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SUSTAINABLE TOURISM: INVESTIGATING SHORT-TERM RENTAL PLATFORMS AND MEASURING TOURISM MARKET VULNERABILITY

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SUSTAINABLE TOURISM: INVESTIGATING SHORT-TERM RENTAL PLATFORMS AND MEASURING TOURISM MARKET VULNERABILITY

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Abstract

Short-term rental (STR) platforms, such as Airbnb, hold significant promise for promoting inclusive tourism by providing diverse accommodation options that cater to a wide array of demographic groups. However, the digital divide presents a substantial barrier, potentially excluding certain groups from accessing and benefiting from these platforms. Existing research has extensively analyzed the impacts of STR platforms, yet there is a noticeable gap in understanding the perception of these impacts, particularly as they relate to socio-demographic variables.

This dissertation aims to bridge this gap by exploring the multifaceted dimensions of STR platforms, highlighting their potential for fostering inclusive tourism while addressing the risks posed by the digital divide. Moreover, the sustainability implications of STR platforms are examined through a qualitative analysis, focusing on the economic, social, and environmental impacts on various stakeholders, including guests, hosts, local businesses, and neighbors. This comprehensive approach considers how STR platforms contribute to local economies by providing additional income streams for hosts and stimulating local businesses. It explores the social dynamics and community interactions facilitated by STR platforms, as well as potential challenges such as gentrification and displacement. Moreover, perception of the environmental footprint of STR platforms, including energy consumption, waste management, and resource utilization, is assessed to provide a holistic view of their sustainability.

In addition, the specific preferences of different demographic groups are investigated, which is a relatively underexplored topic in the existing literature. By identifying distinct user segments based on accommodation choices—shared rooms, entire places, hotel rooms, and private rooms—the research provides valuable insights into the varying needs and preferences of diverse travelers.

Finally, the thesis assesses the vulnerability of tourism markets in Spanish and Italian provinces to global shocks, such as economic downturns, pandemics, and environmental crises. Key vulnerability indicators, including economic dependency on tourism, infrastructure robustness, and adaptive capacity, are analyzed to reveal disparities

between regions. These findings offer critical insights for developing resilience strategies in destination management, ensuring that tourism markets can withstand and recover from global shocks effectively.

By examining the perceived economic, social, and environmental impacts of STRs on various stakeholders and assessing the vulnerability of tourism markets, this thesis provides a holistic understanding of the role STR platforms play in modern tourism and offers actionable insights for policymakers, industry stakeholders, and researchers.

Resumen

Las plataformas de alquiler a corto plazo (ACP), como Airbnb, tienen un gran potencial para promover el turismo inclusivo al ofrecer opciones de alojamiento diversas que atienden a una amplia gama de grupos demográficos. Sin embargo, la brecha digital presenta una barrera sustancial, excluyendo potencialmente a ciertos grupos de acceder y beneficiarse de estas plataformas. La investigación existente ha analizado extensamente los impactos de las plataformas ACP, pero hay una notable brecha en la comprensión de la percepción de estos impactos, particularmente en lo que respecta a las variables socio-demográficas.

Esta disertación tiene como objetivo cerrar esta brecha explorando las dimensiones multifacéticas de las plataformas ACP, destacando su potencial para fomentar el turismo inclusivo al tiempo que aborda los riesgos que plantea la brecha digital. Además, las implicaciones de sostenibilidad de las plataformas ACP se examinan a través de un análisis cualitativo, centrándose en los impactos económicos, sociales y ambientales en varios actores, incluidos huéspedes, anfitriones, negocios locales y vecinos. Este enfoque integral considera cómo las plataformas ACP contribuyen a las economías locales al proporcionar fuentes adicionales de ingresos para los anfitriones y estimular los negocios locales. Explora las dinámicas sociales y las interacciones comunitarias facilitadas por las plataformas ACP, así como los posibles desafíos como la gentrificación y el desplazamiento. Además, se evalúa la huella ambiental de las plataformas ACP, incluyendo el consumo de energía, la gestión de residuos y la utilización de recursos, para proporcionar una visión holística de su sostenibilidad.

Además, Airbnb y plataformas similares ofrecen una variedad de alojamientos que atienden a diferentes grupos demográficos. Este estudio investiga las preferencias específicas de estos grupos, que han permanecido poco exploradas en la literatura existente. Al identificar segmentos de usuarios distintos basados en las elecciones de alojamiento—habitaciones compartidas, lugares completos, habitaciones de hotel y habitaciones privadas—esta investigación proporciona valiosos conocimientos sobre las necesidades y preferencias variables de los viajeros diversos.

Finalmente, la tesis evalúa la vulnerabilidad de los mercados turísticos en provincias españolas e italianas ante choques globales, como recesiones económicas, pandemias y crisis ambientales. Se analizan indicadores clave de vulnerabilidad, incluida la dependencia económica del turismo, la solidez de la infraestructura y la capacidad de adaptación, para revelar disparidades entre regiones. Estos hallazgos ofrecen conocimientos críticos para desarrollar estrategias de resiliencia en la gestión de destinos, asegurando que los mercados turísticos puedan resistir y recuperarse de manera efectiva de los choques globales.

Este análisis integral de las plataformas de alquiler a corto plazo subraya su potencial para el turismo inclusivo al abordar desafíos críticos como la brecha digital y las implicaciones de sostenibilidad. Al examinar los impactos económicos, sociales y ambientales en varios actores y evaluar la vulnerabilidad de los mercados turísticos, esta tesis proporciona una comprensión holística del papel que juegan las plataformas STR en el turismo moderno y ofrece conocimientos prácticos para responsables de políticas, partes interesadas de la industria e investigadores.

Resum

Les plataformes de lloguer a curt termini (LCT), com Airbnb, tenen un gran potencial per promoure el turisme inclusiu oferint opcions d'allotjament diverses que atenen a una àmplia gamma de grups demogràfics. No obstant això, la bretxa digital presenta una barrera substancial, excloent potencialment a certs grups d'accedir i beneficiar-se d'aquestes plataformes. La investigació existent ha analitzat extensament els impactes de les plataformes ACP, però hi ha una notable bretxa en la comprensió de la percepció d'aquests impactes, particularment pel que fa a les variables socio-demogràfiques.

Aquesta dissertació té com a objectiu tancar aquesta bretxa explorant les dimensions multifacètiques de les plataformes LCT, destacant el seu potencial per fomentar el turisme inclusiu alhora que aborda els riscos que planteja la bretxa digital. A més, les implicacions de sostenibilitat de les plataformes LCT s'examinen a través d'una anàlisi qualitativa, centrant-se en els impactes econòmics, socials i ambientals en diversos actors, inclosos hostes, amfitrions, negocis locals i veïns. Aquest enfocament integral considera com les plataformes LCT contribueixen a les economies locals proporcionant fonts addicionals d'ingressos per als amfitrions i estimulant els negocis locals. Explora les dinàmiques socials i les interaccions comunitàries facilitades per les plataformes LCT, així com els possibles desafiaments com la gentrificació i el desplaçament. A més, s'avalua la petjada ambiental de les plataformes LCT, incloent-hi el consum d'energia, la gestió de residus i la utilització de recursos, per proporcionar una visió holística de la seva sostenibilitat.

A més, Airbnb i plataformes similars ofereixen una varietat d'allotjaments que atenen a diferents grups demogràfics. Aquest estudi investiga les preferències específiques d'aquests grups, que han romàs poc explorades en la literatura existent. En identificar segments d'usuaris diferents basats en les eleccions d'allotjament—habitacions compartides, llocs complets, habitacions d'hotel i habitacions privades—aquesta investigació proporciona valuosos coneixements sobre les necessitats i preferències variables dels viatgers diversos.

Finalment, la tesi avalua la vulnerabilitat dels mercats turístics en províncies espanyoles i italianes davant xocs globals, com recessions econòmiques, pandèmies i crisis

ambientals. S'analitzen indicadors clau de vulnerabilitat, inclosa la dependència econòmica del turisme, la solidesa de la infraestructura i la capacitat d'adaptació, per revelar disparitats entre regions. Aquests descobriments ofereixen coneixements crítics per desenvolupar estratègies de resiliència en la gestió de destinacions, assegurant que els mercats turístics puguin resistir i recuperar-se de manera efectiva dels xocs globals.

Aquesta anàlisi integral de les plataformes de lloguer a curt termini subratlla el seu potencial per al turisme inclusiu alhora que aborda desafiaments crítics com la bretxa digital i les implicacions de sostenibilitat. En examinar els impactes econòmics, socials i ambientals en diversos actors i avaluar la vulnerabilitat dels mercats turístics, aquesta tesi proporciona una comprensió holística del paper que juguen les plataformes LCT en el turisme modern i ofereix coneixements pràctics per a responsables de polítiques, parts interessades de la indústria i investigadors.

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FAIG CONSTAR que aquest treball, titulat "**Sustainable Tourism: Exploring Short-Term Rental Platforms Impacts and Measuring Tourism Market Vulnerability**", que presenta **Mona Masoumi Dinan** per a l'obtenció del títol de Doctor, ha estat realitzat sota la meva direcció al Departament de Geografia d'aquesta universitat.

HAGO CONSTAR que el presente trabajo, titulado "**Sustainable Tourism: Exploring Short-Term Rental Platforms Impacts and Measuring Tourism Market Vulnerability**", que presenta **Mona Masoumi Dinan** para la obtención del título de Doctor, ha sido realizado bajo mi dirección en el Departamento de Geografía de esta universidad.

I STATE that the present study, entitled "**Sustainable Tourism: Exploring Short-Term Rental Platforms Impacts and Measuring Tourism Market Vulnerability**", presented by **Mona Masoumi Dinan** for the award of the degree of Doctor, has been carried out under my supervision at the Department of Geography this university.

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List of Abbreviations

STR *short term rental*

P2P *Peer-to Peer*

TBL *triple bottom line*

GDP *gross domestic product*

ICA *International Communication Association*

ICT *information and communication technologies*

SEM *structural equation model*

EFA *exploratory factor analysis*

AVE *average variance extracted*

C.R. *composite reliability*

CFI *comparative fit index*

df *degrees of freedom*

TLI Tucker-Lewis Index

RMSEA *root mean square error of approximation*

SRMR standardized root mean Square Residual

et al. *et alii (and others)*

CI *composite indicator*

EU *European union*

PCA *principal component analysis*

Chapter 1: Introduction

1.1. General Framework and Motivation

Tourism is essential for many global economies due to its extensive benefits. It significantly boosts economic revenue, creates jobs, enhances infrastructure, and facilitates cultural exchanges between visitors and locals (Yehia, 2019). Nevertheless, it is criticized for causing economic distortions, exacerbating income inequality, and contributing to pollution (Canh & Thanh, 2020). Activities related to tourism tend to have positive and negative impacts on the economy, environment, and social aspects of the destination. Destination management organizations and marketers often focus solely on satisfying tourists. However, according to stakeholder theory, sustainable development also requires measuring the impact on residents and their quality of life (Poudel et al., 2014). According to Eligh et al. (2002), local community members play a crucial role as stakeholders in realizing sustainable tourism development. Indeed, sustainable tourism requires a sufficiency approach, focusing on fairness, ecological limits, human benefit, and sustainable futures, rather than promoting growth (Higgins-Desbiolles, 2018).

Given tourism's complex impacts on local economies and the environment, the sharing economy offers a progressive model aligned with sustainable development goals, promoting mindful consumption and resource use to address the challenges of traditional tourism.

The sharing economy emerged around 2008, signifying a system of collaborative consumption characterized by sharing, swapping, and renting resources without the necessity of ownership (Lessig, 2008). The sharing economy can promote more sustainable consumption practices, such as access over ownership, potentially leading to reduced resource consumption and environmental impact (Liu & Chen, 2020). There is significant interest in the sharing economy as a form of sustainable consumption, as noted by Heinrichs (2013), who described it as "a new pathway to sustainability". Moreover,

according to Cannon and Summers (2014), firms such as Airbnb and Uber bring economic, environmental, and entrepreneurial benefits such as increasing the employment rate and reducing carbon dioxide emissions. Airbnb's innovation and cost-savings appeal can significantly alter the traditional accommodation sector, resulting in both positive and negative impacts on destinations (Guttentag, 2015). The sharing economy has significantly changed accommodation, the largest and most prevalent sub-sector within the tourism industry (Sharpley, 2000), by making Short-Term Rentals (STRs) a more attractive choice for property owners over conventional long-term leases (Shokoohyar et al., 2020).

According to Tussyadiah and Pesonen (2015), the rise of STR accommodation platforms, such as Airbnb, has led to notable changes in travel behavior, including increased travel frequency, longer stays, and a broader range of activities. The affordability and unique experiences offered by these platforms allow travelers to visit destinations that might otherwise be cost-prohibitive (Tussyadiah & Pesonen, 2015). Indeed, STRs have been documented to provide tourists with more cost-effective accommodation alternatives (Guttentag, 2015), suggesting a democratization of travel through increased accessibility. Additionally, they have been recognized for their role in contributing to public offers through tax revenue generation (Dinatale et al., 2018), signifying an important monetary benefit of the STR marketplace. Furthermore, the STR sector has been identified as a catalyst for job creation, offering a spectrum of employment opportunities (Shin et al., 2023).

However, the surge in STRs also raises questions about their impact on sustainable development. For instance, a study by Celata and Romano (2022) indicates STR services, such as Airbnb, are factors in the increase of over-tourism within Italian municipalities by pushing out locals and transforming the structural layout of cities frequented by tourists, highlighting the need for a reassessment of urban development strategies.

STR regulation in European cities is contentious and highly politicized, with city governments facing challenges in enforcing regulations due to limited resources and lack of accurate data on hosts (Colomb & Moreira de Souza, 2021). This situation contributes to the displacement of long-term residents, and the gentrification of neighborhoods,

reinforcing a neoliberal approach to city development (Cocola-Gant et al., 2021). Moreover, STRs such as Airbnb, disrupt housing markets, leading to rising rents, and real-estate-based capital extraction, harming the right to housing (Franco & Santos, 2021).

Integrating STRs into the aspects of sustainable tourism development requires recognizing and addressing their complex impact. At the micro level, STRs can affect housing availability and affordability, community cohesion, noise levels, security, and local services and infrastructure. Understanding the micro-scale effects of STRs is crucial for two main reasons. First, it helps us see how these rentals affect the everyday lives of local residents and the overall character of neighborhoods. Second, it shows how these local impacts either support or obstruct the larger goals of sustainable tourism development. Research on the perceived impacts of STR platforms is limited. This gap is significant because perceptions of STR platforms offer valuable context that complements their measurable effects. Analyzing the actual impact of STR platforms in a comprehensive and causal manner is inherently difficult, as it is nearly impossible to disentangle the influence of STR platforms from the broader social changes occurring simultaneously. In contrast, focusing on perceived impacts provides deeper insights into the perspectives, agendas, and everyday realities of these stakeholders—a perspective increasingly emphasized in the literature on STR platforms. Although previous research such as Lutz et al. (2024) and Miguel et al. (2022), has explored various aspects of STRs, the relationship between residents' perceptions of STR impacts and their sociodemographic characteristics remains an unresolved issue.

The socio-demographic characteristics of residents and their perceived impacts on STRs platforms can vary significantly based on location, age, gender, and community composition. These characteristics and perceptions are closely intertwined with broader goals of sustainable development and inclusive tourism (Scheyvens & Biddulph, 2018). By comprehending how different groups of residents are affected by and perceive STRs, policymakers can design regulations that mitigate negative impacts such as housing shortages, community disruption, and environmental degradation. Additionally, recognizing these perceptions helps ensure that the economic benefits of STRs are

equitably distributed, preventing the displacement of long-term residents and maintaining social cohesion. Ultimately, a thorough understanding of these dynamics is vital for fostering sustainable, resilient, and inclusive urban environments where the benefits of tourism are shared among all community members.

Understanding the sociodemographic characteristics of STR guests is also crucial for hosts and property managers to adapt their offerings and marketing strategies effectively. By analyzing factors such as age, income, employment status, and travel preferences, hosts can better meet the needs and expectations of their guests (Lutz & Newlands, 2018), leading to higher satisfaction and repeat bookings. For instance, young professionals might prefer modern amenities and proximity to nightlife, while families may prioritize safety features and family-friendly environments.

Building on the exploration of tourism impacts at the micro-level through STRs, we shift our focus to the macro level by examining the broader vulnerabilities within the tourism market. While micro-level analyses indicate the immediate and localized effects on residents and neighborhoods and their perception, such as housing availability, community cohesion, and local infrastructure strain, macro-level considerations encompass broader economic, social, and environmental dynamics that affect entire cities, regions, and even countries. Ballas et al. (2013) highlight that macro models are often used to assess whole countries or nations in the context of economics and social policy. These models account for large-scale dynamics that influence different regions and localities Addressing vulnerabilities at the macro level can help build resilient tourism markets that support sustainable development.

According to Turner et al. (2003), vulnerability refers to the susceptibility of a system, subsystem, or component within a system to suffer harm when exposed to a hazard. This exposure can come in the form of an alarm or a series of stressors, highlighting the inherent risks associated with environmental, economic, or social shocks (Turner et al., 2003). Grasping the concepts of vulnerability, resilience, and adaptive capacity within the context of community-based tourism is essential for navigating abrupt changes and crafting strategies that foster sustainable tourism development (Tsao & Ni, 2016).

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Historically, risk and vulnerability have been overlooked in the concept of Tourism Destination Competitiveness (TDC) and its practical applications, which often involve various indicators to rank countries or destinations (Duro et al., 2022). The effectiveness and long-term success of sustainable tourism models critically depend on employing precise and comprehensive measurement tools. These tools are instrumental in quantifying the extent of tourism sustainability and tracking its evolution over time, thus ensuring that development practices are in harmony with environmental, social, and economic objectives (Fernández & Rivero, 2009; Mendola & Volo, 2017).

The international scientific community prioritizes finding tools to measure sustainable tourism, using indicators to assess social, economic, and environmental progress, as endorsed by the 1992 Rio Summit's Agenda 21 (Blancas et al., 2016). Renewed focus on tourism vulnerability has prompted researchers to measure it for practical application, acknowledging its complexity and the need to consider multiple factors to reflect its multidimensional character (Duro et al., 2022).

Composite indicators (CIs), celebrated for benchmarking country performances, are not only gaining traction as an indispensable asset in policy analysis and public communication (OECD, 2008) but also offer the advantage of simplicity in interpretation compared to the challenge of discerning common trends across numerous individual indicators (Nardo et al., 2005).

The literature identifies four primary types of events that contribute to tourism vulnerability. Firstly, a significant portion of research focuses on the vulnerability of tourism to natural disasters and environmental shocks, particularly those related to climate change's varying impacts (Cioccio & Michael, 2007; Scott et al., 2019; Duro et al., 2022). Secondly, several studies examine how destinations are affected by wars and political conflicts (Liu & Pratt, 2017; Fourie et al., 2019). Thirdly, due to tourism's high-income elasticity, research also explores how economic crises and other income-impacting shocks influence tourism (Ritchie, 2004; Perles-Ribes et al., 2014; Williams & Baláž, 2014). Lastly, there is an exploration of the impacts of epidemic outbreaks, including the recent Covid-19 pandemic, on tourism (Gössling et al., 2020; Collins-Kreiner & Ram, 2021; Duro et al., 2021, 2022; Hall et al., 2021). However, policymakers

need operational indicators for effective monitoring and decision-making, as highlighted by White et al. (2006).

1.2. Research Questions and Objectives

The impacts of STRs are profoundly significant in the tourism industry, influencing various aspects of local economies, communities, and environments. Moreover, assessing vulnerability is essential for developing strategies that enhance the resilience and adaptive capacity of tourism destinations, ensuring their long-term sustainability.

Despite the growing prevalence and significance of STR platforms like Airbnb in the tourism industry, there remains a notable research gap in understanding how the socio-demographic characteristics of residents influence their perceptions and usage of these platforms. This lack of comprehensive analysis fails to capture the diverse and potentially divergent views within communities, leading to one-size-fits-all policies that may not address the specific needs and concerns of all residents. Addressing this research gap is crucial for developing inclusive and effective strategies that ensure the sustainable integration of STRs into urban and rural landscapes, benefiting the entire community while mitigating adverse effects. Regarding this gap, two research questions are raised:

 How do the socio-demographics of residents influence their perception of STR's impacts?

How do the socio-demographics of residents influence their use of STR platforms?

Accordingly, this thesis focuses on examining the effects of STRs on residents and other community stakeholders, with a particular emphasis on understanding their perceptions of these impacts. By integrating perspectives from different socio-demographic groups, the research explores how factors such as age, income, education, and cultural background affect individuals' perceptions and experiences of STRs. This approach ensures that the findings are inclusive and reflective of the diverse impacts STRs have on the community.

Understanding diverse perspectives is crucial for comprehensive socio-demographic research, ensuring that various groups within a community are adequately represented. Different age groups, income levels, educational backgrounds, and cultural contexts significantly influence how people perceive and interact with STRs. By examining these

varied perspectives, policymakers can craft targeted strategies that address the unique concerns and needs of different demographic segments effectively.

Assessing the community impact of STRs involves analyzing residents' perceptions, which can vary widely. While some residents may view STRs as economic opportunities, others might perceive them as sources of disruption. Understanding these differing perceptions helps measure the overall community sentiment and identify the root causes of any support or opposition to STRs. This insight is vital for mitigating conflicts between residents and STR operators, fostering a more harmonious coexistence within the community.

Economic and social equity is another critical area of focus. This research can identify which socio-demographic groups are most affected by STRs, allowing for a more equitable allocation of resources and support. Furthermore, it can highlight which demographics benefit economically from STRs and which do not, guiding efforts to ensure a fair distribution of economic benefits across the community.

Despite the growing influence of STR platforms like Airbnb in the tourism industry, there remains a significant research gap in comprehensively understanding their multifaceted impacts on tourism dynamics and urban development. There is a lack of analysis employing a sustainable development framework to thoroughly examine these dimensions and identify positive and negative consequences of STRs. This gap highlights the need for a balanced perspective that can inform policymakers, urban planners, and STR platforms about the nuanced effects of STRs, ultimately supporting the development of balanced, fair, and effective policies that meet the diverse needs of all community members while leveraging the economic potential of STRs. Therefore, the following research question is raised:
What are the social, economic, and environmental impacts of STRs according to the residents?

To fill this gap and answer the question, a comprehensive impact analysis provides a balanced view of the positive and negative consequences of STRs. This balanced perspective is crucial for informing more holistic and effective policy decisions. By

ensuring that the well-being of all community members is considered, tourism development policies can contribute to a higher quality of life and more cohesive communities.

Informing policy and regulation through data-driven decisions is paramount. Research provides empirical data that can guide policymakers in crafting regulations that protect residents' interests while promoting tourism. By identifying potential negative impacts early, proactive measures can be taken to prevent issues such as housing shortages, increased living costs, and community displacement. This proactive approach ensures that the benefits of STR platforms are harnessed while minimizing their adverse effects on the community.

On the other hand, the needs of the guests, as one of the key stakeholders, should be thoroughly considered by platform providers and policymakers. To gain a comprehensive understanding of these needs, it is essential to examine the sociodemographic characteristics of the guests and the types of accommodations they prefer. By recognizing and analyzing these sociodemographic trends, platforms can adapt their services and offerings to better meet the diverse preferences and expectations of their guests. Similarly, policymakers can develop regulations and policies that support sustainable growth and address potential issues within the STR market, ensuring balanced and thriving ecosystems for all stakeholders involved. Therefore, the following research question arises:

How do the sociodemographic characteristics of STR guests influence their accommodation preferences?

Finally, the last research question shifts from micro-level tourism impacts to a macro-level perspective, highlighting a significant research gap in developing comprehensive measures to assess tourism market vulnerability. The lack of a holistic and quantifiable measure hampers policymakers' and stakeholders' ability to conduct thorough risk assessments and engage in strategic planning. Addressing this gap is crucial for advancing the broader discourse on sustainable tourism, offering practical insights and tools to manage the complexities of modern tourism markets and ensuring that tourism

development aligns with sustainable principles to benefit local communities and environments in the long run. Therefore, the research question that emerges is:

How can tourism market vulnerability be measured on the country level through a meaningful composite indicator?

To address this question, we propose the development of a CI for measuring tourism market vulnerability. This indicator aims to integrate various factors such as seasonality, income profile, distance, and concentration that contribute to a destination's vulnerability, providing a holistic and quantifiable measure that can be used by policymakers and stakeholders. The CI will facilitate better risk assessment and strategic planning, helping destinations mitigate potential threats and enhance their sustainability.

By addressing the perceived impacts of STRs at the micro level and robust measures of tourism market vulnerability at the macro-level, this thesis seeks to make a significant contribution to the broader discourse on sustainable tourism and offers practical insights and tools for managing the complexities inherent in modern tourism markets. Ensuring that tourism development aligns with sustainable principles is paramount for the long-term benefits it can bring to local communities and environments. A comprehensive understanding of these dynamics will facilitate the development of policies and strategies that are equitable, effective, and sustainable.

To achieve these objectives, this dissertation will focus on the multifaceted micro-level impacts of STRs, including economic, social, and environmental dimensions, while simultaneously developing a macro-level composite indicator to assess tourism market vulnerability. This dual approach ensures that the research addresses both immediate and long-term challenges in tourism management.

1.2.3. Structure of Dissertation

This thesis is structured into six comprehensive chapters, each contributing to a holistic understanding of the research topic. The introductory chapter sets the stage by outlining the significance, scope, research questions, and objectives of the study. Figure 1 indicates and overview of thesis structure.

Chapter 2 encompasses the literature review, identifying knowledge gaps and establishing the theoretical foundation for the dissertation. It explores the concept of the sharing economy, particularly focusing on STR platforms and their sustainability practices across environmental, economic, and social dimensions. This chapter also introduces key theoretical frameworks such as digital inequality theory, which examines disparities in digital technology access and usage. Furthermore, it defines tourism vulnerability and discusses its relevance in regions reliant on STRs, while also introducing CI for assessing sustainability and vulnerability.

Investigating sustainable tourism at the micro-level, **Chapter 3** examines the perceived impacts of STRs using both qualitative and quantitative methods. Firstly, in sub-chapter 3.1, to address the perceived impacts of STRs and their use across different sociodemographic groups, we propose a research model based on digital inequality theory (Van Dijk, 2005). Digital inequality significantly obstructs the achievement of SDGs, especially concerning education and gender equality (Perera et al., 2023). To collect the data, we use a quantitative approach through a survey. To gain a clear understanding and determine whether geographical location affects the outcomes, we analyze data from residents of both the United Kingdom (UK) and the United States (US). Based on findings, sensible policy interventions include providing training for digital literacy, ensuring the accessible design of STR platforms, and implementing regulations that prevent discrimination against certain user groups. Furthermore, by understanding the variable impacts of STRs across different sociodemographic segments, platform providers can adapt their services to better meet the needs of a broader range of users.

Secondly, in sub-chapter 3.4, for a deeper understanding of the impacts of STRs, we conduct a qualitative analysis. The survey included an open-ended question that asked respondents about their perceptions of STRs. The data collected were subjected to thematic analysis to identify patterns and insights related to the perceptions of STRs. Finally, this chapter investigates the perceived impacts of STRs through the lens of sustainability, using the Triple Bottom Line (TBL) (Elkington, 1998) framework as its analytical cornerstone. TBL invites a holistic examination across the three pillars of sustainability: economic, environmental, and social dimensions. The study does not stop

at the assessment of impacts but considers the stakeholders affected by STRs. By leveraging the TBL framework and engaging with stakeholders' diverse perspectives, the study offers valuable insights that could inform future policy, enhance the positive effects of STRs on communities, and mitigate negative outcomes. This qualitative approach underscores the multifaceted nature of sustainability within the context of the burgeoning STR marketplace.

Chapter 4 explores the role of guests as key stakeholders in the STR market. The primary objective of this chapter is to investigate how various sociodemographic factors, such as age, and gender, influence guests' choices in accommodation types. These factors are crucial in understanding the nuanced demands and expectations of different guest segments. This chapter specifically focuses on understanding the accommodation preferences of guests on Airbnb, a leading platform in the STR industry. By selecting Airbnb as the case study, we can examine its extensive global reach and diverse user base to gain comprehensive insights into guest preferences. To gather robust data, an online survey is administered to a diverse sample of Airbnb users. The survey includes questions designed to capture detailed sociodemographic information and specific accommodation preferences. This methodological approach ensures that the collected data is both comprehensive and representative of the broader Airbnb user base. Subsequently, the chapter analyzes the survey data to identify sociodemographic characteristics and accommodation preferences. The findings aim to provide valuable insights for Airbnb hosts and platform providers to tailor their offerings better and enhance guest satisfaction. Moreover, the results can inform policymakers in crafting regulations that support sustainable growth and address potential challenges in the STR market.

After analyzing the STRs impacts and sustainable tourism at the micro-level, in **Chapter 5**, the discourse evolves at the macro-level of tourism and sustainability. This chapter presents a CI designed to measure market vulnerability within the tourism sector, with a specific focus on comparing the markets of Spain and Italy. It identifies a set of factors and synthesize all their information in a single CI. The CI is designed by combining seven indicators to measure a tourism market's vulnerability. It includes a detailed evaluation of the impact of non-EU international markets, with a particular emphasis on the

significance of *distance*. The COVID-19 pandemic underscored the risks of relying too heavily on distant international tourism, revealing the importance of not underestimating *domestic* tourism. *Proximity* to a destination emerged as a key factor in reducing vulnerability during such global disruptions. Moreover, the hypothesis indicates that tourism *concentration*, especially during peak seasons, increases the vulnerability of a destination to disruptions. *Seasonality* is a major element, with most places seeing periodic fluctuations in tourism. The *length of stay* of tourist stays and the *income* level of tourists also affect market stability, as wealthier tourists are better able to weather economic shocks. The findings in this chapter are instrumental for policymakers, as they provide a critical analysis of the vulnerabilities that lead to unsustainable practices in tourism destinations. Through a systematic evaluation of tourism operations, infrastructure, stakeholder engagement, and environmental management, the chapter sheds light on specific areas where tourism does not align with sustainable objectives.

Finally, **Chapter 6** ties together the research findings, acknowledges the limitations of the study, and outlines potential directions for future research to continue exploring the dynamic and multifaceted impacts of STRs on the tourism industry.

