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SCHOOL OF ECONOMICS AND BUSINESS

MASTER THESIS

**PROPOSITION OF A MODEL FOR MEASURING NEGATIVE  
IMPACTS OF AIRBNB FOR THE CITY DESTINATIONS**

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## LIST OF ABBREVIATIONS

<b>CTG</b>	Clean Tech Group
<b>ETIS</b>	European Tourism Indicator System
<b>KPI</b>	Key Performance Indicator
<b>LCA</b>	Life Cycle Analysis
<b>P2P</b>	Peer-to-Peer
<b>QoL</b>	Quality of Life
<b>STR</b>	Short-term Rental
<b>USA</b>	United States of America
<b>USD</b>	U.S. Dollar
<b>UNWTO</b>	United Nations World Tourism Organisation



## INTRODUCTION

For young travellers with a limited budget the rise of Airbnb, among comparable peer-to-peer (hereinafter P2P) accommodation platforms, meant a new stream of endless possibilities to travel the world. There was a fine combination between affordable accommodation and a close connection to the local life and population. Not only was the traveller enthusiastic at first, but also local citizens saw an opportunity to make some extra money by renting out their spare room or apartment while being on holiday themselves. Although the concept still sounds appealing and the exchange of under-used assets into income is still a great method to create a more sustainable situation, an increasing sound of protest started to occur. Starting at major city destinations such as Venice, Amsterdam and Barcelona the local population was experiencing a more and more negative influence of short-term rental (hereinafter STR) and the tourists drawn by it. This led to a strong request to put the issue of short-term holiday rentals at the top of the European agenda, and this was done by ten European cities in 2019. According to those cities, short-term holiday rentals are bringing down the traditional long-term rental possibilities for locals, creating a major gap between housing prices and resident income. Cities are firstly meant to accommodate citizens and not function as a tourist attraction and STR paradise (Henley, 2019). In Italy, the gravity of mass tourism even led cities to present the government with "Ten Commandments" limiting STR in an attempt to make their cities more liveable again via strict regulations (Buckley, 2021). Unfortunately, it seems to create a great challenge for destinations to successfully regulate the STR industry, both by legal actions and other initiatives. At the same time, the negative impact Airbnb might have on city destinations stays alive, resulting in a hate-love relationship between cities and Airbnb. It is essential to understand the underlying problems and impacts Airbnb has on cities, keeping in mind that banning Airbnb will most certainly lead to an even more uncontrollable situation (Dongen, 2019).

Although Airbnb is a relatively new concept many papers have been written about the company and its function in the sharing economy, from a positive and negative point of view. This thesis will add a model to the existing literature, indicating the negative impacts of Airbnb on city destinations. It will provide a clear overview on all possible fields of negative impact and attempts to show the connection between certain economic, social and environmental developments and the role Airbnb presence can play in these developments. This Master thesis has no intention of putting Airbnb, as a concept and company, or the sharing economy in a bad light as the researcher truly believes in the possibilities P2P platforms provide to tourists, citizens and destinations. It merely provides an overview of potential negative impacts on economic, social and environmental indicators and shares a light on the actions taken by various city destinations.

This Master thesis begins with the literature review focussing on the concept of the sharing economy, the pillars of sustainable tourism and the most common point of negative impact that destinations can experience. After the literature review, the purpose and methodology will be explained followed by the developed indicating model and results of the research. This Master thesis will logically end with the discussion and conclusion on the done Delphi research and found results.

## **1 LITERATURE REVIEW**

The theoretical background for this Delphi research is found in the literature. Previously published research on Airbnb and the impact the platform had is taken into account with the reaction of destinations. The focus of the literature review is on the negative impact of Airbnb on city destinations. To be able to measure the negative impact of Airbnb on destinations it is important to indicate what parts of society can be impacted by tourism and platforms such as Airbnb. Gordo, Da Rivera and Cassidy (2020) suggest determining the impact of Airbnb on the economy, the social structure of society and the environment. These three dimensions are commonly used for determining the effects something has on its surroundings. Below the background of the model is briefly mentioned.

### **1.1 “Three Pillars” Model**

Already in times of industrial development the first signs of a trade-off between economic growth and the health of social structures was recognised. After this the importance of preserving natural resources was added to the discussion, which was emerging from the beginning of the 1980s, about what to sacrifice for economic gain. A battle between economic growth and environmental movements increased the consciousness among people on the environmental costs and damage done for economic gain. At the same time questions were asked what should be understood when talking about economic development. Well-known economists argued that development should also be measured by social factors such as employment and poverty rate. Around that time the three pillars of how we know them nowadays slowly came together: economic sustainability, socially sustainability, and environmental sustainability (Purvis, Mao, & Robinson, 2018). Another interpretation of these elements is “people, planet, profit”, often used in literature covering the same topic and idea (Thatcher, 2005). It is good to mention that Purvis, Mao and Robinson (2018) question the historical correctness and academic background supporting the three pillar theory. According to them the three pillars slowly became well accepted and recognised dimensions affecting sustainability, although there is no proof available to support this general acceptance.

The “three pillars” model is shown below in figure 1 as three intersecting circles, where sustainability is in the centre of the three mentioned fields. According to Thatcher (2005) economic perspective is needed to value the dimensions properly. The dimension economy



is roughly valued by income, property, profit and developments strengthening accessibility. The social dimension cares about the well-being of people, efficiency of institutions, living conditions, social cohesion and solidarity. The environment dimension is the last field to take into account in addressing sustainability. Moldan, Janoušková, and Hák (2012) summarised the development of the environmental pillar. They state that the environmental pillar is about the impact on natural resources and biodiversity. There is a necessity to improve human welfare without damaging crucial, rare natural resources and without exploiting nature and natural ecosystems. There remains a lot of unclarity on how to use this model as all of the dimensions of sustainability have multiple interpretations.

