



INSTITUTO
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INTELLIGENCE SYSTEMS IN TOURISM MANAGEMENT

SARA ISABEL DE CARVALHO FERNANDES

Master's Thesis submitted as a partial requirement to obtain the
master's degree in Business Management

Supervisor:

Professor Renato Jorge Lopes da Costa, PhD, ISCTE Business
School

Co-supervisor:

Professor António Ângelo Machado Matos Pereira, MsC, ISCTE
Business School

Lisbon, September of 2023



BUSINESS
SCHOOL

Department of Marketing, Strategy and Operations

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Resumo

Os Sistemas Inteligentes são uma componente cada vez mais fundamental na gestão das organizações, também no setor do Turismo, essa é a realidade, pelo que o presente trabalho intende a uma compreensão da forma como se interligam, quais os seus impactos (positivos e negativos), e quais os que mais são utilizados nesta atividade económica.

Numa era em que o mercado está em constante mudança, as empresas deixaram de ser detentoras de vantagens competitivas por um grande período de tempo, obrigando-se a apostar na inovação, como modo de sobrevivência.

Desta forma, conseguiu-se assumir que o objetivo desta investigação é precisamente averiguar, quais são os problemas encontrados ao longo da evolução do Turismo, porque motivos houve necessidade de os interligar, de que forma foi feito, e quais foram os impactos obtidos.

Para podermos analisar em profundidade, foi executada uma pesquisa, através de entrevistas, com objetivo de perceber, de que forma é que os SI contribuíram para a GT, assinalando as suas vantagens e desvantagens, riscos e possíveis casos de grande sucesso.

As entrevistas, de tipologia qualitativa, foram realizadas a funcionários de diferentes departamentos, de diversas empresas do ramo turístico, com vista a constatar que os SI têm vindo a ter uma presença assídua na grande maioria das empresas do sector do Turismo, e na forma em como é gerido, e se já dispõem de algumas ferramentas de SI, mas que por vezes não são bem aproveitados.

Por fim, espera-se que o estudo possa contribuir para algumas das decisões a tomar no futuro dos SI na GT, com vista a melhorar e/ou potenciar a experiência das empresas e do CF, relativamente aos serviços prestados, nas áreas de Estudo.

Palavras-chave: Sistemas Inteligentes, Gestão do Turismo, Evolução e Estratégias Corporativas.

Classificação JEL:

- L83 *Organização Industrial: Desporto, Jogos, Restaurantes, Recreação, Turismo.*
- Z32 *Outros Tópicos Especiais: Turismo e Desenvolvimento*

Abstract

The Intelligent Systems are a fundamental component in the management of organizations, in tourism sector, isn't a different reality, so this investigation aims to understand how they are interconnected, what are their impacts (positive and negative), and which ones are most used in this economic activity.

In an era in which the market is constantly changing, companies no longer hold competitive advantages for a long period of time, forcing themselves to invest in innovation as a way of survival.

In this way, it was possible to assume that the objective of this investigation is precisely to find out what problems were encountered throughout the evolution of Tourism, why there was a need to interconnect them, how it was done, and what impacts were achieved.

In order to understand, a research was carried out, through interviews, with the aim of identifying how IS contributed to TM, highlighting its advantages and disadvantages, risks and possible cases of great success.

The interviews, of a qualitative nature, were carried out with employees from different departments, from different companies in the tourism sector, with a view to verifying that the IS has been having a regular presence in the vast majority of companies in the tourism sector, and in the form in which how it is managed, and whether they already have some IS tools, but which are sometimes not well used.

Finally, it's hoped that the study can contribute to some of the decisions to be made in the future of IS in TM, with a view to improving and/or enhancing the experience of companies and FC, in relation to the services provided, in the areas of study.

KW: Intelligence Systems, Tourism Management, Evolution through time and Corporate Strategy.

JEL Classification:

- L83 *Industrial Organization: Sports, Gambling, Restaurants, Recreation, Tourism.*
- Z32. *Other Special Topics: Tourism and Development.*

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List of Abbreviations

3S → Sun, Sea, and Sand

AI → Artificial Intelligence

BA → Business Administration

BI → Business Intelligence

CC → Customer Care

CF → Consumidor Final

CRM → Customer Relationship Management

CRS → Customer Reservation System

CS → Customer Support

CT → Cultural Tourism

DA → Data Analysis

DMT → Decision-making Technology

FC → Final Consumer

GT → Gestão de Turismo

HB → Human Beings

HPP → Hyper-personalized Products

ICT → Information and Communication Technologies

IOS → Identification Operating System

IOT → Internet of Things

IS → Intelligence Systems

LR → Literature Review

ML → Machine Learning

PENT → National Strategic Plan for Tourism

POS → Payment Terminals

PR → Public Relations

SFA → Sales force Autonomation

SI → Sistemas Inteligentes

SDGs → Sustainable Development Goals

SMCs → Small and Medium Companies

ST → Sustainable Tourism

TA → Travel Agencies

TE → Traveler Experience

TM → Tourism Management

TO → Tour Operators

UNTWO → World Tourism Organization is the United Nations

VR → Virtual Reality

WW 1& 2 → World War 1 & 2

1. Introduction

1.1. Research Background

Over the decades, the definition of Tourism and Tourism Management, has evolved, according to Rong (2016), *“the foundation of tourism, tourism resources management are the indispensably part of the tourism system, and it is of great importance to ensure the sustainable development of tourism industry.”*. It also addresses that *“In the era of information, effective utilization of the information technology can enhance the second revolution of tourism.”*.

Which contributes to better understanding the opinion of this author about IS & AI in Tourism and TM, that consequently obtained different thoughts, of many other authors, and also discovering different categories related to the definitions of tourism and its management, this means, tourism itself, obtained different definitions until we reached the most known/current ones, and consequently in each category added to Tourism.

IS & AI has been developed over decades, as we know, there is no concrete definition in academic terms, as it can vary depending on the origins and cycle in which one wants to apply the term IS, since it can affect the area of application and vice versa, as quoted by Sérgio Adorno, in which he says that AI has been developing for more than six decades.

“The set of contributions to these studies explore different facets, related to its origins and recent history, its cycles of temporary stagnation and significant advances, the debates it raises in the field of science and technology, its multiple possibilities of use. However, at the same time, it examines its risks, the ethical care that its massive use requires, its social, political, cultural, and moral implications that rapidly transform contemporary societies. In particular, the studies highlight the influences of these technologies in the field of teaching and machine learning; its contributions in the field of mobility, transit routes and traffic light control; its potential for digital forensic science. No less relevant is the impact of AI, not necessarily positive, on the work environment and employment, frustrating the expectations of an increasingly emancipated social world.” (Adorno, 2011)¹.

¹ Translated from the original: “(...) O conjunto de contribuições para esse dossiê exploram diferentes facetas, relacionadas às suas origens e história recente, seus ciclos de estagnação temporária e de avanços significativos, os debates que suscita no campo da ciência e da tecnologia, suas múltiplas possibilidades de uso. Porém, ao mesmo tempo, examina seus riscos, os cuidados éticos que seu emprego massivo requer, suas implicações sociais, políticas, culturais e morais que transformam rapidamente as sociedades contemporâneas. Em particular, o dossiê destaca as influências dessas tecnologias no campo do ensino e do aprendizado de máquina; suas contribuições no domínio da mobilidade, das rotas de trânsito e do controle

It is also known that, with the development of the IS & AI concept, the idea was, also created that machines should be similar, to human beings, but better, more perfect, without losing the best qualities of Humans.

There are thousands of other studies/definitions, but this thesis it is only going to focus on the ones that will lead us to the understanding of TM and where CT appeared.

Tourism and its management are extremely complex topics, as they require a lot of analysis and in-depth research, since it is a generic topic, and *“Culture and tourism have always been inextricably linked. Cultural sights, attractions and events provide an important motivation for travel, and travel in itself generates culture. But it is only in recent decades that the link between culture and tourism has been more explicitly identified as a specific form of consumption: cultural tourism.”* (Richards, 2018).

Mean wild, when we analyze the evolution of tourism, we also discover that *“The emergence of cultural tourism as a social phenomenon and as an object of academic study can be traced back to the surge in post-World War 2 leisure travel. (...) As incomes and consumption continued to rise in the 1960s and 1970s, so did international travel, and the consumption of culture. By the 1980s the flow of international tourists to major sites and attractions began to attract enough attention for the label ‘cultural tourism’ to be attached to an emerging niche market.”* (Richards, 2018).

Currently there are different classifications given to tourism and its activities, one of which is TM, which is interconnected with management itself and with the way tourism and its areas of activity are managed.

Also, analyze the way in which area the final consumer currently gets tiny curiosities about a place of visit, or passage just by searching about that place on the internet, and how important the opinion of others is, for the tourist and for the tourist destination, even of people who don't know each other but who evaluate the destinations.

Which leads to the conclusion that *“(...) during the planned journey, people may consult the travel agency in person. If they plan to travel with a lot of experience, they will be able to travel freely by booking airline hotels and tickets online.”* (Ding, 2018).

semafórico; suas potencialidades para a ciência forense digital. Não menos relevante é o impacto da IA, não necessariamente positivo, sobre o mundo do trabalho e do emprego, frustrando as expectativas de um mundo social cada vez mais emancipado.” (Adorno, 2011).

1.2. Research Problems

In the investigation that's being conducted, IS begins integrated in companies, and in tourism market niches, during the evolution, and also, it's supposed to show, how they connected through time and needs.

The connection between the two previous themes is quite complex, both themes separately, and the combination of the two, knowing that exists a greater variety of studies on each theme, but when trying to research on the two themes together there is a huge gap, expressing how AI is used in TM, in the different niches, and also, identifying that AI, can be found in the evolution, their history and creation of the definition of each theme.

In this case, the research will be subdivided into one market sector, and in this way, it will be possible to analyze how cultural tourism area had a gradual growth in the world, knowing that, CT had a *"(...) continued grow throughout the 1980s and 1990s, driven by the 'heritage boom' (Hewison, 1987), the growth of international and domestic travel and the identification of cultural tourism as a 'good' form of tourism that would stimulate the economy and help conserve culture."* (Richards, 2018).

Following this discovery, it's intended to understand and search the problems encountered in the subjects mentioned before, focusing on the concepts of tourism and TM, IS and even in the connection between the two, guiding to cultural tourism.

The connection between the two previous themes is quite complex, both themes separately, and the combination of the two, as there is a greater variety of studies.

But when trying to research on them together, there is a huge gap regarding the use of IS in TM, although when research about CT, it's quite the opposite, due to the difficulty of separating the sector chosen with TM, because it can be found in the evolution, history and creation of the definition of the themes.

Allowing to *"(...) artificial intelligence based on hyper-personalized products to increase the conversion rate of the ads ultimately improves the traveler experience, through the research on artificial intelligence decision-making technology in tourism management mechanism. At the same time, it is also possible to bring customized suggestions on the journey based on the passenger's information, destination, time, and many other parameters and data processed by the algorithm."* (Ding, 2018).

But also, talking about the way, in which area the final consumer currently gets curious about the destinations to visit, or just by searching about those sights on the internet, and how

important the opinion of others affect the decisions/choice, of the tourist and for the tourist destination, even of someone who categorized/evaluate the destination.

Then, see if were obtained any impacts, or not, and how the targets initially chosen, will lead us to reach the main motivations and the intended conclusions. In this way, the investigation will be based on the LR, and in the methodological process delimited further ahead, also taking into account the interviews that will be carried out with the companies, and will include the opinion of the FC, the view that companies had on this, in order to have a sort of vision of the two worlds.

1.3. Theoretical & Empirical Objectives, and Research Questions

The main objectives are related to, the explanation of, how the themes were chosen, taking into consideration that, Tourism is a very interesting area, because it's a mix of emotions, can be related to dreams and adventure, and besides this was supposed to look for a connection between this theme, and one in the area of this master's degree, in Business Administration, so was found Intelligence Systems.