Figure 1: Thesis Structure Overview

Thesis Structure Overview	Chapter	Title
	1	Introduction
	2	Literature Review
	3	Studying Perceived Impacts of Short-Term Rental Platforms
	4	The Sociodemographic Dynamic of Travelers and Accommodation Preference on Airbnb
	5	Exploring Tourism Market Vulnerability in Mediterranean Europe
	6	Conclusion and Future Research
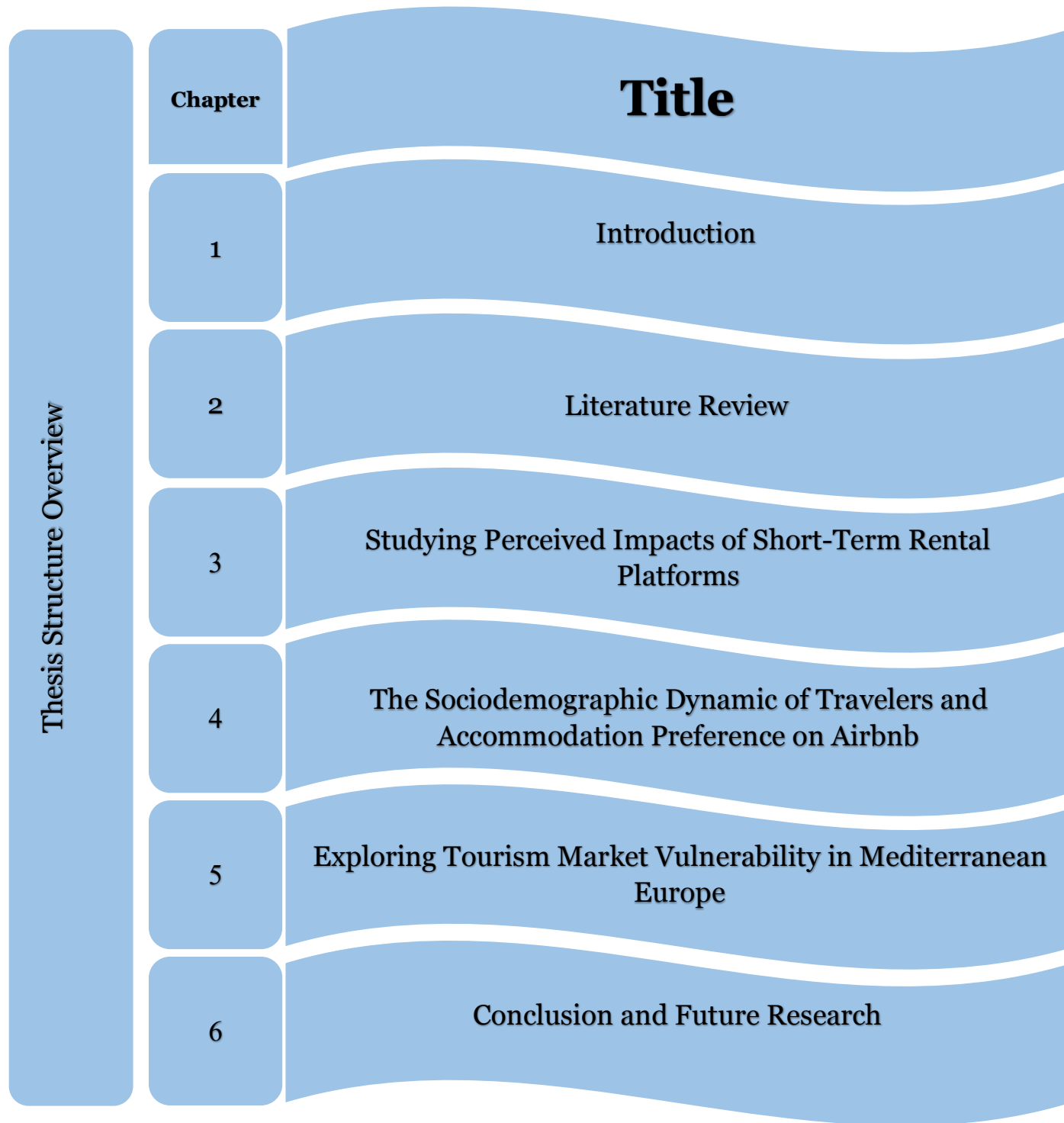
Source: Own elaboration

1.3. Thesis outputs

The thesis consists of four distinct articles that have been submitted to high quality academic journals for consideration for publication or have been published. Additionally, these articles have been selected for presentation at prestigious international conferences. Table 1 indicates the detail of the articles.

Table 1: Thesis Output

Title of article	Author(s)	Status
Studying Short-Term Rental Platform Perceptions and Use through a Digital Inequality Lens	Masoumi Dinan, Mona Lutz, Christoph	Submitted to *Tourism Management Perspectives,* waiting for the decision Presented at the 74th Annual *Conference of the International Communication Association (ICA),* Gold Coast, Australia, June 2024
Resident Perspectives on Short-Term Rental Platforms through a Sustainability Lens	Masoumi Dinan, Mona Lutz, Christoph Poli, Nikola	Submitted to *Current Issues in Tourism,* that the submission received a major revision decision and is in the revision process Presented at the *Tourism, Hospitality & Events International Conference* (THE INC, June 2024, Amsterdam)
The influence of perceived sustainability dimensions of sharing economy on tourist's emotion and intention: Case of Airbnb	Masoumi Dinan, Mona	Published in the *International Journal of Economics, Commerce and Management*, 12. 2024
Measuring Tourism Markets Vulnerability Across Destinations Using Composite indexes: Contrasting Spain and Italy	Duro, Juan Antonio Masoumi Dinan, Mona Perez-Laborda, Alejandro	Under revision to be submitted to a highly-ranked tourism journal

Source: Own elaboration

UNIVERSITAT ROVIRA I VIRGILI
SUSTAINABLE TOURISM: INVESTIGATING SHORTTERM RENTAL PLATFORMS AND MEASURING TOURISM MARKET VULNERABILITY
MONA MASOUMI DINAN

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Chapter 2: Literature Review

2.1. Sharing Economy and Peer-to-Peer Accommodation

Sharing is an alternative to private ownership found in marketplace exchanges and gift-giving. It allows two or more people to enjoy the benefits (or bear the costs) of possessing an item together, defining it as ours rather than mine or yours (Belk, 2007). The sharing economy is a recent phenomenon that has an important global socio-economic development (Frenken, 2017).

The sharing economy, also known as collaborative consumption or the participative economy, lacks a strict definition. However, it generally refers to the emerging marketplace that enables services to be provided on a peer-to-peer (P2P) or shared usage basis (OECD, 2016). The sharing economy appeared around 2008, embodying a system of collaborative consumption. This model is defined by activities such as sharing, swapping, and renting resources, eliminating the need for individual ownership (Lessig, 2008). The sharing economy is based on P2P interactions to acquire, provide, or share access to goods, and services via digital platforms (Schlagwein et al., 2020). It represents a new business model for the P2P exchange of underutilized assets, providing new opportunities for entrepreneurs, promoting more sustainable resource use, and fostering consumer cooperation in the economy (Gössling et al., 2020b). Moreover, the sharing economy covers many sectors, and the main idea of creation is connected to the sustainable use of resources (Geissinger et al., 2019).

The emergence of the sharing economy enabled people to use their underutilized inventory while consumers rapidly embraced platforms such as such as Lyft, Airbnb, Uber, and TaskRabbit (Zervas et al., 2017). These services facilitate the sharing economy by enabling owners to generate income from their assets while providing renters with flexible and often cheaper alternatives to traditional rental or purchase options (Fraiberger & Sundararajan, 2017).

Research on the sharing economy has focused on accommodation and transportation, highlighting innovative business models and regional variations due to differing policies. Despite regional challenges, the sharing economy significantly impacts economic, social, and environmental sustainability (Hossain, 2020). Figure 2 indicates a framework of various facets of the sharing economy.

Figure 2: Sharing Economy Framework
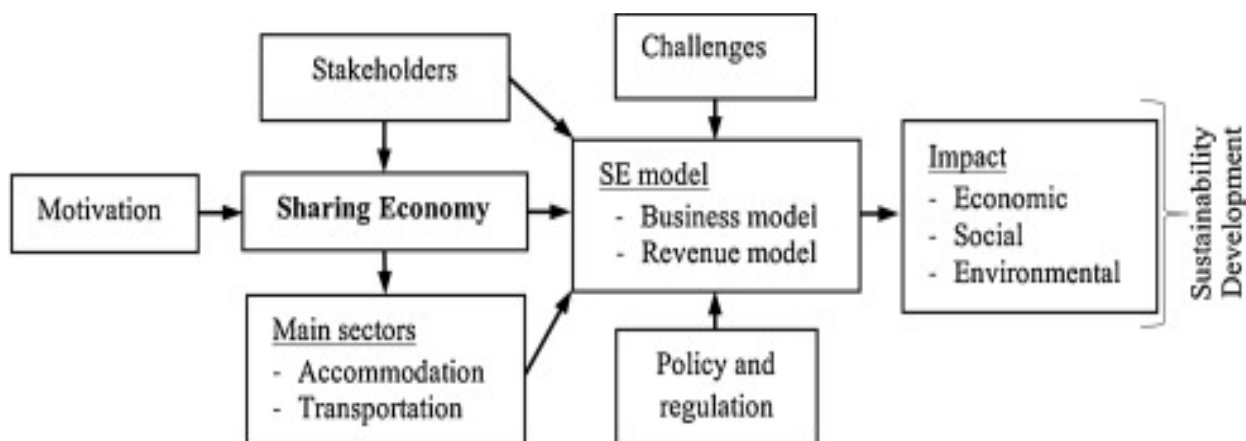
Source: Hossain (2020)

According to Schor (2016), sharing is divided into four categories: recirculation of goods, increased utilization of durable assets, exchange of services, and sharing of production assets. Platforms like eBay enable recirculation. Increased utilization of durable assets involves using underused goods more intensively (e.g., spare rooms, lawnmowers). Neighborhood-based initiatives like tool libraries and digital platforms (e.g., share some sugar, neighborhoods) support this. The exchange of services originated from time banking in the 1980s, where services are traded based on time spent. Lastly, sharing assets not consumption, often takes the form of cooperatives. Table 2 indicates the sharing economy business model.

Table 2: Sharing Economy Business Model

		Type of provider	
		Peer to peer	**Business to peer**
Platform Orientation	**Non-profit**	Food Swaps, Time Banks	Makerspaces
	For-profit	Relay Rides, Airbnb	Zipcar

Source: Schor (2016)

The sharing economy in the tourism industry is growing constantly. According to PricewaterhouseCoopers (PWC), its size is forecasted to reach 335 billion USD by 2025 and most of this growth is in the tourism sector. Four important sub-sectors of the sharing economy are (OECD, 2016):

- **Accommodation** involves short-term rentals in the private sector. Airbnb features more than 7 million properties in more than 220 countries and is one of the most valuable venture-capital-backed company in the world, with an estimated worth of USD 9.92 billion in 2023 (Airbnb, 2023; Statista, 2023).

- **Transportation** comprises car-hailing, and bike-sharing. Car-hailing platform Uber operates in 68 countries and was valued at USD 11.1 billion, 3M Drivers, 10B Trips (Worldmetrics, 2024).

- **Dining** covers activities such as purchasing home-cooked meals or attending dinners organized by residents. Platforms include EatWith, BonAppetour, and Feastly.

- **Travel planning** includes itinerary planning and tours by locals who offer personal and customized experiences. Platforms include Vayable, ToursByLocals, and VoomaGo.

With the growth of the collaborative economy, accommodation has been the strongly impacted sector (Toni et al., 2018). Accommodation is the largest and most ubiquitous sub-sector in the tourism sector (Sharpley, 2000) with around one-third of total trip spending. Thus, accommodation provision is a vital element in the tourism experience and has been shaken up by P2P services (Kuhzady et al., 2020).

The P2P accommodation economy functions through a trifold system: a digital platform, accommodation providers, and guests. The platform offers the necessary technology for guests to find accommodation, communicate with hosts, and handle bookings and payments at their chosen destination. It operates as an online marketplace, mediating between guests and hosts while typically levying a fee for its intermediary services (Bakker & Twining-Ward, 2018). Figure 3 indicates the ecosystem of P2P accommodation in sharing economy.

Figure 3: P2P Accommodation Ecosystem
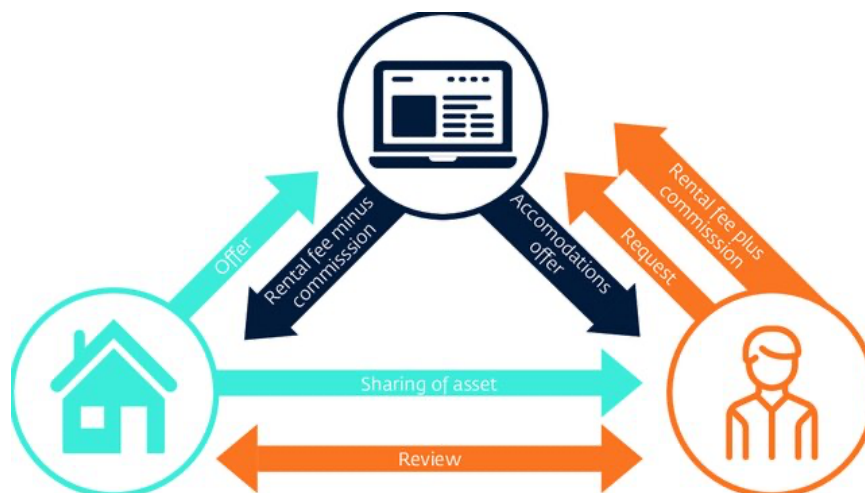
Source: Bakker and Twining-Ward (2018)

There is growing attention on the sharing economy impacts amongst entrepreneurs, innovators, businesses, policymakers, media commentators, and academic researchers (Martin, 2016). Especially home-sharing P2P platforms, such as Airbnb, have made their way into the market (Garcia-López et al., 2020) due to the simplicity, user-friendliness, and ease of use with which travelers can navigate and utilize such P2P accommodation platforms (Lau et al., 2019). Additionally, the sharing economy has resulted development in the tourism industry, especially in the accommodation sector. According to Bakker and Twining-Ward (2018), P2P accommodation platforms in 2018 provided 7% of global accommodation with around eight million beds and a 31% increase estimated between 2013 to 2025. Nonetheless, this growth was challenged by the COVID-19 pandemic (Gössling & Michael Hall, 2019).

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Customers' needs fulfilled by P2P accommodations, such as those offered on platforms like Airbnb, differ significantly from those provided by traditional hotels. These needs include lower prices, more meaningful social experiences, and more sustainable travel options (Stergiou & Farmaki, 2020; Farmaki et al., 2022). Consequently, guest satisfaction and intentions of those who participate in P2P accommodations are different from those who prefer hotels, reflecting distinct motivations and expectations between the two types of lodgings (Tussyadiah, 2016).

According to Palgan et al. (2017), P2P accommodation can be categorized into three groups based on user interaction: non-profit (e.g., Couchsurfing, BeWelcome), for-profit (e.g., Airbnb), and reciprocal (e.g., HomeExchange) (see Figure 4).

Figure 4: A Typology of P2P Accommodation
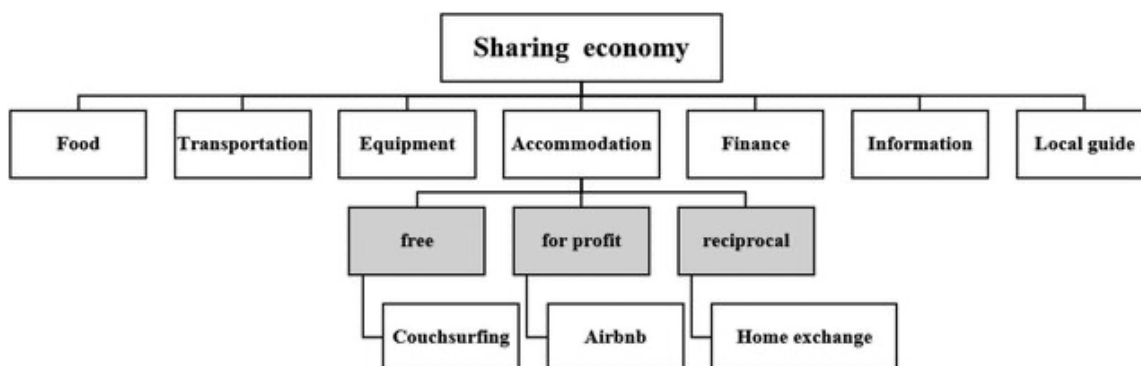
Source: Palgan et al. (2017)

The sharing economy has notably transformed the accommodation market, with short-term rental (STR) options becoming an appealing alternative for property owners compared to traditional long-term rentals (Shokoohyar et al., 2020).

A STR accommodation typically refers to a rental period of less than thirty consecutive days. Unlike traditional leases, which are considered long-term and usually grant a leasehold interest in the property, a STR does not involve granting an estate or long-term interest in the rented land (Bhatia, 2019). STRs offer property owners a flexible alternative to conventional long-term leases, allowing them to adjust prices dynamically based on fluctuating demand (Shokoohyar et al., 2020). STR platforms such as Airbnb play a significant role in matching the increased accommodation demand with the

growing number of tourists (Garcia-López et al., 2020). Moreover, STR platforms enable individuals to earn extra income by renting out unused space to travelers (Barron et al., 2020).

According to Tussyadiah (2015), barriers to adopting P2P accommodation rental services often stem from a mistrust of the system, inefficiencies in using the technology, and perceived insufficient financial advantages. Conversely, the factors that encourage the use of such services include the appeal of sustainable living practices, the sense of community they foster, and the economic benefits they offer. In the global lodging industry, STRs, also known as home-sharing, are a growing sector (O'Neill & Yeon, 2023).

2.2. Sustainability in STR Platforms

The sharing economy has been explored as a facet of sustainable development initiatives, as highlighted in the work by Laukkanen and Tura (2020) who incorporate the triple-bottom-line (TBL) perspective. TBL is a framework introduced by Elkington (1998) that extends beyond the traditional finance-centric approach to business performance, considering environmental and social dimensions. The idea and implementation of the sharing economy and collaborative consumption propose utilizing market intelligence to encourage a more cooperative and sustainable society (Heinrichs, 2013). Furthermore, the World Trade Organization (UNWTO, 2005) points to the environmental, economic, and socio-cultural facets of tourism development as the foundational principles of sustainability. While tourism more generally often benefits the middle and upper classes (Jamal & Camargo, 2014), STRs have a potential for inclusive tourism. A study by Efthymiadou and Farmaki (2024) shows that female hosts experience different types of empowerment (economic, political, social, psychological, educational) based on their hosting motives and proactive attitudes. Hosting improves their quality of life, with prior tourism experience influencing the level of empowerment.

STRs can contribute to the objectives of Sustainable Tourism Development, particularly as outlined in Sustainable Development Goal 10 (SDG 10), which focuses on reducing inequality (Lutz & Angelovska, 2021). On the demand side, STRs are attractive because they come with lower prices than the hotels and greater convenience, which benefits resource-constrained individuals. On the supply side, they open opportunities for those

facing financial challenges to participate as providers and earn extra income (Gassmann et al., 2021; Lutz & Angelovska, 2021). Moreover, according to a survey from Cleantech Group (CTG) (2014), Airbnb promotes a more sustainable way of traveling than traditional hotel accommodation.

However, STR platforms could also exacerbate inequality by disproportionately impacting disadvantaged individuals. Even though city residents might seem like they have common interests, their rights and concerns can differ a lot (Muschter et al., 2022). However, this does not change the fact that power and fairness in cities are still uneven, with some groups having more advantages than others (Torkington & Ribeiro, 2022). STRs can have positive and negative social, economic, and environment impacts.

2.2.1. Economic Impact

Regarding the positive **economic** impacts of STRs, Fang et al. (2016) discuss how the creation of new employment opportunities and the attraction of tourists are facilitated by more affordable STR accommodation options. According to Fremstad (2014), the primary economic benefits of accommodation sharing include cost savings for users, earnings for hosts, and profits for platform operators. Indeed, economic framings highlight the opportunities for market empowerment, fostering micro-entrepreneurship, generating income, and creating jobs (Martin, 2016). The jobs created are both direct, such as employees working for the platforms under contracts, and indirect, such as hosts or individuals who clean the properties (Palgan et al., 2017). In addition, STR platforms incentivize residential real estate investment, as property owners can achieve higher returns through STRs compared to long-term leasing. This trend can incentive development and revitalization of residential areas (Bekkerman et al., 2022). Moreover, STRs generate significant revenue for property owners, contributing to local economies. For instance, in Oregon, STR hosts generated $82 million in revenue, highlighting the economic potential of these rentals in small cities and tourist areas (Dinatale et al., 2018). In addition, they provide opportunities for local residents to earn additional income by renting out their properties, which can be particularly beneficial in economically disadvantaged areas (Muschter et al., 2022).

STRs provide alternative lodging options, increasing the overall capacity to accommodate tourists. This complements the existing hotel infrastructure, particularly in areas where hotel availability is limited (Casado-Díaz & Sellers-Rubio, 2021). The entry of STRs into the market can improve the technical efficiency of hotels by fostering competition, leading to better services and potentially lower prices for consumers (Yeon et al., 2020).

Given the STR industry offers localized economic advantages, it can also destabilize formal accommodation sectors by diverting visitors from conventional lodging providers. This disruption is heightened by the prevalence of illegal STRs advertised through online platforms, operating without proper licenses, taxes, or compliance with zoning regulations (DiNatale et al., 2018; Wyman et al., 2022). Furthermore, Gössling and Hall (2019) argue that the negative impact of STRs, specifically Airbnb, disrupts housing availability and increases house prices by diverting space from providing housing for residents to STR accommodation for visitors. This would reduce the supply of housing available to residents, which would drive up prices (Sheppard & Udell, 2016). Indeed, the shift to STRs could accelerate residential disruption, causing increased home sale prices for long-term residents due to a shortage of long-term rental options or owner-occupied homes.

Studies indicate that STRs contribute to a reduction in the availability of long-term rentals. This is because landlords prefer the lucrative returns from short-term leases over traditional long-term rentals (Li et al., 2020). The Berlin housing market has experienced a decrease in long-term rental supply due to the misuse of residential flats for STRs, exacerbating rental growth in neighborhoods with significant Airbnb activity (Schäfer & Braun, 2016).

STR platforms have increased the supply of rooms for visitors, potentially diverting demand from traditional hotels. This substitution effect negatively influences hotel performance, particularly in the low-end market compared to the high-end market (Soh & Seo, 2021). Moreover, a comprehensive analysis revealed that STR platforms affect hotel performance differently based on hotel class, location, and region. Shared rooms, private rooms, and entire homes have varying impacts on different types of hotels (O'Neill & Yeon, 2023).

In Portugal, the presence of Airbnb has led to a 34% increase in property values and a 10.9% rise in rents, particularly in tourist-heavy areas like Lisbon and Porto (Franco & Santos, 2021). Similarly, in Washington, DC, neighborhoods with higher Airbnb density saw significant property price inflation, potentially disadvantaging low-income homebuyers (Zou, 2020). Moreover, in Los Angeles, the introduction of Home-Sharing Ordinances[1] reduced STR listings by 50%, leading to a 3% decrease in residential property prices and rents, indicating STR's substantial impact on housing affordability (Valentin, 2021).

On the other hand, regulations targeting STR can have a positive effect on hotel performance. Indeed, STRs can disrupt communities and exacerbate housing crises but managing them can improve tourism sustainability and enhance residents' experiences (Park & Agrusa, 2020). For example, New York State's prohibition of illegal STRs in 2016 positively impacted the performance of lower-scale hotels in New York compared to Washington D.C. (Yeon et al., 2020). A study on hotels in Spain found that regions with more STR experienced improvements in hotel efficiency, suggesting a complementary relationship (Casado-Díaz & Sellers-Rubio, 2021).

2.2.2. Social Impact

Concerning **social** aspects, guests can enjoy a more local experience, interacting with hosts and staying in non-touristy areas, as Airbnb accommodations are often scattered (Guttentag, 2015). STRs are viewed as more open, inclusive, and democratic than the traditional economy, fostering trust among strangers and enhancing social capital (Schor, 2016). According to Farmaki and Stergiou (2019) loneliness motivates people to use Airbnb, where hosts and guests socialize in different ways, varying in the intensity and duration of their interactions. Indeed, platforms such as Couchsurfing provide intimate interaction between guests and hosts, offering a platform for cultural exchange and learning (Gössling & Hall, 2019). Moreover, Angel and Doganer (2020) indicate that STRs can bring cultural and social benefits by promoting cultural exchange and providing

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[1] The Home-Sharing Ordinance requires hosts who wish to engage in STRs to register with the City and post their registration number on all advertisements. Hosts must adhere to all requirements and use the online portal to register.

tourists with authentic local experiences. This can foster a sense of community and enhance cultural tourism.

By contrast, STRs can lead to the displacement of long-term residents and the transformation of neighborhoods into tourist destinations. This can make it difficult for residents to maintain a sense of community and belonging (Amaro et al., 2019). Furthermore, ongoing debates and controversies in various cities globally strongly suggest that STRs are linked to gentrification (Wachsmuth & Weisler, 2018). The growth of home-sharing may adversely affect local communities by changing neighborhood composition and displacing long-term residents (Wyman et al., 2022). Valente et al. (2023) describe tourism gentrification as a distinctive form of gentrification characterized by a decline in the local population. Their study emphasizes the noteworthy impact that tourism can have on both housing dynamics and demographic changes in Amsterdam and Barcelona.

According to Park and Agrusa (2020), the presence of STRs can lead to community disturbances, such as noise, overcrowding, and a decline in the quality of life for long-term residents. In Hawaii, residents have reported various disruptions caused by STRs. Furthermore, digital platforms managing STRs have disrupted communities through gentrification, resident displacement, and changes in neighborhood character, transforming homes into transient lodging spaces and neighbors into strangers (Monahan, 2021).

2.2.3. Environmental Impact

The sharing economy is considered a more sustainable way of living because it reduces the need for producing new goods (Botsman & Rogers, 2010). Similarly, in the accommodation sector, the expectation is that privately owned flats and houses will be shared, reducing their idle capacity. This promotes a more efficient use of physical capital, such as real estate (Sundararajan, 2014). According to Ala-Mantila et al. (2016), STRs can decrease the greenhouse gas (GHG) impacts of individuals who live alone (solo dwellers). Furthermore, Midgett et al.(2017) propose that STRs serve as a more sustainable lodging option compared to hotels, emphasizing reduced energy and resource consumption, minimal waste production, and the promotion of social connections among users.

Conversely, STRs have faced criticism for various reasons. Tussyadiah and Pesonen, (2015) contend that the rise in travel resulting from the affordability of STR accommodation can exacerbate environmental pressures and contribute to increased resource exploitation. Moreover, certain STR guests have been known to create disturbances like noise and littering during their stay, and contribution to issues such as traffic congestion and a shortage of parking spaces (Gurran & Phibbs, 2017).

According to Palgan et al. (2017), two mechanisms are at play when it comes to environmental impacts of accommodation sharing: **Addition**: Users increase or intensify accommodation use, access more energy-intensive options than hotels, or travel more frequently, leading to higher GHG emissions and resource use. **Substitution**: Travelers choose shared accommodation over traditional hotels, potentially reducing environmental impact.

Residents have reported issues such as increased waste, noise pollution, and strain on local utilities due to the transient nature of STRs guests (Muschter et al., 2022). Moreover, in rural areas and small cities, the growth of STRs has led to increased tourism, which can put additional pressure on local ecosystems and natural resources. This includes impacts on water usage, waste management, and energy consumption (Henderson, 2017). Table 3 indicates a summary of positive and negative impacts of STRs on TBL according to the literature.

Table 3: Summary of STR impacts

	Positive Impacts	Negative Impacts	References
Economic	New employment opportunities, tourism revenue and growth, more accommodation options and affordable price for the tourists	Housing availability, housing and rent prices for the residents	Gössling & Michael Hall, 2019; Sheppard & Udell, 2016
Social	Social interaction, cross-cultural exchange and awareness, more authentic and local tourism experiences	Resident displacement, gentrification, disruption of established and historical customs	Amaro et al., 2019; Guttentag, 2015; Wachsmuth & Weisler, 2018
Environmental	Reduction of GHG emissions compared to traditional lodgings	Increased environmental strain through heightened water and energy consumption	Ala-Mantila et al., 2016; Gurran & Phibbs, 2017

Source: Own elaboration

2.3. Public Opinion and Attitudes About the Impact of STR Platforms

Perceptions of the impacts of STR platforms can be both positive and negative. A study merging social exchange and stakeholder theories reveals that consumers prioritize sociocultural benefits, like improved social relations, over economic gains such as increased tourism revenue and job opportunities, as more significant contributors to community resilience (Shin et al., 2023). In positive terms, they are viewed as a sustainable business model that can generate wealth without relying on financial support from governments (Midgett et al., 2017). Moreover, many consumers welcome the development of STR platforms due to their affordability, which opens the opportunity for tourism for groups that may otherwise have been excluded and provides an increased range of accommodation options for customers (Guttentag, 2015). This increased choice provided by STR platforms is evident in listings located in residential areas, which can offer a more authentic tourism experience (Bucher et al., 2018). All these impacts can be expected to be seen mostly positively.

In negative terms, STR platforms are subject to criticism (Murillo et al., 2017) and are often portrayed by the media as disruptive (Dogru et al., 2020). One of the main concerns related to STRs is the displacement of residents due to the gentrification of neighborhoods (Sans & Domínguez, 2016; Stergiou & Farmaki, 2020; Franco & Santos, 2021). Another concern about STR impacts is on housing prices (Benítez-Aurioles & Tussyadiah, 2021). The widespread use of STRs has lowered some residents' quality of life due to increased noise, anti-social behavior, and tourism-related nuisances. This has led to changes in demand for local services and a weakening sense of community (Mody et al., 2019). Safety and health concerns (Hazée et al., 2019), discrimination (Lee et al., 2021) legal uncertainties (Rojanakit et al., 2022), and privacy issues (Lutz et al., 2018) have resulted in calls for greater regulation and more accountability of STR platforms (Akbari et al., 2022).

2.4. Digital Inequality Theory

Digital information and communication technologies (ICTs) are widely recognized as factors that contribute to social inequalities related to class, gender, race, ethnicity, and

age, among other aspects (Halford & Savage, 2010). According to OECD (2001) "the *term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels regarding their opportunities to access information and communication technologies (ICTs)*". Norris (2001) identifies two main types of the digital divides: the *global digital divide*, highlighting ICT access disparities between industrialized and developing societies, and the *domestic digital divide*, focusing on the gap within countries. The initial technocratic approach to addressing the digital divide as a social and cultural phenomenon that highlights inequality in access to technology is outdated in an era marked by widespread Internet use, particularly in industrialized societies (Tondeur et al., 2010). The differences in ICT access and use among enterprises and public bodies are multifaceted and depend on a complex interplay of contextual factors such as location, legislation, democratization, organization size, management culture, operational region, and value system (Minghetti & Buhalis, 2009).

