aforementioned association, one mentioned that the company is not a member, and another stated the company is a current member, but devalued the current role of the association: “*The association is important, but people do not understand each other*” (1). Moreover, the collaboration with other companies is done at a local level, for instance with shops that sell artisanal salt, local restaurants that sell oysters, tourist guides, and tour operators. In

addition, they suggest other products and services to their customers in exchange for a small percentage of the generated revenue, e.g., on boat trips along Aveiro urban canals. It was emphasized that those recommendations are done in order to extend tourists stay: *“If I sell a boat trip, I get a percentage, however that is not the goal. The goal is to please the customer who visits us and spends money here. Now, the customer is going to another business and is going to stay longer in the city”* (1).

These findings are following the literature regarding the intraregional characteristic of collaboration in the tourism industry as well as the willingness for SMEs to transfer knowledge and to cooperate between them (Brandão & Costa, 2012; Brandão et al., 2020; Carson et al., 2014; Cooper, 2006; Czernek, 2017; Kofler et al., 2018; Pikkemaat et al., 2018; Werner et al., 2015).

It is known the importance of public authorities for successful processes of knowledge transference and tourism innovation (Brandão et al., 2020; Pikkemaat et al., 2018; Sanz-Ibáñez et al., 2019; Werner et al., 2015). However, during the interviews, companies mentioned distinct aspects of their collaboration with local authorities. One just referred to a partnership for a local cultural event, while another mentioned the organisation of marketing and tourism workshops and the difficulties faced in an early stage to get the project approval at the local and regional level due to requisites related to *Ria de Aveiro* status under Nature 2000 network.

The researcher interviewee started by describing the research projects involving the University of Aveiro and the rehabilitation and development of saltpans, such as *Sal do Atlântico* (2004 – 2007) and *Ecosal Atlantis* (2010 – 2013). Both projects focused on saltpans development and involved various stakeholders, such as salt production sites, municipality councils, museums, or universities, among others, from different countries, i.e., France, Spain, Portugal, and United Kingdom. The main goal of *Sal do Atlântico* was

to identify potential uses for former artisanal salt production sites. On the other hand, *Ecosal Atlantis* promoted the rehabilitation and the touristic development of saltpans.

In both projects initial and final conferences were held, however, the impact of conferences on local communities seems to be insignificant: *“Both projects included an initial and final conference, but maybe that is not the proper dynamic”* (3). Additionally, during the project, several activities were promoted, such as the reconstruction of typical warehouses from Aveiro, which were adapted for birdwatching, and the building of a boardwalk, all in *Santiago da Fonte* saltpan. The saltpan functioned as a pilot area for the implementation of diverse activities to be an example for private companies: *“It was considered an open-air lab, a pilot area to develop activities in the scope of the project which could be an example for private companies”* (3). The saltpan has been used for tourist’s visitation and science dissemination activities. Still, every year, a training course is provided for students who want to become touristic guides in the saltpan. Besides, the Municipality council of Aveiro developed a training course for touristic guides in *Troncalhada* saltpan. In addition, other activities were developed such as workshops, which focused on the gastronomic value of saltpans, accessible tourism, and clay, mud and health and wellness activities.

Additionally, the researcher argued that during *Sal do Atlântico* and *Ecosal Atlantis* interactions between academia and salt workers and interactions among salt workers were difficult to manage. However, nowadays, the tourism initiatives in saltpans are developed by new entrepreneurs in tourism with whom is easier to dialogue and show them how academia can be useful in their businesses: *“It’s easier to dialogue and interact with newest usinesses owners as well as to understand how academia could be useful to them”* (3). Indeed, the rehabilitation of saltpans and the development of tourism activities in saltpans

started following both projects and according to the researcher interviewee those events might be connected: *“I think those projects increased the interest of private agents to invest in saltpans which were in decay. In the last years, the interest increases among entrepreneurs, besides salt workers”* (3). Nevertheless, according to the science and technology manager interviewee, there is no monitoring of the results of those research projects in terms of knowledge transference. Furthermore, the interviewee referred that the University of Aveiro had been involved in a research project that proposed new and friendly solutions for the saltpan walls. This is a prominent issue for saltpans development considering saltpans wall’s vulnerability to water erosion and it was also mentioned by one company’s interviewee.