After that discovery, the search begins by understanding if it was possible to connect the two themes, and to see their evolution through time and need, in order to start researching and see if any questions were popping up.

Later then, on the investigation, it's expected to understand how IS are or are not collaborating in TM, within each company and in the niches, but also in what way tourism, and each of the niches is qualified and can be evaluated, in a more direct perspective.

For this reason, the investigation has been divided into two specific objectives, the first it's related with the understanding of each concept, Tourism, TM & IS, leading to know the opinion/knowledge that Companies & Final Consumer have, and how they can identify the main activities/behaviors that will associate to IS & TM.

The second, it's related to the impact that IS had/hadn't in TM, and in what way the chosen targets, will lead us to reach the main motivations/conclusions, and also, understand if the decisions over the years contributed to the future, & if they are going to improving and/or enhancing the experience of companies and the FC, regarding the services provided.

In order to achieve the objectives mentioned, 4 research questions were defined, as mentioned above:

RQ1 → What are the IS use by Portuguese Tourism managers?

RQ2 → What are the factors that contribute to the development of IS in TM?

RQ3 → What are the impacts caused by using IS in TM?

RQ4 → How Portuguese Tourism Companies perceive the use of IS in their management?

1.4. Thesis Structure

The master's thesis will be divided into four main chapters, first, will be a small and brief introduction about the type of thesis, the themes that will be worked on, the initial objectives and other research questions.

Following this division, the first chapter will include the literature review, where the main topics of study will be addressed, starting with Artificial Intelligence, and its definition(s), and consequently analyzing its evolution and the different theories about the subject.

Subsequent, the second main topic, Tourism Management, in which is going to be carried out an analysis of its evolution and the evolution of the different definitions of this topic, after this analysis, it will be possible to understand the interconnection between the two topics.

Already in chapter three, thus defining the main theme of this thesis, Artificial Intelligence in Tourism Management.

The fourth chapter, will include the presentation of the empirical study, which will consequently be subdivided into 4 subchapters, where the theoretical and empirical Objectives and Research Questions will be addressed, where the technique used for data collection, the characterization of the participants in this investigation, the procedures carried out in the interviews and the information processing techniques, and also the research methodology, together with the conclusions of the entire study, in addition to the presentation of the research results and the discussion of the results and conclusions.

Finally, a brief conclusion is presented, as well as, the theoretical and practical implications of the study, suggestions for future research and the limitations of the investigation.

2. Literature Review

2.1. Intelligence Systems

2.1.1. Overview on Intelligence Systems

Intelligence Systems has been developed over the years, as known, started around the 1940/50s decade, in different places around the world, knowing that, in England, it was through *Alan Turing*, a English mathematician and considered the father of computer science, that was developed the project called “*The bomb*”, which consisted in the creation of a code that would break in the enemy machine, that was used by the British Government to fight the German forces in WWII.

This code was used as a descriptor of the “*Enigma code*.” as quoted by Pinto (2022), simultaneity, in América, the writer, Isaac Asimov, publicized his short fiction designated by “*Runaround*”, that tell us a story about engineers creating robots, as mentioned by Oliveira (2023).

However, the definition of AI, was considered official, later in, when John McCarthy, Marvin Minsky, Nathaniel Rochester, and Claude Shannon, combined during a summer research project, that brings “*together researchers from various fields related with building machines able to simulate human intelligence*” as stated by Pinto (2022).

Meaning that, they already considered that the creation of a connection between IS, AI, Robots and Human Beings, was something essential to contribute to the evolution of the world, knowing that over the years, the definitions were varying depending on the origins and cycle in which one was supposed to apply the term of IS.

IS are connected to technological systems, that perform various functions, and but the main objective is related to, bring the rational capacity of the human being to AI, since it can affect the area of application and vice-versa, as quoted by Adorno (2011), in which he says that “*Artificial Intelligence has been developing for more than six decades*”.

With the studies analyzed, it can be expected to explore different versions, related to IS origins and history, its cycles of temporary stagnation and significant advances, “*the debates it*

raises in the field of science and technology, its multiple possibilities of use.” (Adorno, 2011).² However, at the same time, “examines its risks, the ethical care that its massive use requires, the social, political, cultural, and moral implications that rapidly transform contemporary societies. (Adorno, 2011).³

In particular, the studies marks, the importance of “the influences of these technologies in the field of teaching and machine learning; its contributions in the field of mobility, transit routes and traffic light control; its potential for digital forensic science. No less relevant is the impact of AI, not necessarily positive, on the work environment and employment, frustrating the expectations of an increasingly emancipated social world.” (Adorno, 2011).⁴

For that analysis, we need to go back on time, to the 1950s, to analyze how the IS and AI, was defined, according to Haenlein & Kaplan (2019), we know that was considered a system that has “*the ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation.*”, however, it was also an area of limited access, due to the lack of acceptance of the society of the time, because as we know, they had a very closed mentality, and with difficult access to understand this type of innovation.

Besides that, it also known that, would be difficult to understand that machines could have the same human intelligence capabilities and could reproduce intelligent behavior, as quoted by Lustosa (2004), and that could be the beginning of a new era.

During this time, the AI concept was always linked to the development of the IS concept, meaning that, was linked to the creation and development of Intelligence in Systems, in order to, them to be able, to solve problems in specific areas, as mentioned by (Mendes, 1997).

Over the years, society has been accepting and classifying, in different ways, IS and AI, knowing that, there are different typologies of intelligence, as quoted by Haenlein & Kaplan (2019), “cognitive, emotional, and social intelligence”, and also, “*Artificial Narrow, General, and Super Intelligence*”, depending on the evolutionary state.

² **Translated from the original:** “(...) exploram diferentes facetas, relacionadas às suas origens e história recente, seus ciclos de estagnação temporária e de avanços significativos, os debates que suscita no campo da ciência e da tecnologia, suas múltiplas possibilidades de uso.” (Adorno, 2011).

³ **Translated from the original:** “Porém, ao mesmo tempo, examina seus riscos, os cuidados éticos que seu emprego massivo requer, suas implicações sociais, políticas, culturais e morais que transformam rapidamente as sociedades contemporâneas.” (Adorno, 2011).

⁴ **Translated from the original:** “Em particular, o dossiê destaca as influências dessas tecnologias no campo do ensino e do aprendizado de máquina; suas contribuições no domínio da mobilidade, 6das rotas de trânsito e do controle semafórico; suas potencialidades para a ciência forense digital. Não menos relevante é o impacto da IA, não necessariamente positivo, sobre o mundo do trabalho e do emprego, frustrando as expectativas de um mundo social cada vez mais emancipado.” (Adorno, 2011).

Later on, authors such as Paiva & Prevedello (2017) state that we can feel its impacts in all aspects of our lives, (Rosa et al. 2022), and it's true, because as we know, all evolution has its most positive phases, because technology can contribute to a better quality of life, but also, has its less positive points, considering that there may be concerns related to technological developments, due to, more targeted situations with companies and the evolution of the world, positioning with the environment, that is, in the way companies position themselves and how they have difficulties in capturing customers and keeping them, and because of this reasons, the companies decided to adopt the IS as a solution.

During the fourth industrial revolution, industry 4.0, or digital transformation (Grandinetti, 2020; Hollebeek et al. 2021), was created the *“fusion of different technologies and by blurring the lines between the physical, digital and biological spheres”* (Rosa et al. 2022).

In this phase, some concepts related to the technologies were created, considering the existence of the competitiveness on industrial enterprises, and also, by referring the concepts of interconnectivity, digitalization, and automation, as mentioned by Rauch & Zsifkovits (2020). Here too, the concept of Smart Logistics, aims at the successful implementation of intelligent and lean supply chains based on agile and cooperative networks and interlinked organizations.

Nevertheless, society itself has exploited the IS and the link to environment, and to companies, categorizing and linking to SDGs, knowing, that according to, Bolton et al. (2021), the way the earth is observed, and information collected, in different areas, such as, SDG 6 (Clean Water and Sanitation) and SDG 15 (Life on Land), (Miller et al., 2020), that's linked to the operation of different jobs and organizations that have been appearing, which contribute to the evolution of society and the world, and at the same time society has been accepting this same evolution, but not forgetting, the less positive points, which all evolutions have, this means, majority associated with the carbon footprint, associated with the high computational needs for AI (negatively impacting SDG 13), job losses due to automation (negatively impacting SDG 8) or perpetuating existing inequalities within algorithmic development (negatively impacting SDG 5).

By directing the study more to Portugal, we can see that, the same behavior and mindset regarding the adaptation of AI to their marketing activities, according to Rosa et al. (2022), knowing that they would have to focus primarily on the main objective, on how the IS, would be a source of competitive advantage, considering its main benefits and challenges, as mentioned by Rosa et al. (2022).

Knowing that, we can assume that the main objective of creating the IS definition and each sub definition, is related to the objective of connecting “*the capability of machine to imitate intelligent human behavior*” (Aghion, et al. 2021), also, “*an agent’s ability to achieve goals in wide range of environments*” (Aghion, et al. 2021), and also, with the development of the idea was also created that machines should be similar, to human beings, but better, more perfect, without losing the best qualities of Humans.

Realizing that, authors like Ghimire et al. (2020), say that AI, can be considered the fourth industrial revolution, because AI and IS, will transform all industries around the world, with the help of big data, and the acceleration of business growth.

However, it’s impossible to forget that no matter how much the IS help the development of any area, IS cannot work 100% alone, because always have to be observed, and accompanied by humans, due to different aspects, such as the simple fact that IS aren’t spontaneously creative and can only occupy specific positions as said by Aghion et al. (2021), that “*AI may be deployed in the ordinary production of goods and services, potentially impacting economic growth and income shares.*”.

2.1.2. Expectations regarding the Future of Intelligent Systems

Over the years, we can assume that the evolution is indirectly linked to “*the fourth industrial revolution (Industry 4.0) comprises a set of concepts and technologies that should be used to strengthen the competitiveness of industrial enterprises by referring to the concepts of interconnectivity, digitalization, and automation.*” (Rauch & Zsifkovits, 2020).

Therefore, it also, can be assumed that by implementing the IS, in any sector will bring its benefits, namely, the successful implementation of intelligent and lean supply chains based on agile and cooperative networks and interlinked organizations. Then, information exchange is established through the usage of modern information and communication technologies (ICT), data networks, actors and sensors, and automatic identification and material tracking technologies. Automated transport, transition, and storage systems, supported by autonomous transport vehicles, should enable a partial and/or complete self-control of systems, as quoted by Rauch & Zsifkovits (2020).

However, in addition to all the benefits previously addressed, also, the relationship of association with IS, with the internet, and with computer programs, this means that the Machine Learning, is considered an integral part of AI, which refers to the automated detection of meaningful patterns in datasets. ML tools aim to increase the efficiency of algorithms by

ensuring the ability to learn and adapt based on big-data analytics, according to Rauch & Zsifkovits (2020).

This means that the IS, *“has dominated recent headlines, with its promises, challenges, risks, successes, and failures.”* (Floridi, 2019), but also, to try to look into the seeds of time and say which grain will grow and which will not, that’s trying to understand where AI is more likely to go and hence where it may not be going, as mentioned by Floridi (2019).

Not forgetting that another of the objectives of the creation of the IS, it is also linked to problem solving, *“AI achieves its problem-solving goals by detaching the ability to perform a task successfully from any need to be intelligent in doing so.”* (Floridi, 2019).

“This is why understanding the future of IS also means understanding the nature of problems where such a detachment may be technically feasible in theory and economically viable in practice.” (Floridi, 2019), meaning that, it’s necessary to search the skills needed to solve the problems, and also, finding the solutions possible.