*Figure 1: The “Three-intersecting-circles” representation of sustainability*

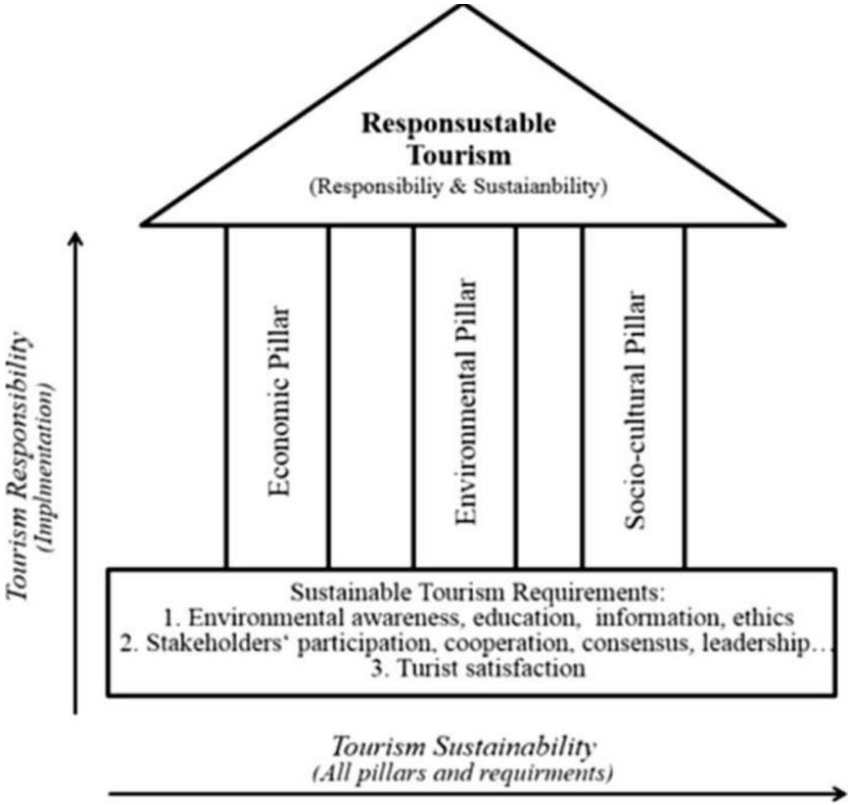


*Source: Purvis, Mao, & Robinson (2019).*

To be able to use the “three pillars” model it is essential to determine what sustainability, the centre of the pillars, means for this thesis. There are many definitions of sustainable tourism originating from the past. Bringing most of the definitions together sustainable development is about meeting the needs of people and improving quality of life at this moment without compromising the possibility for future generations to meet their needs, balancing between the carrying capacity of resources and society and economic development for all. It can even mean improving the possibilities for future generations and leaving a situation behind that is better (more sustainable) than the situation started with. Only to acknowledge the need for sustainable action is not sufficient anymore as it is time to take responsibility (Thatcher, 2005). The United Nations World Tourism Organisation (hereinafter UNWTO) uses a relatively simple definition: “Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities” (UNEP & UNWTO, 2005). Thus, the UNWTO perceives sustainable tourism successfully when it takes into account the economic, social, and environmental impact and minimises the negative ones. The UNWTO also acknowledges the necessity for corrective measures when sustainable development is not implemented correctly and negative impacts on the sustainability of the industry occur (UNEP & UNWTO, 2005).

Mihalič combines this approach of the UNTWO and the “three pillars” model in the “Responsustainable Tourism” theory (Mihalič, 2014). This theory is based on the economy, society, and environment pillars with sustainable development in the centre. It defines the relationship between the responsibility (actions taken) of the tourism industry and the sustainability (concept) of the industry. According to Mihalič, it is a challenge on all levels of the tourism industry to strive for sustainable practice. In the hospitality industry, the economic pillar is traditionally the most important one. Mihalič points out the importance of companies and governments taking responsibility in dealing with tourism growth and development. Everyone related to tourism policy and development has the responsibility to make the industry more sustainable for the future. By bringing sustainability and responsibility together Mihalič created the terminology of “Responsustainable Tourism”. To indicate the function, it is necessary to state how positive or negative practices affect the presence of the three pillars in communities. Below, in figure 2, the combination of the “three pillars” model and the connection of sustainability and responsibility is shown.

Figure 2: Proposed understanding of responsustainable tourism



Source: Mihalič (2014).

A sustainable tourism industry is seen as one that does take into account the impact it has on the economy, the society it operates in and the environment it influences with the aim of narrowing down negative impact to a minimum. The economy in this definition is both the economy tourism directly operates in and the markets surrounding the tourism activity. The idea of society covers all social developments, structures and the quality of life of people affected by tourism exploitation. The quality of life will be described later on in more detail to create a better understanding of the relation between negative impact of Airbnb and the perceived quality of life at city destinations. For the environment pillar not only natural resources are considered but the whole surroundings and structures present at city destinations. Environment and society are closely related in the explanation of sustainability and the “three pillars” model. After an extensive literature review a legal and political dimension will be added to the “three pillars” model. Spangenberg (2002) also considers this as a useful fourth pillar.

It logically is not the first that the “three pillars” model is interpreted freely and adjusted where it seemed necessary. The European Tourism Indicator System, hereinafter ETIS, is in some way a modernised interpretation of the core idea of the “three pillars” model. Designed by the European Commission, the ETIS encourages a more intelligent approach towards tourism with sustainability as main focus. The ETIS functions as a management, monitoring and information tool meant to support tourism policy making for destinations. The ETIS tool is based on 67 indicators and divided among four categories, with great overlap with the ones derived from the “three pillars” model, consisting of: destination management, social and cultural impacts, economic value, and environmental impact (European Commission, 2017). The ETIS tool also shows great overlap with the theory around “responsustainable” tourism, with its focus towards a sustainable and responsible approach on tourism development.

The ETIS tool strengthens the dimension selection of this thesis. The category “Destination management” is comparable to the function of the key performance indicators described later on in this thesis and to the need of taking into account the presence of regulatory actions and possibilities. The idea of using the traditional pillars from the “three pillars” model is equal to the use of the other categories used by the European Commission. The economic value, social and cultural impact, and environmental impact correspond directly with the economic-, social-, and environmental dimensions identified for this Masters Thesis (European Union, 2016). The combination of the ETIS tool and the more traditional “three pillars” model provide the starting point for this research and will present the core of the model for measuring the negative impact of Airbnb on city destinations.

Below the five derived dimensions are further analysed through a literature review. The literature review will start with a brief analysis of the “sharing economy” and Airbnb as a platform company. The Model for measuring Airbnb’s negative impact, the final product of this thesis, is derived from the literature review provided below.

## 1.2 The Sharing Economy

The sharing economy as a concept has existed since people started trading and living in communities. It is part of a wider consumption idea, collaborative consumption. The core idea of collaborative consumption is the trading, renting or sharing of services or products based on access and not on change of ownership. This can take place between individuals or between groups, organisations or companies and individuals. The sharing economy is part of this collaborative consumption idea. Sharing under-utilised assets or skills in exchange for income both in monetary and non-monetary payment (Luri Minami, Ramos, & Bruscato Bortoluzzo, 2021, p. 134). This transaction takes mostly place between individuals and organisations. It is highly questionable if the term “sharing” in the way described before is relevant if commercial organisations are involved. Therefore, it is important to place Airbnb in the right context compared to the sharing economy.

P2P platforms are part of the sharing economy in the wide definition of sharing. In this case it is mostly dependent on between which parties the actual exchange takes place. If peers are equal parties like individual to individual, local inhabitant to individual traveller the sharing character is strong. On the other hand, if owners with multiple listings, often with purely commercial intentions, rent out to travellers the sharing character is lost and Airbnb functions as a platform directly active in the accommodation market. Therefore, Airbnb seems to be more than a P2P platform participating in the sharing economy. With their growing community in both demand and supply Airbnb provides a unique opportunity for the local homeowners that want to make a little extra money by renting out under-utilised spaces. At the same time the platform offers the same unique opportunity for commercial real estate owners to challenge the traditional accommodation industry and generate great margins through unfair competition, with the (in)direct result of increasing property prices and driving local residents out of their cities with solely the purpose of commercially exploiting large quantities of property for their own enrichment (Reinhold & Dolničar, 2017, p. 21).

The company Airbnb has around 4 million hosts worldwide in over 220 countries and 100.000 cities with a total amount of 5.6 million accommodation listings. So by the end of 2020 Airbnb had hosted more than 800 million travellers since the company was founded in 2008 (<https://news.airbnb.com>). In 2017 the number of hosts still counted 3 million in over 190 countries and 65.000 cities, mostly spread over Europe and the United States of America (hereinafter USA) (Nieuwland & Van Melik, 2018). At some points it seems like Airbnb lost the core idea of the “sharing economy” principle it operates in. It is questionable if in the situation of Airbnb, the idea of the sharing economy is still addressed correctly. Oskam (2019) raises a warning that as long as not all (negative) impacts are taken into account the “sharing” character of Airbnb will remain problematic.

### 1.3 Key Performance Indicators

A key performance indicator (hereinafter KPI), is a quantifiable measurement tool used to track the performance of company, process or in this case destination (Oxford University Press (OUP), 2021). The KPIs of a touristic destination show the development a destination made through time and allows comparison between similar destinations. By comparing similar destinations according to set performance indicators, strengths and weaknesses can be discovered and the need for change or further development arises. KPIs are the starting point for any policy making on destination level and are crucial in identifying trends and developments at the destination.