Currently, the collaboration established between these companies and the academia is based on tourism students’ internships, from universities, such as those located in Aveiro or Coimbra, and the use of saltpans area for fieldwork from students in the biology field. It was highlighted during an interview that the origin of interns was more important than their university: *“We have students outside of University of Aveiro because the students are from Aveiro”* (2). Also, the owner of one company regularly participates in courses on marketing or tourism fields developed by UNAVE, an association for professional training and research at the University of Aveiro. Another one argued that the timing of those courses is a constrain, explaining that they occur simultaneously with the beginning of tourism high season in Aveiro: *“Courses are interesting, but they are held in April, May or June, months where our workload increases”* (2). In contrast, the fourth interviewee stated that these courses are held all the year and depend on the demand.

Both companies would like to strengthen the link with the University of Aveiro, which they consider to be already good and to improve their business operations. They suggested starting by

increase the number of internships and improve the connection between UNAVE and local companies: *“The interaction is important, and it is going well, but other organisations should also be part. Nevertheless, UNAVE is the most important”* (1) and *“We can have a closer relationship and our companies can take the first step to attract more students’ internships”* (2).

As the researcher interviewee mentioned, those new companies are more willing to strengthen the interactions between academia and industry than former salt workers. However, a suggestion of a stronger link between them limited to the growth of the number of student’s internships may reflect an unawareness of academic knowledge potential by non-academic organisations in the tourism industry, which has been already discussed in the literature (Elnasr Sobaih & Jones, 2015; Thomas, 2012; Thomas & Ormerod, 2017). Additionally, one interviewee from the University of Aveiro stressed the university’s willingness to collaborate in order to provide academic knowledge to the community: *“The university is interested in new collaborations with private entities and to provide know-how regarding project application”* (4).

## 5. Conclusion

This study explored the tourism innovation process on the complex of saltpans in Aveiro, as well as how companies collaborate between them and with other stakeholders, particularly with the University of Aveiro.

Currently, tourism in saltpans relies on guided tours, nature-based activities, health and wellbeing experiences, and selling salt and salt-based products. Those products and services were identified on the literature, in other salt production sites, and, also, on the potential uses for saltpans in Aveiro promoted in the scope of research projects developed at the University of Aveiro (Albuquerque

et al., 2015; Faganel & Trnavčević, 2012; Hueso & Petanidou, 2011; Kortekaas, 2004; Rodrigues et al., 2011). In fact, the distinctive approach developed in salt pans of Aveiro relies on the connection between aquaculture and tourism activities, the accommodation in houseboats and particularly the transformation of a salt pan in a bathing area.

The present case study validates the idea of an intraregional collaboration in the tourism industry as well as the difficulties for SMEs to transfer knowledge and cooperate between them (Brandão & Costa, 2012; Brandão et al., 2020; Carson et al., 2014; Cooper, 2006; Czernek, 2017; Kofler et al., 2018; Pikkemaat et al., 2018; Werner et al., 2015). The attitude that both companies have towards a formal network such as Associação Laguna de Aveiro supports that idea.

Indeed, the tourism activities in salt pans emerged in recent years following two research projects involving the University of Aveiro, namely *Sal do Atlântico* and *Ecosal Atlantis*. The effort of academia might have contributed to raising awareness on salt pan's potential for the development of touristic activities, however, their collaboration with new companies is based on training courses, students' internships, or fieldwork. Nevertheless, those new companies might have benefited from innovation spillovers due to its spatial proximity of University of Aveiro (Weidenfeld et al., 2010), as well as by the high degree of imitation that drives processes of innovation and knowledge transference in tourism (Kofler et al., 2018; Werner et al., 2015). In fact, Brandão et al. (2020) argued that in terms of knowledge creation the regional network of Aveiro is strongly influenced by academia, which supports the local innovation system and leads to tourism innovation.

Generally, the knowledge transference channels used between the University of Aveiro and the studied companies are student's internships and training courses rather than published papers and reports, conferences or consultancy and contract research (Cohen et al., 2002; D'Este & Patel,

2007). It seems that research papers and conferences are not effective knowledge transference channels, although they are very often used to evaluate the work of researchers or universities. Overall, this case study meets the conclusions of Lopes et al. (2021) on the ineffectiveness of the knowledge transference between SMEs in the tourism sector and the HEIs in Portugal.

According to the literature, the knowledge transference from academia to the industry can be improved by adopting other knowledge transference channels, using social media to increase research impact or matching research agendas to industry's needs (Thomas & Ormerod, 2017; Walters & Ruhanen, 2019). Furthermore, Duxbury et al. (2020) present some ideas to foster knowledge exchange between academia and the industry based on the experience from a research project on creative tourism, namely (1) the development of spaces for ongoing knowledge exchange, (2) enabling practitioners to take on the role of co-researcher, and (3) fostering researchers' close attention to the application side of the project. In addition, it is fundamental an effective communication between academia and industry, capable of translate research findings into a palatable language (Hardy et al., 2018; Lopes et al., 2021).