We can assume that the future of IS, will probably relate to *“hybrid or synthetic data”*, but also, with *“complex tasks”* (Floridi, 2019), because it’s known that IS has the capability of learning from various types and massive amounts of data and being able to update thoughts or actions is what makes one consider a machine to be intelligent as said by Huang et al. (2019).

With this statement we realize that this complex theme had/has different applications related to the different areas of employment, that the world have, meaning that IS, in better known areas with regard to the use of technologies, as well as in the area of Communication, Engineering, Finance, Management, Medicine, Marketing, Public Relations & Advertising, the 7 Arts, Tourism (Tourism Information, Hospitality & Restaurants, etc.), Security/Surveillance, and Telecommunications, and even in less common areas such as Agriculture, Commerce, Construction, Sports, Law, Education, Real Estate, Industry, Maintenance, Fashion, Fishing & Animal husbandry, Politics, Human Resources, Transport & Logistics, and many other.

2.2. Tourism Management

2.2.1. Tourism & TM

The history of tourism begins when, people start travel with the objective of knowing new things and after writing about them, with descriptions practically picturing the moments, but almost sporadic events that occur in a spirit of adventure and curiosity or for religious reasons, as mentioned by Cunha (2010)⁵.

At the end of the sixteenth century, when new travelers appear who decide to travel Europe for instruction, knowledge, pleasure or simple curiosity, it's known that the main motivations were related to the discovery of the new worlds, succeeding the discovery of the sky; the exploration of the spirit, and of the body; of knowledge, and also, because travel was considered a precious stimulus aid, and a new form of instruction, according to Cunha (2010)⁶.

Tourism and its management require a lot of analysis and in-depth research, since it's a generic topic, otherwise culture and tourism have always been inextricably linked, with tourism & TM. cultural sights, attractions and events provide an important motivation for travel, and travel in itself generates culture. But it is only in recent decades that the link between culture and tourism has been more explicitly identified as a specific form of consumption: cultural tourism, as quoted by Richards (2018).

However, from the twentieth century, tourism was considered a relevant activity at an economic level, being currently one of its main sectors worldwide, which directly/indirectly affects much of humanity, as quoted by Daniel (2021)⁷

It's known that, with the evolution of tourism, there were several changes, and transformations, to trying to fit this topic, in the time in which it was lived, and in the ideals of each decade, but we know that, after the I & II WW, the Crisis of 1929, there was a very significant growth, marking the beginning of the 50's, and forwards, taking into account that,

⁵ **Translated from the original:** "(...) a realização de viagens para conhecer novas coisas e de escritos que as descrevem, mas trata-se, quase sempre, de acontecimentos esporádicos que ocorrem por espírito de aventura e de curiosidade ou por motivos religiosos." (Cunha, 2010).

⁶ **Translated from the original:** "É, contudo, a partir dos finais do século XVI que surgem os novos viajantes que percorrem a Europa por instrução, conhecimento, prazer ou simples curiosidade. Os europeus estão ávidos de saber: à descoberta dos novos mundos sucede-se a descoberta do céu; à exploração do espírito sucede-se a do corpo. É o exemplo e são os escritos dos intelectuais, ensaístas e filósofos, que as estimulam afirmando as viagens como uma nova forma de instrução." (Cunha, 2010).

⁷ **Translated from the original:** "O turismo não é um fenómeno de hoje, no entanto, é apenas no século XX que este é considerado uma atividade economicamente relevante, sendo hoje um dos seus principais setores a nível mundial afetando direta ou indiretamente uma boa parte da humanidade." (Daniel, 2021).

the main motivations were related to, the escape from daily stress, for cultural enrichment, out just because of simple curiosity, or for professional reasons, with this new motivations, it was created the term of "New Man", the "*Homo turisticus* or *Homo viajor*", as discusses by Daniel (2021).⁸

Meaning that, when we analyze the history of Tourism, we also discover that "*The emergence of cultural tourism as a social phenomenon and as an object of academic study can be traced back to the surge in post-World War 2 leisure travel. (...) As incomes and consumption continued to rise in the 1960s and 1970s, so did international travel, and the consumption of culture. By the 1980s the flow of international tourists to major sites and attractions began to attract enough attention for the label 'cultural tourism' to be attached to an emerging niche market.*" (Richards, 2018).

At that time, the term "*grand tour*" was also created, which was related to travel abroad, and also the term "*tourist*", was created, which begins, when, the English traveler who moves for the reasons previously mentioned, known that, the first definition was officialized, from 1937, by the League of Nations, according to Cunha (2010)⁹.

Later, it gradually suffers technological, industrial, economic and social transformations, which give rise to the right to rest, leisure and holidays, also creating the necessary conditions to access the destinations through trips to new and wider population sections, that's related later with income, free time and travel facilities, as mentioned by Cunha (2010).¹⁰

With these discoveries, we realize that the taste of traveling, becomes a trend, and the subcategories in Tourism begin to be created, starting with the search for sedentary holidays in the bathing and climatic resorts for therapeutic reasons, in the thermal baths and in the mountains.

⁸ **Translated from the original:** "Apesar de a sua evolução ter sofrido um revês com as I e II Grandes Guerras e com a Crise de 1929, a partir da década de 50 assistiu-se a um crescimento deste fenómeno até então nunca visto. Só para se ter uma ideia da sua evolução, enquanto que em 1950, (...). O Homem viaja essencialmente para "fugir ao stress diário, para enriquecimento cultural, por simples curiosidade ou por motivos profissionais". Estas necessidades estão tão enraizadas na nossa cultura que se fala no nascimento de um novo Homem: "o *Homo turisticus* ou *Homo viajor*" (Luís, in Luís, E., 2002, p.139)." (Daniel, 2021).

⁹ **Translated from the original:** "A viagem é longa e demorada. São, em regra, três anos para percorrer a França, Itália, Suíça e Alemanha, principalmente, que constituem a "*grand tour*", e os que a fazem passam a ser designados por "*touristes*". (...) Turista começa, então, por ser o viajante inglês que se desloca por prazer, instrução e conhecimento. Depois, são-no também os viajantes de outras origens, mas as razões da viagem que definem o turista mantêm-se até muito mais tarde: pelo menos até 1937 quando surge a primeira definição da Sociedade das Nações." (Cunha, 2010).

¹⁰ **Translated from the original:** "A partir da segunda metade do século XIX o mundo ocidental sofre profundas transformações tecnológicas, industriais, económicas e sociais que dão origem ao direito ao repouso, ao lazer e às férias. Criam-se, por via disso, condições que permitem o acesso às viagens a novos e mais alargados estratos populacionais: rendimento, tempo livre e facilidades de deslocação." (Cunha, 2010).

Later, the notion of tourist begins to also cover those who move for reasons of rest, fun or recreation, characterizing themselves as "*excursionist*", thus excluded people who frequent the baths and beaches or participate in a congress, as addressed by Cunha (2010)¹¹.

With these discoveries and innovations, which affect society in general, there is also the need to create some diversification of definitions, so "*tourists*", can decide which localities to choose, based on their characteristics, by what they offer, and by the characterization they have, meaning, if it's more suitable, to attract *tourists/visitors*, for one theme than for another, per example, choosing between beach or culture, in this way, originated a process of touristization of territories, that become spaces of tourist production, as mentioned by Cunha (2010)¹².

Focusing now more in Portugal, tourism it's one of the economic activities that contribute more to the employability of the country, with at least a total of 10%, in addition to that, it also contributes to the areas related to investment and development of other activities, knowing that, it's a sector that, has contributed to the development of the country, in a very positive way, but simultaneously with some less positive aspects. (Daniel, 2010)¹³

During the 60's, after the creation of the product "Sun and Sea", best known for the tourism of the 3 "S", Portugal began to be seen as a country that would enter the competitiveness frameworks with other countries such as Spain, Turkey, Greece, Tunisia, among others, which offer the same type of products, taking into account that they would have to innovate, with regard to the diversity of tourism offer, that is, on the one hand to combat the extreme dependence on tourism "Sun and Sea", and on the other hand, to harmonize the use of the territorial space Portuguese, as reports Daniel (2010)¹⁴, and at this moment in history of tourism that the PENT was executed, which was valid between, 2006 and 2015, and later, updated this plan, based on the evolution of tourism, but also, in the opinion of consumers, to tourism strategy 2016-2020 and later 2021-2027.

¹¹ **Translated from the original:** "O gosto de viajar populariza-se e desponta o turismo como actividade económica. Até, então, as viagens caracterizam-se pelo nomadismo mas a partir do século XIX inicia-se a procura de férias sedentárias nas estâncias balneares e climáticas por razões terapêuticas, nas termas e nas montanhas." (Cunha, 2010).

¹² **Translated from the original:** "A noção de turista começa a abranger também aqueles que se deslocam por razões de repouso, diversão ou recreio pese embora a recusa dos puristas do conceito, que preferem a designação "excursionista", e dele excluem as pessoas que frequentam as termas e as praias ou participam num congresso. Elegem-se certas localidades que pelas suas características e pelos atractivos que dispõem são objecto de organização (informal ou formal) com vista a atrair visitantes originando um processo de turistização de territórios, como se diz agora, que se transformam em espaços de produção turística." (Cunha, 2010).

¹³ **Translated from the original:** "O turismo é uma das actividades económicas mais importantes em Portugal representando actualmente 10% do emprego, para além do seu papel preponderante no investimento e desenvolvimento de outras actividades. Apesar de o sector ter registado algumas fases mais positivas que outras, Portugal ocupava em Março de 2008 o 15º lugar, numa lista de 130 países, no ranking de competitividade do sector turístico." (Daniel, 2010).

¹⁴ **Translated from the original:** "Portugal centrou essencialmente a actividade turística num único produto desde a década de 60: o produto tradicional "Sol e Mar", mais conhecido pelo turismo dos 3 "S" – Sun, Sea and Sand. A competitividade com outros países como a Espanha, a Turquia, a Grécia, a Tunísia, entre outros, que oferecem o mesmo tipo de produto, alertam-nos para a necessidade de diversificação da oferta. Para tal, tem-se procurado diversificar a oferta de produtos no sentido de, por um lado combater a extrema dependência do turismo "Sol e Mar", e por outro harmonizar o aproveitamento do espaço territorial português. O "Plano Estratégico Nacional de Turismo" 2006-2015 (PENT), é disso exemplo." (Daniel, 2010).

During these creations, we can identify different classifications given to tourism and its activities, one of which is tourism management, which is interconnected with management itself and with the way tourism and its areas of activity are managed.

In this case it will be subdivided into 1 market niche, and in this way, it will be possible to analyze how Cultural Tourism market area had a gradual growth in the world, knowing that CT, had a “(...) *continued to grow throughout the 1980s and 1990s, driven by the ‘heritage boom’ (Hewison, 1987), the growth of international and domestic travel and the identification of cultural tourism as a ‘good’ form of tourism that would stimulate the economy and help conserve culture.*” (Richards, 2018).

But also talking about the way in which area the final consumer currently gets little curiosities about a place of visit, or passage just by searching about that place on the internet, and how important the opinion of others is, for the tourist and for the tourist destination, even of people who don’t know each other but who evaluate the destinations.

This means that, CT is a type of tourism that have a variety of activities in which creates an essential motivation on the visitor to learn, discover, experience and consume the tangible and intangible cultural attractions and products in a tourist destination, as quoted by Molinero (2019)¹⁵, he talks about products and attractions related to a set of distinctive material, intellectual, spiritual and emotional characteristics of a society that encompasses arts and architecture, historical and cultural heritage, culinary heritage, literature, music, creative industries and living cultures with their styles. of life, value systems, beliefs, and traditions, Molinero (2019)¹⁶.

Subsequently it was possible to observe that the definitions of Tourism and TM are in constant evolution due to being a sector in constant growth and adaptation to society and the needs of consumers.

¹⁵ **Translated from the original:** “El turismo cultural es un tipo de actividad turística en la que la motivación esencial del visitante es aprender, descubrir, experimentar y consumir las atracciones / productos culturales tangibles e intangibles en un destino turístico.” (Molinero, 2019).