The UNWTO provides a reliable source for basic performance indicators used in their Tourism Barometer and the Tourism Data Dashboard both being part of the UNWTO's market intelligence department. Both tools are used to measure tourism development by region and country. The UNWTO logically uses a great variety of KPIs including tourism employment, seasonality, source markets, inbound and outbound performance of destinations, demand and capacity of accommodation and global and regional tourism performance. The last two are most useful for this Master thesis and will be further explained below.

The global and regional tourism performance approached by the UNWTO focuses on the outbound tourism per country. The dashboard shows the international tourism arrivals, the international tourism receipts, the tourism exports, the purpose of the trip, the expenditures and transport mode. The international tourism arrivals indicate per country how many international tourists arrived over a certain period. It is important to keep in mind that domestic tourism is regaining an important part in the tourism industry and often is left out in measuring tourism performance because the focus is only on international tourists ('Global and regional tourism performance | UNWTO', 2020). The demand and capacity of accommodation shows all kind of accommodation KPIs. The accommodation capacity based on establishment, beds, rooms and population show the performance of the accommodation sector of a country but also indicates the number of overnight stays and the ratio of overnight stay. Not only are the overnights measurable in this way but also the amount of officially registered accommodation can be listed ('Accommodation – Demand and Capacity | UNWTO', 2020).

During the current COVID-19 pandemic many of the mentioned performance indicators were also used to qualify and explain the impact of the crisis on the tourism industry. There will be more about this later in this chapter, discussing the impact of the COVID-19 pandemic on the tourism market and on Airbnb.

## 1.4 Economic Impact

The short-term positive economic effects of Airbnb are widely discussed in existing literature. The platform offers property owners the opportunity to transform their under-utilised assets into economic gain and it provides a cheaper alternative for customers instead of the traditional accommodation sector. Airbnb also creates an easily accessible platform where host and guest can safely rent or rent out a place based on mutual evaluation. The issues caused by the P2P accommodation platform are found in the long run at places with a high number of Airbnb listings. Existing literature identifies multiple disciplines where negative impact occurs. Hajibaba and Dolničar (2017, p. 121) identified six areas of negative impact; Reduction in housing availability; reduction in housing affordability; changing character of neighbourhoods; reduction of residents' quality of life; unfair competition; and unsafe tourist accommodation. Of those six, most are connected to economic impacts and as will be explained below, are based on housing market, impact on hotel sector and the development of tourism employment.

### 1.4.1 Housing market

The presence of STRs has always influenced the affordability and availability of long-term rentals. These rentals are the source of residency for inhabitants in their cities. The increasing demand for STRs resulted in a logical reaction from the supply side. Many property owners formally renting out on the long-term rental market shifted their attention to STR, for the simple reason that STR is more profitable than long-term rental. At many global city destinations this switch directly resulted in increasing property value, increasing rent prices for long-term rental with a decreasing availability of affordable housing for local inhabitants (Edelman & Geradin, 2015, p. 313). In cities like Barcelona the increasing property prices drifted out young vibrant inhabitants that made the destinations interesting in the first place. On the social level Airbnb seems to strongly contribute to the gentrification in city centres. Gentrification in this case meaning the transformation of working-class areas into middle-class or even commercial areas caused by investments done by real estate owners and external sources (Lees, Slater & Wyly, 2007). Locals in Barcelona gave up on buying an apartment in their own city but nowadays even have a doubt about the affordability of renting something in the city they grew up in (Hinsliff, 2020).

The presence of Airbnb might also benefit a neighbourhood. Renovating neighbourhoods creates support among local citizens as long as they also benefit from this increasing value. But once the rise in rent and property value exceeds a certain point a positive attitude turns into a negative one towards the presence and growth of STR accommodation platforms like Airbnb (Yeager, Boley, Woosnam, & Green, 2019, p. 969). The beneficial character of Airbnb rapidly disappears if too many long-term rental properties turn into STRs and local inhabitants fail to find proper accommodation. At that point the "sharing" character of Airbnb seems to disappear, mostly when real estate owners or hospitality entrepreneurs take

over the market. The term “multilisting” is used for hosts that own a large number of properties, logically not being used as their prime address of residence. In Amsterdam and Barcelona this problem exists where in Barcelona 2,5% of the hosts offer 30% of the listings. A small number of the hosts receive all benefits by offering “their” neighbourhood to the visitors. The extra burdening of the public facilities of non-touristic neighbourhoods is in this way not compensated for by the extra income for local hosts as this is increasingly flowing to owners of “multilistings” (Oskam & Boswijk, 2016, p. 28). Many of the listings are not permanent residences of local citizens and they are often rented out as whole apartments by “multilisting” hosts. Approximately one-third of Airbnb’s revenue ended up at multilisting owners according to Stulberg (2016). Airbnb in this way mostly benefits real estate owners with a large capital rather than unemployed citizens or ones with low-income (Cheng, 2016). According to Zervas, Proserpio and Byers (2017, p.697) and Wachsmuth and Weisler (2018, p. 1148) this development increases the gentrification of whole neighbourhoods and might create a rent gap. By having negative impact on the availability of long-term rentals for the local population, reducing the social capital of the neighbourhood and driving local citizens out of their living areas.

To show the impact and problem of “multilistings” one should look at the difference between the number of registered hosts and listings per destination. This shows how big the share of “multilistings” really is and therefore how much of the economic benefits Airbnb has flows away to real estate owners. Research done on the influence of sharing economy platforms by Gordo, De Rivera and Cassidy (2020) shows that the average revenue made over the last years and especially the way it flows back into the local economy is an important indicator on the economic impact of Airbnb. If global investors join P2P accommodation platforms where does the money go at the end and in this way does Airbnb contribute to a sustainable production chain?

#### 1.4.2 Hotel industry

Wachsmuth and Weisler (2018, p. 1169) talk about unfair competition between Airbnb and the traditional accommodation sector, in specific regard to the medium/low segment of hotels. On many occasions Airbnb does not have to meet the same tax obligations and safety restrictions as hotels have to. This shows an unfair situation according to the authors, and they are accompanied by Benner (2017) who points out the difference in obligations towards safety regulations. Either the company or the host should pay the taxes. Benner continues in the New York Times that Airbnb operates on (partly) the same market as hotels but does not play by the same rules when it comes to safety restrictions and tax burden. Therefore, the prices Airbnb hosts can offer are completely out of comparison with hotels’ higher costs. Also state income is lost because of this unfair situation. For example, New York City should have received around 33 million U.S. dollars (hereinafter USD) over the period of 2010-2014 on hotel room taxes now occupied by Airbnb (Wachsmuth & Weisler, 2018, p. 1169).

Airbnb says that their listings complement the hotel industry by being located outside city centres and by offering a different experience. Oskam and Boswijk (2016, p. 28) agrees that it is important to define where most of the listings are located, to be able to determine if Airbnb substitutes or complements the traditional hotel sector. As Benner (2017) in the New York Times rejected that Airbnb complements hotels, Guttentag and Smith (2017) add that around two-third of tourists confessed to using Airbnb as a substitute for hotels. This is the result of an online questionnaire held among 800 Airbnb users that used the service in a one-year time span. Nowak et al. (2015) concludes this discussion by stating that users of Airbnb substitute hotels for Airbnb during their trip. Only 4% argued that they would not have taken the trip without the presence of Airbnb and 42% said it uses Airbnb as substitute for traditional hotels. This suggests a stronger substituting- than complementary function of Airbnb. Adamiak (2018, p. 69) adds in his paper that, especially in Southern Europe, Airbnb presents a much higher maximum capacity than all hotels combined. The coastal destinations often show a double the amount of Airbnb beds over hotels beds.