Although this is an exploratory study, the main limitation may be the small number of participants, since only two out of four companies in our study area have accepted to participate.

Future research involving other current or former salt production sites would give a deeper perspective on these specific community's behaviour regarding tourism innovation and provide a comparison between them. Also, considering a wider range of tourism companies by including other touristic agents in Aveiro would be useful to get a better understanding of the University of Aveiro role in local tourism innovation. Similarly, a deeper study on academics and the knowledge transference flow from industry to university should be helpful to understand the interactions between academia and

industry. Additionally, further research may explore how to increase the usage and impact of other knowledge transference channels on specific types of tourism innovation, for instance how to promote research papers or conferences as useful knowledge transference channels.

## References

- Albuquerque, H., Silva, M. F., & Martins, F. (2015). Revitalização das salinas costeiras tradicionais através do turismo de saúde e bem-estar. In *VIII Congresso sobre Planeamento e Gestão das Zonas Costeiras dos Países de Expressão Portuguesa* (pp. 1–13). Aveiro, Portugal.
- Booyens, I., & Rogerson, C. M. (2017). Networking and learning for tourism innovation: evidence from the Western Cape. *Tourism Geographies*, *19*(3), 340–361. <https://doi.org/10.1080/14616688.2016.1183142>
- Brandão, F., & Costa, C. (2012). Regional Innovation Systems and Tourism: a Conceptual Approach. *Journal of Tourism & Development*, *17*(18(2)), 647–660. <https://doi.org/10.34624/rtd.v2i17/18.12975>
- Brandão, F., Costa, C., Breda, Z., & Costa, R. (2020). Knowledge creation and transfer in tourism innovation networks. In Rocha Â., Abreu A., de Carvalho J., Liberato D., González E., Liberato P. (eds) *Advances in Tourism, Technology and Smart Systems. Smart Innovation, Systems and Technologies*, vol 171. Springer, Singapore. [https://doi.org/10.1007/978-981-15-2024-2\\_25](https://doi.org/10.1007/978-981-15-2024-2_25)
- Brandão, F., Costa, C., & Buhalis, D. (2018). Tourism innovation networks: A regional approach. *European Journal of Tourism Research*, *18*, 33–56.
- Carson, Doris Anna, Carson, D. B., & Hodge, H. (2014). Understanding local innovation systems in peripheral tourism destinations. *Tourism Geographies*, *16*(3), 457–473. <https://doi.org/10.1080/14616688.2013.868030>
- Cohen, W. M., Nelson, R. R., & Walsh, J. P. (2002). Links and impacts: The influence of public research on industrial R&D. *Management Science*, *48*(1), 1–23. <https://doi.org/10.1287/mnsc.48.1.1.14273>
- Cooke, P., Uranga, M. G., & Etxebarria, G. (1997). Regional innovation systems: Institutional and organisational dimensions. *Research Policy*, *26*(4–5), 475–491.
- Cooper, C. (2006). Knowledge management and tourism. *Annals of Tourism Research*, *33*(1), 47–64. <https://doi.org/10.1016/j.annals.2005.04.005>
- Czernek, K. (2017). Tourism features as determinants of knowledge transfer in the process of tourist cooperation. *Current Issues in Tourism*, *20*(2), 204–220, DOI: 10.1080/13683500.2014.944107
- Czernek-Marszałek, K. (2020). Social embeddedness and its benefits for cooperation in a tourism destination. *Journal of Destination Marketing and Management*, *15*(November 2019), 100401. <https://doi.org/10.1016/j.jdmm.2019.100401>
- D’Este, P., & Patel, P. (2007). University-industry linkages in the UK: What are the factors underlying the variety of interactions with industry? *Research Policy*, *36*, 1295–1313. <https://doi.org/10.1016/j.respol.2007.05.002>
- Divisekera, S., & Nguyen, V. K. (2018). Drivers of innovation in tourism: An econometric study. *Tourism Economics*, *24*(8), 998–1014. <https://doi.org/10.1177/1354816618794708>
- Duxbury, N., Bakas, F. E., & Pato de Carvalho, C. (2020). Why is research–practice collaboration so challenging to achieve? A creative tourism experiment. *Tourism Geographies*, *23*(1–2), 318–343. <https://doi.org/10.1080/14616688.2019.1630670>
- Elnasr Sobaih, A., & Jones, E. (2015). Bridging the hospitality and tourism university–industry research gap in developing countries: The case of Egypt. *Tourism and Hospitality Research*, *15*(3) 161–177. DOI: 10.1177/1467358415578188
- Faganel, A., & Trnavčević, A. (2012). Sustainable natural and cultural heritage tourism in protected areas: case study. *Annales: Series Historia et Sociologia*, *22*(2), 589–600.
- Gauci, R., Schembri, J. A., & Inkpen, R. (2017). *Traditional use of shore platforms: a study of the artisanal management of salinas on the Maltese Islands* (Central Mediterranean). SAGE Open, 1 –16. <https://doi.org/10.1177/2158244017706597>
- Hardy, A., Vorobjovas-Pinta, O., & Eccleston, R. (2018). Enhancing knowledge transfer in tourism: An Elaboration Likelihood Model approach. *Journal of Hospitality and Tourism Management*, *37*, 33–41.
- Hjalager, A. M. (1997). Innovation patterns in sustainable tourism: An analytical typology. *Tourism Management*, *18*(1), 35–41.
- Hjalager, A. M. (2002). Repairing innovation defectiveness in tourism. *Tourism Management*, *23*(5), 465–474. [https://doi.org/10.1016/S0261-5177\(02\)00013-4](https://doi.org/10.1016/S0261-5177(02)00013-4)