¹⁶ **Translated from the original:** “(...) Estas atracciones / productos se relacionan con un conjunto de características distintivas de material, intelectual, espiritual y emocional de una sociedad que abarca artes y arquitectura, patrimonio histórico y cultural, patrimonio culinario, literatura, música, industrias creativas y las culturas vivas con sus estilos de vida, valor sistemas, creencias y tradiciones (UNWTO, 2018a, p.11).” (Molinero, 2019).

2.2.2. Evolution of Tourism Management

With the development of the world and its constant adaptation, tourism has been on the same journey, that is, it has *“been in constant adaptation to always be able to follow the evolution of the world, knowing that culture has become a more and more important factor regarding the mobility of communities”*, as mentioned by Kuizinaitė & Radzevičius (2020), and with this, we look at the fact that the CT sector has achieved a significant number in terms of demand, connecting with some rate regarding the activities that subsequently provide economic growth, establish jobs, educate the creativity and promotes innovation.

Later on, tourism and TM, contributed to the regional and local development of countries, and consequently the CT sector, also contributed to the development of strategies, because this sector plays an important role in many areas such as promoting cultural heritage for business purposes, for the development of cultural infrastructure e services, and also puts clusters and companies together, encourages partnerships between cultural sector companies and industry, scientific research, education and partnership of other sectors, creates innovation labs, develops international integrated natural and cultural resource management and local economy refreshment strategies, adds to sustainable urban development, as said by Kuizinaitė & Radzevičius (2020).

During the 20th century, after all this development, and discoveries, there was a period of stagnation and lack of diversification in tourism, which affected the TM considering a period of tourism, as mass standardized, knowing that, during that time, the main interests changed a little, directing to sports, health, nature, highlighting that never ceased the interest for CT, consequently promoting the integration of the transport structure, i.e., airports, railways, good quality roads, water transport, as mentioned by Kuizinaitė & Radzevičius (2020).

It is known that *“Tourism development becomes the official business activity based on local resources and other attracting factors, facilities and services, tourism organizations related to promotion of tourism development. When tourism becomes a regulated activity, there are larger changes in the social, cultural, and natural environment that become inevitable. The distribution of these periods shows that the tourism development cycle can encompass four periods that characterize the number of tourists, for instance, when the supply of tourism services expands more and more, wealthier tourists come to the locality who consumer and use more expensive services and products offered by tourism. Such tourists need high quality services and high-class hotels.”* (Kuizinaitė & Radzevičius, 2020).

Following all this evolution, directing to the observation of what will be the future of Tourism and TM, we can verify that, tourism somehow, linked to the concepts of Consumption, and consumer trends, who are more informed, and seek experiences often more sophisticated, as mentioned by Ramos & Costa (2017), in which they report that evolution is inevitable, and is influenced by factors external to Tourism and simultaneously by the globalization of the sector.

It's known that the consumer of tourism, currently, is more directed to more personalized services, or considered, Taylor Made Tourism, this means, they search for a personalized treatment, trying their best to experience authentic and genuine experiences, escaping the Mass Tourism.

According to Ramos & Costa (2017), these are informed tourists, in the life of whom information technologies have a full presence, and this new tourist knows what he is looking for, respects the environment and the community.

However, we don't dismiss mass tourism, for the survival of the sector, at an economic level, which remains in constant evolution, trying to become better and more competitive, and finding itself in constant preparation for a more volatile tourist market, with a good structure of tourist offer, and constant tourist organization, as explained by Ramos & Costa (2017).

2.3. Artificial Intelligence in Tourism Management

2.3.1. Evolution of IS in Tourism Management

Tourism organizations suffered some “transformations that affected the sector, after the post-digital era, mainly in areas where information stimulate procedures, and where it influences the acquisition of tourist services, meaning that, ended up being reflected in the incorporation of new integrative technologies to destinations and tourist enterprises”, as quoted by Araújo, Farias & Ferreira (2020).¹⁷

Which leads to the first definitions about planning, and the objectives of tourism and its services, as said by Ding et al. (2018), that when tourists are planning any journey, they consult usually the travel agency in person, or if they are secure of themselves, they also can travel freely just by booking airline hotels and tickets online to all of the attractions.

With this first perception allowed the authors to affirm that “artificial intelligence based on hyper-personalized products to increase the conversion rate of the ads ultimately improves the traveler experience, through the research on artificial intelligence decision-making technology in tourism management mechanism. At the same time, it is also possible to bring customized suggestions on the journey based on the passenger's information, destination, time, and many other parameters and data processed by the algorithm.” (Ding et al. 2018).

Now it's possible to analyze where the tourism begins to have the Intelligent Systems as its main ally in its growth, due to the previously mentioned facts, but also, due to the way in which they contribute to reaching different types of target audiences, the IS, were even considered “a strategic tool to improve organizational differentiation in a competitive scenario”, as mentioned by Ding et al. (2018), reporting consequently, the development of the world, society but above all, the business world, when talking about, how to pay greater attention to competitiveness, different ways of acting, and also, the acquisition of a competitive advantage through high performance, while focusing on mitigating the margin of error, which consequently contributes to the search for new forms of communication, sales and customer loyalty, in order to turn them into frequent customers.

¹⁷ Translated from the original: “As transformações provocadas nas organizações turísticas pela era pós-digital, nos procedimentos de informação e aquisição dos serviços turísticos, refletem na incorporação de novas tecnologias integradoras aos destinos e empreendimentos turísticos.” (Araújo, Farias & Ferreira, 2020).

Later on, pops up a new concept of a social, cultural and economic activity, where people move from their countries to others, on vacations or getaways, and other places outside of their daily environment for a personal or professional aim (UNTWO, 2015), called Smart tourism, following the creation of a variety of definitions, regarding the types of travelers, tourism, and the activities done until this moment, as mentioned by Genç (2020).

Added to all this development, other types of evolution also appear, but within the scope of the individual evolution of each country, but also, worldwide, related to the creation of new employment and investment areas, more specifically some side sectors that complement the Tourism and also, its management and quality, like accommodation, transportation, different types of industry (food, culture. etc.), and many others, as stated by Genç (2020)

In other words, it's possible to analyze that IS are immediately present in tourism and in TM, from the moment the client decides to travel, then, when searching for information about products and destinations, later, when they're on the trip and carrying out the activities that were previously booked, through browsing on the internet or in a mobile device, and finally to, seeing their consumption and payments and by providing information to others, giving opinions and evaluations, publishing photos and other multimedia material on their social networks, as stated by Almeida (2018)¹⁸.

According to this author we also know that exists *“an enormous amount of information about travelers, their travel behavior, their needs, and the experience obtained with the destination and with the tourist products stored in the various data sources, of a heterogeneous nature, which is currently still little exploited. However, to find causal connection between different data sources, and big data, it's necessary to apply business intelligence and data mining techniques. The IS, by combining all the traces and information provided deliberately, can obtain personalized information for each tourist and, consequently, provide them with the travel information they need at all times”* (Almeida, 2018)¹⁹.

When verifying all this development related to IS, and its application in the world, and in the Tourism sector, it's possible to conclude that IS, contributed to the introduction of new

¹⁸ **Translated from the original:** “Además, en la actualidad, los turistas dejan trazas o huellas electrónicas en internet, incluso desde antes de viajar, cuando buscan información sobre los productos y destinos, durante el desarrollo del viaje y al finalizar el mismo tanto mediante la navegación en internet o en un dispositivo móvil, como mediante sus consumos y pagos y por proveer informaciones, opiniones, evaluaciones, fotos y otro material multimedia en sus redes sociales (Alonso-Almeida et al., 2016; 2018).” (Almeida, 2020).

¹⁹ **Translated from the original:** “(...) una enorme cantidad de información sobre los viajeros, su comportamiento de viaje, sus necesidades y la experiencia obtenida tanto con el destino como con los productos turísticos almacenada en las diversas fuentes de datos, de naturaleza heterogénea, que en la actualidad está todavía poco explotadas. Sin embargo, para encontrar relaciones causales entre las diferentes fuentes de datos -big data- es necesario aplicar técnicas de inteligencia de negocio y minería de datos. Así, la inteligencia artificial mediante la combinación de todos los rastros e información provista de forma deliberada puede obtener una información personalizada para cada turista y, como consecuencia, proveerle de la información de viaje que necesita en cada momento (Rodríguez-Antón et al., 2008; Bowen y Whalen, 2017).” (Almeida, 2018).

elements, at an emotional and social level, in the Tourism sector and in TM, by combining these factors in such a way that was created a relationship between Companies and the FC, as quantified by Almeida (2018)²⁰

2.3.2. Future of IS in Tourism Management

Concerning about the future of IS in TM, it can be defined as something that will always be in constant evolution, due to be a sector that always tries to adapt to the market and the needs of consumers, and in this way, we can assume that, informatization of information, was a very active factor throughout the evolution of Tourism, and also contributed to the creation of new ways of sharing and acquiring products and services.

It's also known that, IS in Tourism is one of the most innovative and disruptive trends in the world, this means that, the use of robots in service industries, it's going to be the new era, as mentioned by Almeida (2018)²¹.

Following this line of thought, it can be assumed that people started to live with robots, androids and other forms of AI increasingly sophisticated, being aware that the IS went through several phases of transformation, beginning in the early days, when people began to learn how to connect to the internet, observing that it's currently more the other way around, because are the things that connect to the internet to improve people's lives, then we have the construction of robots, that they will be able to interact with human beings autonomously, which is currently under investigation and already with some models in execution, as said by Almeida (2018)²²

Then, we have the companies, which have begun to take advantage of this evolution to focus on their customers and possible new market niches, starting to modify the way they sell their products and services, focusing instead on the experiences of their FC, in how they must be unforgettable, and forever memorable, provoking an effect of a feeling that lasts long then

²⁰ **Translated from the original:** "(...), la realidad virtual introduce nuevos elementos emocionales y sociales en el sector del turismo; cambiando la forma de relacionarse entre compradores y vendedores, (...)." (Almeida, 2018).

²¹ **Translated from the original:** "Robots en turismo Una de las tendencias más innovadoras y disruptivas es el uso de robots en las industrias de servicios." (Almeida, 2018).

²² **Translated from the original:** "En un futuro cercano, sobrepasando cualquier película de ciencia ficción, las personas van a convivir con robots, androides y otras formas de inteligencia artificial cada vez más sofisticadas (Santos, 2017). De acuerdo con esta autora, la tecnología ha pasado por diversas fases, primero las personas se conectaban a internet, ahora son las cosas las que conectan a internet para mejorar la vida de las personas. La siguiente fase, que es inminente, va consistir en que los robots interactúen con el entorno de manera autónoma e independiente del control humano, con la posibilidad de que incluso las personas se combinen con robots para mejorarse." (Almeida, 2018).

expected, which consequently creates loyalty consumers and you get even more clients, but also to diversify the market niches, as cited by Almeida (2018)²³

Then realized through IS, different forms of promotion, such as through images or videos of the destinations, with brief descriptions about the product or service provided, which may appear in catalogs of TA or TO, or find themselves with presence on social networks, also collecting the opinions of other travelers and their valuation, that experience is still not their own.

Based on opinions and experiences of others that may even be contradictory in some cases, all this evolution contributed to the creation of a new concept, VR, knowing that represents the real opportunity to capitalize on the unique nature of travel and destinations in order to involve the customer in the travel experience from the first initial contact and make it possible to build their own experience, as explains Almeida (2018)²⁴

²³ **Translated from the original:** “De acuerdo con Petkus (2004), las empresas ya no venden ni productos ni servicios sólo experiencias y para que éstas sean de verdad memorables y produzcan un efecto profundo y duradero en el consumidor se deben cumplir dos premisas:.” (Almeida, 2018).