So far, the substitution of middle/low segment hotels is discussed but what kind of impact has Airbnb on the performance of hotels? Different experts have shown different results over time and often hotels seem to be able to adapt to the presence of Airbnb and keep their performance indicators on the same level. The performance of hotels in cities that also have a strong presence of Airbnb differ strongly but in general the same performance indicators are negatively affected. Research done by Dogru, Mody, and Suess (2019, p.28) on ten US cities states that an increase in Airbnb supply negatively impacts the revenue per available room, occupation rate and average daily rates of hotels. The mentioned indicators are confirmed by a research done by Zervas, Proserpio, and Byers (2017, p. 697). They say that hotels in the middle/low segment of the market experience a negative impact on both occupancy rate and revenue rate if Airbnb listings increase. In Austin this even led to a 8-10% decrease in revenue for vulnerable hotels. In general, the hotels affected do not serve a strong corporate segment.

Neeser (2015) provides a different perspective. He discovered that in Northern-European countries hotels adapted to the presence of Airbnb by lowering their rates to meet occupancy goals, therefore the revenue per available room did not change. As the negative impact of Airbnb on hotels is still acknowledged by Neeser, Haywood (2016) argues that no clear connection is visible in Manhattan. So therefore, the effect of Airbnb on hotel performance seems to differ per destinations and expert. The increasing presence of Airbnb at a city destination also seems to impact the traditional pricing strategies based on demand flows. As normally in peak periods hotels increase prices to profit high demand, Airbnb disrupts this habit by offering a very flexible STR supply (Zervas, Proserpio, & Byers, 2017, p. 697). The freedom of adding and removing listings whenever preferred by hosts often eliminates the revenue management pricing tactics of many hotels in the middle/low segment.

There is nothing against strong competition on the accommodation market. Nevertheless, it seems highly unfair that the accommodation sector has to compete with Airbnb under the



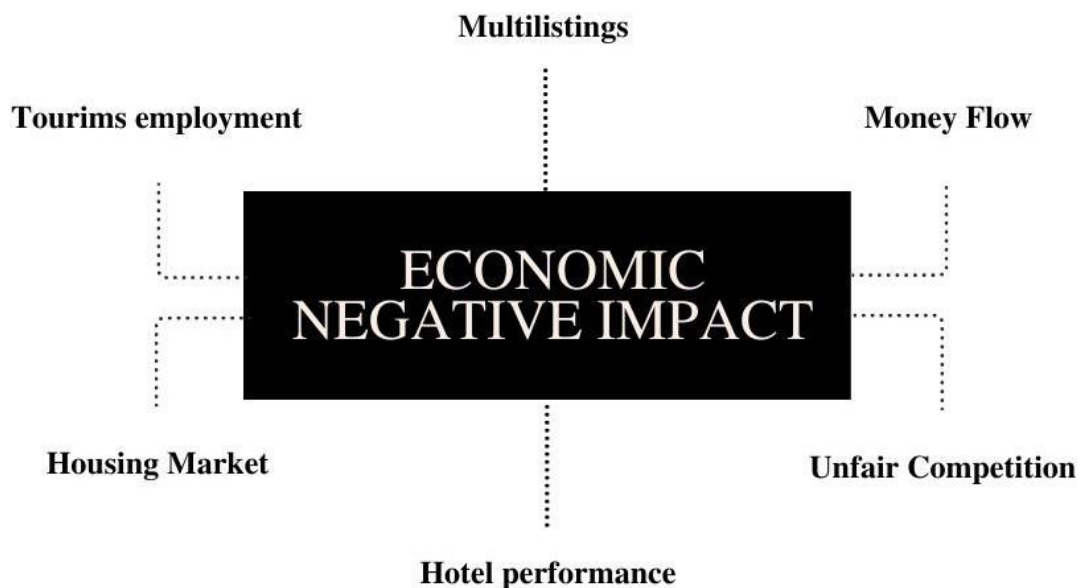
current conditions. So, the unfair competition comes from the absence of equal safety regulations, tax burden and standards hotels have to meet. Without any regulation towards these issues the sharing economy can turn into the skimming economy practising on a different level through unfair competition (Malhotra & Van Alstyne, 2014, p. 25).

The hotel industry has to learn how to deal with a change in economic approach from a materialised society to the age of access, which is possible as shown by Neeser (2015). Airbnb is more successful in meeting the new mindset of consumers than the traditional hotel sector (Rifkin, 2001). In the end Airbnb could and should be complementary to the accommodation industry or the platform should at least be a fair and stimulating competitor.

### 1.4.3 Tourism employment

The growing presence of Airbnb and substitution of hotels is believed to cause job loss as performance indicators drop. Research done by Fang, Ye and Law (2016, p. 265) suggest that this is not necessarily the case. They state that the presence of Airbnb expands the tourism market and creates new jobs in all parts of the industry. Dogru et al. (2020, p. 104001) add that there is no significant relation visible between the increase in Airbnb listings and dropping employment in the tourism sector. It is, given the little research done, hard to determine if both findings are effective for all destinations. Therefore, this research will take into account the development of employment rates in both the hotel industry as the tourism industry as a whole and compare this to the increase/decrease of registered Airbnb listings. These impacts combined are what Airbnb has a negative impact on at a city destination, in figure 3 below these impacts are graphically presented.

*Figure 3: Economic negative impact of Airbnb*



*Source: own work.*

## 1.5 Social Impact

The social impacts caused by the presence of Airbnb are hard to determine and provide a grey area. Many social impacts are directly related to other impacts such as economic, environmental and legal ones. For example, the rising rent prices for long-term rental is seen as a negative economic impact but directly influences the social situation of a neighbourhood or community. This part of the literature review is therefore less easily translated into a measurable indicator.

The social character of Airbnb is for many tourists a motivation to use the platform as an accommodation provider. Oskam (2019) mentions that tourists prefer the interaction with local citizens over the use of commercial hotels, with the hope of immersing themselves in the local culture and receiving tips from somebody who is active in the community. Gordo, De Rivera and Cassidy (2020) add to this that the international connection for both tourists and hosts are a motivation for using the service. The use of Airbnb results in interaction between people of all layers of society, nationality and age. Therefore, it is often seen as an enrichment of the overall experience and a successful way to broaden the mind and understanding of people from different backgrounds. Unfortunately, there are two small side notes to add to this positive impact. When multilistings take over the Airbnb market the encounter between tourists and a local person, active in the everyday society, disappears. Secondly it is questionable if the international encounters happen more than once and if they cause lasting results or impacts for both users, hosts and the surrounding communities.

These encounters all start with the booking procedure. The booking system and screening method Airbnb offers its hosts was argued to provide discriminative possibilities. As guests do a booking request with their highly personalised profile there was a chance hosts would be declining booking requests based on ethnicity or nationality causing structural discrimination on the platform. Research done by Hajibaba and Dolničar (2017, p. 218) rejects this assertion and says that declined requests are merely a risk reduction for hosts' private properties. Gordo, Da Rivera and Cassidy (2020) indicate the functioning of the booking and rating system of Airbnb as one strengthening both hosts and guests trust in one another. Reputation and social control are strongly present in the booking procedure for both host and guest and result in strong trust in each other and safety for both host and guest. So far, we have been concerned with the social interaction between tourists and hosts.

If a host decides to transfer the under-utilised assets into economic gain on the STR market the social impact is often not considered. Oskam (2019) points out that the neighbours and neighbourhoods do not have any influence or input on the decision of a homeowner to rent out their property as an Airbnb listing. Therefore, public areas will be used more intensively as well as public transportation without compensation for everyday users. Also, the public facilities inside the shared properties are more intensively used and the dynamic of an apartment building changes when neighbours vary from week to week. In the most extreme

scenarios Oskam states that well-being and liveability may decrease as well as property value to with the end result in a changing character of whole neighbourhoods.