Digital inequality research examines the obstacles that prevent individuals from participating in a digital society and from embracing new technologies (Philip & Williams, 2019). The core idea of digital inequality theory is that social inequalities lead to unequal access to digital technologies, which, in return, reinforces and perpetuates those social inequalities (Van Dijk, 2005). Van Dijk identifies four stages of digital technology access: Motivational (desire to use technologies like STR platforms), Material (ownership of devices and services), Skills (digital literacy and competencies), and Usage (application diversity and time spent) as depicted in Figure 5. Access to information and communication technologies (ICTs) across these four stages is related to *personal categories* such as age, gender, race, personality, cognitive ability, and health, as well as *positional categories*, including, labor position, education, household, and nation (Van Dijk, 2005,2017). Digital inequality research has found that those from more privileged backgrounds use digital technologies in more capital-enhancing ways and for a greater number of activities compared to those from disadvantaged backgrounds (Hargittai, 2010). This highlights the need to address socio-economic barriers in all four stages, ensuring equitable benefits from the digital society.

Tourists use technology and the Internet to expedite and improve their information searches and vacation planning, as well as to access preferred opportunities and services (Buhalis, 2003; Wilson, 2004). However, access to technology does not automatically ensure its wise usage. Some tourists, despite having access to ICTs and the Internet, struggle to use them effectively due to various factors such as lack of knowledge, trust, literacy, language skills, content availability, credit card accessibility, and low bandwidth (Minghetti & Buhalis, 2009). For example, inexperienced Internet users may struggle to easily access online suppliers or tourist portals, search engines, and online travel agencies (e.g., Expedia, Kayak, Travelocity) to obtain information on flights, hotels, and tourist destinations, or to book travel services.

Figure 5: Causal and sequential model of digital technology access by individuals in contemporary societies
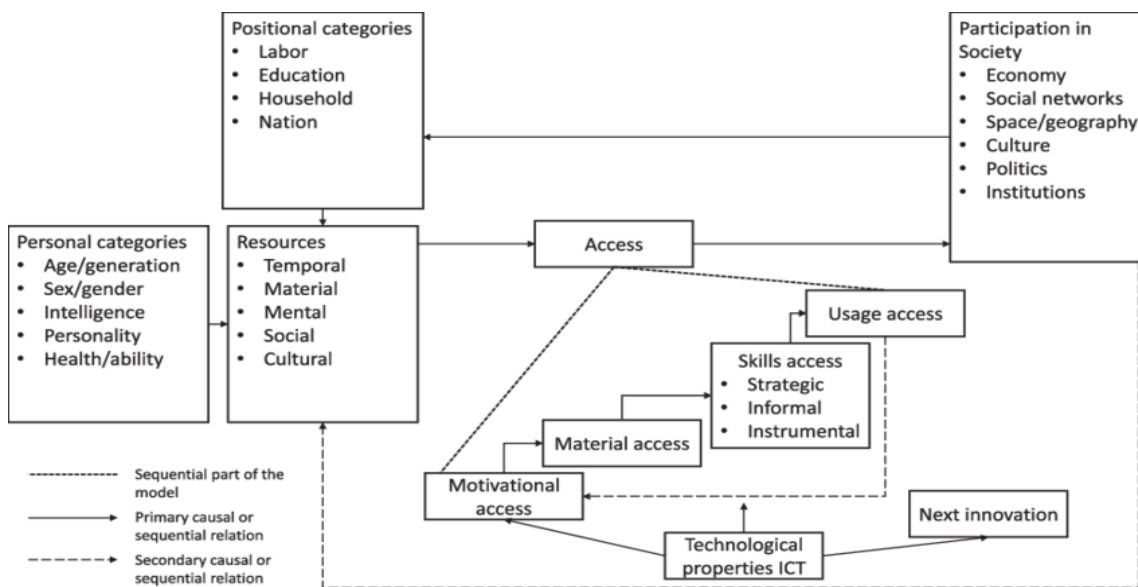
Source: Van Dijk (2005)

2.5. Inclusive Tourism

The expansion of ICTs in the travel sector is evident with online travel agencies (OTAs) such as Expedia and TripAdvisor, are redefining how we plan our trips (Pouri & Hilty, 2021). Moreover, platforms like Airbnb transforming accommodation by scaling up traditional homestays (Bakker & Twining-Ward, 2018), underscores a shift in the industry.

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The accessibility and impact of these technologies across different demographics raise important questions in the context of inclusive tourism, a concept aimed at ensuring equal tourism opportunities for all (Scheyvens & Biddulph, 2018). Nyanjom et al. (2018) suggest that to achieve inclusive tourism, which aims for equal access for everyone, a flexible and evolving approach to working with different stakeholders is necessary. The idea of inclusive tourism includes certain important aspects, which are depicted in Figure 6.

Figure 6: Elements of Inclusive Tourism

Source: Scheyvens & Biddulph, 2018

Although STR platforms have the potential to democratize the provision of accommodation services (Kadi et al., 2022), socio-demographic barriers present significant hurdles. Inclusive tourism goes beyond just STR platform users, like guests and hosts. It considers the wider context, including tourism policy involvement, respectful self-representation, expanding tourism to new areas, and the effects of tourism on local communities, along with its social initiatives and impacts (Scheyvens & Biddulph, 2018).

The inclusive tourism discussion also extends to the wider effects of tourism on communities and the necessity for research into the impacts and perceptions of STR platforms in local contexts, an area that remains under-explored. Limited digital literacy

and awareness hinder participation in the sharing economy, making it less accessible for potential consumers (Lutz & Angelovska, 2021). Socio-economic disadvantages, including barriers to ICTs, limit the full realization of inclusive tourism. Such socio-economic (dis)advantages run along the personal and positional categories discussed above (e.g., age, ethnicity, socioeconomic status, disability, and geographical location). The latter, namely how tourism – and specifically the role of STR platforms – shapes people's communities and local contexts, and how these impacts are perceived, remains an under-explored question in inclusive tourism.

2.6. Stakeholders of STRs

Theoretically, sustainable business models should adopt a holistic approach to value creation, integrating economic, social, and environmental facets of value (Boons & Lüdeke-Freund, 2013). To achieve this goal, sustainable business models should also contribute to a fairer distribution of value among stakeholders, extending to both the environment and the broader society (Schaltegger et al., 2016).

Scheyvens and Biddulph (2018) argue that true inclusion in tourism requires genuine efforts to involve diverse stakeholders in a meaningful way, rather than just superficial gestures or tokenism. However, destination management organizations and marketers often prioritize meeting the needs of tourists, while residents prioritize their livelihoods and enhancements to their quality of life. Thus, considering both the perspectives of tourists and residents is essential in the planning and management of tourism (Poudel et al., 2014).

The impacts of tourism affect various stakeholders in different ways (Woo et al., 2013). For the attainment of sustainable development and inclusive tourism, it is imperative to consider the perspectives and contributions of various stakeholders (Martín Martín et al., 2021). The expansion of STR accommodation over the past decade has resulted in challenges and effects for various stakeholders at different scales (Cheng et al., 2022). According to Sanna et al. (2020), key actors in the context of STR platforms include the operators, hosts, and guests. Additionally, residents, local authorities, and citizens' associations in cities with a significant presence of STR platforms are also noteworthy stakeholders.

Travelers' choices of destinations, travel frequency, duration of stay, and engagement in various activities in tourism destinations are significantly influenced by the social and economic appeals of STR accommodations (Tussyadiah & Pesonen, 2015).

Supporters of STR platforms contend that these services not only provide **hosts** with an additional income source but also contribute to the distribution of tourism within cities (Garcia-López et al., 2020). Moreover, they address a market demand by offering supplementary lodging options, particularly in cities lacking traditional accommodation types. Consequently, STRs attract tourists who might not have considered visiting otherwise (DiNatale et al., 2018).

In the **local business** landscape, the lack of employee hiring for STR hosts may contribute to increased unemployment, especially impacting low-end hotels. However, the entry of STRs may benefit the broader tourism sector, as travelers choosing STR accommodations often extend their travel durations, leading to an expansion of the overall market size in the tourism industry. This growth creates a demand for additional services, such as more restaurants, generating employment opportunities and contributing to the local economy (Fang et al., 2016).

Hosts and guests of STRs can cause conflicts with nearby residents by creating disturbances or accelerating gentrification. Nonetheless, STR guests contribute to the local economy (Edelman & Geradin, 2015) which in turn offers substantial benefits to the neighbors.

Figure 7 illustrates the positive and negative interactions among the key stakeholders of STRs. Platforms like Airbnb create a symbiotic relationship with hosts and guests, who support and influence one another (Ikkala & Lampinen, 2015).

Figure 7: Stakeholders of STRs and their relationships
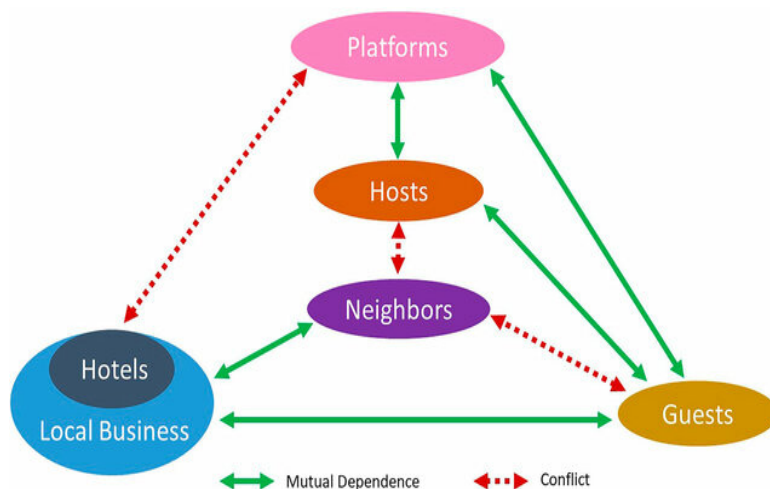
Source: Furukawa and Onuki (2022)

2.7. Segmentation in Tourism and Sharing Economy

Consumer segmentation in tourism, marketing, and service research categorizes consumers into groups with similar characteristics, highlighting significant differences between groups to reflect market diversity (Khoo-Lattimore & Prayag, 2015). In tourism research, studies on consumer segmentation analyze different groups of travelers based on their motivations, the destinations they choose to visit, and the types of accommodations they prefer (Andreu et al., 2006; Dotson et al., 2008; Guttentag et al., 2017). This helps understand the diverse preferences and behaviors of tourists (Guttentag et al., 2017). In recent years, the study of how different types of travelers prefer various forms of accommodation beyond hotels has become increasingly important. This includes options like home swaps, bed-and-breakfasts, homestays, and hostels. Researchers are focusing on understanding the different groups of consumers and their preferences in these alternative lodging options (Andriotis & Agiomirgianakis, 2014). The differences in market segmentation results between hotels and alternative accommodations (like rentals or hostels) could pose challenges for businesses that provide a wide range of accommodation options (Lutz & Newlands, 2018).

The sharing economy is growing worldwide, but research on the differences in demographics among its users and non-users is still limited. One notable study, a 2016

survey by Pew, found a significant demographic gap in the United States. This gap is particularly evident in terms of income and education levels between those who use sharing economy services and those who do not (Smith, 2016). A 2016 survey of 28 EU countries found that education and age significantly influenced sharing economy use. The 25–39 age group engaged the most at 27%, followed by 40–54 at 22%, 15–24 at 18%, and 55+ at 10% (Andreotti et al., 2017). Airbnb listings were more common in areas with higher education levels (Cansoy & Schor, 2016). Research indicates that race significantly affects involvement in home-sharing platforms like Airbnb. Specifically, African-American users face systematic discrimination, whether they are guests or hosts (Edelman & Luca, 2014; Cheng & Foley, 2017). Additionally, a 2016 Pew survey revealed that white users (13%) and Latino users (9%) are much more likely to utilize home-sharing services compared to African-American users (5%) (Smith, 2016).

Research indicates that demographic (such as age, gender, and ethnicity) and socio-economic factors (like income and education level) influence how people use sharing services or platforms (Lutz & Newlands, 2018).

2.8. Airbnb

Airbnb is an American company, founded in 2008 by Brian Chesky, Nathan Blecharczyk , and Joe Gebbiain in San Francisco, California. Airbnb is a shortened version of its original name AirBedandBreakfast.com.Airbnb, a leading online marketplace for lodging and travel experiences, has revolutionized the way people book accommodations worldwide. The platform operates in over 220 countries and regions, providing travelers with diverse choices that often offer more personal and localized experiences than traditional hotels. As of 2024, Airbnb had over 8 million listings, highlighting its extensive reach and popularity (Airbnb, 2023). Indeed, Airbnb principally is an online rental platform that enables tourists individually book their accommodations including "entire place"," private room", "shared room" and "hotel rooms. The total revenue of Airbnb worldwide reached 9.92 billion U.S. dollars in 2023. This was an increase over the previous year's total of 8.4 billion (Figure 8) (Airbnb, 2023).

In recent years, Airbnb has expanded its services beyond accommodations, venturing into the realm of experiences. Airbnb experiences are special activities, tours, and workshops led by local hosts, providing visitors an authentic way to discover a place. As an Airbnb host, you can make your property more attractive by adding personalized events, venues, or entertainment options (Rush, 2024). This shift aligns with the growing trend towards experiential travel, where tourists seek more authentic and immersive experiences. Indeed, Airbnb's online experiences can transform virtual tourism into a transformative virtual experience paradigm, meeting tourist needs and promoting well-being through

Figure 8: Worldwide Airbnb Revenue
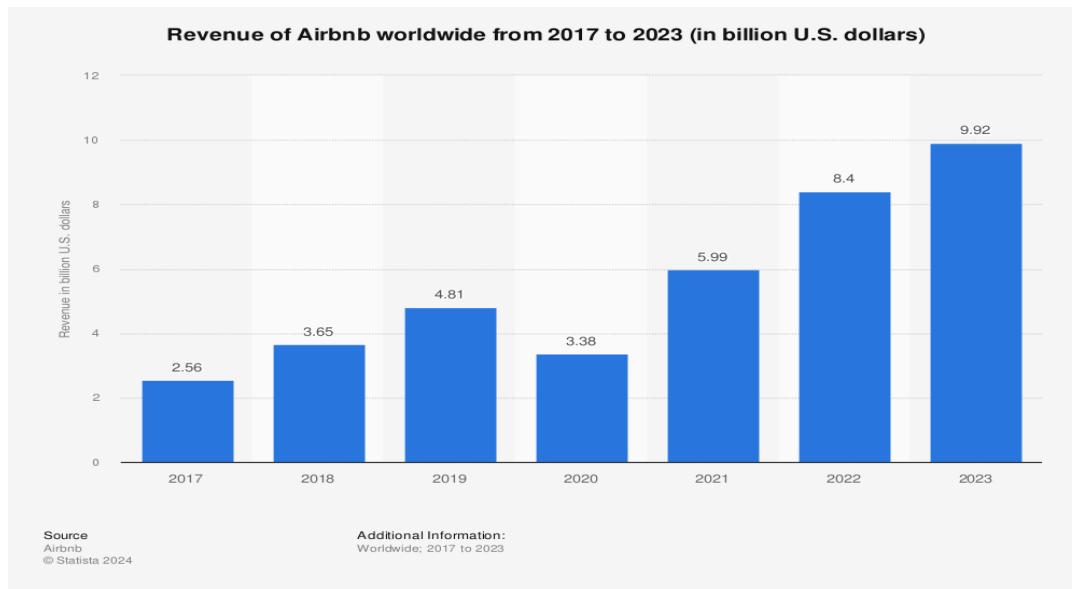
Source: Airbnb

hedonic, environmental-mastery, social, and well-being (Wong et al., 2023). By diversifying its offerings, Airbnb aims to create a more comprehensive travel platform that caters to a wide array of interests and preferences, further solidifying its position as a dominant player in the travel industry.

2.9. Tourism Market Vulnerability

Tessema and Simane (2021) define vulnerability as a condition where susceptibility to harm is coupled with a lack of capacity to adapt. In this context, vulnerability affects the ability of a system to either be resilient or responsive to harm (Ng et al., 2019).

Over the past decade, there has been a growing interest in understanding and addressing the factors that contribute to vulnerability in tourism destinations. This interest has been largely driven by tourism researchers and practitioners focused on disaster and crisis management as well as climate change (Calgaro et al., 2014). Calgaro (2012) identifies twelve factors that heighten the vulnerability of tourism destinations (Figure 9).

Figure 9: Tourism Market Vulnerability Factors

Source: Calgaro (2012)

The researchers have studied the factors that make certain destinations vulnerable or resilient in the face of various challenges, such as climate change. These researchers have developed a framework called the Destination Sustainability Framework (DSF) to help analyze and address vulnerability in tourism (Student et al., 2020). For instance, research by Scott et al. (2019) examines the susceptibility of the global tourism sector to the impacts of climate change. It highlights how climate change poses a significant threat to tourism development, which could compromise the competitiveness of the tourism industry and its ability to contribute to sustainable development goals, especially in developing countries.

Duro et al. (2021) describe the profound impacts of the COVID-19 pandemic on the tourism sector, emphasizing the vulnerabilities that have been exacerbated by the crisis.

The authors examine various dimensions of tourism vulnerability, including economic, social, and environmental aspects. In another study, Liu and Pratt (2017) inspect the impacts of terrorism on the tourism industry, focusing on the industry's vulnerability and resilience. They found that terrorism significantly affects tourists' destination choices, as personal security is a major concern. Tourists tend to avoid destinations that have experienced terrorist attacks. Table 4 highlights a selection of literature on tourism vulnerability.

Table 4: Selection of Literature on Tourism Vulnerability

Title	Summary	Autor(s)
A climate change vulnerability assessment methodology for coastal tourism	Presents a five-step methodology for assessing the vulnerability of coastal tourism to climate change. The steps are designed to help coastal tourism destination managers understand their vulnerability to climatic changes and devise appropriate adaptation strategies.	(Moreno & Becken, 2009)
International tourism and climate change	Examines the intricate relationship between tourism and climate change. It discusses how tourism, a significant global economic sector, is highly climate-sensitive and how it contributes to anthropogenic climate change.	(Scott et al., 2012)
Tourism in Crisis: Managing the Effects of Terrorism	Discusses the profound impact of terrorism on tourist destinations and provides strategies for managing such crises.	(Sönmez et al., 1999)
The vulnerability of tourism firms' stocks to the terrorist incidents	Examines the effects of terrorist attacks on the stock performance of firms in the tourism, travel, and leisure industries	(Hadi et al., 2020)
Climate change: Vulnerability and resilience of tourism and the entire economy	The research emphasizes how fluctuating and extreme weather patterns, indicative of climate change, modify tourist activities and impact the tourism sector. The paper also quantifies these effects and compares the vulnerability and resilience of tourism to other economic sectors.	(Dogru et al., 2019)
Tourist towns on the edge: Conceptualizing vulnerability and resilience in a protected area tourism system	Explores the challenges and resilience of remote tourist towns, using the Franz Josef and Fox Glacier townships in New Zealand as case studies	(Espiner & Becken, 2014)
Who are vulnerable in a tourism crisis? A tourism employment vulnerability analysis for the COVID-19 management	explores the vulnerability of workers in the tourism sector during the COVID-19 pandemic and provides a model to identify and support those most affected.	(Sun et al., 2021)
Vulnerability assessment of small islands to tourism: The case of the Marine Tourism Park of the Gili Matra Islands, Indonesia	Explores the impact of tourism on small islands and assesses their vulnerability.	(Kurniawan et al., 2016)
A framework to identify destination vulnerability to hazards	Explores why some tourism destinations suffer more acute impacts from crises compared to others and offers a framework to identify vulnerabilities.	(Alvarez et al., 2022)
Considering disaster vulnerability and resiliency: The case of hurricane effects on tourism-based economies	Examines the vulnerability and resilience of tourism-based regional economies affected by hurricanes over a 26-year period.	(Kim & Marcouiller, 2015)
Tourism, job vulnerability and income inequality during the COVID-19 pandemic: A global perspective	Examines the impact of the COVID-19 pandemic on tourism employment and income inequality globally.	(Sun et al., 2022)

2.10. Composite Indicator

Indicators are effective tools for communicating ecosystem status and trends to stakeholders, and they help reveal connections between environmental, human, and economic subsystems (Jorgensen et al., 2013). However, tracking multi-dimensional

processes, such as complex ecosystem dynamics, with individual indicators is challenging due to difficulties in linking trends across dimensions (Munda, 2005) and capturing interactions within and between subsystems. To comprehensively capture different aspects of relevant systems, multiple indicators are recommended (Fulton et al., 2005). The design of good indicators has been extensively discussed (Failing & Gregory, 2003; Fulton et al., 2005) with a consensus on key criteria: indicators should be cost-effective, deliver reliable information on status and trends, provide data at various scales and resolutions, enable frequent reporting, be understandable to the public, and respond predictably to policy changes.

An indicator is a quantitative or qualitative measure derived from observed data that reveals relative positions, such as those of a country, in a specific area. When evaluated regularly, it can indicate changes over time and across different units (OECD, 2008). The OECD defines a composite indicator as a measure that combines individual indicators into a single index based on an underlying model. Composite indicators (CIs) aggregate multiple indicators to track and communicate complex systems. They combine a set of indicators with different units of measurement into a single mathematical index (Burgass et al., 2017). This type of indicator should ideally capture multidimensional concepts that a single indicator cannot, such as competitiveness, industrialization, sustainability, single market integration, and a knowledge-based society. Table 5 shows the cons and pros of using CIs (Saisana & Tarantola, 2016).

Table 5: Pros and Cons of Composite Indicators

Pros	Cons
• Can summarize complex, multi-dimensional realities with a view to supporting decision makers • Are easier to interpret than battery of many separate indicators • Can assess progress of country over time • Reduce the visible size of a set of indicators without dropping the underlying information base	• May send misleading policy messages if poorly constructed or misinterpreted • May invite simplistic policy conclusions. • Maybe misused e.g. to support a desired policy, if the construction process is not transparent and/or lacks sound statistical or conceptual principals • The selection of indicators and weights could be subject of political dispute

Source: Saisana and Tarantola (2016)

The process of building a CI involves a series of systematic steps, each critical for ensuring the accuracy, reliability, and relevance of the final measure. Table 6 provides a structured overview of these steps indicates (OECD, 2008).

Table 6: Building Composite Indicator Steps

Step	Why it is needed
1. Theoretical framework	- Provides the basis for the selection and combination of variables into a meaningful composite indicator.
	- Ensures a clear understanding and definition of the multidimensional phenomenon to be measured.
	- Structures various sub-groups of the phenomenon (if needed).
	- Compiles a list of selection criteria for the underlying variables, e.g., input, output, process.
2. Data selection	- Checks the quality of the available indicators.
	- Discusses the strengths and weaknesses of each selected indicator.
	- Creates a summary table on data characteristics, e.g., availability, source, type.
3. Imputation of missing data	- Estimates missing values.
	- Provides a measure of the reliability of each imputed value.
	- Discusses the presence of outliers in the dataset.
4. Multivariate analysis	- Checks the underlying structure of the data using multivariate methods, e.g., PCA, cluster analysis.
	- Identifies groups of indicators or countries that are statistically "similar" and interprets the results.
	- Compares the statistically determined structure to the theoretical framework and discusses differences.
5. Normalization	- Selects suitable normalization procedures that respect both the theoretical framework and data properties.
	- Discusses the presence of outliers and makes scale adjustments if necessary.
	- Transforms highly skewed indicators if necessary.
6. Weighting and aggregation	- Selects appropriate weighting and aggregation procedures that respect the theoretical framework and data properties.
	- Discusses whether to account for correlation issues among indicators.
	- Discusses whether compensability among indicators should be allowed.
7. Uncertainty and sensitivity analysis	- Considers a multi-modelling approach and alternative scenarios.
	- Identifies all sources of uncertainty and accompanies composite scores with uncertainty bounds.
	- Conducts sensitivity analysis to determine influential sources of uncertainty in scores/ranks.
8. Back to the data	- Profiles country performance at the indicator level to reveal drivers of composite indicator results.
	- Checks for correlation and causality.
	- Identifies if results are dominated by few indicators and explains sub-component importance.
9. Links to other indicators	- Correlates the composite indicator with other measures, considering sensitivity analysis results.
	- Develops data-driven narratives based on the results.
10. Visualization of the results	- Identifies a coherent set of presentational tools for the target audience.
	- Selects the visualization technique that communicates the most information.
	- Presents the composite indicator results clearly and accurately.

Source: OECD (2008)

2.11. Case studies

This dissertation examines different countries for specific purposes. Firstly, the United States and the United Kingdom are selected to study the impact of STRs. The US and UK offer contrasting STR usage patterns, with the US market driven primarily by internal demand and the UK market characterized by a diverse international guest composition (Lutz et al., 2024). Additionally, Spain and Italy are chosen to address the CI for market vulnerability. These two countries are significant players in the Mediterranean tourism market, attracting millions of tourists annually (Ibáñez de Aldecoa, 2020).

By focusing on these countries, the dissertation aims to provide a comprehensive understanding of STR impacts and market vulnerabilities, offering valuable insights for stakeholders in the tourism and hospitality industry.

2.12. STR impacts case study countries

To study STRs impact we chose the United Kingdom (UK) and the United States (US). Despite sharing the same language, the US and UK differ in STR use. In the US, internal demand drives a substantial portion of STR use, influenced by domestic travel trends and geographical diversity. Conversely, the UK attracts a more internationally diverse guest composition, benefiting from its rich history and global appeal. In addition, these countries are among the top for the highest number of STRs listed (AirDNA, 2024a, 2024b). Understanding these differences is crucial for stakeholders. In the US, STRs are popular for domestic travel across states, while in the UK, international tourism boosts occupancy rates and competition among providers. This knowledge helps property owners tailor offerings and policymakers develop regulations suited to each market's unique characteristics.

2.12.1. United Kingdom

In the UK, STR platforms such as Airbnb, Booking.com, and Expedia have seen significant growth, offering flexible accommodation options that cater to a diverse range of tourists and contribute to the local economy. In the UK, there were around 9.9 million nights spent in short-term let accommodation in July-September 2023. Most of these nights were occupied by visitors from the UK (62%) (Cromarty, 2024). As of 2024, the UK boasts over 500,000 STR listings, showcasing its strong foothold in the global STR market and

its attractiveness to both domestic and international visitors (AirDNA, 2024a). In the fourth quarter of 2023 alone, STRs were responsible for nearly 1.9 million stays, resulting in approximately 18.1 million guest nights across the country. Notably, 63.7% of these guest nights were from domestic visitors, while international visitors accounted for the remaining 36.3% (ONS, 2023). These figures underline the pivotal role that STRs continue to play in the UK's tourism industry, supported by a robust infrastructure and a growing demand for alternative accommodation options.

The UK government is implementing new regulations to address the rapid growth of STRs and their impact on local communities. Starting in the summer of 2024, individuals will need to obtain planning permission from their local council before converting their properties into short-term lets. This aims to prevent the displacement of local residents due to a high concentration of STRs (GOV.UK, 2024). Moreover, mandatory national registration scheme for STRs will be introduced. This registry will help local authorities gather data on the number and distribution of STRs, ensuring compliance with health and safety regulations and better managing the sector's impact on housing availability (Stevens, 2023; GOV.UK, 2024). In addition, homeowners will still be allowed to let out their primary or sole residence for up to 90 nights a year without requiring planning permission, maintaining flexibility for occasional hosts (GOV.UK, 2024). The introduction of these regulations aims to balance the benefits of STRs with the needs of local communities. To mitigate the negative impacts on housing availability and community cohesion, the government aims to ensure that STRs are properly registered and regulated. This approach has been generally well-received, as it provides clearer rules for hosts and essential data for policymaking (GOV.UK, 2024).

2.12.2. United States

The STR market in the US continues to grow, with 2023 showing robust figures. As of early 2024, there are over 2.25 million Airbnb listings in the US, contributing significantly to the $64 billion market value of the STR industry. The average revenue per listing was over $26,000 in 2023, indicating a healthy demand and profitability for hosts (AirDNA, 2024b)

The regulatory landscape for STR in the US varies significantly by city and state, reflecting local priorities and challenges. Most cities require hosts to obtain a license or permit before renting out their properties. For example, New York City mandates that hosts collect and remit occupancy taxes, and properties must meet specific health and safety standards (Lee, 2022). Some cities, like Los Angeles, only allow STRs if the property is the host's primary residence. This is designed to prevent the conversion of housing stock into vacation rentals, thereby protecting long-term housing availability (Safely, 2023). Zoning laws play a crucial role in regulating STRs. Cities like Honolulu have strict caps on the number of STRs permitted, while other areas, such as Denver, require specific lodging licenses for properties used as STRs (Lee, 2022).

The rise of STRs has sparked debates over their impact on housing affordability and community cohesion. Critics argue that these rentals can drive up local rents and reduce the availability of long-term housing. In response, many cities are tightening regulations to balance the benefits of tourism and supplemental income for residents with the need to maintain affordable housing for local populations (Lee, 2022).

2.13. Composite Indicator Case Studies

To define a CI, Spain and Italy are selected. Although other countries like France and Greece are significant in the Mediterranean tourism scene, including them in certain analyses would require sacrificing either data breadth or depth. Italy and Spain, however, are key players in the EU Mediterranean market, attracting millions of tourists annually (Ibáñez de Aldecoa, 2020). Italy and Spain offer diverse tourism products, from sunny beaches and natural attractions to urban and cultural heritage sites. This variety ensures a broad market spectrum, allowing detailed exploration of market vulnerabilities and providing actionable insights for destination management.

Both countries are renowned for their rich cultural histories, culinary delights, and vibrant festivals. Architectural wonders in Spain and Italy's Renaissance art and ancient Roman landmarks highlight their cultural appeal. Their Mediterranean climate, favorable year-round, and well-developed tourism infrastructure support large tourist inflows (Ibáñez de Aldecoa, 2020).

Natural attractions like the Spanish Costas and Italy's Amalfi Coast, combined with historic urban centers, create a diverse tourism portfolio catering to various preferences. Their strategic importance in Mediterranean tourism offers valuable insights for managing tourism in similar destinations, balancing tourist inflows with cultural and environmental preservation (Soldati & Marchetti, 2017; Lascu et al., 2018).

2.13.1. Spain

Tourism is a vital part of Spain's economy, contributing significantly to its GDP. In 2022, the tourism sector added €155,946 million to the GDP, recovering strongly from the pandemic-induced drop to €66,869 million in 2020. Before the pandemic, tourism's GDP contribution was increasing, peaking at €157,355 million in 2019. Figure 10 depicts the tourism contribution to GDP in Spain (INE, 2024).

The sector not only directly boosts the economy through spending on accommodation, food, transport, and entertainment but also indirectly via supply chains and infrastructure investment. Tourism is a significant employer, providing jobs to around 9.3% of the workforce. It is also a major source of foreign exchange earnings, crucial for balancing Spain's trade deficit (INE, 2024).