²⁴ **Translated from the original:** “En los viajes, la posibilidad de poder experimentar previamente se limita a las imágenes del destino que se pueden observar a través de catálogos o videos y, aunque las redes sociales nos permiten recoger las sensaciones de otros viajeros y su valoración, esa experiencia sigue sin ser propia sino basada en opiniones y experiencias ajenas que incluso pueden ser contradictorias en algunos casos. Por eso, la Realidad Virtual (RV) representa una oportunidad real de capitalizar la naturaleza única de los viajes y destinos con el fin de hacer partícipe al cliente de la experiencia del viaje desde el primer contacto inicial y hacer que pueda construir su propia experiencia.” (Almeida, 2018).

3. Methodology

3.1.Context of the Investigation

The investigation structure, begins with the delimitation of the objectives of this study, starting with the understanding of the main reasons and choices that Tourism Management had, that forced them to connect to Intelligence Systems, and vice-versa.

The first part is related to the definition of what we want to investigate, meaning that, this research involves four essential components, such as, who are the main contributors to this study, where and when the investigation takes place, and what are the main objectives.

Then, it's recommended to start the methodology, that includes the creation of a structured script for the interviews, in order to classify the study, as a quantitative analysis, in other words, quantitative approaches aim to present and numerically manipulate observations with a view to discretion and explanation of the phenomenon on which the observations relate, meaning, the qualitative approach refers to a non-numerical interpretative examination of observations, with a view to discovering the underlying explanations and modes of interrelationship, as quoted by Vilelas (2009)²⁵.

The Quantitative analysis would be done through online and in person interviews and aims to collect data referring to the factors that are related to the connection of TM and IS, and in addition, it's supposed to capture the impact that IS had and still has on TM directing to CT.

The 2nd part is related to understanding when and where are the problems, the evolution of IS and TM, observing what are the impacts in their evolution, if they are positive or negative, and if had any progress related to their performance. Then, it should also be noted that, the method used to obtain results was by questioning the interviewers, based on the questions that result from the literature review, allowing a fluid conversation (Carmo & Ferreira, 2008)²⁶, which opened space for other questions and to the interviewed explain their vision and perspective, as will be, revealed afterwards.

²⁵ **Translated from the original:** "As abordagens quantitativas visam a apresentação e a manipulação numérica de observações com vista à descrição e à explicação do fenómeno sobre o qual recaem as observações. Por sua vez, a abordagem qualitativa remete-se para um exame interpretativo não-numérico das observações, com vista à descoberta das explicações subjacentes e aos modos de inter-relação." (Vilelas, 2009).

²⁶ **Translated from the original:** "Referir também que a técnica utilizada para a obtenção de resultados foi a realização de inquérito através de uma entrevista, tendo como base as questões que surgiram ao longo da revisão de literatura, permitindo um diálogo fluido (Carmo e Ferreira, 2008), que abriu espaço para outras questões e aos autores inquiridos que apresentassem a sua visão e perspetiva." (Carmo and Ferreira, 2008).

In the last part of the interviews, will have questions related to the connection between IS and TM, with the main objective, that's to understand the opinion of employees and of department managers on the different themes, and in what way they agree or disagree with the evolution of the themes, but also, in order to value the experience of companies and the final consumer, in relation to the services provided, in the study areas.

3.2. Methodology applied on the Investigation

The methodology applied in the investigation it's related to the main objectives of the study of the themes mentioned above, meaning that, it's supposed to understand what reasons and choices led Tourism Management to meet Intelligence Systems.

In this way, the methodology used will be structured by doing interviews, classified as a quantitative analysis, through an online or in person meeting, in order to allow the collection of data referring to the factors that are related to TM, and IS, in addition to trying to capture the impact that IS had and still has on TM.

For the development of this investigation, the definition of the topics combined two procedures, the first part, was by categorizing the main themes based on the literature review carried out, then, the subcategory, was defined later, based on the data collected in the interviews.

The sample obtain was 16 interviewers, from different departments, as Financial/Accounting, Marketing, Operational, Booking Management, Incoming/Outgoing; Client Support; Commercial, and many Others, in different Companies, related to the tourism Sector.

The interviews were divided into four parts, the first, is related to IS, where some questions were done, in order to understand the main activities or behaviors that the interviewers can identify and also the problems in the evolution of IS, and how would be associated with TM.

Then, recognize the most common IS used in TM, in what way affects the performance of Companies, in addition, understanding as well, the impacts of the optimization on the day-by-day operations, in Companies, taking into account the way they have been operating so far.

Conclusively, we have the part of the study, where the two themes were combined, meaning the gradual development of IS in Tourism and in its Management, directing a little towards the Portuguese reality, also, what impacts they caused, in the last five years.

The difference was also identified between the companies that bond the IS, fully, partially, or didn't connect at all, subsequently understanding the expectations and different thoughts

regarding the investments made in IS, consequently, in the evolution of Tourism and TM, and what will be the future of this area, capturing the opinion/constructive critic of FC, who experience the services provided by companies.

Regarding the method used to present the analyzed data, it was systematized, taking into account, the main objective of this study, meaning that, the interviews were based on four stages, the first one, was related to the identification of the companies, markets areas and then, contact the employees to proceed with the interviews.

Then, the sixteen interviews were obtained by talking with Managers and Employees from different departments, in various companies in this sector, as the Booking Department (Incoming & Outgoing), Customer/Client Support (Front & Back Office), Events Managers in Music & Arts sector, Flight Attendants, Guides & Tour Leaders, Key Account Managers of TA & TO, Tourism Coordinator (Professor), Receptionists, Sales Managers, and Travel Retailers, with the purpose of covering a larger and representative number of interviews as possible.

Knowing that, the Interviewees were selected based on the phenomenon under study, as mentioned before, recognizing that they had to be working in the area, or having experience, to know how to answer all questions about IS & TM.

The population sample is not representative of all population in Portugal, since given its size, it could not be considered for a generalization of the facts under study, since this type of sample, it's only to help in research that only tries to find out some general signs of a problem or in other cases, due to time avoids another more rigorous study, as mentioned by Vilelas (2009)²⁷,

Regarding the interviews, starting by the elaboration of the interview guide, then, the theoretical structure that allowed the interviewee to understand and contextualize the objective of the investigation, until the ending of the sample collection, it can be said that the total amount of time spent, on all process was around twelve weeks.

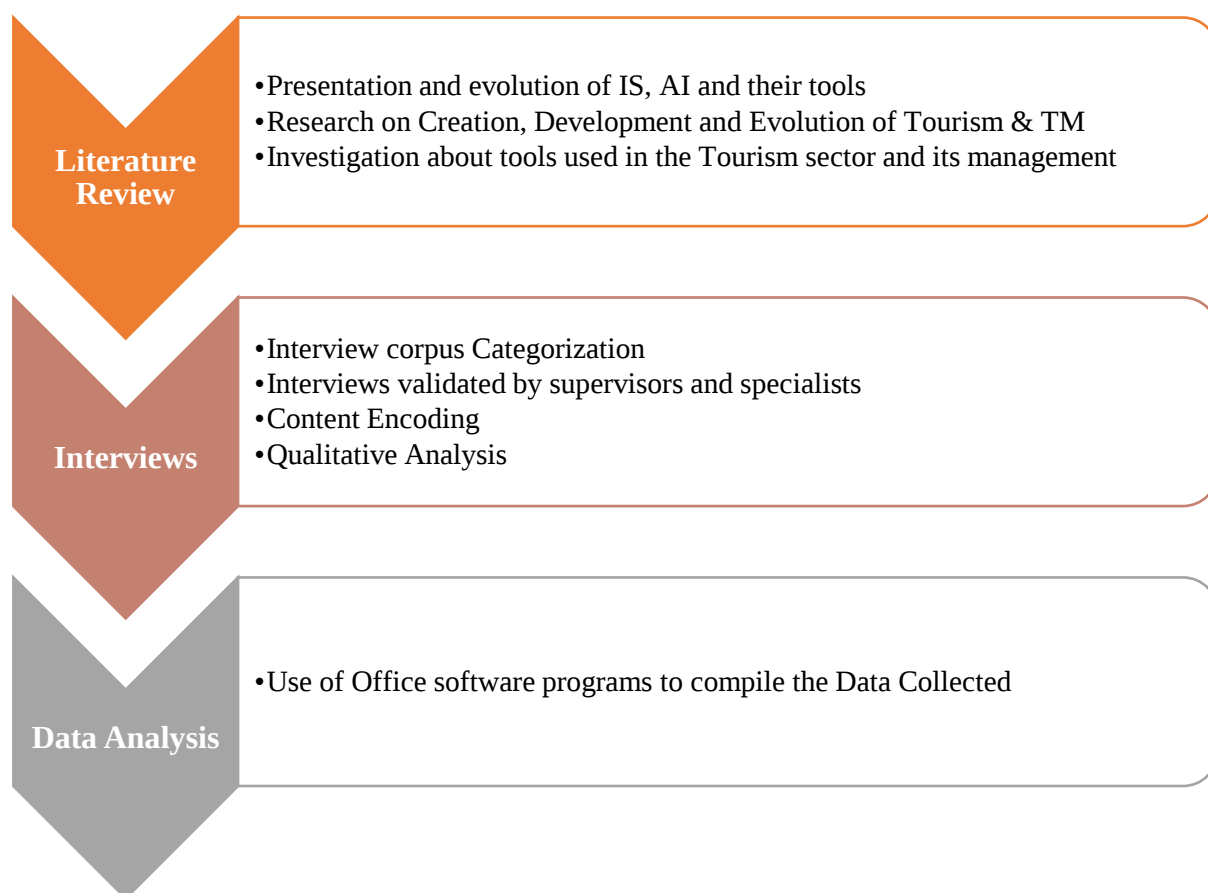
²⁷ Translated from the original: "(...) este tipo de amostra utiliza-se quando não se pretende efetuar um trabalho demasiado aprofundado, quando se procuram conhecer apenas alguns indícios gerais dum problema ou noutros casos, quando o tempo impede outra forma de trabalho mais rigorosa." (Vilelas 2009).

Table 1 - Relation between Objectives → Research Questions → Literature Review

Objectives	Research Questions	LR Connection
O1 - Understand each concept, Tourism, TM & IS.	RQ1 → What are the Intelligent Systems use by Portuguese Tourism managers?	Bird (2017). Marques & Santos (2016). Li, & Lin (2021). Piplani & Sharma (2022). Costa (2017)
	RQ2 → What are the factors that contribute to the development of IS in TM?	Rong, F. (2017). Kuizinaite & Radzevičius (2020). Choi et al. (2012). Costa et al. (2020). Veiga et al. (2022). Almeida (2019). Rauch & Zsifkovits (2020).
	RQ3 → What are the impacts caused by using IS in TM?	Zlatanov & Popescu (2019). Molinero (2019). Buhalis & Amaranggana (2014). Werthner (2023) Rodrigues et al.(2020). Graça (2022). Adorno (2021). Genç (2020). Floridi (2019).
O2 – Understand the impact in TM.	RQ4 → How Portuguese Tourism Companies perceive the use of IS in their management?	Gretzel (2011). Onuiri & Omotunde (2016). Graça (2022). Estratégia Turismo 2027 (2017). Botelho (2015). Mayra Michels (2018). Aghion et al (2017).
		Pinto (2022). Oliveira, (2023). Haenlein & Kaplan (2019). Lustosa (2004). Mendes (1997). Paiva & Prevedello (2017). Rosa, et al. (2022). Grandinetti (2020). Hollebeek et al. (2021). Rauch & Zsifkovits (2020). Bolton et al. (2021). Miller et al. (2020). Aghion et al.(2021). Ghimire et al. (2020). Huang et al. (2019). Cunha (2010). Richards (2018). Daniel (2021). Daniel (2010). Ramos & Costa (2017). Araújo et al. (2020). Ding et al. (2018). Almeida (2018). Venkatraman (2017). Borges et al. (2020). Weill & Woerner (2017). Knickrehm (2018). Gunkel (2012). Sharma et al. (2014). Costa et al. (2019). Singh et al. (2020). Venkatesh & Agrawal (2006). Close & Kukar-Kinney (2010). Brown et al. (2003). Olbrich & Holsing (2011). Chaudhuri et al. (2021). Agnihotri (2021).