The presence of Airbnb at city destinations resulted in complaints and protests by local communities towards the platform. The social impact Airbnb has on these destinations is so severe that a part of the population feels the urge to actively protest against it. Citizens lost faith in the idea that Airbnb manages the opportunity for locals to transform under-utilised property into an extra income in a suitable way. The costs for the community, caused by Airbnb, are too high. Costs mentioned here are mostly indirectly measurable as they concern noise nuisance, overcrowded public spaces and public transportation and extra pollution or damage done to public facilities (Oskam, 2019). The level of support for the development of P2P holiday accommodations depends on the cost-benefit relation of local citizens (Yeager, Boley, Woosman & Green, 2019, p. 969). The disruption of this balance results in protest and marches. In Barcelona and Venice, a total ban on Airbnb is demanded by the population while in Los Angeles the request is more on regulating the STR (Reyes, 2020). The biggest social problem and burden seem to be the number of listings per inhabitant. Adamiak (2018, p. 70) shows that this is most intense in coastal areas on the European continent. In 2018 the highest number of listings were found in Paris (56.800), London (55.400), Rome (25.300) and Barcelona (21.600). The coastal areas are experiencing the highest number in listings per 1000 inhabitants: Batumi (40.1), Split (34.2), Marbella (31.1) and Venice (26.7). Protest movements in Venice, Florence and Naples arguing that their cities are “no hotels” or “theme parks” as that is how they perceive the enormous amount of tourists visiting through platforms like Airbnb (Ciccarelli, 2020). While considering these complaints and protests it is crucial to realise that tourism is often used as a scapegoat, fairly and unfairly, when discussing major urban social developments. These developments, resulting in protest, are related to tourism and P2P platforms but more often are caused by bigger processes such as gentrification and austerity (Colomb & Novy, 2018).

A way to be more specific on the social structure of a destination and its neighbourhoods is via the the quality of life (hereinafter QoL). The impact on QoL is mostly concerned with the burden on society and the changing community.

The interpretation of quality of life is a much discussed topic and covers many facets of society. The majority of existing theories agree on the fact that economic, social and environmental factors influence the quality of life. The existence of tourism covers all these fields. Development of cultural tourism can, for example improve the quality of life while an increase in nightlife tourism can decrease this. The attitude of residents towards tourism development is crucial for the impact on their perception of quality of life (Uysal, Sirgy, Woo, & Kim, 2016, p. 255). The European Union (hereinafter EU) specified the 8 + 1 dimensions model to approach the quality of life of the European citizens. This theory applies to a whole continent and therefore could be used for any other part of the world. The 8 + 1 dimensions focus on general aspects of life such as: material living conditions; productivity or main activity; health; education; leisure and social interactions; economic

security and physical safety; governance and basic rights; natural and living environment; and the plus one dimension “Overall experience of life”. Within these dimensions certain points relate to the negative impact of Airbnb pointed out earlier in this literature review. Factors like housing, economic safety and value of assets, importance of social interaction and sustainable relationships, and conditions of living environment are having an impact on the quality of life according to the Eurostat Statistics Explained (n.d.) This is still a very wide and general theory, a part of the approach of Rahman, Mittelhammer and Wandschneider (2005) towards the quality of life seems more fitting for this research. They mention overlapping factors as the EU and conclude that the quality of life is influenced by an interconnected network of:

1. Health
2. Work and productivity
3. Material well-being
4. Feeling part of one’s local community
5. Personal safety
6. Quality of environment
7. Emotional well-being
8. Relationship with family and friends

For this research it is not essential to point out the general impact on quality of life but only the parts that are potentially influenced by changes caused by Airbnb. Point 3, 4, 5 and 6 of the theory of Rahman, Mittelhammer and Wandschneider are directly linkable to negative impact related to the presence of Airbnb. It is clear that to truly indicate the total QoL many indicators should be taken into account and a combination of them would result in a true value on the QoL. Nevertheless, the approach used during this research provides a possibility to measure only the impact Airbnb has on those parts of the QoL for citizens of city destinations.

#### 1.5.1 Material well-being

This part of QoL has everything to do with one’s economic situation. Rahman, Mittelhammer and Wandschneider (2005) use gross domestic product per capita as the main indicator, while the EU also mentions material deprivation and housing (Eurostat Statistics Explained, n.d.). Connected to economic indicators found on Airbnb the changes in housing market, rent prices and property value are direct indicators on this part of quality of life. The presence of listings improves the income of hosts but also impacts the availability and affordability of housing for citizens not active on the STR platform. Indicators on material well-being are *change in long-term-rental price, availability of long-term-rental, increase in property value and the amount of short-term tourism rental.*

### 1.5.2 Feeling part of one's local community

The approach to local community used by Rahman, Mittelhammer and Wandschneider is not relevant for this thesis as they measure the feeling part of one's local community through political freedom (Rahman, Mittelhammer & Wandschneider, 2005). The title would suggest a more socially oriented view as used by the EU. Eurostat Statistics Explained (n.d.) mentions leisure activities and social interactions as essential for a community. For tourist the presence of Airbnb improves their possibility of taking leisure trips and increase their (international) social interaction. As argued before by Gordo, Da Rivera and Cassidy (2020) tourism creates social interactions between tourist and locals (hosts in this case) but the sustainability of these contacts is questionable. The other side of social interactions is where Airbnb negatively impacts the local citizens. By driving away local citizens from their neighbourhoods by drifting up the rental prices, the social interaction and feeling of being part of one's community decreases dramatically. Indicators to measure this negative impact on the quality of life are *population decrease (neighbourhoods)* linked to the *increase of Airbnb listings* and *change in property purpose to short-term tourism rental*.

Another action influencing the quality of life in a community is the desire and drive to protest against factors changing the local community. This relates to the many marches and initiatives worldwide protesting against the presence of Airbnb and mass tourism in general. That the urge to protest occurs indicates that the impacts are so severe continuation is not an option. Therefore, other indicators on quality of life's feeling part of one's local community are *organised protest against Airbnb* and *registered initiatives and organisations fighting towards Airbnb*. Complaints by residents about the platforms and its users will also be used as a measurement tool but there is a closer connection to "Quality of living and natural environment" discussed below.

### 1.5.3 Quality of living and natural environment

Eurostat Statistics Explained (n.d.) and Rahman, Mittelhammer and Wandschneider (2005) approach this part of quality of life mostly environmentally. The environmental changes on the long-run impact everyday life. The EU also mentions one's individual perception of the QoL and natural environment, for example as being influenced by the quality of public spaces and amount of pollution in all forms. For this thesis it is interesting to measure the negative impact of Airbnb on the perception towards the public environment. Impact indicators are in this case both social and environmental. The burden on society and public facilities indicates the gravity of impacts and the influence on the QoL. Therefore, the amount of Airbnb listings in certain areas determines the capability of local communities to deal with negative factors this presence is bringing. The acceptance of this burden and the burden itself can be measured through the following indicators: *tourist arrival per capita*, *tourist overnight per capita* and *Airbnb listings per capita*. Another type of indicators is about the complaints about the presence of Airbnb listings by citizens: *complaints about use*

*of public facilities, complaints about use of public facilities residencies, complaints about pollution, complaints about noise and complaints about damage.*

The general impact on the social dimension and the more detailed view on the QoL will be narrowed down into measurable topics. All combined in figure 4 are the factors on which Airbnb has a negative impact on at a city destination.

*Figure 4: Social negative impact of Airbnb*



*Source: own work.*

## **1.6 Environmental Impact**

The environmental impact on tourism in general is a complicated topic, sustainability is much used term and has slowly lost its value over time. To address environmental impact a wider approach is requested. As for social impact also, the environmental impact is linked to all other dimensions. The “three pillars” model, created by Professor Mihalič (2016) combines the environment, economy and social-cultural functions of tourism into a model guiding towards “Responsustable Tourism”. This term combines responsible tourism and sustainable tourism, the combination for a successful, long-term tourism industry. “Responsustable Tourism” focuses on the sustainable part on regulations and requirements towards environmentally friendly alternatives and on the responsible part on the responsibility from all participants in the tourism sector. To translate the three pillars into measurable impacts the approach of Dolničar, Juvan and Hajibaba (2017, p. 267) towards environmental impact will be combined with the responsibility Airbnb claims to take in their sustainability reports. During this analysis it is important to keep in mind that environmental impacts of P2P accommodation platforms can only be measured by setting saved resources against re-spent resources. This means that impact is always measured as comparison to alternatives. Experts share their concern towards this in research done by Gordo, De Rivera and Cassidy (2020).