Figure 10: Tourism Contribution to GDP (Spain)

Source: (INE, 2024)

45
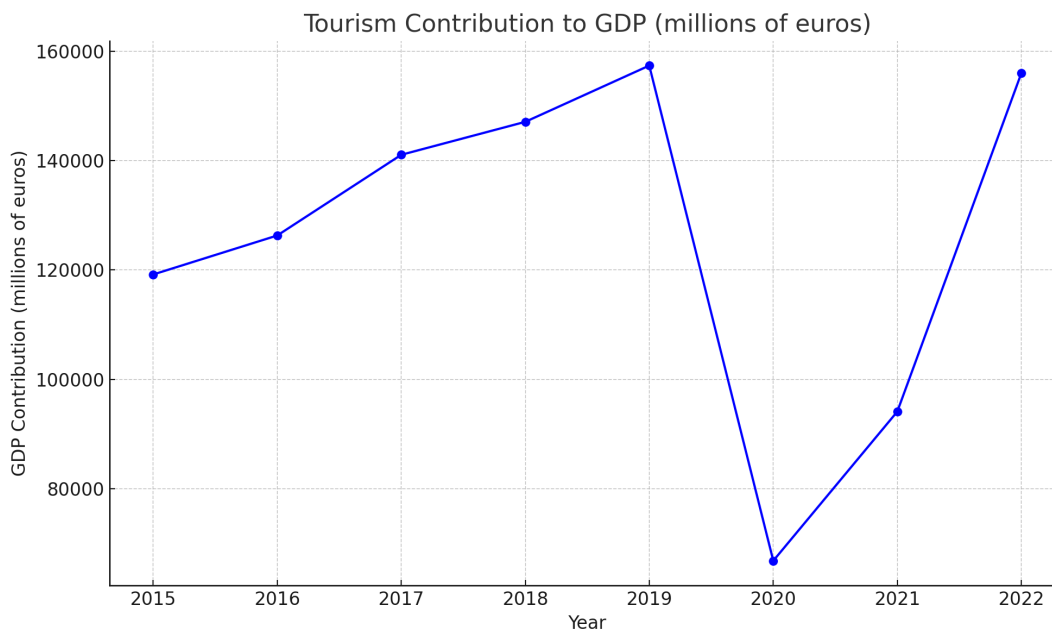
Regions like Catalonia, the Balearic Islands, and the Canary Islands are key contributors due to their popularity among tourists. Cities such as Barcelona and Madrid also attract millions of visitors for their cultural and historical attractions. However, challenges like overtourism, which strains infrastructure and housing, and the need for sustainable tourism practices are pressing issues (Bourliataux-Lajoinie et al., 2019; Carballo et al., 2019; Blázquez-Salom et al., 2023). Moreover, COVID-19 has negatively impacted tourism in Spain, with the Balearic Islands experiencing the largest decrease in visitors, but domestic tourism and accommodation types have shown a recovery potential (Moreno-Luna et al., 2021).

2.13.2. Italy

Tourism in Italy is a vital economic engine, known for its rich cultural heritage, diverse landscapes, and culinary delights (Rech & Migliorati, 2021). As one of the world's top tourist destinations, Italy attracts millions of visitors each year who come to explore its historical sites, natural beauty, and gastronomic offerings.

Tourism is a crucial sector in Italy's economy, significantly contributing to its GDP (Bronzini et al., 2022). The 2024 Economic Impact Research (EIR) by the World Travel & Tourism Council (WTTC) disclosed that Italy's Travel & Tourism sector contributed €215 billion, accounting for 10.5% of the nation's total economic output last year, highlighting the sector's critical role as a cornerstone of the Italian economy (WTTC, 2024).

Figure 11: Tourism Contribution to GDP (Italy)
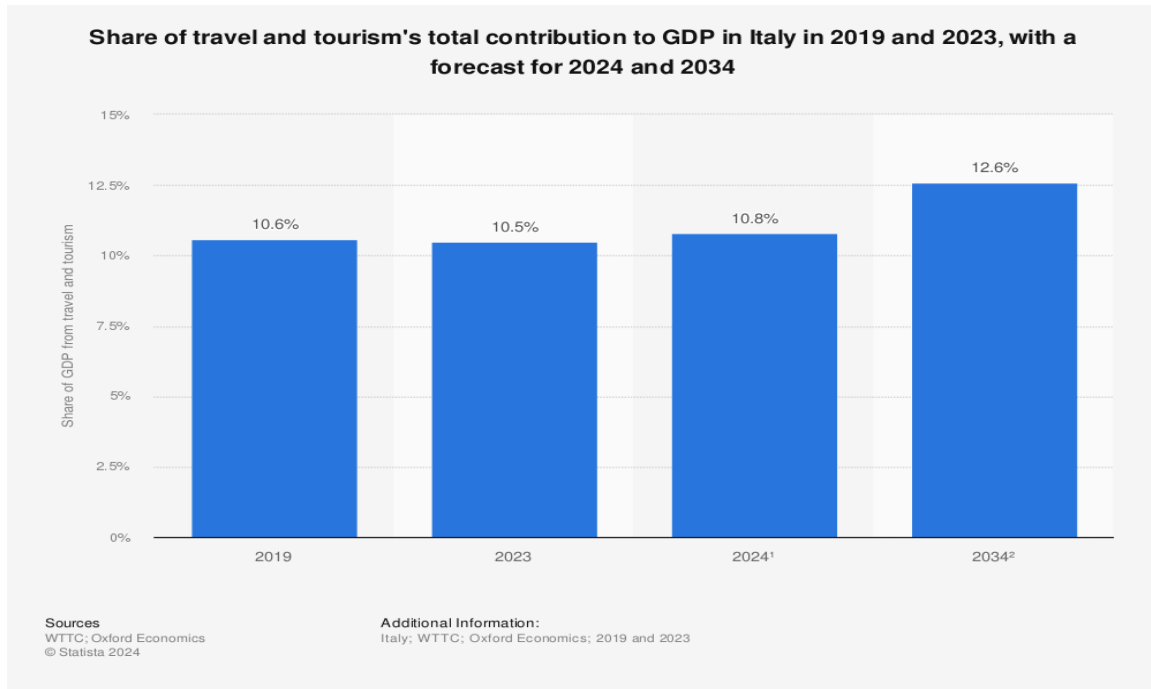
Source: WTTC,2024

Italy has many outstanding cultural and natural attractions, but these resources are not being fully utilized. The country's cultural heritage, in particular, is underappreciated, both in terms of the number of tourists visiting and the revenue generated per tourist compared to international standards (Angeloni, 2013).

Chapter 3: Studying Perceived Impacts of Short-Term Rental Platforms

3.1. Introduction

In the global lodging industry, STRs, also known as home-sharing, is a growing sector (O'Neill & Yeon, 2023). STR platforms such as Airbnb play a significant role in matching the increased accommodation demand with the growing number of tourists (Garcia-López et al., 2020). Moreover, STR platforms enable individuals to earn extra income by renting out unused space to travelers (Barron et al., 2021).

While tourism more generally often benefits the middle and upper classes (Jamal & Camargo, 2014), STRs may foster inclusive tourism and promote certain objectives of sustainable tourism development as outlined in Sustainable Development Goal 10 (SDG 10) (Lutz & Angelovska, 2021). On the demand side, STRs – brokered through platforms such as Airbnb – are attractive because they come with lower prices and greater convenience, which benefits resource-constrained individuals. On the supply side, STRs open opportunities for extra revenue and income generation (Gassmann et al., 2021; Lutz & Angelovska, 2021). However, STR platforms could also exacerbate inequality by disproportionately impacting disadvantaged individuals. Even though city residents might seem like they have common interests, their rights and concerns can differ considerably, with power and fairness in cities being unevenly distributed, where some groups have more advantages than others (Torkington & Ribeiro, 2022). Several scholars have explored how STR platforms affect local communities, thus showing inequality implications. For example, the impacts of STR platforms on housing prices, new business opportunities, gentrification, the hotel industry, and regulatory issues have been explored (Yeon et al., 2020; Garcia-López et al., 2020; Soh & Seo, 2021; Barron et al., 2021; Franco & Santos, 2021; Maté-Sánchez-Val, 2021; Robertson et al., 2022; Bianco et al., 2022), with much of the research stressing the disruptive nature of STR platforms. However, the

perceived impacts of STRs have received less attention (Jordan & Moore, 2018; Nieuwland & Van Melik, 2020; Stergiou & Farmaki, 2020). Thus, evidence is limited on citizens' perceptions of STR platforms and their variation across social characteristics.

Understanding the relationship between socio-demographic characteristics of residents and their perceptions of STR impacts is crucial for developing balanced, fair, and effective policies that address the needs and concerns of all community members while harnessing the economic potential of STRs. Nevertheless, this aspect has received insufficient academic attention. Moreover, the impact of sociodemographic factors on the use of STRs remains underexplored, including how age, income, education, and cultural background influence the use patterns of STR platforms. Therefore, we address the following overarching research questions: What is the relationship between socio-demographic characteristics of residents and their perceived impact of STRs? Do socio-demographic characteristics and STR platform use influence the perceived impacts of these platforms?

Tussyadiah (2015) highlights that the motivations for using STRs accommodation include societal aspects of sustainability and community, alongside economic advantage. However, the rapid expansion of STR accommodations has raised concerns about their actual and perceived impacts.

One contributing factor to the substantial growth of STRs is that property owners or hosts have the potential to earn greater economic returns compared to long-term rentals (Wyman et al., 2022). In addition to the advantages for guests, listing a room or home on STR platforms holds value for the hosts by enabling them to augment their income (Van Holm, 2020). However, the positive aspects like economic benefits, socialization opportunities for hosts, and the revitalization of otherwise excessively quiet neighborhoods are substantially overshadowed by negative impacts, including housing shortages, elevated noise levels, and the accumulation of litter left by tourists or guests (Miguel et al., 2022). Best exemplified by Airbnb, STR platforms are recognized as disruptive innovations (Guttentag, 2015). However, Jover and Cocola-Gant (2023) suggest that the fast growth of STRs is not just because of innovation or market disruption. Simply saying STRs cause rent gaps, making homeowners prefer short-term over long-term rentals, does not completely explain the increase in investment in the

market. Such an oversimplification fails to account for the adverse effects of STRs on housing prices and availability as well as impacts on local communities (Fang et al., 2016; Gurran & Phibbs, 2017). Thus, STRs may present a significant challenge to the sustainability of tourism destinations, affecting the economic, environmental, and sociocultural well-being of residents, who play a crucial role as stakeholders in tourism (Park & Agrusa, 2020). Stergiou and Farmaki (2020), for example, show a prevalence of negative perceptions regarding the socio-economic and environmental impacts of STRs.

STRs like Airbnb pose significant challenges for urban policymakers and planners regarding the efficacy of current planning regulations on tourist and residential accommodations (Gurran & Phibbs, 2017). Carrasco-Farré et al. (2022) suggest digital platforms must not only outline a stakeholder value proposition but also provide meaningful benefits to key stakeholders beyond users and providers to positively impact the urban ecosystem. Failure to do so can lead to conflicts and resistance, as observed in Airbnb's struggles in Spain. Indeed, digital platforms promoting urban sustainability gain local authority approval, while those lacking a clear value proposition face barriers and may lose support (Carrasco-Farré et al., 2022).

The influence of STRs on sustainability is intricate and contingent on different factors. A more comprehensive investigation is needed to thoroughly grasp the relationship between STRs and sustainability. Moreover, the effects of STRs on various stakeholders within these platforms, considering diverse sustainability aspects, merit further attention.

Our study, based on digital inequality theory (Robinson et al., 2015; Lutz, 2019) ,investigates these research questions both in the United States (US) and the United Kingdom (UK). By doing so, we provide implications for the tourism industry and motivation for inclusion, particularly through spotlighting marginalized individuals. Integrating these groups into the tourism economy not only provides growth opportunities for the tourism industry but can also foster equity and social cohesion. The results show the importance of creating inclusive policies and practices that ensure everyone can participate in and benefit from tourism-related activities. Moreover, understanding the varying perceptions of STRs across socio-demographic groups provides valuable insights for policymakers and STR platforms. By analyzing these

differences, they can adapt their policies and services to meet the specific needs and preferences of certain socio-demographic groups. This targeted approach can lead to more effective regulation, enhance user satisfaction, and ensure that the benefits of STRs are accessible to a broader segment of the population.

In addition, further analysis to gain a deeper understanding of residents' perceptions of the impacts of STRs, a qualitative analysis was conducted. This analysis aimed to explore and interpret the opinions and experiences of residents regarding STRs, providing valuable insights into their views on how these rentals affect their community and daily lives. By examining the qualitative data, researchers were able to capture the nuanced perspectives and underlying sentiments of the residents, offering a comprehensive understanding of their perceptions and the broader implications of STRs on their environment, social, and economic impacts related to sustainability. Grasping the perspectives of the local community is crucial because it provides an in-depth insight into the effects of STRs on sustainable development. Therefore, we assess the wide-ranging effects of STRs on different community members in this contribution.

To address the identified research gaps, we explore the positive and negative impacts of STRs, as perceived by residents in the US and the UK, with a focus on sustainability. We used an open-ended question format, prompting participants to share their perspectives on the concept of STRs. Subsequently, we systematically analyzed the responses. Initially, we categorized the feedback into positive or negative impacts attributed to STRs. Upon closer examination, a discernible pattern emerged, revealing three overarching dimensions of sustainability: social, economic, and environmental.

Further investigating the data, our analysis pinpointed four primary stakeholder groups significantly affected by STRs: guests, hosts, local businesses, and neighbors. This comprehensive understanding of stakeholder dynamics sheds light on the multifaceted impacts of STRs on various facets of the community, providing valuable insights for informed decision-making and policy formulation.

3.2. Method

3.2.1 Research Questions

The research on how residents' socio-demographic profiles influence their perceptions of tourism differs. Some studies display a significant effect of socio-demographic variables on the perception of tourism impact. According to Nugroho and Numata (2022), residents' support for tourism development is influenced by their sociodemographic characteristics because of how they perceive the benefits and costs of tourism. The educational background, place of birth, and how long respondents had been living in the community explain a significant amount of the variance in overall attitudes (Almeida-García et al., 2016). A study by Sharma and Dyer (2009) revealed that coastal residents near tourist areas felt tourism's benefits more than hinterland residents, who in turn viewed social impacts more positively. Suburbanites saw greater economic gains from tourism than urban or rural residents. Moreover, Sharma and Gursoy (2015) suggested that over time, demographic factors like age, gender, income, education, and occupation may shape how residents view the effects of tourism. For instance, Nunkoo and Ramkissoon (2010) reveal that gender is a significant predictor of the perceived impacts of tourism. Moreover, correlation between age and attitude towards tourism, with findings often indicating that young and middle-aged residents are more likely to have a favorable view of the economic benefits of tourism (Hong Long & Kayat, 2011). In addition, a study by Julião et al. (2023) reveals that individuals aged 41-60 are more motivated by the sharing economy and its benefits, whereas those with below-average salaries show less interest and suggest that age and financial status significantly influence attitudes towards the sharing economy. Considering these insights, the literature review leads to the following research question:

RQ1: How do personal and positional factors affect perceived STRs' impacts?

Hamari et al. (2016) discuss that technological aspects are important when it comes to collaborative consumption, especially sharing economy platforms. Szopiński and Staniewski (2016) suggest that the frequency of purchasing tourism services online varies among internet users from different countries due to their attitudes toward new

technologies. In addition, scholars suggest a strong association between age and the digital divide (Neves & Amaro, 2012). For instance, Van Deursen et al (2011) have also shown digital inequalities between younger and older generations, with younger individuals being more likely to use the internet for a wider range of activities while older individuals may be less comfortable with certain aspects of digital technology. In the tourism industry, women often seek information about local entertainment options, dining experiences, and other nearby attractions, while men typically show interest in websites offering flight bookings, accommodation options, rental car services, and weather forecasts (Kim et al., 2007). Furthermore, in terms of the functionality and scope of travel websites, there is a significant difference in attitudes and online information search behavior between men and women (Kim et al., 2007).

RQ2: How do personal and positional factors affect the use of STR platforms?

Andriotis (2004) found that in rural areas, residents working in tourism tend to hold more favorable opinions about tourism compared to those not involved in the industry. Indeed, people's views on the consequences of tourism development are shaped by their perception of the trade-offs involving social, economic, and environmental factors (Harrill, 2004). Despite the literature on residents' perception of tourism, the perception of users or non-users on the impacts of STRs remains an unresolved question.

RQ3: What is the difference in perceptions of the impacts of STRs between users and non-users of these platforms?

3.2.2. Proposed Research Model
In the following, we integrate these insights from the digital inequality, inclusive tourism, and (perceived) impacts of STR platforms literature to derive our research model to answer the questions.

Our proposed research model is built on Van Dijk's (2005) multidimensional model of digital inequality theory. Van Dijk (2005) argues that the utilization of digital media, which represents the final stage and ultimate objective within the technology

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appropriation process referred to as "access", relies on more than just motivation, physical access, and skill proficiency. While these factors are essential, they alone are insufficient to ensure effective use. In this research, usage access is the focus. Usage access as a dependent variable can be assessed in at least three ways: usage time, usage application and diversity, and creative usage (Van Dijk, 2005). Usage phase scholars primarily concentrate on the frequency and diversity of the use and their determinants (Van Dijk, 2017). Indeed, usage can be characterized by how often and the nature of activities carried out. To assess the usage access, participants were asked about their experience with specific STR platforms. The platforms included Airbnb, HomeAway, Booking.com, TripAdvisor, and FlipKey, and participants were asked to indicate which of these platforms they have used and in which capacity. Two levels of access to these platforms were examined: Never Used: Referring to participants who had never used the listed platforms. At Least Once: Referring to participants who reported using at least one of the platforms, whether as a guest, host, or both. By collecting this information, it becomes possible to identify the level and diversity of participants' usage of sharing economy services, specifically about STR platforms. This data allows for an understanding of participants' engagement with these platforms and provides insights into their involvement as guests, hosts, or both. The resource-based model of internet usage can be applied to explain online participation in the sharing economy (Eichhorn et al., 2020).

According to Van Dijks' digital divide model, *personal* and *positional* categories are responsible for the unequal distribution of resources. In our research model, we have identified age, gender, country of residence (UK and USA), and area of residency as personal categories. These personal categories can have an impact on an individual's access to and usage of digital resources. On the other hand, education, income, and political attitude are identified as positional categories in the research model. These positional categories are broader social and economic factors that can influence an individual's opportunities to access and utilize digital resources. Moreover, it is possible to investigate the perceived impacts of STRs among different categories of participants. By considering both personal and positional categories in the research model, we can gain insights into the complex interplay of individual characteristics and societal factors in

shaping the digital divide. Figure 12 indicates the structural model proposed by authors based on digital inequality theory.

By examining these categories, we can understand the impact of STRs among different participant groups. Considering both personal and positional categories provides insights into how individual characteristics and societal factors shape digital inequalities. Figure 8 depicts the structural model based on digital inequality theory.

Figure 12: Proposed Research Model Based on Digital Inequality Theory
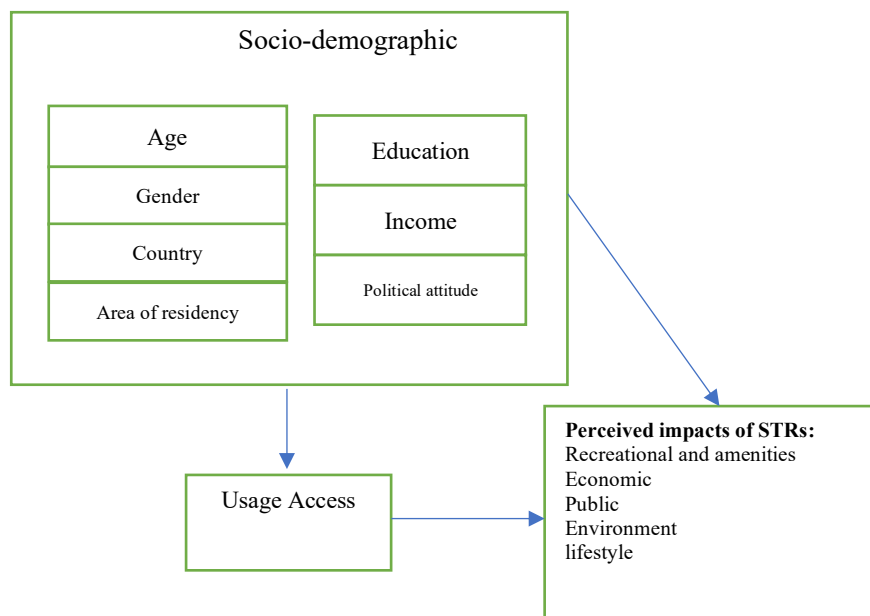
Source: Own elaboration

3.2.2. Survey Design

In June 2021, an online survey was conducted in the UK and the US, and participant recruitment was facilitated through Prolific (Palan & Schitter, 2018). Peer et al. (2022) highlight the higher data quality of Prolific compared to similar platforms like CrowdFlower and Amazon Mechanical Turk. Using census data from the US Census Bureau and the UK Office of National Statistics as a baseline, Prolific ensured the selection of respondents along with age, sex, and ethnicity to mirror the population distribution in each country (Prolific, 2024). This robust approach allows researchers to draw on a more diverse and generalizable subset of the population compared to Prolific's standard samples and screening tools. Additionally, using Prolific's representative sample is a cost-effective alternative to traditional, more expensive sample providers. The

compensation for filling out the survey was £1.25 British Pounds. The US-based respondents spent on average 8 min to complete the questionnaire (median), for an hourly compensation of £9.3 British Pounds (corresponding to $13.15 US Dollars at the time of the survey). The UK-based respondents were slightly faster and spent on average 7 min to complete the survey (median), for an hourly compensation of £10.9 British Pounds.

The survey started with a short description of STR platforms and with an informed consent page. Respondents were screened for their awareness of STR platforms (5 UK and 4 US respondents dropped out here) and their use, directing them to relevant sections based on their response. Non-users were directed straight to the perceived impact questions. Users were further asked which of the five most prominent STR platforms (i.e., Airbnb, HomeAway, Booking.com, TripAdvisor, FlipKey) they have used and in which role (guest, host, guest *and* host, not used the specific platform)[2]. We also clarified that we were interested in the use of more general-purpose platforms, such as Booking.com and Tripadvisor, only insofar as they are used for STR purposes. Accordingly, the respondents were further streamed into different sections: Guests were directed to the general perceived impact questions and guest-specific perceptions questions, hosts to the general perceived impact questions and host-specific questions, and guests *and* hosts were directed to answer all sections.

We used 14 items to measure the perceived impact of STR platforms in general (Table 6), refined from a pilot survey with 27 items (See Appendix Table 1) that was based on different dimensions of impact (e.g., socio-cultural, economic, political, environmental, technological) (Liang et al., 2018; Mody et al., 2019). The impact dimensions were not represented by predefined components/factors but consisted of individual items that were for the most part adapted from (Mody et al., 2019). The survey participants had six response options for all impact items, 1-Very negative impact, 2- Somewhat negative

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[2] The following statement was used to make this qualification: 'PLEASE NOTE: For guest, we are interested in your stay in private accommodations that belong to a specific person or are managed privately through an agency. Please only tick the "Guest" option if you have used the platform in such a capacity. For example, choose this option if you have booked a room in someone's home through Booking.com but not if you have used Booking.com for booking a normal hotel.'

impact, 3-No impact 4-Ambivalent impact, 5-Somewhat positive impact, and 6-Very positive impact.

3.2.3. Data Collection and Descriptive Statistics

We focused on the US and UK due to their significant STR market size and contrasting usage patterns (Woodward, 2024). Despite sharing the same language, the US and the UK have different STR use patterns, with a significant portion of use in the US driven by internal demand (Jacobs, 2020). By contrast, the UK has a more internationally diverse guest composition (Office for National Statistics, 2019).

In June 2021, we conducted an online survey in the UK and the US. We chose Prolific for participant recruitment due to its higher data quality compared to alternatives and its ability to provide representative samples (Palan & Schitter, 2018; Peer et al., 2017, 2022b; Prolific, 2024). The representative sample has been successfully used for recent top publications in tourism (Kim, 2019) and beyond (Nelson-Coffey et al., 2021). It allowed us to collect a more generalizable sample with age, gender, and ethnic composition that mirrors the general population in both countries (Prolific, 2024).

After removing missing values due to screening and quality control through two attention checks, 358 respondents in the UK and 370 in the US remained (Total N=728). The average age was 46.6 years in both the UK and the US. This is higher than the average age in both countries because we did not have minors in the survey. In total 50.90% identified as female, 48.21% as male, and the remaining participants chose another gender identification or preferred to self-identify. Education-wise, 4.40% reported having Middle school/junior high school, 13.87% a high school degree, 6.32% certificate program, 14.56% some college studies, 37.77% bachelor's or equivalent, 17.99% master's degree and 5.08% doctorate or equivalent.[3] The most common area of residency is suburban, with a frequency of 30.08%, followed by big cities (> 500K inhabitants) with

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[3] Academic classification of for the UK: GCSEs/CSEs/GCE O-Levels with grades A*-C, Higher secondary degree (A-Levels, 5 or more GCSEs/CSEs/GCE O-Levels with grades A*-C), Post-secondary non-tertiary education (Higher National Certificate, Certificate of Higher Education, NVQ Level 4), Short-cycle tertiary education (Higher National Diploma, Diploma of Higher Education, NVQ Level 5), Bachelor's or equivalent, Master's or equivalent and Doctorate or equivalent.

24.18%, small to medium-sized cities (< 500K inhabitants) with 23.49%, and finally rural areas with 22.25%.

The political attitude of respondents ranges from 1 to 10 (1=very left-leaning; 10=very right-leaning), with a mean of 4.47, suggesting that respondents hold a slightly left-leaning attitude (SD=2.25). Regarding income, we used 17 predefined annual personal income levels, ranging from 0 to 4,999 to 150,000 or more (in either GBP or USD, depending on the country). The mean income level for both countries together is 7.72 which belongs to the 30,000 to 34,999 income categories. Separated by country, the average income in the UK is between 20,000- 29,999 GBP (5.90), while in the US, it is between 40,000 – 49,999 USD (9.43).

3.3. Results

To analyze the results, we first employed Exploratory Factor Analysis (EFA) to reduce the number of factors. EFA helped us identify a smaller set of underlying factors by explaining the covariation among the observed variables. This reduction simplifies the data, making it more manageable and interpretable. Following the EFA, we used structural equation modeling (SEM) to explore and identify the relationships between the identified factors and other variables. SEM allowed us to test complex models that include multiple dependent and independent variables, providing a comprehensive understanding of the direct and indirect effects among them. This two-step approach ensured a robust analysis of the data, enhancing the validity and reliability of our findings.

3.3.1. Exploratory Factor Analysis (EFA)

We used factor analysis which is a powerful tool for uncovering the hidden structure in data, making it an essential technique in various research fields. Factor analysis is a set of techniques used to describe the relationships among variables by identifying underlying factors. It originated from the observation that variables within a specific domain, such as human ability tests or measures of interpersonal functioning, frequently show correlations (Cudeck, 2000). EFA is a statistical method used to identify the smallest number of underlying factors that can explain the correlations among a set of observed

variables. It aims to uncover the common factors that account for the patterns and structure within the data (Watkins, 2018).

EFA on 27 perceived impact items (see Appendix) eliminated 13 items falling below the threshold of 0.5 (Williams et al., 2010) or exhibiting high cross-loadings, resulting in a refined set of 14 items (see Table 7). Utilizing Promax rotation and the Principal Axis method, the EFA resulted in five factors that explain 52% of the total variance: Factor 1: Recreational and amenities-oriented aspects. This factor represents aspects related to recreational activities, amenities, and cultural elements, including items such as "good public transportation," "melting pot environment", and "bohemian environment". Factor 2: Lifestyle and community. This factor is about someone's lifestyle and their embeddedness in the community. Factor 3: Perceived impacts on (natural) environment. This factor focuses on the perceived impacts on the natural environment. Factor 4: Economic impacts (Supply and demand of STRs); It reflects respondents' views on how STRs affect the local economy. Factor 5: Public nuisance aspects. this factor encompasses public nuisance aspects such as drug and alcohol abuse, crime, and vandalism.

3.3.2. Structural Equation Modeling (SEM)

SEM is a sophisticated multivariate technique that is increasingly employed in scientific research to assess and validate complex causal relationships. SEM distinguishes itself from other modeling methods by simultaneously evaluating both direct and indirect effects within hypothesized causal structures, offering a thorough understanding of the interconnections among multiple variables (Fan et al., 2016).

We employed SEM using the "Lavaan" package in RStudio (Rosseel, 2012), utilizing the Maximum Likelihood Robust (MLR) method for parameter estimation and model fit assessment. The analysis revealed that our model exhibits a good fit, as evidenced by the following fit indices: degrees of freedom (df) = 155, chi-square = 301.69, $p < 0.0001$, Tucker-Lewis Index (TLI) = 0.96, Comparative Fit Index (CFI) = 0.94, Standardized Root Mean Square Residual (SRMR) = 0.027, and Root Mean Square Error of Approximation (RMSEA) = 0.031.

The TLI and CFI values surpass the recommended threshold of 0.90, indicating a well-fitting model, while the SRMR and RMSEA values are below the suggested limits of 0.08 and 0.06, respectively, further confirming the model's adequacy (Bentler & Bonett, 1980; Lei & Wu, 2007; Kline, 2023;). These results collectively demonstrate that our SEM model reliably captures the underlying structure of the data, providing robust support for the hypothesized relationships.

Construct validity was thoroughly evaluated by examining both convergent and discriminant validity (Ping, 2004). Hair et al. (2014) recommend that for a construct to be considered valid, Cronbach's α and Composite Reliability (CR) scores should exceed 0.70, and the Average Variance Extracted (AVE) should be greater than 0.50. Fornell and Larcker (1981) further argue that even if the CR is above 0.60, the construct's validity is still deemed sufficient). In our analysis, all constructs demonstrated Cronbach's α and CR values well above the recommended 0.70 threshold, indicating strong internal consistency and reliability. The AVE values for all constructs also surpassed the 0.50 mark, confirming that a substantial portion of the variance in the observed variables is captured by the constructs. These findings, detailed in Table 7, provide robust evidence for the convergent validity of our constructs.

Moreover, the discriminant validity was assessed by ensuring that the square root of the AVE for each construct was greater than the correlations between the construct and all other constructs in the model. This further supports that each construct is unique and distinct from others, solidifying the overall construct validity of the measurement model. These rigorous evaluations ensure that our constructs are both reliable and valid, reinforcing the integrity of our subsequent analysis and findings.