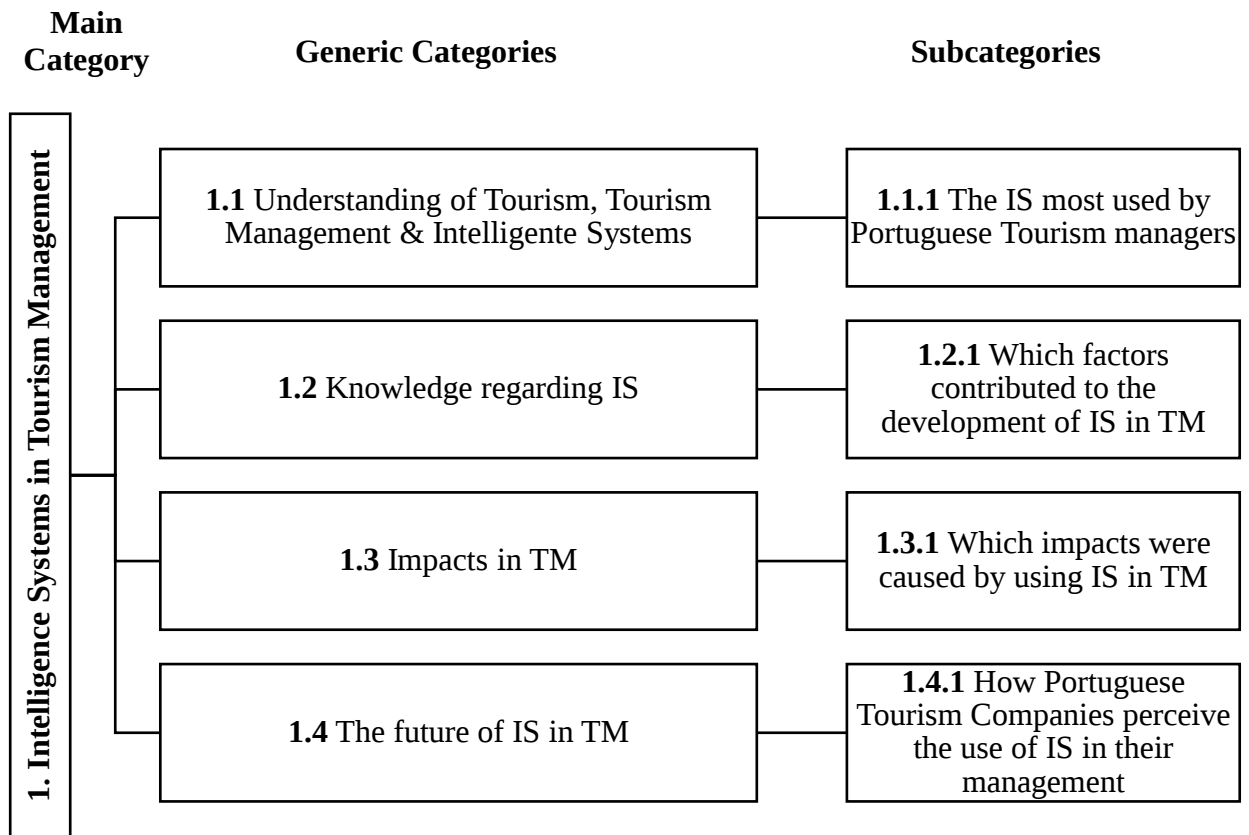
Source – Elaborated by the Author

Table 2 – Investigation Model



Source – Elaborated by the Author

Table 3 - Categorization and coding of the interview corpus for qualitative analysis



Source – Elaborated by the Author

3.3.Sample Characterization

The interviews ran as expected, each having an average of 25 to 40 minutes, embracing the interviewees ideas and perspectives, regarding each topic, and added some additional information to the questions, making it possible to add more content to this analysis.

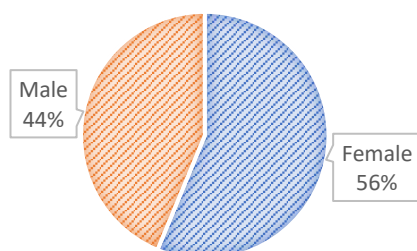
The sample size was established, in order to allow some conclusions, although, the main purpose, is not to obtain a representative study of the population.

The main goal of this sample was to present the diversity between sectors regarding the different topics board, regarding that, one of the main purposes, that was to present different professional realities, of small, medium, and large companies in tourism sector, that use IS tools, more or less frequently, to verify how they depend on them to evolve and grow on the market.

The 1st part of the interviews was directed to introduce the topics that would be addressed, trying to know some demographic information (graphics nr 1 & 2, bellow) and aiming whether respondents had minimal knowledge about what were IS, and what connections they had for the topics of this study, knowing that 56.3% said that they have some or total knowledge of what are Intelligent Systems, and 43.8%, didn't know, only after been explained the definition of IS.

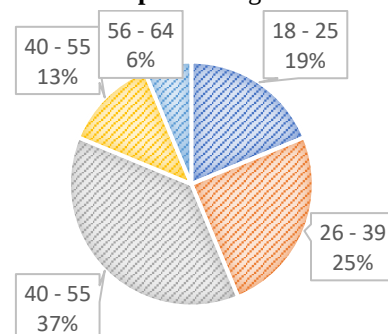
It's known that, of the 16 interviewees, 9 (56%) were carried out on females, with the remaining 7 (44%) on males, which can be seen in the graphic below, also it's possible to verify the different age groups.

Graphic 1 – Gender



Source: Done by the Author

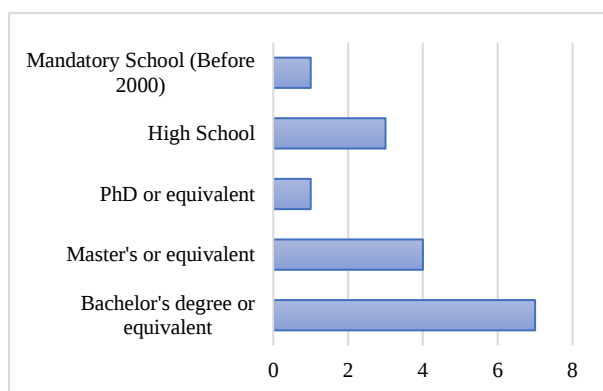
Graphic 2 - Age



Source: Done by the Author

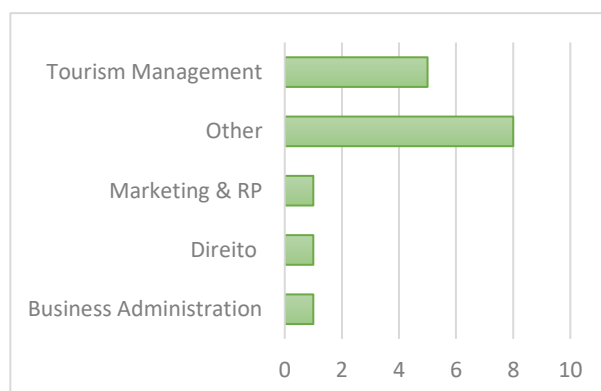
Regarding the academic graduation of the interviewees, only 1 (6,25%) of the elements has the Mandatory School (Before 2000), 3 (18,75%) of the elements has the 12th grade, 7 (43,75%) of the elements has a bachelor's degree or equivalent, 1 (6,25%) of the elements has a PhD or equivalent, and 4 (25%) of the elements has a Master's degree or equivalent, as revealed in the Graphic 3, bellow.

Graphic 3 – Academic Graduation



Source: Done by the Author

Graphic 4 - Area of Graduation

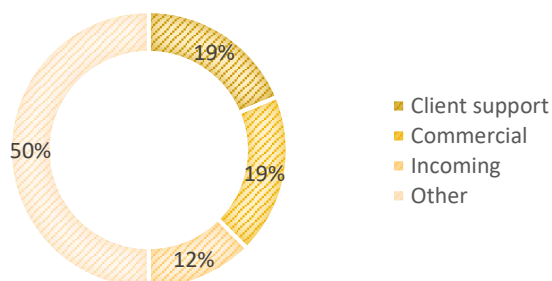


Source: Done by the Author

The predominant graduation area is 8 (50%) "Others", due to many of the professionals interviewed, don't find themselves in the area for which they studied for; then is TM with 5 (31,25%) elements, followed by Business Administration, Law, and PR & Marketing, with 1 (6,25%) element each.

Since the study developed, is more focused on business perspective, how the acquisition and investment in IS and AI tools reflects the evolution of each enterprise and watching the relevance of this collect information about each activity sector the interviewer's work.

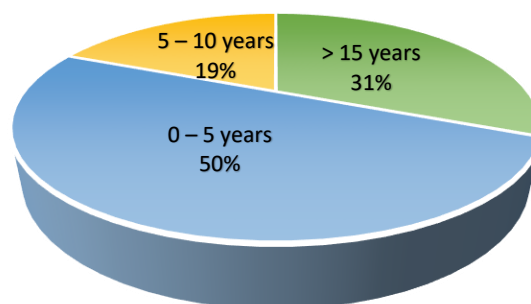
Graphic 5 - Departments Positions



Source: Done by the Author

From the sample collected, the vast majority of respondents represents 50% (8 elements), because they are from various departments that doesn't mandatory includes an office, meaning, they are from Operational areas, as mentioned before. Then, 38% (3 elements each) of the interviewers are from two sectors that are eventually related, Client Support & Commercial departments, and subsequently, the Incoming department that had a share of 12% (2 elements).

Graphic 6 - Years of Experience in the Tourism Sector



Source: Done by the Author

As can be observed in the above chart, the employees that have more than 15y of experience in the Tourism Sector (in the same or between companies), are 5 (31%); There are 3 (19%) elements at least work in this sector between 5 to 10y; Completing the total of interviewers, 8 (50%), elements are freshmen in this sector.

This means that's possible to make a brief, but important conclusion, regarding all the data collected so far, that overtime has been seen the exploration of the sector, and the growing of comfort and confidence in this sector, in a way that helps improving the interest for working in tourism, but also, contributes to the evolution of the sector due to its knowledge and versatility.

4. Presentation and Discuss of Results

4.1. Perception of how IS can help developing Tourism sector and TM

In the initial questions, the main purpose was to understand how the interviewees would know to what extent the IS were connected with the tourism sector and the way it's managed, and in this way it was questioned what the main activities and behaviors associated with the tourism sector were, IS and TM, if the company where they are located if it's well managed, when related to the Tourism Sector, and how it can improve.

Also focusing on the outlooks of other authors, such as Holliday (1983); Porter and Millar (1985); Venkatraman (2017) and Borges et al. (2020)²⁸, who state that IS are seen as “*strategic tools to improve organizational differentiation in a competitive scenario*”, and other authors, such as Weill & Woerner (2017)²⁹, who state that “*(...) many companies are adopting new technologies with the aim of achieving high performance and competitive advantage*”, and in this way we can see in table 2, below, that the interviewees agree with the line of thoughts of the authors mentioned.