Dolničar, Juvan and Hajibaba (2017, p. 267) approach three basic environmental indicators for Airbnb; the original purpose of the property, the size of the property; and the environmental-friendly measurements taken by the owner of the property.

The original purpose of a property determines the impact on the environment concerning the construction. If the property was constructed for housing purpose and later transformed into STR the environmental burden is less severe than when the property was built with the sole purpose of focusing as holiday STR, what Airbnb listings are in this case. On the property size they mention that the bigger the property the bigger the usage of natural resources. Bigger properties often have more space for extra facilities, hence a higher environmental burden. Their last indicator is on eco-friendly appliances present at listings. Apartments are having less impact on the environment if eco-friendly appliances are installed such as solar panels, recycling options or water saving features.

To further measure the impact of Airbnb, a comparison with the accommodation sector is unavoidable. Airbnb often substitutes the traditional accommodation sector, mostly middle/low-segment hotels but a comparison between Airbnb listings and hotels asks for some nuance in approach. Bastič and Gojčič (2012, p. 1018) argue that most of the Airbnb listings offer less/no extra services such as room cleaning, spas or pools. In contrast to Airbnb accommodations cleaning services are offered on a daily basis and bed linen is provided freshly washed every day. Hotels in the middle/low segment are having a lower impact as fewer extra services exist at these providers. Skjelvik, Erlandsen and Haavardsholm (2017, p.9) agree with the high environmental burden that comes with operating a hotel on daily base. They provide the same nuance that Airbnb mostly substitutes low-middle segment hotels which in general offer fewer extra services that pollute. It can be said that hotels are a bigger burden on the environment if the total impact of hotels is taken into account compared to the impact of the individual STRs from Airbnb. On the other hand, there are many listings equipped as normal living areas, and they offer fully functioning kitchens and bathrooms causing a higher use of power and water than comparable services at hotels. It is hard to say if eating-out is more sustainable than cooking at the Airbnb.

The increasing presence of Airbnb seems to have another positive effect. Occasionally it prevents the construction of new hotels. During the Olympics in Rio de Janeiro in 2016 a total of 257 new hotels would have been needed to accommodate all visitors were it not for the presence of Airbnb as alternative accommodation (World Economic Forum, 2016). Skjelvik, Erlandsen and Haavardsholm (2017, p.9) argue the same. STRs could prevent the construction of new hotels in the long-run and therefore prevent CO<sub>2</sub>-emission.

Gordo, De Rivera and Cassidy (2020) link another social development to the environmental impacts. Their report points out a change in behaviour of consumers due to the “sharing economy” principle. The idea of making use of existing assets instead of newly created ones and thereby sparing the environment. P2P accommodation platforms strengthen the idea of exploiting non-used assets and often stimulate sustainable development and improvement of

utilities. Below data provided by Airbnb shows the result of their promoting activities towards sustainable alternatives for hosts and tourists, reported from the perspective of the company itself.

Based on the literature it seems that Airbnb is outperforming the traditional accommodation sector. Nevertheless, the platforms indirectly contribute to the increasing number of trips. This development is not directly linkable to Airbnb but the logic behind it suggests a certain connection. Airbnb is offering more affordable, cheaper, accommodation alternatives to travellers, resulting in less expenses while travelling. The money “saved” by less expensive accommodations is often used for two things. Either the number of days spent at the destination is prolonged because of better affordability or this money is “saved” and used for another trip later that period. In the last case Airbnb indirectly contributes to the increase in arrivals worldwide. This does not directly influence the environment dramatically but if transportation during this extra trip is carried out by airplane the environmental burden will be highly demanding. Skjelvik, Erlandsen and Haarvardsholm (2017, p.9) provide an example: if one person takes one extra flight from Oslo to London Airbnb will have to substitute around 270-400 guest nights at an hotel to compensate for this flight. According to this theory Airbnb annuls the good work they did by driving down the prices in the short-term accommodation sector on destinations worldwide.

Airbnb seems to take its responsibility towards the environmental impact pillar mentioned by Mihalič (2016). In 2014 the Clean Tech Group (hereinafter CTG), on request of Airbnb, conducted a research in environmental benefits of home sharing through Airbnb in North America and Europe. In this research CTG compared energy and water use, waste and greenhouse gas emission of Airbnb guests to hotel guests. It showed that in North America Airbnb guests use 63% less energy than hotel guests. Airbnb published that less than half of their hosts offers single use toiletries, around 80% of hosts admit owning at least one energy efficient application and around 92% claims to recycle and promote recycling at their listings. Also, water use, and greenhouse emission seems to be lower at Airbnb listing compared to hotel use (Clean Tech Group, 2014). In a second research done by Airbnb itself, based on methodology used by the CTG in 2014, the platform shares promising numbers on water, waste, energy and greenhouse gas reduction if their listings are used as replacements of hotel rooms. The total waste reduction of North America and Europe combined were up to 122.400 tons in 2016 (Airbnb, 2017).

Usage of Airbnb listings as accommodation type instead of hotels has a significantly lower negative impact on the environment according to the CTG (Clean Tech Group, 2014). Airbnb shows some ambiguity in their idea on complementing or substituting the traditional accommodation sector. The company officially states not to function as a substitute for hotels but as a complementary provider but when it comes to environmental impact it promotes that fact that the platform outperforms the traditional accommodation sector as a better alternative. All the environmental impacts combined are the factors on what Airbnb



has an impact on at a city destination. Not all environmental impacts are negative, in figure 5 below the impacts are graphically presented.

*Figure 5: Environmental (negative) impact of Airbnb*



*Source: own work.*

## 1.7 Legal Actions

The last part of this literature review is on the legal actions taken by destinations worldwide. On the topic of legal impact, the impacts are of a different type than the economic, social and environmental ones mentioned before. The legal actions, mostly of regulatory nature, are measured by existence. As it is impossible to measure the impact Airbnb has on the legal bodies of destinations this part approaches the presence of regulations, the type of regulations and the implementation problems these existing regulations often face. To create some clarity, destinations have three general options of approach towards regulating according to Nieuwland (2017) and Lines (2015). They mention laissez-faire, full bans and specific regulations. The laissez-faire approach allows STR completely and has been the first reaction of most destinations, especially when positive impact outweighed negative impact. The full ban has not been implemented a lot and prohibits the existence of P2P accommodation platforms like Airbnb completely. This approach would be a big mistake according to Dongen (2019). The specific regulations are the most chosen option and include all types of regulations of any other nature than full allowance or full ban. Within the specific regulations a division is made by Oskam and Boswijk (2016). They divide the regulations into three categories: taxation, consumer protection and resident protection.

The global response to the increase of Airbnb came a little to late according to Oskam (2019). He explains the logical late reaction as increasing tourism numbers due to platforms like Airbnb were seen as positive tourism development at many destinations. Any agreement on regulations and tax collections with Airbnb nowadays are seen as major victories benefiting

both parties. In reality these victories seem to have a big downside. By collecting tax from their hosts and paying it to local governments Airbnb protects its hosts privacy and does not have to provide insight in real numbers of listings and income. It is also not sure if Airbnb should be trusted with enforcing legislation for local governments (Woolf, 2017). For every city the same kind of issues occurred over the years and Hajibaba and Dolničar (2017, pp. 120-131) investigated a total of ten cities reacting to Airbnb. Most of the regulations they discovered can be divided among the three major categories mentioned before. Therefore, below these three topics will be explained.