Table 7: Factor Structure and Reliability Analysis

Constructs	Items (Items code)	FL	Cronbach α	CR	AVE
Recreational and amnesties	Attractions (23)	0.79	0.80	0.76	0.48
	Festivals, Fairs, and museums (18)	0.75			
	Good public transportation (20)	0.70			
	Having live sports to watch in my community (19)	0.61			
Lifestyle	The preservation of my lifestyle (14)	0.90	0.78	0.83	0.58
	My personal life quality (17)	0.70			
	A feeling of belonging to a community (13)	0.65			
Environment	Clean air and water (3)	0.80	0.71	0.71	0.45
	Preservation of natural areas (1)	0.67			
	Peace and quiet (4)	0.58			
Economic	Demand of STRs in general (21)	0.78	0.76	0.76	0.61
	Offering of STRs in general (22)	0.77			
Public aspect	Crime and vandalism (11)	0.76	0.71	0.71	0.55
	Drug and alcohol abuse (10)	0.74			
Note(s): FL: Factor Loading; CR: Composite Reliability; AVE: Average Variance Extracted					

Source: Own elaboration

Discriminant validity is established by comparing the square roots of AVE for each construct with the correlations between the constructs (Fornell & Larcker, 1981). Table 8 shows that this is the case.

Table 8: Discriminant Validity

Constructs	Mean	(1)	(2)	(3)	(4)	(5)
Recreational and amnesties (1)	4.06	**0.69**				
Lifestyle (2)	3.32	0.53	**0.76**			
Environmental (3)	3.33	0.39	0.63	**0.67**		
Economic (4)	3.77	0.50	0.36	0.35	**0.78**	
Public (5)	2.91	0.03	0.29	0.18	0.14	**0.74**
Note(s): Square root of AVE (in bold) using the criterion of Fornell and Larcker						

Source: Own elaboration

To address Research Question 1 (RQ1), we analyzed to explore the relationship between personal and positional categories and the perceived impact of STR, as shown in Table 9. Our comprehensive analysis yielded several key insights:

Firstly, our analysis revealed no notable differences in the perceived impacts of STR between female and male participants, indicating that gender does not significantly influence individuals' perceptions of STR impacts.

Secondly, age was found to significantly influence perceptions of recreational, lifestyle, and economic impacts associated with STR. Younger individuals tended to have more positive views on these aspects. Specifically, the influence of age on recreational impacts was significant ($p<0.001$), with a z-value of -5.466 and a beta coefficient of -0.246, indicating that younger respondents had a more positive perception. Similarly, age significantly affected lifestyle impacts ($p<0.001$), with a z-value of -2.270 and $\beta=-0.093$, and economic impacts ($p<0.001$), with a z-value of -4.727 and $\beta=0.223$.

The area of residence significantly shaped perceptions of STR impacts. Urban residents exhibited the most positive views regarding the impacts of STR, while rural residents expressed more negative views on certain aspects. Suburban and small to medium-sized city residents also had more negative perceptions compared to urban residents.

There were notable differences between US and UK residents in their perceptions of STR impacts. US residents had more positive perceptions compared to UK residents across several aspects. For instance, recreational and amenities impacts were viewed more favorably by US residents ($p=0.001p$, $z=3.298$, $\beta=0.156$). Lifestyle impacts ($p=0.015$, $z=2.441z$, $\beta=0.106$), environmental impacts ($p=0.000$, $z=3.602$, $\beta=0.170$), and economic impacts ($p=0.002$, $z=3.602$, $\beta=0.147$) were also perceived more positively by US residents.

Our analysis showed that neither income levels nor education levels had significant associations with the perceived impacts of STR. This suggests that these socio-economic factors do not heavily influence individuals' perceptions of STR impacts. Additionally, there were no significant associations found between the use of STR platforms and the perceived impacts of STR, indicating that familiarity or engagement with STR platforms does not significantly alter perceptions of their impacts.

Political attitudes played a significant role in shaping perceptions of STR impacts. Respondents with right-leaning political attitudes had more positive perceptions of

lifestyle, environmental, and economic aspects of STR. For example, lifestyle impacts (p=0.023, z=2.27, β=0.111), environmental impacts (p=0.002, z=3.039, β=0.165), and economic impacts (p=0.009, z=2.623, β=0.123) were viewed more positively by right-leaning individuals. However, right-leaning respondents had more negative perceptions of public aspects of STR compared to left-leaning respondents (p=0.005, z=−2.825, β=−0.156). In summary, these findings highlight the importance of considering demographic factors such as age, area of residence, and country of residence when assessing perceptions of STR impacts. Additionally, political attitudes significantly influence these perceptions, particularly about lifestyle, environmental, economic, and public aspects. The lack of significant associations with income, education, and STR platform use suggests that these factors are less critical in shaping perceptions of STR impacts. These insights are crucial for policymakers and stakeholders in understanding and addressing the varied perspectives on STR within different demographic groups.

To address research question 2 (RQ2), we investigated the influence of personal and positional categories on the use of STR platforms, as detailed in Table 10. Our analysis yielded several key findings.

Firstly, our analysis revealed that gender and area of residency had no significant effect on the use of STR platforms. This indicates that these factors do not play a major role in determining whether individuals engage with STR services. However, education, income, age, and country of residency were identified as significant influencers of STR platform use. Both education and income positively influenced the use of STR platforms. Specifically, education had a significant positive effect (p=0.006, z=2.763, β=0.109), suggesting that individuals with higher educational attainment are more likely to use these platforms. Similarly, income had a significant positive impact (p<0.001, z=4.525, β=0.180), indicating that individuals with higher income levels are more inclined to utilize STR services.

Conversely, age and US residency were negatively associated with the use of STR platforms. Age was found to have a significant negative effect (z=−6.610, β=−0.246), meaning that older individuals are less likely to use these platforms. Additionally, US residency showed a significant negative association (z=−3.792, β=−0.141), indicating that

US residents are less likely to engage with STR services compared to residents of other countries.

Finally, our analysis revealed no significant relationship between the perceived impacts of STRs and the use of these platforms, as shown in Table 11. This suggests that individuals' perceptions of the impacts of STRs do not significantly influence their decision to use these services.

In summary, while gender and area of residency do not significantly affect STR platform use, factors such as education, income, age, and country of residency play crucial roles. Higher education and income levels are associated with increased use of STR platforms, whereas older age and US residency are linked to decreased use. Additionally, the perceived impacts of STRs do not appear to influence platform use. These findings provide valuable insights for stakeholders and policymakers aiming to understand the demographics and motivations of STR platform users.

Table 9: Personal Categories and Perceived Impacts of STRs

		Gender			Age			Country USA		
	STR's aspect	Z-value	β	sig.	Z-value	β	sig.	Z-value	β	sig.
	Recreational	-1.071	-0.046	0.284	**-5.466**	**-0.246**	**0.000**	**3.298**	**0.156**	**0.001**
	Lifestyle	-0.708	-0.031	0.479	**-2.27**	**-0.093**	**0.023**	**2.441**	**0.106**	**0.015**
	Environment	0.071	0.003	0.943	-0.844	-0.037	0.399	**3.602**	**0.17**	**0.000**
	Economic	-1.002	-0.047	0.317	**-4.727**	**-0.223**	**0.000**	**3.071**	**0.147**	**0.002**
	Public	0.119	0.004	0.905	-0.086	0.004	0.932	-1.197	-0.058	0.231
		Recreational			Lifestyle			Environment		
		Z-value	β	sig.	Z-value	β	sig.	Z-value	β	sig.
RQ1	Area residency (Rural)	**-1.995**	**-0.103**	**0.046**	-0.596	-0.03	0.551	-0.798	-0.044	0.425
	Area residency (Suburb)	**-2.823**	**-0.154**	**0.005**	**-3.9**	**-0.206**	**0.000**	-1.545	-0.089	0.122
	Area residency (Small to medium)	-1.733	-0.09	0.083	**-2.218**	**-0.117**	**0.027**	-0.546	0.007	0.585
		Economic			Public					
		Z-value	β	sig.	Z-value	β	sig.			
	Area residency (Rural)	1.017	0.055	0.309	**2.369**	**0.127**	**0.018**			
	Area residency (Suburb)	-0.054	0.003	0.957	-0.471	-0.027	0.638			
	Area residency (Small to medium)	-0.37	-0.021	0.712	0.026	0.001	0.979			

Source: own elaboration

Table 10: Positional Categories and Perceived Impacts of STRs

		Income			Education			Political attitude		
	STR's aspect	Z-value	β	sig.	Z-value	β	sig	Z-value	β	sig
RQ1	Recreational	1.167	0.013	0.243	1.066	0.059	0.287	1.596	0.076	0.11
	Lifestyle	-0.475	-0.022	0.635	1.198	0.053	0.231	**2.274**	**0.111**	**0.023**
	Environment	-0.116	-0.006	0.907	1.127	0.059	0.26	**3.039**	**0.165**	**0.002**
	Economic	0.936	0.044	0.349	1.182	0.054	0.237	**2.623**	**0.123**	**0.009**
	Public	-0.489	-0.026	0.618	1.054	0.05	0.05	**-2.825**	**-0.156**	**0.005**

Source: own elaboration

Table 11: Use of STR platforms and perceived impacts of STRs

	STR's aspect	Z-value	β	sig.
RQ3	Recreational	0.226	0.01	0.821
	Lifestyle	1.714	0.074	0.086
	Environment	1.27	0.061	0.204
	Economic	1.214	0.053	0.225
	Public	0.553	0.026	0.581

Source: own elaboration

3.4. Perceived Impacts of STRs through a sustainability Lense

3.4.1. Methodological Approach

To comprehensively understand the sustainability impacts of STRs, our study employed an open-ended question format, inviting participants to express their perspectives on the perceived impacts of these rentals. This format was chosen to capture diverse and nuanced insights, allowing participants to freely articulate their opinions regarding the sustainability aspects associated with STRs. The wording of the question was: *"Please use the text box below to tell us what you see as the main impacts of short-term rental platforms in your community. We are interested in your perceptions and experiences. Your honest opinion is greatly appreciated."* The question was compulsory and could not be skipped. We focused on the US and the UK as they are the two largest English-speaking

STR markets with global importance, allowing us to explore sustainability-related impacts beyond one country and derive comparative insights.

The analysis proceeded in two phases. All collected data was initially scrutinized, and essential details from each response were coded. Subsequently, these coded elements were categorized based on the three fundamental dimensions of sustainability: environmental, economic, and socio-cultural impacts. The analytical process encompassed a thorough review of the responses, to identify recurring themes, patterns, and perspectives on the outlined sustainability aspects. By categorizing participant responses in alignment with these sustainability dimensions, the study presents a comprehensive understanding of the multifaceted sustainability impacts of STRs.

3.4.2. Findings

By conducting a comprehensive thematic analysis, we categorized the information based on the three fundamental pillars of sustainability: social, economic, and environmental, distinguishing between positive and negative impacts within each category. This detailed approach revealed nuanced differences in responses, highlighting how various stakeholders—neighbors, guests, local businesses, and hosts—perceive the impacts of sustainability differently.

Our analysis uncovered that certain responses reflect the initial perceived impacts on sustainability. For instance, neighbors and guests might focus on immediate changes in their surroundings or experiences, while local businesses and hosts may consider both immediate and longer-term implications for their operations and community engagement.

By differentiating these perspectives, we gained a deeper understanding of how different groups contribute to and are affected by sustainability initiatives. This distinction is crucial for delineating the immediate and subsequent impacts of sustainability as perceived by different community members. It underscores the importance of considering a wide range of viewpoints to fully appreciate the multifaceted nature of sustainability.

Table 12 provides a summary of key themes derived from the data analysis, categorizing the impacts into the three sustainability pillars.

Overall, this thematic analysis approach not only highlights the diverse perceptions of sustainability impacts but also emphasizes the interconnectedness of social, economic, and environmental factors in achieving sustainable development goals. By considering these varied perspectives, policymakers and community leaders can develop more comprehensive and inclusive sustainability strategies that address the needs and contributions of all stakeholders.

Table 12: Summary of Findings

Host	Guest	Neighbors	Local Business
Social			
	(+) More destinations to visit	(-) Lack of community	
	(+) More interaction with locals	(-) Safety	
	(+) More culture	(-) Annoyance to neighbors	
	(+) Home feeling	(-) Strangers	
		(+) More culture	
		(-) Disrespectful behavior	
Economic			
(+) Side income	(+) Flexibility	(-) Housing availability	(-) Competition with hotel for price (for local hotels)
	(+) Cheaper accommodation options	(-) House price	(+) Income for local business
	(+) More accommodation options	(-) Renting price	(+) Boost local economy
Environmental			
		(-) Traffic builds up	
		(-) More foot traffic	
		(-) Littering	
		(-) Noise	
		(-) Overcrowded	

Source: Own elaboration

Additionally, Figure 13 presents a visual depiction of the most important words and themes identified in the responses. This visual representation aids in quickly grasping the primary concerns and focal points of each stakeholder group, enhancing our understanding of the broader sustainability impacts within the community.

Participants predominantly focused on the economic implications of STRs, with a secondary emphasis on their social ramifications. The environmental dimension, however, received comparatively less attention.

The most frequently recurring words in the word cloud—such as housing, income, rent, and price—highlight the significant influence of perceived economic sustainability impacts of STRs, particularly concerning housing availability and pricing for residents. This focus suggests that participants are acutely aware of the economic impact of STRs and their implications for local communities. The emphasis on economic terms indicates a strong concern among participants regarding how STRs affect the local housing market and, consequently, the financial well-being of residents. Additionally, the recurrence of words like community and behavior points to participants' concerns about the social dynamics associated with STRs. These terms reflect worries about the effects of STRs on neighborhood cohesion and the overall well-being of residents. Participants seem to be mindful of how the presence of STRs can alter the social fabric of communities, influencing relationships and interactions among neighbors.

The presence of words like litter and noise among the frequently mentioned terms underscores the potential negative externalities associated with STRs, such as increased littering and noise pollution. These concerns, though less frequently mentioned compared to economic and social issues, highlight the environmental sustainability aspects that participants find important. This indicates an awareness of how STRs can contribute to environmental degradation through increased waste and noise disturbances.

In summary, the analysis reveals that participants are most concerned with the economic impacts of STRs, particularly regarding housing affordability and market stability. Social impacts, such as community cohesion and resident behavior, are also significant but secondary. Environmental impacts, while noted, receive less emphasis. These insights suggest that any policy or strategy addressing STRs should prioritize economic and social considerations while also mitigating potential environmental harms to ensure a balanced and sustainable approach.

Figure 13: Word Cloud of The Data

Source: Own elaboration

3.4.2.1. Social Impacts

Neighbors

According to the participants' depiction, STRs have some negative social impacts on hosts, guests, and communities or neighbors. Among the issues frequently mentioned was the prevalence of **anti-social and disrespectful behavior** associated with STR guests. These behaviors impact the daily lives of **permanent residents** in the neighborhood, resulting in heightened stress, discomfort, and a diminished sense of well-being. Moreover, certain forms of disrespectful conduct may pose safety risks, such as unauthorized access to common areas or activities that compromise the security of the neighborhood. Furthermore, the repeated occurrence of anti-social behavior associated with STRs can stain the reputation of the community as an appealing place to live or visit.

This negative perception may influence the attitudes of potential residents, tourists, and investors toward the neighborhood.

These concerns underscore the importance of responsible management and oversight of STR properties to mitigate the negative social impacts on local communities. This behavior can include noise disturbances, unruly conduct, and a lack of consideration for neighbors and the community at large. Excessive **noise** in public spaces due to numerous people coming and going, especially in the context of party venues, was a recurring concern mentioned by participants. The constant arrival of visitors and the hosting of parties in the neighborhood can contribute to disruptive noise levels that disturb the peace and tranquility of the community.

*"Noise and extra vehicle, unsociable behavior, etc from the renter of these property in quiet residential area. Having various people coming and going is not nice for resident who are quietly living their life in neighboring property."*UK
"Short term rentals bring about transients that are not productive to the community. People that use these generally have no respect for private property belonging to others." USA

One of the major social issues caused by STRs is the loss of community. In some cases, residents may feel a deep sense of loss within their community. This feeling, known as "solastalgia," denotes a feeling of displacement or disconnection from one's home, where despite physically being present, one feels a loss of familiarity or attachment to the place (Askland & Bunn, 2018). Residents feel disconnected and distressed because they witness changes in their familiar surroundings and the evolving dynamics of their community. The impact of solastalgia manifests as a profound and negative emotional experience for individuals. For instance, an individual undergoing solastalgia may grapple with a sense of loss and disconnection, particularly as they bear witness to changes in the natural allure of their neighborhood, attributable to the growing prevalence of phenomena such as the increased presence of STRs. This emotional response highlights the deeply personal and subjective nature of solastalgia.

"Loss of community mainly with transient resident its difficult to get to know neighbour in area with lots of rental property." UK

"The main impact of short term rentals to me is not having a formal community or neighborhood. People coming and going, some not respecting neighbors, parties, a lot of traffic, etc. I would prefer not to have a short term rentals in my neighborhood." USA

On the flip side, STRs can also have a positive social impact on the community. The presence of a diverse mix of guests from various cultures provides locals with a unique opportunity to interact with and learn from people of different backgrounds. This **cross-cultural exchange** can foster a sense of openness, tolerance, and cultural enrichment within the community. Cross-cultural exchange influences individual hosts and guests. Hosts share aspects of their local culture with guests, and guests, in turn, contribute to the cultural exchange by immersing themselves in the local community. This level involves personal interactions and shared experiences between individuals from different cultural backgrounds.

"I personally enjoy the opportunity to mix with different cultures and also the ability to experience a different, more authentic way of life rather than a bland, generic chain of hotels that are the same all over the world." UK

"I think the main impact of short-term rental platforms in my community is very little. Being that it is a small community that people know each other or at least can recognize if it is someone from this area or not, it would be refreshing to see someone new here and there. The main benefit is to the people that own the properties." USA

Guests

STRs have diverse effects on guests, with one recurring theme being the sense of **homely ambiance** frequently highlighted by participants. Travelers opting for STRs as their lodging of choice often express that their stay in such accommodations differs significantly from that of hotels, as it imparts a genuine feeling of being at home. An illustrative example of this is the presence of an equipped kitchen, which grants them the ability to cook their meals, further enhancing their perception of being in a familiar and cozy environment.

"We actually just stayed in a short-term rental last week. We spent money in the surrounding area and the home had everything we needed including a stocked kitchen which was important to us". USA

"People can feel more at home in a place they are unfamiliar with and choose where they would like to stay." UK

"It makes you feel at home and does not have the hotel smell. It also saves money because you have a full kitchen so you do not have to eat out every meal". USA

STRs allow tourists to explore **remote** or less explored destinations that have limited traditional hotel accommodations. This flexibility lets travelers experience and enjoy unique locations. STR accommodations play an important role in attracting more tourists to lesser-explored destinations, including rural ones, where STR accommodations act as a driving force for showcasing these distinctive locales.

"We do not have any real hotels in my area because it is so small and sparsely populated. There are some Airbnb here though and as there is tourism out this way, having these here allows for people to actually stay the night or longer and take time to experience the area rather than just briefly stop and drive on. This in turn has the potential to help the local businesses with some extra income. I understand things could be drastically different in more populated areas, but for my area I do believe they are beneficial." USA

"It provides home rental in an area with minimal hotel options". USA

3.4.2.2. Economic Impact

Neighbors

Housing for the residents is one of the most frequently mentioned themes by the participants. In their views, STRs have a significant negative impact on the housing market for locals. Generally, the issues related to housing are related to **availability** and **price**. When houses are converted into STRs, there is a reduction in the number of available long-term housing units for residents. Moreover, in some cases, the conversion of housing units into STRs can lead to the displacement of long-term residents who are unable to find or afford alternative housing. The decrease in housing supply, coupled with increased demand from tourists and short-term renters, can drive up housing prices, making it difficult for residents to afford housing in their communities. Furthermore, considerations of overall city planning, and tourism management were brought up. The success of a city as a tourist destination can be influenced by how well it manages the

balance between STR accommodations, housing needs for residents, and the preservation of local character.

"A lot of property is bought up to be used for Airbnb, depleting rental stock, driving up rental and house price and making it difficult for local people to find affordable housing." UK

"I lived in Brooklyn, NY until fairly recently and short term rentals had a terrible effect on the availability of rental properties, rent rates, and the gentrification of the city. I think it pushed many residents into financial hardship for the profits of the few…" USA

"Available housing would be the largest impact for me. If the rich are buying up all the houses to turn into rentals, then that negatively impacts the city as a whole." UK

Guests

STRs offer an extensive range of advantages and **flexibility** that surpass the typical offerings of hotels. When travelers embark on their quest for accommodation, they are presented with an enticing array **of personalized services and amenities**, far more tailored to their specific needs and preferences compared to what traditional hotels typically provide. In STRs, guests often find themselves in a unique position to curate their experience. From choosing the size and style of the property to accessing a full kitchen, laundry facilities, and even options for specialized requests, these accommodations empower travelers to craft an environment that aligns perfectly with their desires. This personalized touch extends to location choices as well, allowing visitors to immerse themselves in the heart of a neighborhood or scenic locale, providing an authentic and enriching experience that may not be as readily available in a standard hotel setting.

"It gives people more choice of themed hotel service with customerised need. I believe Airbnb hotel can be more interesting and part of a journey / attraction when I am traveling (part of a whole traveling experience)." UK

"There are very few hotels in our area, so short-term rental platform do help with providing accommodation for people wanting to stay here. They are usually less expensive than hotel, so the people who stay in them are not usually the type of people who would stay in hotel. They can be more personal than a hotel, but depending on what type of short-term rental accommodation you are using, you may not actually ever

meet the host. They do make holiday more affordable by offering cheaper alternative of accommodation to hotel that a lot of people would not be able to have." UK

The extensive variety of available accommodations within the realm of STRs also translates into **a diverse price range**, a significant advantage, particularly for families. This diversity in pricing represents a good opportunity for those seeking more budget-friendly options. Families can reap the benefits of this pricing spectrum, as it allows them to find lodgings that align with their financial preferences and requirements.

"A good place for hosting or for someone who needs a place to stay for a low price" USA

I am part of the middle working-class community. Short-term rental platforms have allowed my family, friends, and I to enjoy amazing vacations for affordable and reasonable prices. At times we all chip in a little money and we stay in very big and beautiful vacation homes. In addition, I have family members and friends who make a little extra income by renting out their houses on platforms like Airbnb". USA

Local business

On the other hand, STR accommodations make a significant positive contribution to the **local economy**. Tourists who support local restaurants and use local services play an important part in stimulating economic growth within the community. STRs impact the local community by bringing in visitors who spend money on various goods and services, including local restaurants, shops, and attractions. This can bolster local businesses and create job opportunities.

"I think it brings a positive aspect because it brings people into the area that are going to spend money in your local area at attractions and food outlets etc…" UK

Hosts

Individuals who become hosts can experience a positive economic impact through the additional income generated by renting out their properties. This can be particularly beneficial for hosts who rely on the extra income for personal finances or to offset housing costs.

"Overall, it seems a good option for people who have the property to earn some money, though it is risky to allow strangers to stay in your home or property." US

3.4.2.3. Environmental Impact

Neighbors

Participants reported several negative environmental impacts caused by STR tourism. One of the main issues is the increase in tourist numbers, which can lead to **crowding** in certain destinations. Tourists who do not care about their actions and do not anticipate the consequences can unintentionally harm the places they visit.

"From my own personal experience of living next door to an Airbnb it was the constant traffic of people, noise was overbearing and they were not very good at keeping the area tidy with their litter". UK

Furthermore, residents often highlight the issue of **littering** as a direct consequence of the behavior of some disrespectful tourists. In various instances, visitors fail to adhere to local norms and regulations regarding waste disposal, leading to the indiscriminate disposal of trash in public spaces. This not only poses aesthetic challenges for the community but also raises concerns about environmental degradation and the overall well-being of the neighborhood.

"Transient guests do not have respect for the local area. They leave litter in the countryside and on the beach mainly from empty drink bottle and food wrapper. They let their dogs and children run free ruining crop and damaging wildlife. However, they also spend money in local shop and support local economy in doing so". UK

3.4.2.4 Comparison Between the UK and USA

The results suggest that only a small number of American participants indicated that these platforms have either no impact or very little impact on their community or neighborhood. In contrast, many UK residents perceive STRs as having negligible impact on their community. The predominant reason cited by UK-based respondents for perceiving minimal impact from STRs in their communities is the lack of tourist attractions or the small-town nature of their area. These factors contribute to a scarcity of STRs in their vicinity, thereby mitigating any significant effects on their neighborhoods.

The absence of prominent tourist destinations or attractions in certain British areas means that there is limited demand for short-term accommodations. Consequently, property owners are less inclined to list their properties on platforms like Airbnb or similar services, resulting in fewer STRs available in these areas.

One UK participant noted, "*There is very little to no impact on my community as it is not a holiday destination of note. In areas we have used short term rental, we have found locals to be welcoming and friendly.*"

Another participant mentioned, "*I do not live in an area that attracts many tourists, so I do not believe there is a great market for short-term rental hosts in my area. For this reason, I would say their impact is small or none.*"

Additionally, another significant reason mentioned by British participants for the minimal impact of STRs in their communities is the remote location of their city or town from larger urban centers. This geographical distance from major cities plays a crucial role in shaping the prevalence and impact of short-term rental activity.

As one participant explained, "*Where I live, I am unaware of many short-term rentals, so I really do not think there is an impact. My town is not close enough to London for people to choose to stay here for a vacation.*" These insights suggest that the perceived impact of STRs varies significantly between the US and the UK, largely due to differences in local tourism demand and geographical factors. In areas with fewer tourist attractions and greater distance from major urban centers, the presence and impact of STRs are notably diminished. This information is crucial for policymakers and community planners who must consider these factors when addressing the regulation and integration of STRs within different regions. By understanding the local context and the reasons behind the minimal impact of STRs in certain areas, more tailored and effective policies can be developed to manage their presence and effects.

3.5. Theoretical Implications

Tourism scholars have examined the multifaceted impacts of STRs, for example on the housing market (Dinatale et al., 2018; Garcia-López et al., 2020; Robertson et al., 2022), hospitality, and over-tourism (Soh & Seo, 2021; Celata & Romano, 2022; O'Neill & Yeon, 2023). However, there is a noticeable lack of attention when it comes to the perceived

impacts of platforms, especially through the lens of digital inequality and inclusive tourism (Van Dijk, 2005; Scheyvens & Biddulph, 2018; Lutz & Angelovska, 2021). We contribute to such scholarship by showing the intricacies of how both digital practices and attitudes towards digital technologies – here in the form of perceived impacts – are shaped by personal and positional characteristics. Our work fills a gap in understanding perceived STR impacts by integrating digital inequality theory and inclusive tourism. Unlike previous studies, we employ a quantitative approach and broaden the scope by including both US and UK samples. This enriches our understanding of sociodemographic influences on STR perceptions and identifies potentially disadvantaged groups (Jordan & Moore, 2018; Mody et al., 2019)

The research findings reveal that age, education, and income levels are significant determinants in the utilization of STR platforms. These conclusions are consistent with the findings of (Andreotti et al., 2017), which suggest that younger individuals, who possess higher educational qualifications, and have greater incomes are more inclined to use such sharing platforms. Those with lower income, education, and older are excluded. When certain demographics are excluded from participating in the STR market, it can contribute to a lack of diversity and inclusivity in tourism. This exclusion can limit the spread of economic benefits within a community, as the income generated from STRs will likely flow to a homogenous group that is younger, more educated, and has higher income. As a result, the potential for STRs to contribute to local economic development is diminished, as not all community members have the opportunity to participate as hosts or service providers. Contrary to the findings by Kim et al. (2013) and, Huang and Yuan (2017) which identified gender as a significant factor influencing online customer behavior in tourism, our research did not find gender to be a significant determinant in the use of STR platforms. This suggests that there is an equitable opportunity for all genders to engage with and benefit from STR platforms. Significantly, STRs contribute to inclusive tourism, thereby supporting the attainment of Sustainable Development Goal (SDG) 10, which calls for reduced inequalities (Lutz & Angelovska, 2021). Furthermore, our findings align with research by Johnson and Mehta (2024) which suggests sharing economy is a digital common that provides women access to vast networks and resources.

This nuanced understanding of the sharing economy highlights its role as a facilitator of inclusivity, even as it continues to navigate and improve upon its communication barriers.

Investigating the perceived impacts of STRs, the results indicate younger individuals exhibit a more favorable view of the impacts of STRs. Being active participants in the STR market, this demographic is likely to have their perception of STR impacts influenced positively. For example, they typically view the lifestyle and economic aspects of STRs in a positive light because they directly benefit from them. The social dimension of STRs resonates with the younger generation's values of openness and exchange. The interaction with guests from various cultural backgrounds is not merely a transaction but an opportunity for cultural exchange and building global networks. The positive perceptions of STRs by younger individuals can also be attributed to their lifestyle choices, which often prioritize experiences over possessions. The sharing economy model of STRs aligns with this preference, offering an authentic and localized travel experience that is sought after by many young travelers. Furthermore, our study found that gender did not significantly affect the perceived impacts of STR platforms. This finding is consistent with the research by Sharma and Dyer (2009) which suggested a level playing field in terms of access to and benefits from STR platforms for all genders. This gender neutrality in perceptions is an encouraging indicator of inclusivity within the STR marketplace. It implies that the economic and social opportunities afforded by STRs—such as supplemental income for hosts and affordable, diverse lodging options for travelers—are equally perceived by men and women.

In line with previous research, based on a study by Miguel et al. (2022), the perceived impacts of STRs among UK residents exhibit an ambivalent yet moderately positive sentiment. However, this study highlights that US residents hold a comparatively more favorable perception of STRs. According to Nieuwland and van Melik (2020), European cities tend to have more relaxed regulations for STRs compared to their American counterparts which typically enforce stricter rules, such as the necessity for permits, specific safety measures, and the provision of information by STR hosts. This difference can be attributed to the regulatory approaches adopted by European and American cities, to manage and mitigate the negative impacts associated with STRs.

Further analysis suggests that residents' perceptions of STRs vary significantly depending on their area of residence. Those living in rural areas, suburbs, and small to medium-sized cities generally hold a more negative view on at least one aspect of STRs when compared to their counterparts in larger cities. This variance in perception could be attributed to several factors. Residents in rural areas, suburbs, and smaller cities may experience the negative externalities of tourism more acutely. Without the infrastructure to support increased visitor numbers, these regions can suffer from traffic congestion, overuse of public spaces, and a strain on local resources. Furthermore, the economic benefits in these areas may be more dispersed or less visible, leading to a perception that STRs serve external visitors at the expense of the local community as indicated from the results of the analysis the impacts on the economic aspect didn't appear significant. The findings align with research by Sharma and Dyer (2009), which indicates a proximity effect. Those living closer to tourist attractions often benefit more directly from tourism and, therefore, tend to have a more favorable view of its impact. This proximity allows for easier access to the economic opportunities provided by tourism, including increased demand for local services and businesses. However, this "proximity benefit" might not be uniformly felt across different residential areas, especially when the capacity to absorb tourist activity is limited. In rural or less densely populated areas, residents may feel that tourism disrupts their lifestyle and environment, potentially leading to a negative perception of STRs.