Table 4 – IS & AI in Tourism Management

Questions	N.Times	Interviewees
Presence of Intelligence Systems in TM	16	1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11; 12; 13; 14; 15; 16.
Development of IS & Tourism in Portugal	11	2; 6; 7; 8; 10; 11; 12; 13; 14; 15; 16.
Business Management in tourism sector, and if IS contributes to well management & improvement	8	1; 4; 5; 6; 7; 8; 9; 11.
Impact of IS on the activity of Tourism Companies	10	2; 6; 7; 8; 10; 12; 13; 14; 15; 16.
Use of IS & AI in your Company	9	1; 6; 8; 9; 11; 12; 14; 15; 16;
Expectations related to investments in IS, during the evolution of Tourism and TM.	12	1; 2; 6; 7; 8; 10; 11; 12; 13; 14; 15; 16.
Impacts (+) on companies “non-investors” in IS	5	2; 10; 11; 13; 14.
Impacts (-) on companies “non-investors” in IS	9	2; 3; 6; 10; 11; 12; 14; 15; 16.

Source: Done by the Author

²⁸ Translated from the original: “(...) sistemas são vistos como “ferramentas estratégicas para melhorar a diferenciação organizacional num cenário competitivo”, em que a “correlação existente entre a IA e a estratégia como uma associação que acrescentará valor comercial”. (Holliday, 1983; Porter e Millar, 1985; Venkatraman, 2017; Borges et al., 2020)

²⁹ Translated from the original: “(...) muitas empresas estão a adotar novas tecnologias com o objetivo de alcançar um elevado desempenho e vantagem competitiva.” (Weill & Woerner (2017).

Over the years, the presence of IS in TM, was significant to the point of realizing its presence and usefulness, however, it was discovered that only in the last 10 years, more emphasis was placed, as it began to emerge a little in the shadow of other areas, and becoming closely linked to the way of society and the world evolved, but also how they started to see tourism.

These statements were also in line with what the interviewees mentioned, they talked about how decisions over the years contributed or not to the future of Tourism & TM, with the majority of responses being directed towards the positive aspects, noting that the evolution was slow but gradual, and managers in the tourism sector should seek to search new ways of managing and implementing them, but also not seeing tourism sector solely for the money income.

Then, are statements related to investments made in IS, throughout the evolution of Tourism and TM, and what their expectations were, namely, that the evolution was, huge and fast, which encouraged and motivated the target audience, they also mentioned that, is more certain that the direction of this evolution will takes is going to lead us to a point that we are just the face and the systems do everything else.

Some of the interviewees report that everything will become faster, smarter, more optimized, and with the right personal balance, it could become a richer and more practical, consumer and operational experience, which will contribute to a more Sustainable Tourism.

Then, the discussion of the impacts (positive & negative), considering the companies that are “non-investors” in IS, they will maintain the traditional way of work, and with this statement it’s known that, they will not be very competitive comparing with major companies, probably they will be left behind, work is not optimized, more information is not provided, invest more in creativity in order to get around the pros of intelligence systems, and if they don't keep up with developments, they will end up losing their target audience.

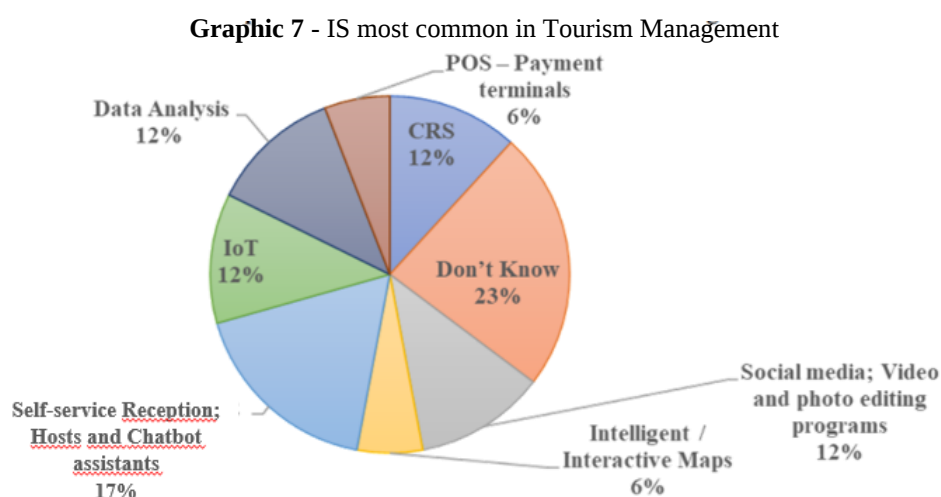
On the other hand, some interviewees stated that human can create a better service, by creating a good environment to host their clients (“human touch”), this means that, could be created a more personal environment between customers, companies, and partners, creating more genuine relationships and memories both from the customer's perspective and from the perspective of professional relationships with partners.

In table 2, it’s possible to understand that from the point of view of the interviewees, the presence of IS in TM, it’s becoming more frequent however in Tourism sector some of the companies need to improve themselves in order to embrace more precisely the IS & AI, as you can see above, and this makes perfect sense, since IS have its evolution through time, but in the

less couple of years, have been more noticeable, knowing that have embrace almost 100% the tourism sector since Covid 19.

In addition, it's also important to highlight the perspective of the FC regarding this suddenly evolution, and by talking with employees from Customer Support, it's known that with IS it was created kind of direct channel to reach the FC, this means that, this channel helps on how a salesperson, sells directly to his clients, without having to actually be present, and also in how the companies talk and create a closer relationship, by trying to know a little bit more about their market niches, and also, managing their needs.

Besides that, just by looking at the other responses from other interviewers, from another departments, it's possible to verify that, IS also helps to have shorter response times, to reach some competitive scenarios, by giving greater attention and providing quick with quality services.



Source: Done by the Author

Afterward, the interviewers talked about the most common IS used in TM, as can be seen in the graphic 7 above, in which 4 (23%), didn't know how to identify a IS related to TM, after it's possible to verify that 3 (17%), mentioned a Self-service Reception; Vending Machines; Host & AL Assistants; Then 2 (12%), stated areas where it's very common to use IS, as Social media, Video and photo editing programs; Other 2 (12%) mentioned IoT related to support tourist information search and decision making and 2 (12%) more, referred to programs of Data Analysis; With 1 (6%) element saying that uses POS, in 1 (6%) know about CRS and 1 (6%) is familiarized with Intelligent / Interactive Maps.

4.2. The use of IS & AI tools is a threat to jobs

This question was prepared based on a literature review, with one main objective, that's, understanding how interviewees consider IS, whether it's a good optimizer of results in a company's day-to-day operations, or not, such as Knickrehm (2018)³⁰, said that's "*abundantly clear that IS, analysis a large volume of data and advanced robotics allow machines to take on tasks that previously required a human to be carried out*".

Table 5 – IS & AI in Tourism Management

Questions	No of Times	Interviewees
IS a good optimizer of results in a company's day-to-day operations?	8	2; 6; 7; 10; 11; 12; 14; 16.

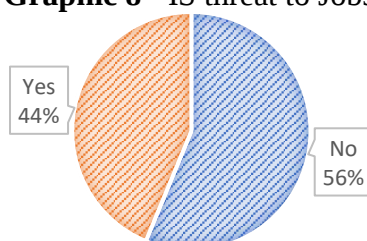
Source: Done by the Author

Still for Knickrehm (2018)³¹, it's possible to expect coexistence between humans and IS, and AI tools, in a way that people could adapt to this new technology, and there creates scope for the creation of new jobs, also, Gunkel (2012)³², stated that the main objective of introducing IS and AI tools is to assist workers and not replace them.

Knowing this it can be assumed that it was very relevant to analyze the main answers given by the interviewees, through table 5.

Later on, was questioned to the interviewees if they considered IS a threat to their Jobs, and as can be seen, in graphic 8, 7 (44%) of the elements said "Yes", and 9 (56%) of the elements said "No", which proves what was mentioned above by the different authors and by the participants themselves, regarding the objectives of IS and the way they see them.

Graphic 8 - IS threat to Jobs?



³⁰ **Translated from the original:** "(...) a IA, a análise de grandes volumes de dados e a robótica avançada permitem que as máquinas assumam tarefas que antes exigiam a sua realização por um ser humano." (Knickrehm, 2018)

³¹ **Translated from the original:** "(...) é possível que haja uma convivência entre humanos e a IA é exequível, "bastando" uma adaptação das pessoas a esta nova tecnologia, existindo margem para a criação de novos empregos." (Knickrehm, 2018)

³² **Translated from the original:** "(...) a introdução de IA tem como principal objetivo auxiliar os trabalhadores e não os substituir." (Gunkel, 2012)

Source: Done by the Author

Taking into account the Table above, it's clear that in the tourism sector, humans will be always needed and probably, will never be replaced 100%. Through the interviews collected, it was possible to understand this idea, since being a very relational area, a relationship develops between the workers and the final customer that will be impossible to replace with any AI tool.

4.3. The impacts if your company does not follow this trend, compared to Competitors

With this question, the main objective was to understand the interviewees' perspective, given the digital transition that has occurred in the last decade, however, much more noticeable since the emergence of the Covid-19 Pandemic, which forced many companies to look for alternative solutions, such as for example, the different e-commerce channels, or even the use of Business Intelligence to improve the analytical capacity of your products and other AI tools, to maintain the same quality of service, or improve it.

Table 6 - Impacts if the companies doesn't follow the trends comparing to Competitors

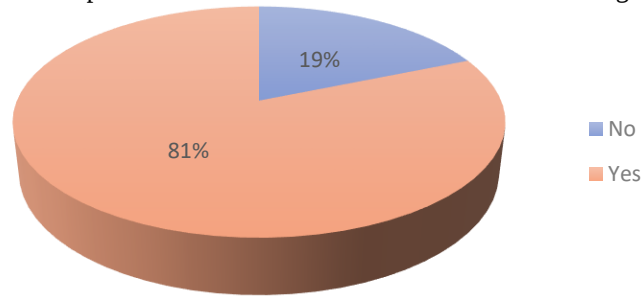
Questions	N.Times	Interviewees
Companies affected by not following the trends	8	2; 3; 6; 10; 11; 12; 13; 15.
Not keeping up with technological trends could put the company's survival at risk	6	2; 3; 6; 12; 13; 15.
Companies with a consolidated position and ability to access adequate resources	2	10; 11.

Source: Done by the Author

As mentioned by Costa et al. (2019) e Singh et al. (2020)³³, and many other authors, “*the emergence of the e-commerce channel, and another type of online platforms, developed with the help of AI tools, allowed companies to follow the trend of customers who are more present in the digital world*”. In many cases, it was about survival, and it can be assumed that this applied for the vast majority of companies, this was the main objective, as can be seen in the presentation of the data in table 6.

³³ **Translated from the original:** “(...) o surgimento do canal e-commerce, contudo, outro tipo de plataformas online, desenvolvidas através do auxílio de ferramentas de IA, nomeadamente Machine Learning e Deep Learning, permitiram às empresas acompanhar a tendência dos clientes que estão mais presentes no mundo digital.” (Costa et al. (2019) e Singh et al. (2020)

Graphic 9 - Covid-19 pandemic contributed to the acceleration of the digitalization process



Source: Done by the Author

Afterwards, there are companies that were already trying to achieve these pre-pandemic objectives, and it is pointed out that the pandemic itself was the final "push" for the automation of services, making the development of these systems a priority, leaving behind only the companies that They did not want to follow the trend, thus creating a situation of competitive disadvantage, and even Obsolescence and the loss of competitiveness itself.

Later on, it was questioned to the interviewees if they think that the Covid-19 pandemic contributed to the acceleration of the digitalization process that had been applied for a long time, leading many companies to modernize themselves and their services, and as can be seen, in graphic 9, 13 (81%) of the elements said "Yes", and 3 (19%) of the elements said "No", which proves what was mentioned above by the different authors and by the participants themselves, regarding the evolution of tourism, the acceleration of the digitalization process, and the needs of the companies in order to survive.

Based on the categorization of the answers given above, it's clear that if there is no monitoring of the digitalization of services, how communication is made to the customer, how the customers think about purchasing the products of companies, then this companies run a serious risk of being overtaken by the competitors, leading to unfortunate results and consequently, it will be not possible to maintain the activity in a sustainable way.