### 1.7.1 Taxation

On many occasions cities-imposed taxes on hosts located at their destinations. In general Airbnb functions as the party collecting this tax from their hosts and paying the governments. In New York Airbnb hosts pay an income tax, tourism tax and a tax per night spent. San Francisco came up with a more specific tax of 14% of the rental price for renting out under 30 days. Hosts in London pay a council tax but if they rent out their only residence a tax-free income up to 7500 pounds is opposed. In Amsterdam hosts pay tourist and income tax and the tourist pays a 5% tax to the city of Amsterdam when renting an Airbnb in the city centre. Barcelona has comparable approach imposing an income tax and per person per night tourism tax (Hajibaba & Dolničar, 2017, p. 121-130).

### 1.7.2 Resident protection

The resident protection is meant as an attempt to protect the liveability of neighbourhoods for local citizens. Examples of how cities try to achieve this vary but many are concerned with a rental day maximum, the obligated presence of property owners or rules on the matter of accessibility and visibility of listings.

The city of New York passed a law prohibiting the renting out of entire houses for a period less than 30 days with high fines for breaking the law. This had a direct major impact on the amount of whole house listings. Another law was imposed that allows entire houses to be rented out as the owner is on vacation and registers the absence at the municipality. San Fransisco allowed only primary residencies to be registered with proof that the hosts live at the residence for at least 275 days a year. The city also has a maximum of 90 days for rental if the host is not present at the residence but there is no limitation if the host is present (Bort, 2014). Paris focused more on commercialising properties that are rented out for more than 120 days a year, non-commercial rent of primary residences is obliged not to pass this number of days. Like many cities London followed with a maximum of 90 days per year of renting out entire homes, parts of residences are allowed to be rented out the whole year round. Berlin chose a different approach by limiting the number of permits given out for STR and this is known as one of the most severe regulations in Europe. By not only tackling residences but also all kinds of empty buildings the number of listings in Berlin dropped by

40% in 2016. Amsterdam even created a new term “private rental” to deal with P2P accommodation platforms and limited the STR to 60 days annually with a maximum of four people per property. If a listing occupies 40% or less of the residence there is no limitation on days to rent (Hajibaba & Dolničar, 2017, p. 121-130). Oskam also mentions the existence of limitation of maximum days annually of mostly 90-, 60- or 30-days limitations. According to Oskam a 30-day limitation, such as implemented in Singapore, is most effective as it fits the idea of renting out your primary residence during a holiday.

As burden releasing actions the location of rentals has been addressed by certain destinations. Amsterdam prohibits STRs in the city centre and listing buildings in the centre of Madrid requires a separate entrance from the one used by locals. Valencia even took a step further in limiting listings to ground floors and first floors to prevent Airbnb listings having an attractive view over the city (Oskam, 2019).

In the more recent developments, the COVID-19 crisis is offering local citizens a unique moment of peace and quietness now tourism is brought down to a minimum. Nevertheless, in Venice and Florence citizens initiatives are very much aware of the threat of mass tourism returning to their cities. Therefore, they sent a list with ten requests in the fight against mass tourism, two of them concerning Airbnb. The manifesto suggests a 90-day rental limit and the classification of all short-term rentals under 30 days as a tourism purpose. To prevent multilisting they suggest a maximum of two properties per owner. According to the local society Airbnb practices unfair competition paying 39% less taxes, lowering the average quality of the tourism offer. In their experience Airbnb slowly hollows out whole cities (Cicarelli, 2020).

### 1.7.3 Consumer protection

To protect the consumer many destinations, oppose a fee upon registration. As in the past many listings were not known by local governments and were seen as illegal listings this is still seen as a real problem. New York enforces a law that once occupancy of residencies is changed from long-term to transient (suited for short-term) a safety check is obligated. San Fransisco managed to partly regulate with a required registration and registration fee and a full insight into the hosts’ personal details. Also hosts need to provide a detailed safety plan inside the facility. London implemented the same type of requirements concerning fire safety and the obligation to allow inspections by the fire department (Hajibaba & Dolničar, 2017, p. 121-130).

Figure 6, on the next page shows a visual presentation of the existing structure of legal possibilities taken by city destinations worldwide.

Figure 6: Legal possibilities against Airbnb at city destinations



Source: own work.

#### 1.7.4 Enforcement issue

One of the practical and biggest problems is the intensity of enforcing the regulations on Airbnb listings. The time and personnel needed to check individual listings is enormous and not worth the achieved result and as long as Airbnb does not provide full transparency the true enforcement of regulations seems an undoable task. Data and host information is not provided by Airbnb and the only method of control is door-to-door controls based on neighbour complaints. There are services providing spatial data on the locations of Airbnb listings such as AirDNA. This company tracks down Airbnb listings by following bookings and in that way indicating where listings are located (AirDNA, 2020). Next to that it is essential not to let regulations hold back the efficiency of the market and function of Airbnb as holiday accommodation provider. If Airbnb is able to, within legal base and equal competition, provide a more efficient service, legislation should not be there to prevent this (Oskam, 2019). On daily basis destinations, you can experience how delicate the regulation of Airbnb is and how tricky implementation is. In the beginning of this year the Scottish parliament withdrew a new regulation for a licensing scheme targeting STRs because it was judged to be impossible to effectively implement. This new legislation was put in place as a response to increasing complaints about high rental prices, litter and noise caused by Airbnb guests from the community (BBC News, 2021).

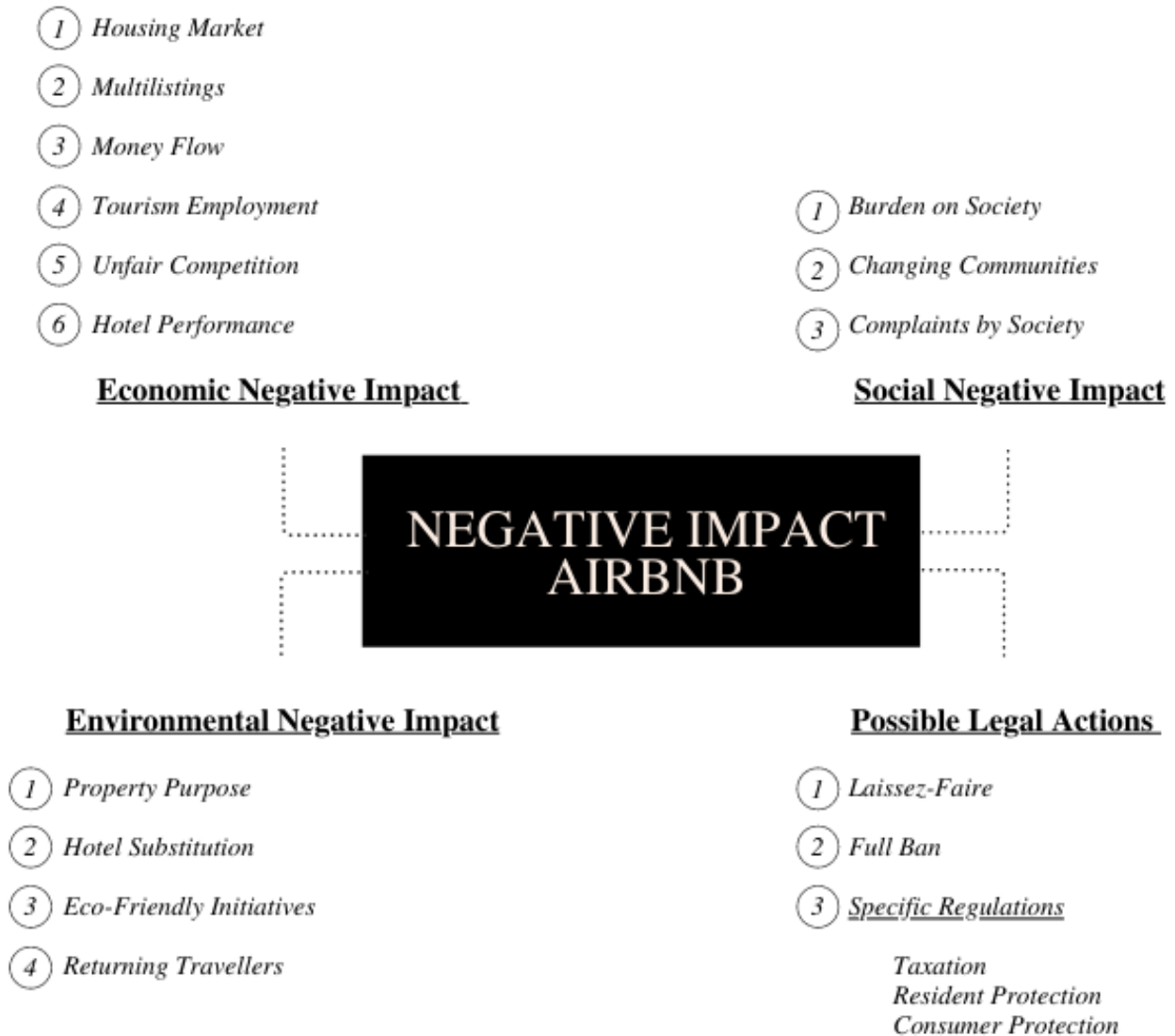
Nevertheless, in an article written by Leshinsky & Schatz (2018) the effect of different types of regulations on the amount of Airbnb listings is mentioned. According to the study the