Right-leaning individuals may view STRs favorably as they align with property rights by Segal and Whinston (2013), which posits that property rights grant the owner the ability to use and benefit from an asset, exclude others from it, and transfer these rights if they choose. This viewpoint is supported by Friedman (2017) who argues for minimal government interference in private property decisions, which could be extrapolated to support the freedom to rent out one's property via STR platforms.

Our additional analysis of qualitative of the data enriches our understanding of the sustainability impacts of STRs by incorporating and comparing various stakeholder perspectives. Unlike previous studies that often focus on specific sustainability aspects, our study explores the viewpoints of hosts, guests, neighbors/residents, and local businesses. By doing so, we emphasize the significance of a holistic approach to sustainability in discussing STRs. Our findings offer a broader framework for assessing

the multidimensional impacts of STRs, fostering a better integration of economic, environmental, and social considerations in the discourse.

The findings also enrich the theoretical debate around the sharing economy and its role in sustainable and inclusive tourism (Midgett et al., 2017; Park & Agrusa, 2020; Stergiou & Farmaki, 2020; Lutz & Angelovska, 2021; Miguel et al., 2022). This study is consistent with the findings of Stergiou and Farmaki (2020) which suggest that STRs deeply integrate into daily life, impacting various aspects of the economy, society, and environment. Consequently, they may exacerbate neighborhood issues by not only altering the physical components of neighborhoods but also reshaping social dynamics among residents, both individually and collectively. In contrast to Midgett et al. (2017), who solely examined Airbnb and found it to be more sustainable than traditional accommodation, our research shows that STRs can have mixed impacts on sustainability. Furthermore, qualitative studies like ours provide a more comprehensive understanding of perceived impacts compared to quantitative research such as Miguel et al. (2022).

We found that STRs impact stakeholders economically, both positively and negatively, showcasing the diverse consequences within the industry. Specifically, regarding housing affordability and availability, it exposes the issue of tourism gentrification. This phenomenon occurs when the proliferation of tourism accommodations worsens housing shortages and increases property prices, resulting in the displacement of long-term residents. Unchecked growth in the STR market can unfairly inflate property prices, adversely affecting first-time homebuyers and raising rents for long-term tenants (Zou, 2020).

While STRs offer convenience and economic benefits, they can also impact social cohesion, cultural integrity, and a sense of place within a neighborhood, ultimately contributing to feelings of community loss or solastalgia among long-term residents. Indeed, STR platforms, such as Airbnb, significantly affect host communities emotionally, particularly in tourist hubs, whether they are urban or rural. Petruzzi et al. (2023) suggest that effectively managing aspects such as housing stability, community identity, disturbances, safety, resident-tourist relations, and economic support for local businesses is crucial for fostering a socially sustainable host community.

Further analysis reveals that while some participants acknowledged the positive aspect of cross-cultural interaction facilitated by STRs, research by Muschter et al. (2022) emphasizes that many Airbnb listings are not managed by homeowners renting spare rooms, but rather by professional landlords seeking higher rents compared to long-term rentals.

The relative absence of positive environmental impacts of STRs by participants is noteworthy, especially considering reports that suggest platforms like Airbnb can contribute to environmental sustainability. For instance, a study by CleanTech (2014) found that platforms such as Airbnb reduce energy consumption and lower gas emissions. This discrepancy underscores the importance of considering multiple perspectives and sources of information when assessing the environmental impacts of STRs. Factors like individual experiences, biases, and study framing could influence participant perceptions. Participants may not fully recognize the positive environmental contributions of STRs, especially if discussions focus on negative impacts. Despite potential benefits like reducing environmental footprints, these may not always be apparent. This result adds to the literature on tourism's environmental dimensions, emphasizing the need for responsible tourist behavior and environmental stewardship (Gössling et al., 2012).

The perception gap between UK and US citizens regarding STR platforms may stem from differing regulatory frameworks across cities. American residents might experience stronger effects due to widespread STR listings or less stringent regulations. Conversely, British respondents often reside in smaller towns with fewer tourist attractions, experiencing fewer disruptive influences from these platforms. With the US hosting a significant number of STR listings globally (Woodward, 2024), residents there may perceive impacts more intensely than their British counterparts. This highlights the importance of considering geographical context and regulations when studying community attitudes towards STRs. Further exploration into distinct regulation, urban density, and resident perceptions can offer insights into localized dynamics and guide policy responses effectively.

This study illustrates how the sharing economy, exemplified by STR platforms, can be both a catalyst for sustainable practices and a source of sustainability challenges. This

duality encourages a reevaluation of theoretical models that often position the sharing economy as inherently sustainable. The nuanced understanding of STR's impacts on local communities, as revealed in this research, invites further theoretical exploration into the complex relationships between technology-enabled platforms, tourism development, and sustainability.

3.6. Practical Implications

Our findings provide valuable insights for STR platforms. Particularly, STR platforms should cultivate a more comprehensive positive impact and overall user experience. This approach can contribute to the establishment of a coherent brand image and help in building legitimacy within the market. The outcomes of this study hold practical value for advocates of STR platforms, enabling them to tailor their strategies according to specific demographic profiles, ensuring a more inclusive approach. Government and policymakers need to invest in tourism infrastructure, particularly in rural and suburban areas. This investment could improve residents' perceptions of STRs, as the absence of such support may lead to negative views, as discussed by Garcia-López et al. (2020). Platform service providers should craft inclusive tourism policies that address the needs of underrepresented demographics in STR participation. This approach is supported by Andreotti et al. (2017), who highlighted the tendency of younger, more educated, and wealthier individuals to engage with STRs, suggesting the need for policies that also enable older and less affluent community members to benefit from the STR economy. For example, they can offer amenities or create more authentic experiences designed to attract older individuals, encouraging their active participation as both guests and hosts on these platforms. The preference of right-leaning individuals for STRs, as noted by Segal and Whinston (2013), and Friedman (2017) implies that STR platforms could advocate for property rights, emphasizing responsible use that aligns with community values and sustainability. Examining the perceived impacts of STRs through the framework of digital inequality theory and inclusive tourism enables policymakers to formulate policies that are fairer and more encompassing, effectively tackling the distinct hurdles encountered by various societal groups within the digital sharing economy.

From a practical standpoint, our findings from the qualitative analysis offer useful insights for policymakers, tourism industry stakeholders, and STR platform operators. For *policymakers*, the study highlights the need for balanced regulations that address the diverse impacts of STRs. Policies should aim to harness the economic benefits of STRs while mitigating negative social and environmental effects. This could include measures like setting limits on the number of rental days, enforcing stricter noise regulations, and implementing zoning laws to preserve community integrity and housing affordability. The fact that a significant number of participants expressed a lack of impact from STRs and highlighted their absence in their communities suggests that the influence of these platforms tends to be more prevalent in larger cities or popular tourist destinations. This observation indicates that the perceived impacts of STRs, whether positive or negative, are likely to be more pronounced in areas where such platforms are actively operating. Thus, tailored and fine-grained regulation might be needed to deal with the sustainability impacts of STRs.

Depending on the destination, policymakers may consider different approaches. Common limitations on Airbnb include quantitative restrictions on the number of accommodations, visitors, or rental days; locational limitations to specific areas; density controls in neighborhoods; and qualitative regulations defining acceptable accommodation types (Gottlieb, 2013; Miller, 2014; Guttentag, 2015; Gurran & Phibbs, 2017). According to Benítez-Aurioles (2021), municipal authorities implement measures to address tourism pressure, protect affordable housing, and preserve residential areas. For instance, New York City, as of September 5, 2023, commenced enforcing regulations that mandate all eligible short-term rental hosts to be registered with the city or hold Class B status to continue hosting STR stays (Hajela, 2023). Implementing waste management policies and promoting responsible tourism practices can help mitigate environmental degradation and preserve the natural beauty of neighborhoods.

For *tourism industry* stakeholders and *STR platform operators*, the study emphasizes the importance of engaging with local communities and considering their concerns. This engagement can foster a more sustainable tourism ecosystem that benefits residents, tourists, and businesses alike. STR platforms can play an important role in promoting responsible hosting practices, raising awareness about sustainability issues, and

facilitating community involvement in tourism development. Collaborative efforts between STR platforms, local governments, and communities could lead to innovative solutions that balance tourism growth with sustainability objectives, ultimately contributing to the long-term health and vitality of local destinations Stergiou and Farmaki (2020) highlight the importance of policymakers recognizing the role of STR platforms in regulating the conduct of hosts and guests in STR accommodations. For instance, in their research in Koukaki residents are initiating self-organization efforts, potentially forming a lobby group capable of influencing policymaking regarding P2P accommodation networks. Capacity-building initiatives targeting hosts, guests, and local communities can enhance awareness and understanding of the social, economic, and environmental implications of STRs. Training programs, workshops, and educational campaigns can empower stakeholders to adopt responsible behaviors and practices that contribute to the sustainable development of tourism. Given the dynamic nature of tourism and the STR, policymakers by monitoring trends, evaluating impacts, and adjusting strategies as needed, communities can effectively manage the challenges and opportunities associated with STRs while striving for sustainability and resilience. Implementing these practical implications can help communities harness the potential benefits of STRs while minimizing negative impacts and promoting sustainable and inclusive tourism development.

Chapter 4: The Sociodemographic Dynamics of Travelers and Accommodation Preferences on Airbnb

4.1. Introduction

People can be left out of social and economic activities due to their age, gender, ethnicity, economic background, disability, where they live, and other factors, sometimes in combination (Lutz & Angelovska, 2021). For instance, outdated negative attitudes about women using public and tourist areas still exist and continue to shape how society views (Wilson & Little, 2008). However, women seek freedom, the opportunity to meet new people and experience different cultures, to engage in new and authentic activities, to have adventures, to broaden their perspectives, and to enhance their knowledge (Osman et al., 2019; Nikjoo et al., 2021; Yang, 2021; Yang et al., 2022; Hosseini et al., 2022).

Accommodation is a critical sector of tourism, playing a pivotal role in attracting tourists from different segmentations. Indeed, a diverse range of accommodation options allows a broader range of people to utilize and enjoy them According to (Pina & Delfa, 2005), having a diverse range of accommodations in different sizes and types effectively attracts people with various backgrounds and preferences. For example, backpackers often have extended stays, making budget-friendly accommodations more appealing to them (Nash et al., 2006).

The demand for secure and private lodging options is driven by the need for personal safety and peace of mind, which significantly enhances the travel experience. Solo-traveling females value hotel amenities like a cell phone with emergency contact information, a nearby ATM, and personalized stewardship service from staff (Herjanto et al., 2020). This preference is driven by the desire for a personal retreat where they can relax without concerns about sharing their space with strangers (Angelovska et al., 2020).

Since its launch in 2008, Airbnb has grown to operate in over 100K cities across 220 countries (Airbnb, 2023). Contrary to the perception of it being a single uniform service, Airbnb offers four distinct types of home-sharing options: shared room, private room, hotel room, and entire place.

According to Lutz and Newlands (2018), different types of accommodations attract different demographics. For example, entire homes tend to attract older, higher-income consumers who prioritize privacy and convenience, while shared rooms appeal more to younger, budget-conscious travelers who are open to social interactions

Diversity of accommodation types allows people from various sociodemographic backgrounds to find suitable lodging options on the platform. However, the specific types of accommodations preferred by different demographic segments have not been thoroughly explored in current research. Therefore, a critical question arises: What are the most popular types of accommodations according to various sociodemographic factors?

To address this question, we investigate the consumer characteristics of Airbnb users. By doing so, we can identify whether the consumer base can be divided into distinct segments. The analysis differentiates between four accommodation types: shared room, entire place, hotel room, and private room.

Understanding the preferences for these accommodation types can help reveal patterns among different sociodemographic groups. Moreover, the results of this research provide valuable insights into the segmentation of consumers of STRs and their accommodation preferences. This information can help hosts tailor their offerings to meet the specific needs and desires of different demographic groups, enhancing customer satisfaction and potentially increasing bookings.

4.2. Methodology

A comprehensive survey was designed to collect the data, utilizing Microsoft Forms as the platform for its creation. Firstly, the participants were asked for demographic information such as their age, gender and marital status. To understand respondents' Airbnb usage

frequency, "*How many times have you used Airbnb during the last 5 years?*" The options provided were: Never used, 1-5 times, 6-10 times, and more than 10 times.

Next, the survey inquired about the types of accommodations used by the participants. This question covered the four accommodation options mentioned before, namely entire place, hotel rooms, private rooms, and shared rooms. Participants were allowed to choose more than one option if they had used multiple types of accommodations.

Ito collect the data, in March 2022, we utilized the Amazon Mechanical Turk (MTurk)[4] platform. The recruitment of participants for our study using MTurk was considered appropriate because MTurk users tend to exhibit typical behavioral patterns and pay close attention to instructions, like participants from traditional research sources (MTurk, 2024).

We collected a total of 459 responses in total. However, we removed those who answered "*Never used*" to the frequency of Airbnb platform usage to avoid bias. Moreover, incomplete or unanswered surveys were excluded from the data. Ultimately, 448 surveys remained for our analysis.

4.3. Results

4.3.1. Descriptive statistic

The largest group of participants falls within the age range of 25-34 years old (48.1%). Following the 25-34 age group, the next largest cohort is the 35-44 (27.5%) age group. The third largest age group among survey participants is 45-54 (9.2%). The 55-64 age group follows (7.4%), representing a smaller portion of Airbnb users (Figure 14).

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[4] Amazon Mechanical Turk (MTurk) is a crowdsourcing marketplace that makes it easier for individuals and businesses to outsource their processes and jobs to a distributed workforce who can perform these tasks virtually. This could include anything from conducting simple data validation and research to more subjective tasks like survey participation, content moderation, and more. MTurk enables companies to harness the collective intelligence, skills, and insights from a global workforce to streamline business processes, augment data collection and analysis, and accelerate machine learning development. (https://www.mturk.com/)

Participants aged 18-24 (5.4%) make up the next largest segment. Finally, the smallest group of participants was +65 (2.5%). In addition, as depicted in Figure 15, the participant group consists of 42% men and 58% women.

Figure 15: Distribution of Age Groups
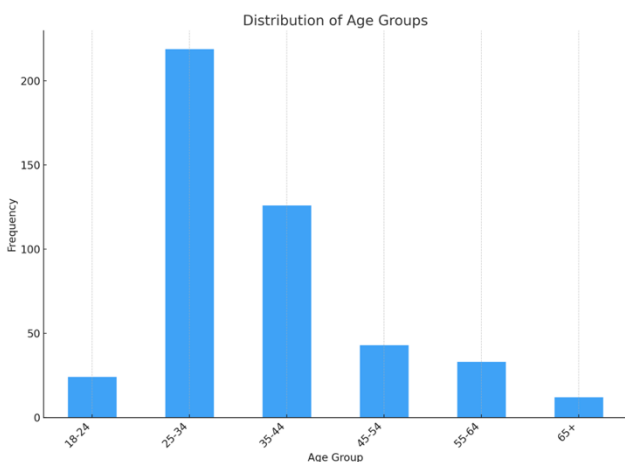
Figure 14: Gender Distribution
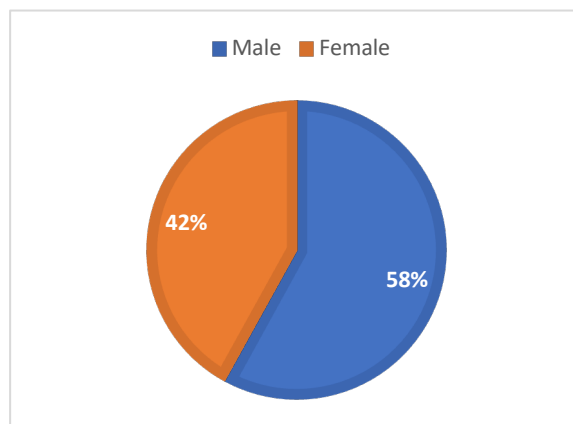
Source: Own elaboration

Further analysis describes the type of accommodation preference, as depicted in Figure 16. Given that participants could select multiple accommodation types, our initial step involved expanding the dataset to account for each accommodation choice. This process involved creating a separate entry for each combination of accommodation types selected by an individual participant, thereby ensuring that all choices were represented accurately in the analysis. Subsequently, we constructed a set of dummy variables for each participant, corresponding to each accommodation type. These dummy variables were binary indicators, where a value of '1' signified that the participant chose that particular accommodation type, and a '0' indicated they did not. This approach allowed us to perform a more granular analysis, capturing the nuances of participants' preferences across multiple accommodation types and enabling a more comprehensive understanding of their behavior.

The most popular type of accommodation on the platform is the private room, accounting for 37% of all bookings. This preference indicates that a significant number of guests value the balance between privacy and affordability that private rooms offer. Staying in a private

room often allows guests to interact with their hosts, gaining local insights and personalized recommendations while maintaining their own space.

Following private rooms, entire places are the second most popular type of accommodation, representing 28% of bookings. Entire places provide guests with full privacy and control over their environment, making them a preferred choice for families, groups of friends, or travelers seeking a home-like experience. The appeal of entire places is enhanced by the ability to cook meals, host gatherings, and enjoy a space exclusively dedicated to the guests.

Hotel rooms on Airbnb come in as the third most popular accommodation type, making up 27% of the bookings. This shows that traditional hotel experiences are still in demand, especially for guests who prefer the amenities and services typically associated with hotels, such as daily housekeeping, front desk support, and sometimes additional facilities like gyms and pools.

Finally, the least popular type of accommodation on the platform is the shared room, accounting for only 8% of bookings. Shared rooms are typically chosen by budget-conscious travelers, such as backpackers or solo adventurers, who prioritize cost savings over privacy (Nash et al., 2006). While shared rooms can offer unique social experiences and opportunities to meet new people, the lack of personal space makes them less appealing to the majority of guests.

Figure 16: Accommodation Type Preference
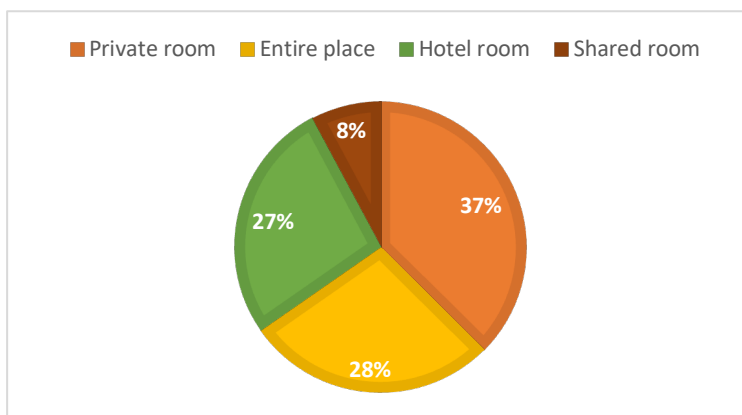
Source: Own elaboration

4.3.2. Accommodation Preference by the Demographic

Since the number of respondents varied across different age groups, normalization was performed to convert the raw counts of preferences into percentages for each age group. This transformation is essential because it allows us to understand the relative preference for each type of accommodation within each age group, rather than just looking at the absolute numbers. When we use raw counts, the data can be misleading if the number of respondents in each age group is significantly different. For example, if one age group has many more respondents than another, their raw counts for each accommodation type will naturally be higher, but this doesn't necessarily mean that the preference is stronger in a proportional sense.

4.3.3.1. Accommodation Preferences by Gender Group

The results depicted in Figure 17 indicate both men and women show a strong preference for private rooms, with 37.56% of men and 37.59% of women favoring this option. This indicates a universal inclination towards having personal space within shared properties. In contrast, shared rooms are the least popular option among both genders, but women are even less inclined towards this type of accommodation, with only 5.11% opting for shared rooms compared to 9.76% of men.

When it comes to entire places, women show a slightly higher preference, with 29.56% opting for this type of accommodation compared to 26.59% of men. This suggests that women might value the privacy and space offered by entire places a slightly more than men.

Hotel rooms are relatively equally preferred by both genders, with 26.10% of men and 27.74% of women choosing this option. This indicates a similar appreciation for the convenience and amenities provided by hotels among both men and women.

Overall, while the preference trends are quite similar across genders, women show a slightly higher inclination towards entire places and hotel rooms, and a markedly lower preference for shared rooms compared to men.

Figure 17: Accommodation Preference by Gender
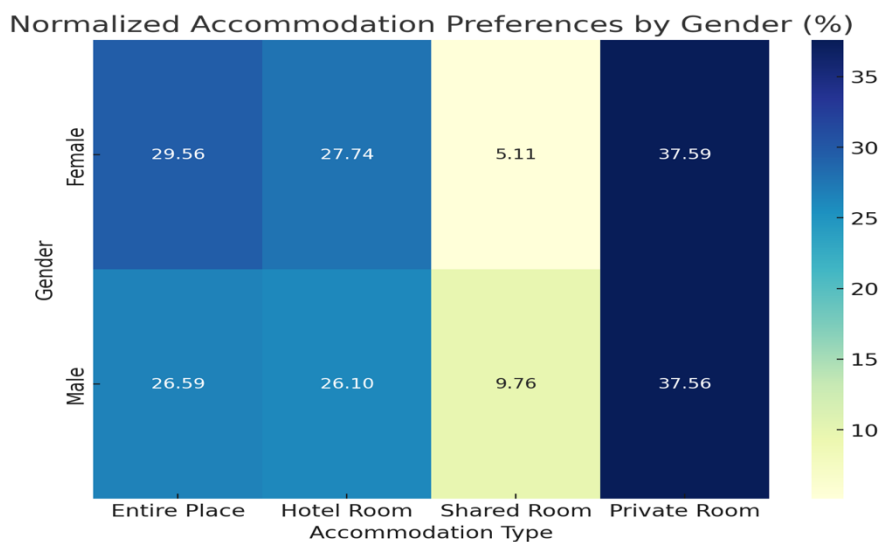
Source: Own elaboration

4.3.3.2. Accommodation preference by the Age group

Figure 18 depicts accommodation preferences by different age groups. Among the 18-24 age group, the most popular accommodation type is private rooms, with 38.10% of respondents preferring this option. Entire places are also highly favored at 35.71%, while hotel rooms are less popular at 16.67%, and shared rooms are the least favored at 9.52%.

For the 25-34 age group, private rooms are again the most preferred option at 38.49%, followed by hotel rooms at 31.23%. Entire places are chosen by 24.61%, and shared rooms remain the least popular at 5.68%. Respondents aged 35-44 show a balanced preference, with 37.30% choosing private rooms and 30.27% preferring entire places. Hotel rooms are selected by 23.78%, and shared rooms by 8.65%.

In the 45-54 age group, private rooms are preferred by 33.85%, while 32.31% favor entire places. Hotel rooms are chosen by 23.08%, and shared rooms by 10.77%. For those aged 55-64, private rooms are the most popular choice at 41.51%, with entire places and hotel rooms equally favored at 24.53%. Shared rooms are the least preferred at 9.43%. Among respondents aged 65 and above, private rooms are favored by 27.27%, entire places by 31.82%, hotel rooms by 22.73%, and shared rooms by 18.18%.

Generally, private rooms are consistently the most popular choice across all age groups, especially among those aged 55-64. Entire places are strongly preferred by the youngest (18-24) and oldest (65+) age groups. Hotel rooms are more popular among the 25-34 age group, while shared rooms are the least popular across all age groups but slightly more accepted by the youngest and oldest respondents.

Figure 18: Accommodation Preference by the Age Group
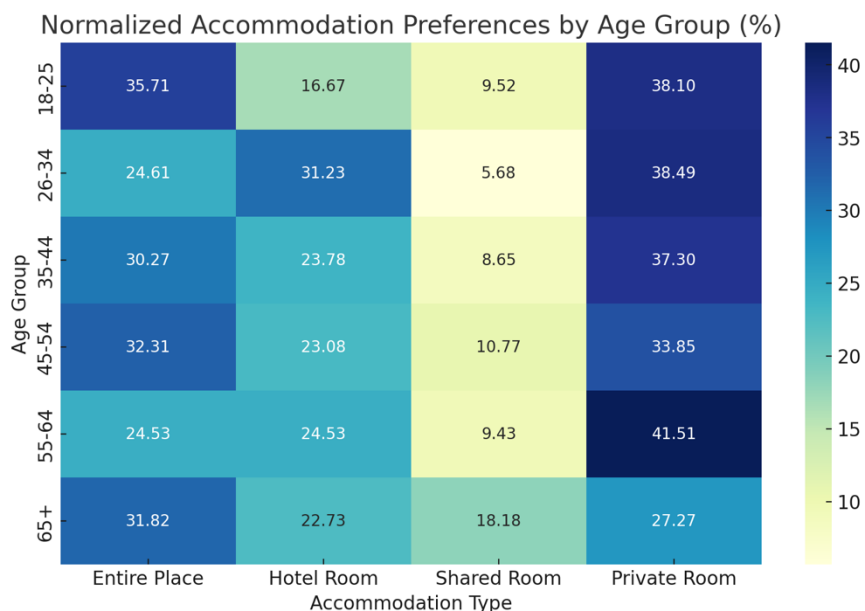
Source: Own elaboration

4.3.3.3. Accommodation Preference by Martial status

Marital status and accommodation preference are shown in the Figure 18. Singles show a strong preference for private rooms, with 38% opting for this type of accommodation, followed by 28% favoring hotel rooms, and 26% preferring entire places. Shared rooms are the least favored among singles, with only 9% selecting this option. This trend indicates that singles value privacy and personal space but are also flexible between private rooms and hotel stays. On the other hand, those who are married or in a relationship overwhelmingly prefer entire places, with 38% choosing this option, closely followed by 37% who prefer private rooms.

This suggests that couples or partners seek more space and privacy, likely due to their need for a comfortable and private environment. Hotel rooms are less popular among married or partnered individuals, with only 20% favoring them, and shared rooms are the least preferred, with just 5% selecting this type of accommodation. This pattern underscores the general desire for more personal space and privacy regardless of marital status. The analysis highlights that singles and married individuals prioritize privacy but exhibit slight variations in their accommodation choices, with singles being slightly more flexible and married individuals showing a stronger preference for entire place.

Figure 19: Marital Status and Accommodation Preference
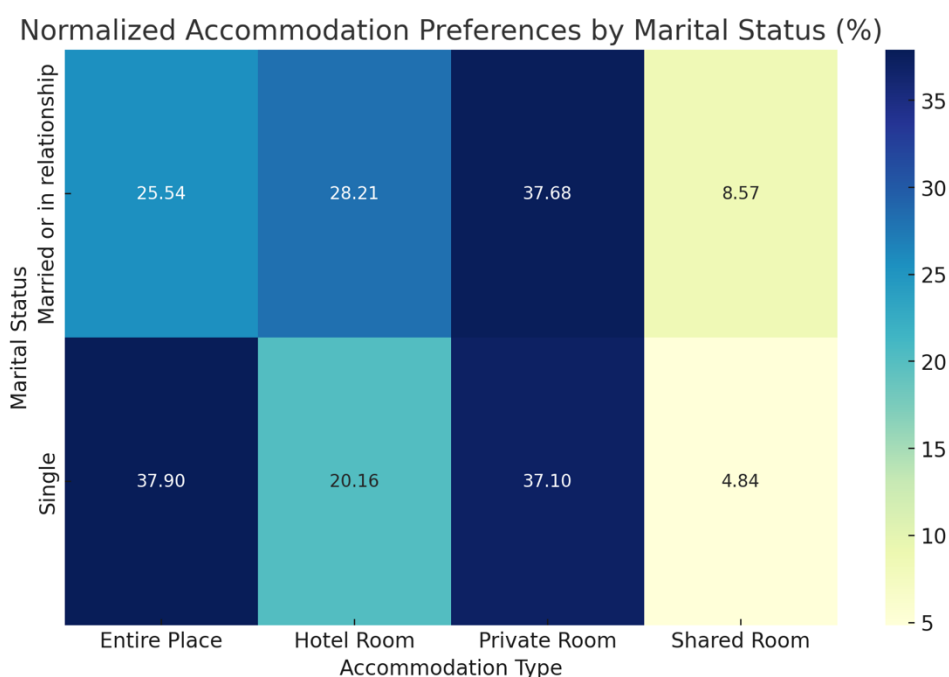
Source: Own elaboration

4.3.3.3. Accommodation Preference by Frequency of Travel

The analysis of frequency of using an of Airbnb and accommodation type preference indicates and among those who used Airbnb 1-5 times during the last 5 years, the most popular accommodation type is entire places, with 36.32% of respondents preferring this option (Figure 20). Private rooms are also highly favored, with 33.02% choosing this type. Hotel rooms are less popular at 23.58%, and shared rooms are the least favored, with only 7.08% of respondents opting for this type. Figure

For those who booked Airbnb 6 to 10 times during past 5 years, private rooms are the most preferred option, with 41.88% indicating this choice. Entire places are also significantly preferred at 24.35%, followed closely by hotel rooms at 25.32%. Shared rooms remain the least popular option, with 8.44% of respondents selecting this accommodation type.

Among frequent travelers who used Airbnb more than 10 times, hotel rooms become the most popular choice, with 33.54% favoring this option. Private rooms are also highly preferred, with 35.37% choosing this type. Entire places are selected by 23.17% of respondents, and shared rooms are the least favored, with 7.93% opting for this type.

Figure 20: Frequency of Using Airbnb and Accommodation Preference
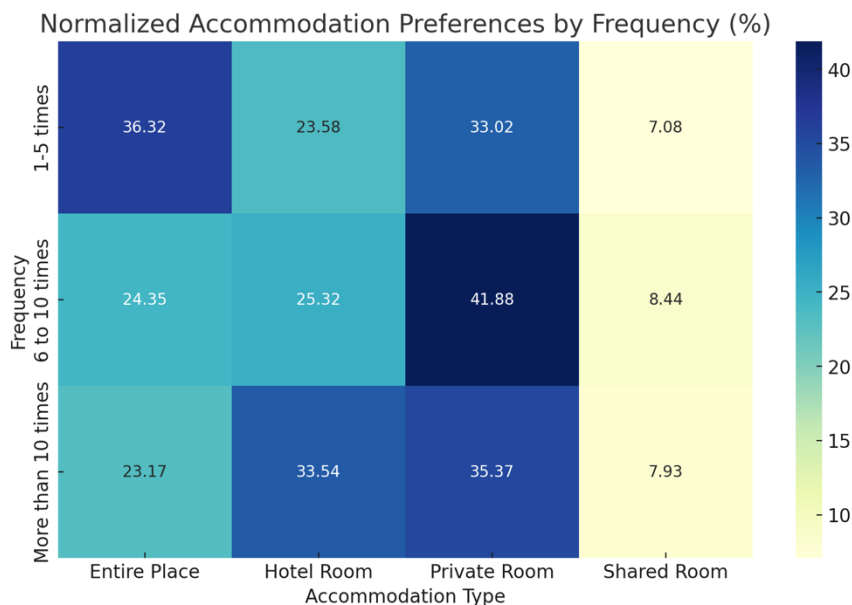
Source: Own elaboration

Overall, entire places are preferred by those who used Airbnb less (1-5 times), suggesting that occasional travelers value privacy and space. Private rooms are consistently popular across all frequency categories, with the highest preference observed among those traveling 6 to 10 times. Hotel rooms are most favored by frequent travelers (more than 10 times), indicating a preference for convenience and amenities during frequent travel. Shared rooms are the least popular option across all frequency categories, with slightly higher acceptance among those used Airbnb 6 to 10 times. This analysis highlights how accommodation preferences vary with the frequency of travel, providing valuable insights

into the needs and priorities of travelers based on how often they travel. Frequent travelers tend to prefer the convenience of hotel rooms, while occasional travelers lean towards the privacy of entire places.