- Hjalager, A. M. (2010). A review of innovation research in tourism. *Tourism Management*, 31, 12. <https://doi.org/10.1016/j.tourman.2009.08.012>
- Hueso, K., & Petanidou, T. (2011). Cultural aspects of Mediterranean salinas. In T. Papayannis & D. Pritchard (Eds.), *Culture and wetlands in the Mediterranean: Mediterranean: an evolving story* (pp. 213–226). Athens: Med-INA.
- Hueso Kortekaas, K. (2020). La patrimonialización de las salinas tradicionales: una herramienta para el desarrollo local. *Estudios Geográficos*, 81(289), e047. <https://doi.org/10.3989/estgeogr.202061.061>
- Kim, N., & Shim, C. (2018). Social capital, knowledge sharing and innovation of small- and medium-sized enterprises in a tourism cluster. *International Journal of Contemporary Hospitality Management*, 30(6), 2417–2437. <https://doi.org/10.1108/IJCHM-07-2016-0392>
- Kofler, I., Marcher, A., Volgger, M., & Pechlaner, H. (2018). The special characteristics of tourism innovation networks: The case of the Regional Innovation System in South Tyrol. *Journal of Hospitality and Tourism Management*, 37, 68–75.
- Kortekaas, K. H. (2004). Sustainable tourism initiatives in European saltscapes. *Sustainable Tourism*, 9, 199–207.
- Leydesdorff, L., & Etkowitz, H. (1996). Emergence of a Triple Helix of university—industry—government relations. In *Science and Public Policy* (pp. 279–286). Surrey, England: Beech Tree Publishing. <https://doi.org/10.1093/spp/23.5.279>
- Liu, C.-H. S. (2018). Examining social capital, organizational learning and knowledge transfer in cultural and creative industries of practice. *Tourism Management*, 64, 258–270. <https://doi.org/10.1016/j.tourman.2017.09.001>
- Liu, J., & Nijkamp, P. (2019). Inbound Tourism as a Driving Force for Regional Innovation: A Spatial Impact Study on China. *Journal of Travel Research*, 58(4), 594–607. <https://doi.org/10.1177/0047287518771223>
- Lopes, J. M., Oliveira, M., Lopes, J., & Zaman, U. (2021). Networks, innovation and knowledge transfer in tourism industry: An empirical study of smes in portugal. *Social Sciences*, 10(5). <https://doi.org/10.3390/socsci10050159>
- Makkonen, T., Williams, A. M., Weidenfeld, A., & Kaisto, V. (2018). Cross-border knowledge transfer and innovation in the European neighbourhood: Tourism cooperation at the Finnish-Russian border. *Tourism Management*, 68, 140–151.
- Martins, F., Pedrosa, A., da Silva, M. F., Fidélis, T., Antunes, M., & Roebeling, P. (2020). Promoting tourism businesses for “Salgado de Aveiro” rehabilitation. *Journal of Outdoor Recreation and Tourism*, 29, 100236. <https://doi.org/10.1016/j.jort.2019.100236>
- Panfiluk, E. (2021). Innovativeness of tourism enterprises: Example of Poland. *Sustainability (Switzerland)*, 13(3), 1–17. <https://doi.org/10.3390/su13031024>
- Pikkemaat, B, Peters, M., & Chan, C.-S. (2018). Needs, drivers and barriers of innovation: The case of an alpine community-model destination. *Tourism Management Perspectives*, 25, 53–63.
- Raisi, H., Baggio, R., Barratt-Pugh, L., & Willson, G. (2020). A network perspective of knowledge transfer in tourism. *Annals of Tourism Research*, 80(March 2019), 102817. <https://doi.org/10.1016/j.annals.2019.102817>
- Rodrigues, C. M., Bio, A., Amat, F., & Vieira, N. (2011). Artisanal salt production in Aveiro/Portugal—an ecofriendly process. *Saline Systems*, 7(3), 14. <https://doi.org/10.1186/1746-1448-7-3>
- Rodriguez-Sanchez, I., Williams, A. M., & Brotons, M. (2019). The innovation journey of new-to-tourism entrepreneurs. *Current Issues in Tourism*, 22(8), 877–904. <https://doi.org/10.1080/13683500.2017.1334763>
- Sanz-Ibáñez, C., Lozano, S., & Anton Clavé, S. (2019). Brokers in a destination’s knowledge networks. *Journal of Destination Marketing and Management*, 11, 120–129.
- Shaw, G., & Williams, A. (2009). Knowledge transfer and management in tourism organisations: An emerging research agenda. *Tourism Management*, 30(3), 325–335. <https://doi.org/10.1016/j.tourman.2008.02.023>
- Thomas, R. (2012). Business elites, universities and knowledge transfer in tourism. *Tourism Management*, 33(3), 553–561.
- Thomas, R., & Ormerod, N. (2017). The (almost) imperceptible impact of tourism research on policy and practice. *Tourism Management*, 62, 379–389.
- Valeri, M., & Baggio, R. (2021). Increasing the efficiency of knowledge transfer in an Italian tourism system: a network approach. *Current Issues in Tourism*, 0(0), 1–16. <https://doi.org/10.1080/13683500.2021.193796>
- Verreynne, M. L., Williams, A. M., Ritchie, B. W., Gronum, S., & Betts, K. S. (2019). Innovation diversity and uncertainty in small and medium sized tourism firms. *Tourism Management*, 72(April 2018), 257–269. <https://doi.org/10.1016/j.tourman.2018.11.019>