According to Sharma et al. (2014) and Costa R. et al. (2019), state in their theories, there is a clear lack of training on the part of companies, mainly small and medium-sized ones, in the application of artificial intelligence in their companies in order to provide an exceptional service.

It can be seen from the interviewees that in relation to the investment that their companies make or have already made in the e-commerce channel to provide greater coverage to the customer and through Business Intelligence tools, and the various AI tools, this is in line with

what states Sharma et al. (2014)³⁴, “access to a quantity and quality of information in real time, which ultimately prepares salespeople to negotiate with customers and will bring them closer to making sales”.

4.4.Types of IS & AI tools that can enhance results

This question aimed to identify what types of AI tools can optimize the performance and results obtained so far, table 7 presents the views of the interviewees and the companies in which they work.

Table 7 - Types of IS & AI tools that can enhance results

Questions	N. Times	Interviewees
Business analysis tools, such as CRM, CRS, or SFA	7	1; 2; 6; 10; 11; 12; 16.
Business analysis tools for forecasting sales and team performance; Billing; Sale terminals (POS)	6	1; 2; 6; 11; 12; 16.
E-commerce development	11	1; 2; 5; 7; 8; 9; 10; 11;13; 14; 16.
Evaluate Employee performance (Results vs Time Spent)	6	1; 2; 6; 11; 12; 16.
Mechanism that could objectively qualify, customers and opportunities; Estimate market niches	2	10; 12.
Tools that would help companies think about competitors’ advantage	5	1; 2; 6; 7; 16.
Tools that analyze customer consumption habits according to specific products; Tools thinking about future customers	5	2; 6; 9; 11; 14.
Tools that help in day-to-day life (Sales professionals)	9	1; 2; 6; 8; 10; 11; 12; 13; 16.
Mechanism that could help enhancing CR service	5	1; 2; 6; 11; 12.
Mechanism / IOS that would help clients to find new options when they need to modify their trip	5	2; 6; 9; 11; 13.
Mechanism such as Intelligent / Interactive maps	1	8.

Source: Done by the Author

Analyzing the table above, the diversity of activity sectors is taken into account, and the types of tools that were identified to improve the results obtained, even so, the possibility of having some Business analysis tools within reach, such as CRM, CRS, or SFA, contributes to better performance, as some of the interviewee’s report. It is also known that those who use business analysis tools for forecasting sales and team performance, for Billing and in POS, have

³⁴ Translated from the original: “(...) acesso a uma quantidade e qualidade de informação em tempo real, que numa última instância, prepara os vendedores para negociar com os clientes e os deixará mais próximos de concretizar as vendas.” (Sharma et al., 2014)

a different perception on how to forecast sales, and how to analyze a possible future creating some advantage over the competitors.

During the interviews, it was possible to understand the needs of each employer or employee in relation to their company, since due to their experience in different areas they observe some difficulties in their day-to-day life, which may or may not be the same for all elements, as they belong to different companies and sectors.

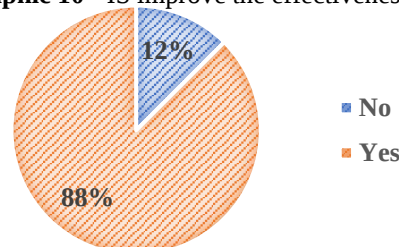
It was possible to understand how they acquire materials, and how they operate, promote and sell their services, and also how there could be an increase, if they had more AI tools at their disposal to help them with tasks, which sometimes, it's normal routine, but consume a lot of time.

Then was possible to see based on the interviews if Intelligence Systems improved the effectiveness of products and services, and if or how IS enhances the effectiveness of products and services in TM, knowing that, in the next graphic, from the 16 elements, 14 (88%) said "Yes" and 2 (12%) said "No", it's common knowledge that the vast majority of companies don't make the necessary investment in the necessary materials to different departments of their company.

Some of the interviewees indicated that companies take the achievement of sales and the promotion of services for granted, and ended up somehow ignoring all the effort expended that could promote better results, which goes according to Costa et al. (2019)³⁵, *"the majority of small and medium companies are unaware of the possibility of optimizing their day-to-day management through the use of AI tools, as well as the advantages and benefits that they can bring to the development of their business"*.

Concluding that IS enhance the experience of Companies, regarding the services provided to the FC, if they mix both options, IS & AI with "human touch", otherwise they never will create better conditions and improvements in their companies.

Graphic 10 - IS improve the effectiveness?



Source: Done by the Author

³⁵ Translated from the original: "(...) a grande maioria das empresas de pequena e média dimensão desconhece a possibilidade de otimização da sua gestão quotidiana através da utilização de ferramentas inteligentes, bem como as vantagens e os benefícios que as mesmas poderão trazer para o desenvolvimento do seu negócio." (Costa et al., 2019)

5. Conclusions

5.1. Final Considerations

The main considerations, contributions and limitations found throughout the research and, make suggestions for future investigations with a view to enhancing the acceptance and implementation of AI tools in their companies.

RQ 1. Perception of how IS can help developing Tourism sector and TM

In this question, the main purpose was to understand the perception of how the interviewees would know about IS and how AI tools are helping to develop the tourism sector and its management. Based on that, all the conclusions are in line with the authors mentioned on this thesis as ((Holliday, 1983), (Porter and Millar, 1985), (Venkatraman, 2017), (Borges et al., 2020), & (Weill & Woerner, 2017)).

The interviewers mentioned that Self-service Reception, Hosts and Chatbot assistants, are the IS most common in TM, (3 (17%)).

RQ 2. The influence of IS & AI tools in TM

This question is to understand how interviewees consider IS, as a good optimizer of results in a company's day-to-day operations, or not.

Taking into account the Table 4, it can be seen that IS is present in the Society, and the tourism sector is becoming to be better managed by improving their ways of approaching the final consumer, and to adapt their ways of evolution, in order to create expectations related to investments done in IS and AI tools, just by follow the main trends, and avoid the examples of the companies that are “non-investors”.

RQ 3. The impacts if your company does not follow this trend, compared to Competitors

Here is to understand how was the digital transition that has occurred in the last decade, knowing that the pandemic was the final "push" for the automation of services, making the development of these systems a priority, leaving behind only the companies that did not want to follow the trend, creating a situation of competitive disadvantage, and even Obsolescence and the loss of competitiveness itself.

On the other hand, the main positive impact can be considered related to technology and the improvement of quality of life, and also a worldwide market to conquer, just by helping the plant to contribute to Sustainable Tourism, and by companies that are leaders, can be faster, smarter, prepared to optimize, and become more practical, providing better consumer and operational experience.

RQ 4. Types of IS & AI tools that can enhance results

This question aimed to identify what types of AI tools can optimize the performance and results obtained, is based on the diversity of activity sectors is taken into account, and the types of tools that were identified to improve the results obtained, and to verify some difficulties in their day-to-day life of some sectors or companies.

Concluding that IS enhance the experience of Companies, regarding the services provided to the FC, if they mix both options, IS & AI with "*human touch*", otherwise they never will create better conditions and improvements in their companies.

5.2. Main contributions of the investigation

This study aims to promote a series of contributions at different levels, both academic, business, as well as personal development, considering the area of activity in which this investigation is based and the daily responsibilities inherent to my current professional position.

Regarding to the academic contribution, this study aims to add more bibliographic content to the scientific community, presenting a compilation of LR studied and presented, to support all the theoretical and practical understanding. The work developed, in the area of study in question, is even more relevant, as there is a profound lack of information and well-founded thoughts, duly scientifically proven.

Through this discussion, it will allow professionals with responsibilities of workers at higher levels, or Business administrators, to consider the investment of AI and IS in the tourism sector and the way in which they manage it, thus creating the opportunity to be considered more-value, contradicting what was stated by the interviewees that there is a wrong perception on the part of senior management regarding the contribution of AI technology in optimizing performance and results achieved.

Was very important to understand how the interviewees positioned themselves in relation to the impacts that digitalization has on companies, more specifically, after the Covid-19

pandemic, in which some of AI tools (e.g., e-commerce channel) gained a greater preponderance in the daily lives of organizations, and, in many cases, they were vital for their survival.

Then, on a personal level, this investigation was very important and impactful, as it not only allowed us to gain greater knowledge about these topics and also contribute to helping the tourism sector and its managers.

In this way, this research allowed me to deep in my research, selection, and processing of scientific data skills, giving me the chance to develop a methodological process based on an interview guide and apply it to a sample, thus expanding the field of vision on the different tourism sectors and professionals.

5.3. Limitations of the investigation

In a first analysis, it can be noted that the limitations placed on the research, such as the sample of participants and the fact that it is only in Portuguese national territory.

Taking into account the previously mentioned limitations, it is requested that this study be read with due attention and distance, in order to avoid possible extrapolation of the results obtained.

With this study, it was possible to verify that the use of AI tools is already very present in companies, considering, of course, the selected sample, which, due to its different size and capital, you may face complications, to a greater or lesser extent, regarding to access to this type of technology.

Its emphasized that this master's thesis is merely an exploratory study, with the aim of adding academic content to the work developed to date, and cannot serve as a representative of a broader study (macro perspective).

5.4. Suggestions to Future Researches

The suggestion is to develop studies that research about specific market niches in the tourism sector instead of all the tourism worldwide, and to transform this approach from qualitative to quantitative analysis.

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Appendix

Objetives	Research Questions	Questions of the Interview	
<u>O1</u> - Understand each concept, Tourism, TM & IS, leading to know the opinion/knowledge that Companies / FC have, and how we can identify the main activities/behaviors, will associate to IS & TM.	<u>RQ1</u> → What are the Intelligent Systems use by Portuguese Tourism managers?	<u>EQ1</u> - Do you know how to identify what IS are?	<u>EQ3</u> - Do you consider that you do a good Management of your Company when it comes to Tourism? If so, how do you think it could improve?
		<u>EQ2</u> - What are the main activities / behaviors, which can be associated to IS & TM?	<u>EQ4</u> - If you use IS in your company, please mention which ones?
	<u>RQ2</u> → What are the factors that contribute to the development of Intelligent Systems in Tourism Management?	<u>EQ1</u> - In your opinion, what are the SIs that are most commonly used in TM?	<u>EQ2</u> - In your opinion, what kind of SI can optimize the results in the day-to-day of a company, taking into account the way they have been obtained so far?
	<u>RQ3</u> → What are the impacts caused by using Intelligent Systems in Tourism Management?	<u>EQ1</u> - Do you know what the perception regarding the development of IS is related to Tourism in Portugal?	<u>EQ3</u> - What are the impacts, positive or negative, that you think companies have had, with regard to "non-investors" of SIs?
<u>O2</u> - Search if IS had/hadn't impact in TM, in what way the chosen targets, will lead us to reach the main motivations/conclusions, how the decisions over the years contributed to the future, & if they are going to enhancing the experience of companies / FC, regarding the services provided.	<u>RQ4</u> → How Portuguese Tourism Companies perceive the use of Intelligent Systems in their management?	<u>EQ2</u> - From your perspective, when did SI have had the greatest impact on the activity of Tourism Companies?	<u>EQ4</u> - What are your expectations regarding the investments made in SI throughout the Evolution of Tourism and TM?
		<u>EQ1</u> – how you consider that the decisions over the years contributed to the future of Tourism & TM?	<u>EQ3</u> - You believe that the use of IS, can be seen as a threat to jobs for some, and for others, it can improve the effectiveness of their products and services.
		<u>EQ2</u> – What do you think about IS, enhancing the experience of your Company and Other, regarding the services provided to the FC?	<u>EQ4</u> – You believe that Covid-19 epidemic has contributed to the acceleration of the digitalization process that has been applied for a long time, leading many companies to modernize themselves and their services (e.g. e-commerce, business intelligence, chatbots, VR, etc.). If so, what could be the impacts if your company does not keep up with this trend, compared to the competition?