4.3.4. Theoretical Implications

The findings of this study offer significant theoretical implications for understanding consumer behavior in the context of STRs. The results for gender indicate that both men and women have a similar preference for private rooms. This highlights private rooms as the most popular accommodation type across genders. According to Cheng and Jin (2019), Airbnb guests highly value the privacy and safety provided by this type of accommodation. However, Valentine (1989) highlights women's fear as solo travelers. The current results suggest that the safety and privacy offered by private rooms on Airbnb may mitigate these concerns, making them a preferred choice for both men and women. This shift indicates a significant improvement in the perception of safety in shared economy accommodations, especially for female travelers. Moreover, the second most popular type of accommodation is the entire place. This type of accommodation is especially slightly more popular among women. This preference may be attributed to the greater sense of security and control over the environment that entire places provide, addressing safety concerns more effectively than other accommodation types. In contrast, shared rooms are the least popular accommodation type among both genders. This suggests that despite their cost-effectiveness, shared rooms do not meet the privacy and safety expectations of most travelers, making them a less favorable option.

Regarding age groups, private rooms are consistently the most popular choice among participants across all age ranges. This preference highlights the universal appeal of private rooms, which balance affordability and privacy, meeting the needs of a diverse demographic. For younger travelers, private rooms offer a budget-friendly option with essential personal space. Young professionals and small families, values the privacy and personalized experience of private rooms, which remain cost-effective. Entire place is the second popular accommodation type among all the age groups. Younger travelers (18-24) and older travelers (55 and above) especially value the privacy and control that entire place offer, making them a preferred choice. This consistent popularity underscores the

broad appeal of entire places for those seeking a home-like experience during their travels.

The preference for entire places among married individuals or those with partners aligns with Lutz and Newlands (2018) research, which shows that households with children tend to prefer entire homes significantly more than those without. Moreover, the only significant factor regarding travel partners is that guests traveling with a partner are more likely to book entire homes. In contrast, traveling alone, with friends, or family does not affect this choice. In addition, the home benefits factor aspects related to the advantages of renting the entire place. This makes sense, as the benefits of renting a whole home are typically interconnected (Guttentag et al., 2017).

Interestingly, the results show that those who travel more frequently tend to use private rooms more often. This suggests that frequent travelers value the balance of affordability and privacy that private rooms offer, making them a preferred choice for regular stays. This finding is consistent with previous research by Nash et al. (2006), which suggests that frequent travelers, such as backpackers who typically have longer stays at their destinations, are also more likely to choose budget accommodation options.

Additionally, the cost-effectiveness of STRs is a significant factor driving the use of this type of accommodation (Guttentag et al., 2017). For travelers who frequently travel choose private rooms over entire places or hotel rooms (Nash et al., 2006). These travelers need to manage their travel budgets efficiently without compromising on the quality of their stay. Private rooms provide a middle ground, offering a degree of interaction with hosts and access to local insights, enhancing their travel experience.

4.3.5. Practical Implications

The findings of this study offer several practical implications for Airbnb hosts, accommodation providers, and marketing strategists. Given that private rooms are the most popular accommodation type across all demographics, Airbnb hosts should focus on enhancing the privacy and safety features of their listings. This could include installing secure locks, providing private bathrooms, and ensuring clear communication about safety protocols. Emphasizing these features in listings can attract more bookings from

both male and female travelers. The data indicates that frequent travelers prefer private rooms. Hosts can cater to this segment by offering discounts for long-term stays, loyalty programs, or additional amenities like workspace areas and high-speed internet, which are particularly attractive to business travelers and digital nomads.

Although shared rooms are the least popular, there is still a market for budget-conscious travelers. Hosts can improve the appeal of shared rooms by ensuring cleanliness, providing personal storage spaces, and creating a welcoming and social environment. Highlighting these improvements in listings can help attract more bookings from solo travelers and backpackers (Nash et al., 2006). Moreover, shared rooms are presented as a '*hostel*' experience, entire homes are described with the language of a '*hotel*' or '*hotel-like*' experience. This language is suggestive of a higher-priced experience and thus attracting a higher-income, or at least less frugal, guest (Lutz & Newlands, 2018). In this regard, STR platforms can emphasize the potential for social interaction and networking opportunities in shared rooms. These platforms can feature stories or testimonials from guests who made lifelong friends or had enriching experiences through shared accommodations. In addition, according to Lutz and Newlands (2018), Airbnb listings for shared rooms often specify a preference for "younger" guests, which can deter older customers due to the vague definition of "younger." This can lead to confusion among potential guests unsure if they meet the age criteria.

Since families prefer entire places, STR platforms can introduce value-added services tailored for family travelers. These could include partnerships with local service providers for child-friendly amenities, grocery delivery, or local tours, which can be bundled with the booking of entire homes to enhance the family travel experience.

Chapter 5: Exploring Tourism Market Vulnerabilities in Mediterranean Europe: A Study of Spanish and Italian Provinces

5.1. Introduction

The European Mediterranean destinations wield significant influence in global tourism. Renowned for their cultural heritage, stunning landscapes, and diverse offerings, these regions attract travelers from around the world seeking unforgettable experiences. In turn, the tourism sector contributes substantially to these economies. Countries such as Spain, Italy, Greece, Croatia, and France heavily rely on tourism as a vital economic sector, contributing significantly to GDP, employment, and infrastructure development.

However, the sudden halt in travel caused by the COVID-19 pandemic exposed vulnerabilities within the tourism sector of many European Mediterranean destinations, including an overreliance on international visitors. The abrupt decline in tourist arrivals and the subsequent economic fallout underscored the need for resilience and adaptability in the face of unforeseen disruptions.

In this paper, we analyze how the structure of destinations' tourism markets affects exposure to shocks, rendering destinations more (or less) vulnerable to global shocks, such as pandemic crises or geopolitical events. That is, whether the composition of the market mitigates (or amplifies) how external shocks percolate into the tourism sector. In this sense, we adhere to the standard definition of short-run vulnerability, i.e., the susceptibility of destinations to experience harm or damage in their tourism sector when exposed to external stressors, threats, or hazards (Milder et al., 2016; Aznar-Crespo et al., 2020).

To accomplish this, we draw from recent literature on tourism resilience (e.g., Gallego & Font, 2019; Gössling et al., 2020; Duro et al.,2021) and identify a concise set of indicators

to assess the vulnerability of tourism markets in Spanish and Italian provinces. Subsequently, we propose a CI of market vulnerability, which consolidates the information content of individual indicators into a single measure. This approach allows us to rank provinces, highlighting the more and less vulnerable, enabling us to establish comparisons and search for general patterns across territories, providing valuable insights into the resilience of tourism markets in diverse geographical contexts. Moreover, the composite index may help as an alert system for destinations that helps policymakers and destination managers make strategic decisions that reduce risks.

Provinces (NUTS 3) are selected as the primary unit of analysis owing to their significant role in governance, direct correlation with the concept of destination, data accessibility, and the feasibility of conducting econometric analyses with sufficient observations. Analyzing at the province level provides a closer insight into the destination concept compared to more aggregated approaches, while the ample number of provinces facilitates exploring vulnerability within a heterogeneous context, thereby simplifying statistical analysis.

The decision to focus exclusively on Spanish and Italian provinces arises from a deliberate balance to secure a comprehensive and comparable array of key market indicators while maintaining ample territorial detail (NUTS 3). Although other countries like France or Greece also have significance in the European Mediterranean scene, their inclusion would require sacrificing either the breadth of available indicators or the granularity of the analysis. Nonetheless, Italy and Spain are two of the most significant players in the EU Mediterranean market, attracting millions of tourists annually. More importantly, these two countries boast a diverse array of tourism products, encompassing sun and sand destinations, natural attractions, as well as urban and cultural heritage sites. This diversity ensures the presence of a broad spectrum of market compositions, allowing for the nuanced exploration of market vulnerabilities and offering actionable insights for destination management that can be extended to other Mediterranean countries.

This study contributes to the existing literature on tourism vulnerability, which encompasses various dimensions. Numerous studies have examined the impact of natural disasters and environmental phenomena, particularly those exacerbated by climate

change (Dogru et al., 2019; Scott et al., 2019; Rosselló et al., 2020). Another strand of research focuses on destinations' susceptibility to conflicts and geopolitical instabilities (Mansfeld, 1999; Liu & Pratt, 2017). Literature has also explored into the consequences of crises and economic shocks (e.g., Prideaux et al., 2003; Williams & Baláž, 2014; Perles-Ribes et al., 2016). Finally, a growing body of literature has explored the implications of epidemic outbreaks, especially the recent Covid-19 pandemic. (e.g.,Hall et al., 2020; Gössling et al., 2020b; Collins-Kreiner & Ram, 2021; Duro et al., 2021). In a more general framework, Duro et al. (2024) study how uncertainty impacts tourism markets and destination price and promotion decisions.

In this sense, our work aligns closely with Duro et al (2022) who developed a composite vulnerability index within Spain. Encompassing both Spanish and Italian provinces offers several advantages. Firstly, it enables a comparative analysis between two geographically neighboring yet distinct countries, shedding light on similarities and differences in market vulnerabilities. Secondly, it enhances the generalizability of findings by exploring a broader range of contexts and factors that influence tourism resilience. Moreover, including both Spanish and Italian provinces not only provides comparative insights but also strengthens the statistical robustness of the analysis due to increased territorial heterogeneity. This diversity enriches the dataset, facilitating more nuanced statistical analyses and reducing the influence of specific territory characteristics. Additionally, studying a diverse range of territories allows for the identification of tailored strategies for each context, thereby enhancing the practical relevance of research findings for policymakers and stakeholders alike.

5.2. Indicators of Market Vulnerability

We analyze market vulnerability at the province level for both Italy and Spain. We must, therefore, find indicators that are readily available at the province level for the two countries, allow for direct comparison between territories and countries, and that straightforward related to market vulnerability. Restricted by the availability of comparable data at the province level for the two countries, we base our analysis on seven indicators that capture the complexity of market structure. This parsimonious approach

also increases the practical use of the posterior composite index, easing its interpretation (Atauri Mezquida et al., 2005).

In our comprehensive analysis, we examine the multifaceted influence exerted by the distance to the source market. In particular, it has been shown that *domestic* tourism significantly reduces the vulnerability of the tourism sector, as has become evident during the COVID-19 pandemic (Arbulú et al., 2021; Duro et al., 2022). Domestic tourism is less volatile and more stable compared to international tourism. During times of global uncertainty or crises (such as economic downturns or pandemics), international travel may decline sharply, but domestic travel is likely to remain more consistent (Canh & Thanh, 2020) domestic tourism not only promotes economic development, job creation, and reduced inequality but also acts as a strategy to alleviate economic vulnerability, as evidenced by the research findings.

However, although the international market is considered more vulnerable than the domestic, not all international markets are alike. *Distant* international markets (beyond the borders of the European Union (EU) for Spain and Italy) are more vulnerable. This vulnerability stems from factors such as limited accessibility and the imposition of distinct regulations, acting as additional barriers to travel, particularly in the face of unexpected shocks (Calgaro et al., 2014; Batista e Silva et al., 2018). Conversely, those in closer geographical *proximity* to a destination, are less likely to contribute to the vulnerability of a tourism destination, due to the ease of transportation, which facilitates accessibility.

Another important indicator of market vulnerability is the *income profile* of demand. The rationale behind this consideration lies in the observation that wealthier tourists tend to withstand the impact of economic shocks more effectively than their lower-income counterparts. This aspect has been notably highlighted during the COVID-19 pandemic. Understanding the income profile of tourists contributes to a more nuanced analysis of the tourism market's vulnerability, especially in times of economic uncertainty and disruptions.

Koo et al.(2016) define dependency in the context of tourism as a situation where a destination exhibits a high reliance on a single entity within its tourism system. In essence, the hypothesis posits that a higher *concentration* in tourism, particularly during certain months, amplifies the destination's susceptibility and exposure to shocks (Duro et al., 2022). *Seasonality* stands out as a prominent aspect of tourism and most tourism destinations experience systematic fluctuations in tourism activities over the year (Higham & Hinch, 2002). Indeed, seasonality escalates market vulnerability by diminishing the opportunities to counteract the impact of shocks, especially when these disruptions occur during months of concentrated demand. The inherent cyclicality in tourism exacerbates the challenges of effectively mitigating and recovering from unforeseen shocks, underscoring the importance of addressing seasonality as a critical factor in bolstering market resilience (Koo et al., 2016; Batista e Silva et al., 2018; Duro et al., 2022)

 Finally, we consider the *length of stay* as a vulnerability indicator. Length of Stay, refers to the amount of time a person spends enjoying leisure activities or using services that are influenced by their visit to a particular destination (Adongo et al., 2017). Some studies, including those by Boakye (2010) and Campos-Soria et al. (2015), suggest that negative experiences at a tourist destination can have serious repercussions, not only affecting that location but also surrounding areas. These consequences might include cancellations of trips, shorter visits, and a significant decrease in tourist demand.

The length of stay at a destination can significantly impact tourism market vulnerability. A longer average stay can contribute to economic stability, diversification, and thoughtful infrastructure planning, all of which collectively reduce the vulnerability of the tourism market. For example, after the events in late 2004, while Bali saw an increase in tourist arrivals, visitors began to stay for fewer days and spent less Money (Gurtner, 2016). If a destination relies on a high volume of short-stay visitors, it may be vulnerable to fluctuations in travel demand. In contrast, longer stays provide a more stable source of revenue that isn't as sensitive to rapid changes in the number of tourists.

In prospect theory, Kahneman and Tversky (2013) suggest that fear arises when the perceived risks or losses from an event are greater than the anticipated benefits.

Additionally, fear can also stem from various sources, including personal experiences, the experiences of friends and family, and information presented in the mass media. Fear negatively impacts tourism demand, as noted by Boakye (2012), and research by Money and Crotts (2003) indicates that tourists who prefer to avoid uncertainty tend to choose shorter stays.

Longer average length of stay can lead to more efficient use of resources such as accommodations and attractions. This efficiency can help businesses plan better and maintain operations even during challenging times. More importantly, visitors who stay longer often develop a deeper connection to the destination, potentially leading to repeat visits and word-of-mouth referrals. Repeat business is typically less sensitive to global shocks than attracting new visitors. A summary of the indicators considered is depicted in Figure 21.

Figure 21: Market Vulnerability
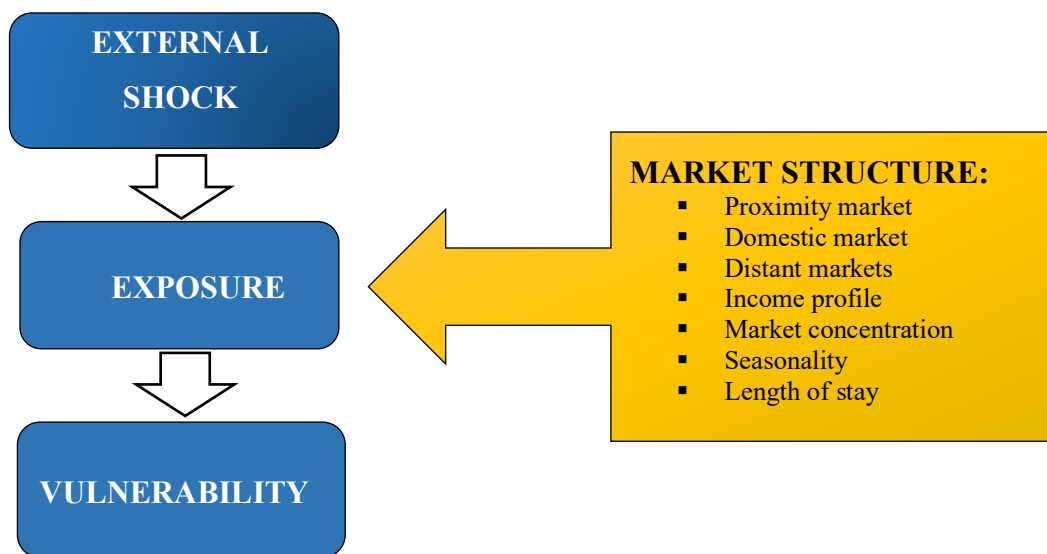
Source: Own elaboration

5.3. Data and Descriptive Analysis

5.3.1. Variable Selection

After selecting the key factors, the next step involves identifying specific variables to compute individual indicators. Our initial focus centers on travelers, as they hold greater

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relevance than overnight stays. This emphasis aligns with our primary concern for market dynamics and effective management. Additionally, we prioritize examining hotel establishments, recognizing them as the pivotal component of tourism demand across all provinces. The substantial economic impact of hotels surpasses that of other establishments, making them a critical focal point in our analysis. Furthermore, it's important to note that data for hotel establishments is accessible at the province level. In contrast, information regarding other types of accommodations, such as camping facilities, is currently unavailable.

The data for each country's provinces was sourced from different entities. Specifically, for Spanish provinces, we retrieved information from the Instituto Nacional de Estadística (INE), while for Italian provinces, the data collection relied on the Istituto Nazionale di Statistica (Istat) website. This approach ensured the utilization of reputable and country-specific statistical sources, enhancing the reliability and accuracy of the obtained data for our comparative analysis. To mitigate the impact of the COVID-19 pandemic, our data collection spans the years 2015 to 2019. This timeframe allows us to establish a baseline and analyze trends in tourism-related indicators without the influence of the pandemic, providing a more accurate representation of the pre-COVID landscape for both Spanish and Italian provinces.

Table 13: Indicators of Market Vulnerability

Indicator	Variable definition	Direction
Domestic	Domestic travelers/total	Positive
Proximity	Bordering country travelers / Int. travelers	Positive
Distant	Non-UE travelers/ Int. travelers.	Negative
Seasonality	Largest month of travelers/ total travelers	Negative
Concentration	Total of 3 largest markets travelers/ total travelers	Negative
Length	Number of overnight stay/total travelers	Positive
Income profile	4- and 5-star hotel travelers /total hotel total travelers	Positive

Source: Own elaboration

Table 13 provides a summary of the definitions of interindividual indicators. This table serves as a comprehensive reference, elucidating the various indicators used to assess vulnerability in the tourism market and illustrating how each contributes to our understanding of market dynamics and susceptibility.

The *domestic* indicator is delineated as the proportion of domestic travelers relative to the overall number of travelers. Simultaneously, *proximity* is characterized by the proportion of travelers from bordering countries to the total count of international travelers. For Spain, the border countries considered are France and Portugal, whereas for Italy, the encompassed border countries are France, Austria, Slovenia, and Switzerland. Likewise, the *distant* indicator is computed by dividing the number of non-EU travelers by the total count of international travelers. To assess *seasonality*, the calculation involves dividing the count of travelers during the month with the highest influx by the total number of travelers. Additionally, *market concentration* is assessed by the ratio of the three largest market to total travelers. The *length of stay* is determined by dividing the total number of overnight stays by the overall count of travelers. Finally, the *income profile* is evaluated by examining the percentage of travelers who opt for 4 and 5-star hotels in comparison to the overall number of travelers.

Subsequently, we standardized the variables orienting them towards lower vulnerability within a range of [0,1] through rescaling (Min-Max). Thus, a lower value of the rescaled index indicates higher vulnerability. This process was undertaken to render the indicators comparable and to orient them uniformly toward higher vulnerability. Standardizing the variables in this manner ensures a consistent and coherent basis for assessing and comparing the vulnerability levels across the diverse indicator.

5.3.2. Analysis of Individual Indicators of Market Vulnerability

Figure 22 illustrates the average indicator values categorized by country and geographic location, specifically distinguishing between Spanish and Italian provinces, as well as between coastal and non-coastal areas within these countries. This categorization allows for a detailed comparison of different regions and their respective vulnerability profiles.

To assess the statistical significance of the mean differences between the considered groups, Table 14 presents the mean difference values along with the p-values from the corresponding t-tests. These statistical tests determine whether the observed differences in average indicator values are significant or merely due to random variation.

The findings reveal nuanced insights into the vulnerability profiles of Italy and Spain. The analysis shows that these differences tend to be statistically significant, indicating that geographic location and country-specific factors play an important role in shaping the vulnerability of tourism markets in these regions. The results underscore the importance of considering both country-level and regional differences when evaluating the impacts of various indicators on market vulnerability.

By highlighting the statistical relevance of these mean differences, the study provides a deeper understanding of the distinct vulnerability profiles in Spain and Italy. This information is crucial for policymakers and stakeholders who aim to develop targeted strategies to mitigate vulnerabilities and promote sustainable tourism practices in different geographic contexts.

Figure 22: Average Indicator Values across Provinces.
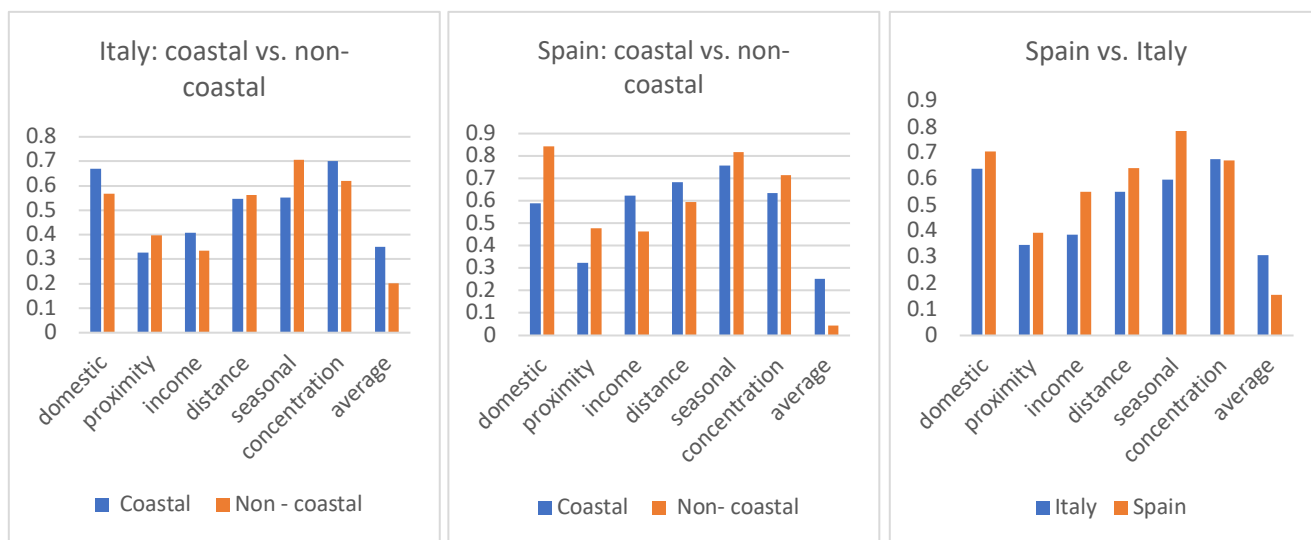
Note(s): Lower values of indicators indicate more vulnerability
Source: Own elaboration

To assess the statistical significance, Table 14 provides the mean difference between groups in Figure 22 together with the p-values from the corresponding t-tests.

Table 14: Mean Difference Between Group Means: T-test.

	Domestic	Proximity	Distant	Income	Seasonal	Concent.	Length
Spain vs Italy	0.06 (0.09)	0.05 (0.18)	0.09 (0.00)	0.17 (0.00)	0.18 (0.00)	-0.01 (0.82)	-0.15 (0.00)
Spain: coastal vs. non-costal	-0.25 (0.00)	-0.16 (0.03)	0.09 (0.06)	0.15 (0.00)	-0.06 (0.14)	-0.08 (0.09)	0.21 (0.00)
Italy: coastal vs. non-costal	0.10 (0.02)	-0.07 (0.09)	-0.01 (0.73)	0.07 (0.13)	-0.15 (0.00)	0.08 (0.04)	0.15 (0.00)

Note(s): Mean difference between groups. P-values from the corresponding t-test in parenthesis.
Source: Own elaboration

Overall, Spain exhibits lower vulnerability across most indicators compared to Italy. Notable exceptions where Italy performs better include the length of stay and market concentration, which are almost identical for both countries. Spain's higher values in the domestic market, proximity markets, income, and seasonality indicators suggest a more resilient tourism sector compared to Italy.

More interestingly, coastal and non-coastal provinces display distinct vulnerability patterns, with these patterns differing between Spain and Italy. In Spain, coastal provinces exhibit lower vulnerability due to higher tourism income, stronger reliance on distant markets, and longer average stays. These coastal regions benefit from a diverse tourist base that contributes significantly to local economies, enhancing their overall stability. However, they face higher vulnerability due to weaker reliance on domestic and proximity markets, which makes them more susceptible to fluctuations in international travel trends. For example, coastal areas like the Balearic Islands and Costa Brava heavily depend on tourists from distant European countries, making them vulnerable to international travel restrictions or economic downturns abroad.

Conversely, non-coastal provinces in Spain demonstrate lower vulnerability owing to stronger domestic and proximity markets and more diverse market concentration. These areas, often characterized by cultural and historical attractions, draw a significant number of local tourists, thus maintaining a steady flow of visitors regardless of global tourism trends. However, they encounter higher vulnerability from lower tourism income, more pronounced seasonality, and shorter average stays. This pattern is evident in regions such as Castilla-La Mancha and Extremadura, where tourism is more seasonal and incomes from tourism are lower compared to coastal regions. Overall, coastal areas

benefit from income and market diversity, while non-coastal areas are strengthened by local and nearby markets, providing a balanced but varied tourism landscape.

In contrast, Italy's coastal provinces exhibit lower vulnerability due to stronger reliance on domestic tourism, higher tourism income, and longer average stays. These regions, including famous destinations like the Amalfi Coast and Sardinia, attract a large number of domestic tourists, which buffers them against international market volatility. However, they face higher vulnerability due to weaker reliance on proximity markets and more pronounced market concentration. This means that while they have a stable income from domestic tourism, they are at risk if domestic travel trends change or if competition from other domestic destinations increases.

Non-coastal provinces in Italy show lower vulnerability from stronger proximity markets and less pronounced seasonality but higher vulnerability due to lower income from tourism and shorter average stays. For instance, regions like Umbria and Marche benefit from being close to major urban centers, attracting visitors from nearby areas. However, their lower overall tourism income and shorter stays present challenges for sustained economic benefit. Overall, Italy's coastal areas benefit from domestic tourism and longer stays, while non-coastal areas are supported by nearby markets and less seasonality, creating a nuanced and complex tourism dynamic.

To further analyze the territorial differences, Figure 23 depicts a heatmap illustrating the vulnerability levels for each indicator. Darker areas on the heatmap correspond to lower vulnerability, suggesting a reduced impact of the respective indicators. This visual representation helps in quickly identifying regions that are more resilient versus those that are more vulnerable.

The figure highlights the distinct vulnerability patterns in Italy and Spain. Italian provinces tend to be more vulnerable to distance indicators, especially those in the middle and northern parts of the country. For example, provinces such as Venezia, Como, Verbano, and Roma, as well as all provinces in the Tuscany region, including Firenze, have very low values for the domestic indicator. These regions heavily rely on international tourists, making them vulnerable to changes in international travel policies

and economic conditions in other countries. Additionally, tourism in these territories also presents vulnerability from proximity and distant indicators, as a significant part of their demand comes from very distant (non-EU) countries, such as the US, China, and Australia. This reliance on distant markets exposes them to greater risk from global disruptions like pandemics or economic recessions.

In contrast, Spanish provinces tend to have lower vulnerability to the distance of the source. Only the two archipelagos, the Balearics and Canarias, and provinces with the two largest capitals, Madrid and Barcelona, present increased vulnerability from distance. Unlike in Italy, this vulnerability arises from the significant share of international EU markets, while distant, non-EU markets have relatively low weight. This means that Spanish regions are less impacted by fluctuations in distant markets, as their tourist base is more evenly distributed among European countries. Interestingly, the income profile shows a similar pattern in both countries, with northern provinces tending to present greater vulnerability. This pattern reflects the higher cost of living and reliance on high-income tourists in northern regions, making them more susceptible to economic changes that affect tourists' spending ability.

Regarding market concentration, the distribution in both countries is characterized by a few provinces being notably more vulnerable than the rest. In Spain, these are the Mediterranean provinces of the Balearic Islands, Tarragona, and Valencia, as well as the Canary Islands, with a large concentration of British, French, and German tourists. This high concentration means that any changes in travel preferences or economic conditions in these source countries can significantly impact these regions. In Italy, the province of Bozen stands out with heightened concentration, heavily relying on German and Austrian tourists. This reliance makes Bozen particularly vulnerable to any changes in the travel patterns of tourists from these countries.

Finally, concerning the length of stay, the pattern is similar in the two countries. Longer stays are concentrated in coastal provinces, especially in the islands. As Figure 23 shows, provinces in the Balearic and Canary Islands for Spain, and those in Sardinia and Sicily for Italy, present larger average stays than interior, non-coastal provinces. This trend

highlights the appeal of coastal and island destinations for longer vacations, which can provide more stable income streams for these regions. In contrast, interior regions, which often serve as short-stay destinations or stopovers, face greater challenges in achieving sustained economic benefits from tourism.