- Walters, G., & Ruhanen, L. (2019). A market positioning approach to university–industry collaboration in tourism. *Tourism Recreation Research*, 44(1), 103-115, DOI: 10.1080/02508281.2018.1558510
- Weidenfeld, A., Williams, A. M., & Butler, R. W. (2010). Knowledge transfer and innovation among attractions. *Annals of Tourism Research*, 37(3), 604-626.
- Werner, K., Dickson, G., & Hyde, K. F. (2015). Learning and knowledge transfer processes in a mega-events context: The case of the 2011 Rugby World Cup. *Tourism Management*, 48, 174-187.
- Williams, A. M., Rodríguez Sánchez, I., & Škokić, V. (2021). Innovation, Risk, and Uncertainty: A Study of Tourism Entrepreneurs. *Journal of Travel Research*, 60(2), 293-311. <https://doi.org/10.1177/0047287519896012>
- Zach, F. J., & Hill, T. L. (2017). Network, knowledge and relationship impacts on innovation in tourism destinations. *Tourism Management*, 62, 196-207. <https://doi.org/10.1016/j.tourman.2017.04.001>

### **Annexe 1 – Guide from the interviews with private companies**

- Companies' characterisation: name, brand, occupied salt pans, date of starting the activity, date of starting tourism activities, number of employees, number of employees with an academic degree and the field of study.
- Companies' innovation: Products or Service, Process, Management, Managerial, or Institutional.
- Collaboration with other stakeholders: Government (local, regional, or national), Academia (the University of Aveiro and other HEIs), Private companies from the tourism industry or other industries, and Non-governmental organizations.
- Knowledge transference from Academia to Industry: main channels and positive or negatives aspects of the process.

### **Annexe 2 – Guide from the interviews with academic staff**

- Knowledge transference from Academia to Industry: main channels, positive or negatives aspects of the process,
- Innovation in salt pans from previous research projects, and other research projects related to tourism in salt pans or Aveiro lagoon.
- Knowledge transference from Industry to Academia: main channels, contributions for research projects, and positive or negatives aspects of the process.
- The relationship between the University of Aveiro and the tourism industry in Aveiro.