Figure 23: Indicators of Market Vulnerability across Countries and Territories

Domestic

Proximity

Distance

Income

Seasonality

Concentration

Average stay
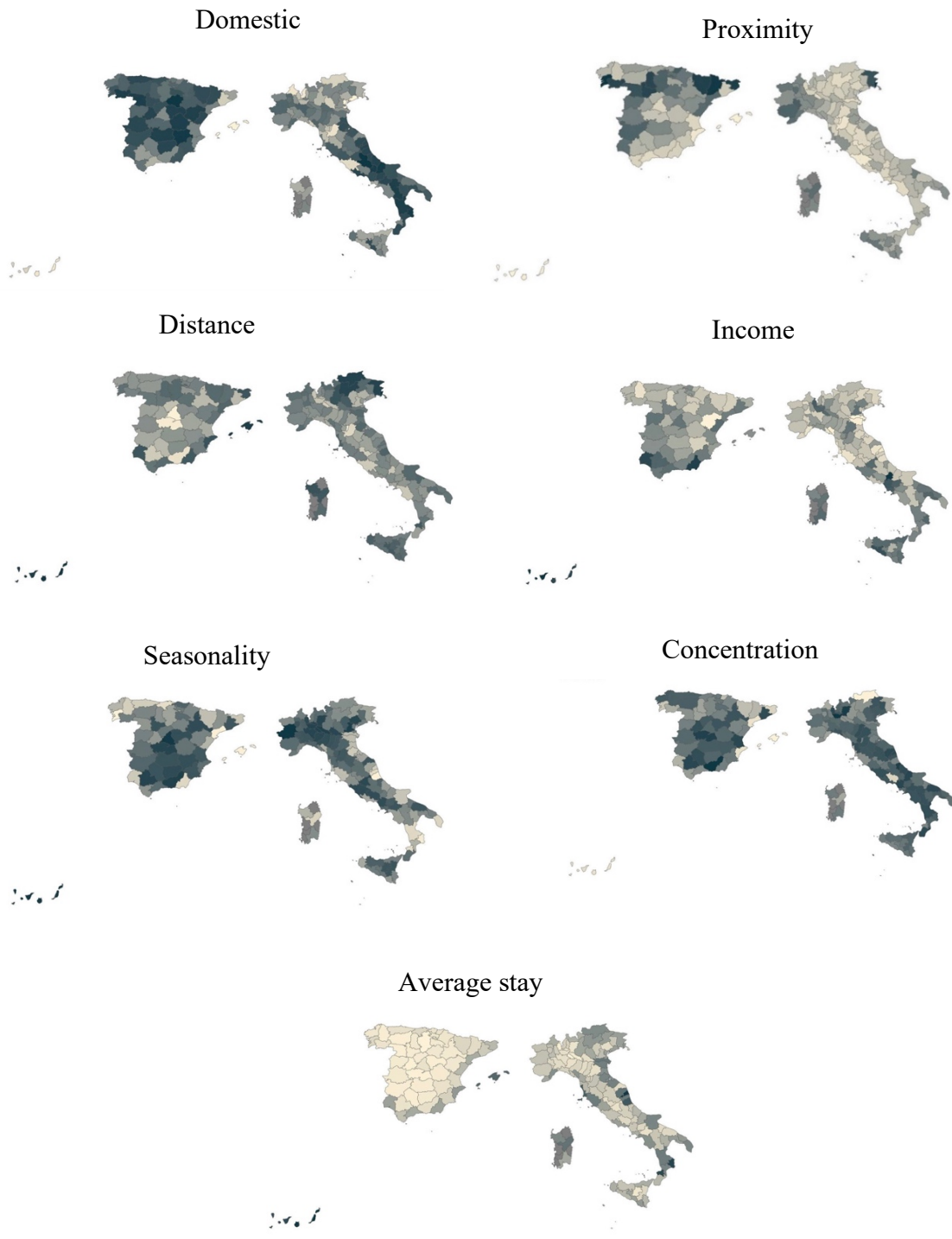
Source: Own elaboration
Note(s): Darker area indicates less vulnerable

5.4. The Market Vulnerability Composite Index

Disaggregated analysis has the advantage of being able to analyze specific market characteristics that may impact different territories. However, because territories can exhibit varying values across different indicators, it becomes challenging to determine their relative vulnerability without aggregating these indices into a single metric. Using a composite indicator simplifies this process by providing a holistic view of overall vulnerability, making it easier to compare and rank territories according to their overall market vulnerability. This approach allows policymakers and stakeholders to identify which areas require the most attention and intervention, ensuring a more targeted and effective response to vulnerabilities in the tourism sector.

5.4.1. Derivation and Weighting

We aggregate individual indicators into a unified dimension to form the ultimate composite index. The aggregation process typically entails calculating the weighted arithmetic mean of the individual indicators $I_k, k = 1 \dots K$

$$VTM_i = 100 \times \sum_k w_k I_i^k \,.$$

Determining the weighted average necessitates the assignment of weights *(wk)* to each indicator. To address concerns related to subjective direct weighting, we employed a data-driven methodology. This approach aims to mitigate discretionary decisions made at other stages of constructing composite indexes, ensuring a more objective and evidence-based weighting process (Blancas et al., 2016).

To ascertain the weights, we utilized Principal Component Analysis (PCA), as developed by Nicoletti et al. (1999). PCA serves as a multivariate data analysis method specifically designed for dimensionality reduction, with the overarching objective of simplifying the dataset's structure. This entails a linear transformation of the original data, yielding a set of orthogonal variables referred to as principal components. These components capture the maximum variance in the data with the fewest number of variables, allowing us to

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assign weights based on the contribution of each indicator to the overall variance. This process ensures an objective and systematic weighting process.

When applying PCA as a weighting technique, the standard method uses the factor loadings on the first component (Klasen, 2000). However, the first principal component often fails to capture a significant portion of the overall variance. To overcome this problem, Nicoletti et al. (1999). developed a method using several components to determine weights (OECD, 2008). This multi-component approach allows for a more comprehensive capture of the data's variance, leading to more accurate and representative weighting of indicators.

As a preliminary stage, we assessed the appropriateness of variables through the Kaiser-Meyer-Olkin (KMO) sampling adequacy test and Bartlett's sphericity test as pre-tests. Our findings revealed a KMO value exceeding 0.5, affirming the dataset's suitability for PCA. Furthermore, Bartlett's test strongly refuted the null hypothesis of orthogonality, indicating that the variables are sufficiently correlated for PCA. Overall, these test results collectively support the suitability of the variables for PCA, ensuring that the selected indicators are appropriate for generating reliable and valid weights.

Table 15: Eigenvalues of Individual Indicators

CP.	Eigenvalue	% Variance	Cummulated %	Boostrapped Quartiles
1	2.59	0.37	0.37	2.60 [2.45; 2.78]
2	1.39	0.20	0.57	1.50 [1.39; 1.61]
3	1.34	0.19	0.76	1.21 [1.10; 1.30]
4	0.80	0.11	0.87	0.76 [0.70; 0.82]
5	0.42	0.06	0.93	0.41 [0.37; 0.43]
6	0.32	0.05	0.98	0.30 [0.26; 0.32]
7	0.14	0.02	1.00	0.13 [0.11; 0.14]
KMO measure of sampling adequacy: 0.53				
Bartlett's sphericity test:	$\chi2=18.292$	df = 6	p-value = 0.005543	

Note(s): Bootstrap results are obtained with 1,000 bootstrap replicas
Source: Own elaboration

Table 15 summarizes the PCA results. As the table shows, the first component contributes the most to the variance, accounting for 37% of the total variance. The second and third components contribute 20% and 19% respectively. This significant contribution from the first component highlights its importance in explaining the variability in the dataset.

The subsequent step involves determining the optimal number of components to retain. This decision is informed by the eigenvalues of the components. As depicted in Table 3, the initial three components exhibit the highest eigenvalues, underscoring their significance. Notably, the fourth eigenvalue is consistently below 1 (0.80). Additionally, the entire interquartile range of the bootstrapped distribution for the fourth eigenvalue consistently remains below one, indicating it does not contribute significantly to the variance.

The primary component stands out with the most significant contribution, accounting for 37%, while the second and third components follow with contributions of 20% and 19%, respectively. These three components together account for 76% of the total variance, which is a substantial proportion, indicating that these components capture the majority of the information in the dataset.

Consequently, we opt to retain the first three principal components to derive the weights assigned to the indicators. This strategic choice aligns with the eigenvalue analysis, ensuring a meaningful representation of the underlying structure in our data. By retaining these components, we ensure that the derived weights reflect the most important aspects of the data, leading to a more accurate and robust composite index.

In summary, the PCA results presented in Table 15 provide a clear rationale for selecting the first three components. The eigenvalue analysis supports this decision, highlighting the significant contributions of these components to the overall variance. This approach ensures that the composite index is based on a thorough and objective analysis of the data, providing reliable and valid weights for the indicators.

Table 16: Rotated Factor Loadings and Implicit Weights

Indicator	Loading			Squared scaled loading			Weight
	F1	F2	F3	F1	F2	F3	
Domestic	-0.07	-0.04	0.86	0.00	0.00	0.54	**16%**
Proximity	0.82	-0.17	0.38	0.34	0.01	0.11	**15%**
Distant	0.77	0.34	-0.02	0.30	0.06	0.00	**13%**
Income	-0.1	-0.43	-0.51	0.00	0.10	0.19	**6%**
Seasonal	-0.17	-0.86	-0.29	0.01	0.38	0.06	**16%**
Concentration	-0.82	-0.22	0.29	0.34	0.02	0.06	**15%**
Length of stay	0.12	0.91	-0.21	0.01	0.43	0.03	**19%**
Exp Var.				1.96	1.95	1.37	
Exp/Total Exp				0.37	0.37	0.26	

Note(s): The table shows varimax rotated loadings. Exp.Var is the variance explained by the factor. Exp./Tot.Exp is the explained variance divided by the total variance of the two factors. Squared loadings are scaled to the unity sum. Implicit weights are the final weights for each indicator.
Source: Own elaboration

Following the selection of components and a thorough assessment of the model's quality, we proceed to derive the weights for indices from the three identified components. In Table 16, the Varimax rotated factors loading of these components is presented. Notably, the first component, centering on geographic distances, incorporates variables such as 'proximity' (0.82), 'distance' (0.77), and 'concentration' (-0.82). The second component emphasizes hotel occupancy and comprises 'seasonal' (-0.86) and 'average stay' (0.91). Lastly, the third component, focusing on factors related to 'domestic,' features a loading of 0.86, while 'income profile' exhibits a loading of -0.51. This nuanced analysis provides a comprehensive understanding of the factors contributing to each component, facilitating a more informed interpretation of the model's outcomes.

5.4.2. Rankings of Tourism Market Vulnerability

Utilizing the weights derived from Table 16, we merge individual factors to construct the ultimate composite index. Table 17 presents a ranking of the top 10 (less vulnerable) and bottom 10 (more vulnerable) provinces. Additionally, separate results for Spain and Italy are provided (Table 17).

Table 17: Ranking of Tourism Market Vulnerability: Top 10 and Bottom 10 Positions

All Provinces							
TOP (Less Vulnerable)				BOTTOM (More Vulnerable)			
Rank	Province	Country	Coastal	Rank	Province	Country	Coastal
1	Castellón	Spain	Yes	149	Baleares	Spain	Yes
2	Huelva	Spain	Yes	150	Roma	Italy	Yes
3	Valladolid	Spain	No	151	Venezia	Italy	Yes
4	Taranto	Italy	Yes	152	Lodi	Italy	No
5	Crotene	Italy	Yes	153	Como	Italy	No
6	Guadalajara	Spain	No	154	La Spezia	Italy	Yes
7	Orense	Spain	No	155	Bozen	Italy	No
8	Caltanissetta	Italy	No	156	Firenze	Italy	No
9	Turin	Italy	No	157	Terni	Italy	No
10	Soria	Spain	No	158	Prato	Italy	No
Spanish Provinces							
TOP (Less Vulnerable)				BOTTOM (More Vulnerable)			
Rank	Province	Country	Coastal	Rank	Province	Country	Coastal
1	Castellón	Spain	Yes	102	Cantabria	Spain	Yes
2	Huelva	Spain	Yes	103	Málaga	Spain	Yes
3	Valladolid	Spain	No	107	Toledo	Spain	No
6	Guadalajara	Spain	No	112	Sevilla	Spain	No
7	Orense	Spain	No	115	Granada	Spain	Yes
10	Soria	Spain	No	123	La Coruña	Spain	Yes
11	Ciudad Real	Spain	No	128	Barcelona	Spain	Yes
12	Las Palmas	Spain	Yes	129	Madrid	Spain	No
15	Lérida	Spain	No	134	Lugo	Spain	Yes
16	Zamora	Spain	No	146	Baleares	Spain	Yes
Italian Provinces							
TOP (Less Vulnerable)				BOTTOM (More Vulnerable)			
Rank	Province	Country	Coastal	Rank	Province	Country	Coastal
4	Taranto	Italy	Yes	145	Verb.-Cus.-Osso.	Italy	No
5	Crotene	Italy	Yes	147	Roma	Italy	Yes
8	Caltanissetta	Italy	No	148	Venezia	Italy	Yes
9	Turin	Italy	No	149	Lodi	Italy	No
13	Fermo	Italy	Yes	150	Como	Italy	No
14	Caserta	Italy	Yes	151	La Spezia	Italy	Yes
22	Brindisi	Italy	Yes	152	Bozen	Italy	No
25	Pescara	Italy	Yes	153	Firenze	Italy	No
26	Catanzaro	Italy	Yes	154	Terni	Italy	No
30	Vercelli	Italy	No	155	Prato	Italy	No

Source: Own elaboration

Results in Table 17 highlight the higher vulnerability of Italian provinces compared to Spanish ones. Although the top ten less vulnerable territories encompass both Spanish and Italian provinces, the most vulnerable provinces are predominantly Italian, with the sole exception of Balearics. As noted in previous section, the result is mostly explained by

the greater reliance on tourism from regions outside the European Union. A detailed, country-based analysis of the index follows.

Concerning Spain, the Balearic Islands emerge as the most vulnerable province, showcasing pronounced susceptibility to domestic factors, proximity, income profile, and economic concentration indicators. Following closely is Lugo, the second most vulnerable province, exhibiting elevated vulnerability to proximity, income, and average stay indicators, and Madrid, with demonstrates a notable vulnerability to proximity, domestic factors, distance, and average stay indicators. On the other hand, the Spanish provinces showcasing lower vulnerability include Castellón, Huelva, Valladolid, Guadalajara, and Las Palmas.

Figure 24: Territorial Distribution of the Tourism Market Vulnerability: Spain

Source: Own elaboration

The distribution of the composite index is visually depicted in Figure 24, which maps the provinces of Spain. Darker hues on the map signify regions with higher index values, indicating lower market vulnerability. This visual representation offers a clear and intuitive insight into the relative strengths and weaknesses of different provinces, aiding in the identification of areas with a more resilient position in the tourism sector.

By examining the map, stakeholders can quickly identify which provinces exhibit greater resilience to market fluctuations and which are more vulnerable. This information is crucial for policymakers and tourism planners who aim to enhance the stability and sustainability of the tourism industry. Provinces with darker hues, indicating lower

Figure 25: Territorial Distribution of the Tourism Market Vulnerability: Italy

Source: Own elaboration

vulnerability, can be studied as models for best practices, while those with lighter hues may benefit from targeted interventions to mitigate their vulnerabilities.

As for Italy, depicted in Figure 25, Prato emerges as the most vulnerable province, demonstrating pronounced susceptibility in proximity, domestic factors, and distance. Following closely, Terni exhibits high vulnerability in proximity, income, distance, and average stay indicators. Subsequent provinces in vulnerability include Firenze, Bozen, and La Spezia. Conversely, the provinces with the lowest vulnerability are Taranto, Crotone, Caltanissetta, Fermo, and Turin, standing out as regions demonstrating notable resistance to various vulnerability indicators.

Table 17, along with Figures 23 and 24, shed light on the starkly different geographical distribution of market vulnerability between Spain and Italy. In Spain, coastal provinces appear to be more vulnerable, with 7 out of the 10 most vulnerable being coastal, while only 3 out of the less vulnerable provinces share this characteristic. This pattern suggests that Spain's coastal regions, despite their popularity and high tourist influx, face significant challenges that increase their vulnerability, such as dependence on international markets, high seasonality, and potential over-reliance on tourism income.

Conversely, the situation is reversed in Italy, where coastal provinces tend to exhibit lower vulnerability. In Italy, only 3 out of the 10 more vulnerable provinces are coastal, whereas 7 out of the 10 less vulnerable provinces are located along the coast. This geographical discrepancy indicates that Italy's coastal regions benefit from a more stable and diverse tourism market, possibly due to a stronger domestic tourism base, lower seasonality, and better integration of tourism with other economic activities.

This geographical discrepancy underscores the varied dynamics at play within each country's tourism market and highlights the importance of considering regional nuances in vulnerability assessments. The findings suggest that policy interventions and tourism management strategies need to be tailored to the specific regional contexts of each country. For instance, enhancing resilience in Spain's coastal regions might involve diversifying the tourist base and reducing seasonality, while in Italy, supporting inland

provinces might focus on developing tourism infrastructure and promoting regional attractions.

5.3. Conclusion

The COVID-19 pandemic has significantly disrupted the fundamental principles upon which traditional tourism strategies were established. These strategies often relied on the assumption of continuous growth in tourism activity and its role in fostering territorial development. The pandemic has served as a stark reminder that tourism, like other economic sectors, is susceptible to various risks and uncertainties. Consequently, tourism stakeholders must prioritize risk management as a fundamental objective within their strategic frameworks.

In light of this realization, there is a growing need to generate knowledge aimed at identifying risks, evaluating policies, and enabling proactive planning. Within this context, the paper focuses on vulnerability indicators associated with the structure of destination source markets. By examining these indicators, stakeholders can gain valuable insights into the factors influencing destination resilience and susceptibility to external shocks.

The examination of vulnerability indicators helps in understanding how different factors, such as market concentration, dependency on specific tourist demographics, and geographic diversification, affect the robustness of a tourism destination. For instance, destinations heavily reliant on a few international markets may face greater risks during global disruptions, such as pandemics or economic downturns. Conversely, regions with a diversified tourist base and strong domestic market may exhibit greater resilience.

By analyzing these vulnerability indicators, stakeholders can develop targeted strategies to enhance the resilience of tourism destinations. This involves diversifying the tourist base, promoting domestic tourism, and reducing dependency on seasonal and international markets. Moreover, understanding the vulnerabilities can aid in the formulation of policies that support sustainable tourism development, ensuring that the sector can withstand and recover from future shocks more effectively.

Several indicators have been identified, each strongly linked to the vulnerability coming from the market structure and easily understandable. These indicators include distance to the source, with a separate effect of the domestic, proximity, and distant markets, income profile of the demand, seasonality, market concentration, and length of stay. To streamline these indicators, we have combined them into a composite index using PCA to derive weights.

This framework has been empirically applied to Spanish and Italian provinces, given their significance in Mediterranean tourism and the availability of robust territorial data. Our findings indicate that, on average, Italian provinces exhibit higher vulnerability based on the underlying structure of their tourism markets. This vulnerability is primarily attributed to a significant reliance on international, distant markets, which exposes these regions to greater risks during global disruptions, such as the COVID-19 pandemic.

The analysis reveals that Italian provinces heavily depend on tourists from distant, non-EU countries, making them particularly susceptible to international travel restrictions and economic downturns in these source markets. This dependence on long-haul tourism means that any disruption in global travel can have a pronounced impact on the tourism sector in these provinces.

Conversely, Spanish provinces show relatively lower vulnerability. This is largely due to a more balanced mix of domestic and international tourists, with a strong emphasis on European markets that are geographically closer. The robust domestic market in Spain has provided a buffer against international shocks, demonstrating greater resilience during periods of global uncertainty, such as the recent pandemic. Regions that could rely on domestic tourists were better able to sustain their tourism activities even when international travel was restricted.

Furthermore, the data underscores the importance of domestic tourism in enhancing resilience. Provinces that could pivot to attract local visitors during the pandemic managed to mitigate some of the adverse impacts on their tourism sectors. This adaptability highlights the strategic advantage of having a diversified tourist base that includes a substantial proportion of domestic travelers.

The empirical application of this framework to Spanish and Italian provinces not only highlights the differing levels of vulnerability but also provides insights into the structural factors contributing to these vulnerabilities. These findings are crucial for policymakers and tourism planners who need to develop strategies that reduce reliance on volatile international markets and enhance the resilience of the tourism sector through diversification and targeted support for domestic tourism.

Our findings reveal that the market structure of Italian provinces is more vulnerable than that of Spanish provinces. Interestingly, the factors underlying vulnerability in the two countries differ significantly despite their similar overall characteristics. Notably, coastal provinces in Italy tend to have less vulnerable tourism markets, whereas, in Spain, the situation is entirely reversed due to Spain's heavy reliance on sun-and-sea tourism products.

Overall, our work underscores the importance of prioritizing vulnerability reduction within destination management objectives. This imperative should persist even beyond the COVID-19 pandemic. Hence, policymakers must focus on sustaining sufficient domestic and nearby international demand, mitigating seasonality and market concentration, and attracting higher-income visitors. These strategies should form the cornerstone of strategic medium- and long-term tourism policies.

However, this paper has solely focused on vulnerability associated with the structure of the source market. Broadly speaking, the array of targets extends far beyond this scope, encompassing factors such as climate change and dependency, among others. Nonetheless, we contend that the ultimate impact of external shocks on tourism activity is significantly influenced by the type of vulnerability scrutinized in this study. Given the imperative for sectoral transformation (as highlighted by McKinsey and Company, (2020)), effective vulnerability management is paramount. To this end, decision-makers require tools for vulnerability monitoring, such as the index proposed herein. This toolbox equips destination managers to evaluate diverse strategies, not only in terms of profitability but also in risk reduction.

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Chapter 6: Conclusion and Future Research

6.1. Findings highlight

In Chapter 3 using digital inequality theory allowed us to explore how socio-demographics of residents influence their perception of STRs's impacts. This study explored the perceived impacts and use patterns of STR platforms in the US and UK through the lens of digital inequality theory and inclusive tourism. The findings suggest that demographic factors such as age, country of residence, educational background, and income level significantly impact the use of STR platforms. Younger individuals, who tend to be more comfortable with digital technology, are more likely to engage with these platforms (Bilgihan et al., 2014; Amaro et al., 2019). Furthermore, those with higher levels of education and income are presumably more frequent users due to greater digital literacy and access (Newlands & Lutz, 2020; Lutz & Angelovska, 2021). Interestingly, US-based individuals are less inclined to engage with STR platforms compared to their British counterparts. However, US residents tend to have a more positive attitude toward the STRs impacts. This observation suggests a notable divergence in the adoption and use of STR services between the two countries, warranting further investigation into the cultural, economic, and regulatory factors that might influence such contrasting patterns of STR platform use. Moreover, gender, and area of residency were not statistically significantly associated with the use of STR platforms, and the use level did not have an impact on the perceived impacts of STRs.

We also analyzed the relationship between socio-demographic characteristics and the perceived impacts of STRs. We found that age, country of residency, and area of residency influence the perceived impacts of STRs in some respects. Specifically, younger individuals tend to have a more favorable perception of the recreational, lifestyle, and economic impacts of STRs. This demographic seems to appreciate the convenience, leisure opportunities, and potential financial advantages that STRs offer. Conversely, age

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did not play a significant role in shaping perceptions regarding the environmental and public sphere impacts of STRs.

The analysis suggests that among various positional factors, only political attitude has a discernible influence on the perceived impacts of STRs across various dimensions, including lifestyle, environmental, economic, and public aspects. Individuals with a right-leaning political attitude are more likely to hold positive views of the impact of STRs. This correlation might reflect broader ideological beliefs related to property rights, economic freedom, and regulatory perspectives, which are often associated with conservative political thought.

Further analysis in this chapter suggests a nuanced understanding of STRs, revealing both positive and negative effects across the three TBL sustainability dimensions of social, economic, and environmental impacts. Socially, while STRs facilitate cross-cultural exchanges and contribute to more vibrant community life, they also lead to issues like loss of community feelings, increased noise, and safety concerns. This dichotomy shows the complex interplay between the benefits of increased tourism and the challenges of maintaining community cohesion.

Economically, STRs provide financial benefits to hosts and local businesses by generating additional income and boosting local economies. However, these advantages are counterbalanced by concerns over housing availability and affordability, as well as competition with local hotels. Environmentally, the negative impacts of increased traffic, littering, and noise pollution highlight the pressing need for sustainable tourism practices. These findings indicate that while STRs can contribute to sustainability goals, they also pose significant challenges that require careful management and regulation. Moreover, the study reveals a notable discrepancy in perceptions between British and American residents regarding the impacts of STRs on their communities. While a larger proportion of British respondents expressed the belief that STRs have negligible effects on their community, American residents appeared to be more divided in their assessments, with a significant number acknowledging discernible impacts.

The survey collected data in chapter 4 on age, gender, marital status, as well as preferences for various Airbnb accommodation types show that the largest group of participants is aged 25-34, with a majority being female (58%).

Private rooms are the most popular accommodation, accounting for 37% of bookings, followed by entire places at 28% and hotel rooms at 27%. Shared rooms are the least favored, with only 8% of bookings. Both men and women guests prefer private rooms, while shared rooms are least popular among both genders.

Across age groups, private rooms are consistently preferred, especially by those aged 55-64. Younger (18-24) and older (65+) age groups favor entire places more. Moreover, the heatmap shows that singles tend to prefer private rooms, with hotel rooms and entire places being secondary options, while shared rooms are the least favored. In contrast, married or partnered individuals overwhelmingly prefer entire places and private rooms, indicating a desire for more space and privacy

Frequent travelers (more than 10 times) prefer hotel rooms and private rooms, while those who travel less frequently (1-5 times) prefer entire places. This data provides valuable insights into the accommodation preferences of different demographic groups on Airbnb.

Finally, Chapter 5 addresses the necessity of generating knowledge to identify risks, evaluate policies, and enable proactive planning. It focuses on vulnerability indicators related to the structure of destination source markets, providing insights into factors influencing destination resilience and susceptibility to external shocks.

Key indicators include:
- Proximity market
- Domestic market
- Distant markets
- Income profile
- Market concentration
- Seasonality

- Length of stay

In general, key findings are:

i) Tourism market structure of Italian provinces is in general more vulnerable than Spanish provinces

ii) Key factors driving vulnerability in the two countries differ. Vulnerability in Italian provinces usually come from high dependence on distant, international markets, whereas in Spain, it is fundamentally driven by a strong seasonal pattern. As a result, the geographic distribution of resilience is different between the two countries. Provinces situated in coastal areas tend to be less vulnerable than other provinces in Italy, whether this pattern reverses in Spain.

The study underscores the importance of reducing vulnerability as a priority in destination management, a goal that should persist beyond the pandemic. Policymakers should focus on sustaining domestic and nearby international demand, mitigating seasonality and market concentration, and attracting higher-income visitors. These strategies are essential for medium- and long-term tourism policies.

Although this study focuses on market structure vulnerability, it acknowledges that broader targets, including climate change and dependency, are crucial. Effective vulnerability management, as highlighted by McKinsey and Company (2020), is essential for sectoral transformation. Decision-makers need tools like the proposed vulnerability index to evaluate strategies not only for profitability but also for risk reduction.

6.2. Limitation and Future Studies

While this thesis provides valuable insights into the sustainability impacts of STRs from the perspective of key stakeholders, it also has some limitations. In Chapter 3, firstly, the geographical scope of the study, focusing on the US and UK, limits the generalizability of the findings to other regions with different cultural, economic, and regulatory contexts, especially in the Global South. Secondly, the cross-sectional nature of the study captures the residents' perspectives at a specific point in time.

The survey was done in 2021, so Covid-19 pandemic-related developments might have influenced the perceptions. Longitudinal research would help understand how the impacts of STRs and their perceptions evolve over time, especially in the rapidly changing landscape of the sharing economy and tourism. Moreover, the research primarily considers the perspectives of residents, with only a small number of hosts. Future research could benefit from incorporating the viewpoints of other stakeholders, such as hosts, platform representatives, and policymakers.

Other directions for future research include expanding the study to different geographical locations to enhance the understanding of cultural and contextual differences in the sustainability impacts of STRs. Investigating the interplay between STRs and other forms of accommodation, such as hotels and traditional B&Bs, could provide a more comprehensive view of the tourism ecosystem. Additionally, examining the role of technology and platform design in shaping the sustainability impacts of STRs can offer insights into how digital platforms can contribute to more sustainable tourism practices. Interdisciplinary research combining insights from tourism studies, urban planning, economics, and environmental science could yield a holistic understanding of the multifaceted impacts of STRs on sustainability.

The data reported in Chapter 4 are about a single platform from a single platform, Airbnb, which may limit the generalizability of the findings to other sharing economy platforms. To increase the generalizability of the findings, future research should expand the scope beyond Airbnb to include other STR platforms like Vrbo, Booking.com, and local platforms.

Comparative studies across different platforms can highlight unique preferences and behaviors specific to each platform's user base future studies should aim to gather more representative samples of the Airbnb user base. This can be achieved by using stratified sampling techniques to ensure that different age groups, genders, income levels, and other relevant demographics are proportionately represented. Secondly, the study relied on self-reported data, which may be subject to biases such as social desirability or recall bias. To mitigate the biases associated with self-reported data, future research could incorporate a mixed-methods approach. This could involve combining survey data with

observational data, such as booking behaviors and reviews, to validate self-reported preferences. Lastly, the sample size, although sufficient for the analysis conducted, may not be large enough to represent the entire population of Airbnb users, particularly those from diverse geographic and cultural backgrounds. Moreover, future research can use other segmentation methods such as cluster analysis or the accommodation preferences could be regressed on demographics (i.e., multivariate statistical methods could be used).

In Chapter 5, the main limitation was geographical focus. The empirical application of this framework is limited to Spanish and Italian provinces. While these regions are significant in Mediterranean tourism, the findings may not be directly applicable to other regions with different tourism dynamics, cultural contexts, and economic conditions. Applying the proposed framework to a wider range of geographical regions, including those outside the Mediterranean, will help validate its generalizability and adaptability. Comparative studies across diverse regions will enhance the understanding of global tourism vulnerabilities.

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Appendix

Question prompt: To what extent, do short-term rental platforms (e.g., Airbnb) have an impact on your neighbourhood regarding the aspects listed below?

Appendix Table 1: Overview of 27 Perceived Impacts of Item

Item	*ID code*
The preservation of natural areas	*perc-imp 1*
The preservation of cultural/historical sites	*perc-imp 2*
Clean air and water	*perc-imp 3*
Peace and quiet	*perc-imp 4*
Quality recreation opportunities	*perc-imp 5*
Litter issues	*perc-imp 6*
Traffic issues	*perc-imp 7*
Crowding and congestion	*perc-imp 8*
Working conditions	*perc-imp 9*
Drug and alcohol abuse	*perc-imp 10*
Crime and vandalism	*perc-imp 11*
Population growth	*perc-imp 12*
A feeling of belonging in my community	*perc-imp 13*
The preservation of my way of life	*perc-imp 14*
Having tourists who respect my way of life	*perc-imp 15*
Resident participation in local government	*perc-imp 16*
My personal life quality	*perc-imp 17*
Festivals, fairs, and museums	*perc-imp 18*
Having live sports to watch in my community	*perc-imp 19*
Good public transportation	*perc-imp 20*
Offering of short-term rentals in general	*perc-imp 21*
Demand of short-term rentals in general	*perc-imp 22*
Attractions	*perc-imp 23*
Bohemian environment	*perc-imp 24*
Melting pot environment	*perc-imp 25*
Availability of affordable housing	*perc-imp 26*
Regeneration of neighbourhoods in decline	*perc-imp 27*