biggest visible effect occurs when Airbnb hosts are personally targeted instead of Airbnb as a whole. In Berlin and Santa Monica this tactic was used on entire home listings and hosts in general. The hosts were fined with respectively \$100.000 in Berlin and \$500 in Santa Monica which led to a 49% and 37% decrease in the cities just mentioned. The main reaction was that there was a significant drop in the amount of professional Airbnb hosts. Therefore, it seems that targeting Airbnb hosts in person is a much more successful strategy than going after Airbnb itself.

As clarity of listings makes enforcing the law a time consuming and impossible challenge private companies more and more take the place of data gatherers. Companies such as AirDNA provide a tool for governments and this development is expected to continue, bringing new challenges for governments. Next to that, in recent time some cities like Amsterdam found an agreement with Airbnb itself to drop off illegal listings from their website as a move towards a sustainable future between company and city. This is a type of self-enforcement that might be one of the best options for future law enforcement, the only downside is that control remains in the hands of Airbnb itself (Leshinsky & Schatz, 2018).

The literature review, concerning all types of on impact Airbnb has on city destinations combined, is graphically presented in figure 7 on the next page. Legal actions are considered to be a separate field as it is the reaction of destinations on the presence of the negative impacts presented before.

Figure 7: Negative impact model Airbnb



Source: own work.

## 1.8 COVID-19 Impact on Airbnb

The whole tourism industry stopped in the beginning of 2020 when the COVID-19 pandemic spread over the earth. According to the UNWTO (2020) tourism numbers dropped back to where they were 30 years ago, with up to 75% less international arrivals over the whole 2020. The UNWTO predicts a total recovery, although up to the level before the pandemic might take up to four years, if it recovers to former numbers at all. On the other hand, the COVID-19 global pandemic offered many targeted citizens a moment of relief from the endless mass of tourists visiting their cities. Tourism will return after this crisis and although the predictions are not all the same large quantities of tourists are most probably to return. For the listing owner the travel ban meant a dramatic stop in income. The impact of this stop

depends on the type of owner according to Dolničar and Zare (2020). They differentiate between owners with pure commercial intentions, often with high starting costs, and owners of listings offered in the idea of the sharing economy. The first ones have been strongly hit by the stop as the income flow stagnated but costs like mortgages and exploitation costs have continued to exist. For the second group these costs are the everyday costs as listings are primary addresses of residence and renting them out was only an extra source of income. Dolničar and Zare created two possible scenarios for the future of Airbnb after COVID-19. Their first expectation is that the economic crisis caused by the global pandemic made house owners and investors return to the long-term rental market as costs exceeded income for too long. This would suggest a partial return of Airbnb listings to the original sharing character of the platform. The second, more realistic, scenario is that the function of Airbnb will remain how it is and that the demand will recover to nearly pre-COVID-19 numbers. Dolničar and Zare expect the number of commercial listings to decline in the future and for Airbnb to recover its original purpose of sharing spaces between local hosts and tourist. This expectation from a purely economic point of view seems too positive as long as Airbnb has no regulations to follow concerning exploiting the STR accommodation sector for commercial purpose. Another argument supporting the switch from short-term rental to long-term is the unpredictability of the tourism market, the impact of global events shown by the COVID-19 pandemic and the anxiety that arose in many Airbnb listing owners (Krouk & Almeida, 2020, p. 99). In the end it will depend on the financial means of listing owner if they will continue in the STR market or if they will switch back to the more stable long-term rental.

So far, the perspective was purely from the house owner renting out via Airbnb. The company itself had to let go 25% of its employees as result of the global travel restrictions. Hu & Lee (2020) measured a drop of 57.8% in global bookings during the lockdowns at destinations. Around the beginning of April 2020, the cancellation rate was about 90% and booking down by 80% according to AirDNA. Airbnb launched a supporting plan for covering mortgage costs worth of 17 million USD and compensating lost income because of cancellations worth of 250 million USD (Temperton, 2020). Airbnb as a company cut out a lot of “unnecessary” costs and returned to the core of the business: being a host. By laying off a quarter of the workforce the company managed to remain a stable factor for their hosts in need. Airbnb also “invested” 1 billion USD for refunding non-refundable cancellations to keep the market vibrant (Taulli, 2020).

The cancellation procedure and flexibility in booking will be essential to recreate the trust from tourists in the platform as a safe option for travelling after the COVID-19 pandemic (Krouk & Almeida, 2020, p. 99).

## 2 RESEARCH PURPOSE

The aim of this thesis is to provide a model suitable for measuring Airbnb's negative impact on destinations based on found indicators currently impacting city destinations. The focus will not only be on negative impact but also on regulatory actions taken by destinations towards Airbnb. The principle of the sharing economy is described and taken into account, to understand Airbnb's business environment. Airbnb is a relatively young research topic as the company was founded in 2008, yet many papers and articles have already been dedicated to the complexity of the P2P accommodation platforms and their problematic presence.

The main research question to be answered will be the following: *How are global city destinations affected by negative economic, social, and environmental impact and legal actions caused by Airbnb?* To support the general research question subquestions will be answered in order to come to a final result. These questions will deal with the economic, social and environmental impact that Airbnb has on destinations worldwide, what the negative impacts are and what kind of legal actions have been taken so far by city destinations. The purpose of indicating these impacts is to combine them into a framework usable for negative impact analysis of Airbnb on city destinations worldwide. Next to the impacts also the legal actions are playing a factor in gravity of impacts for the future.

This thesis will deepen the existing knowledge on this topic and function as a collection of research done towards the negative impact Airbnb has on city destinations. The goal is to serve as a guideline, best practices example and literature source for future policy makers on destination level.

For the literature review city destinations worldwide are used for analysis of negative impacts resulting from the presence of Airbnb. The attempt was to use a wide and diverse selection of city destinations covering the most common and severe negative impact indicators. The analysed city destinations are chosen based on four criteria: gravity of negative impacts; number of registered Airbnb listings; actions taken towards regulating STR; and personal interest of the author. Airbnb is mostly present in Europe and the USA, therefore most of the selected cities are located here. The destinations are selected based on a literature review considering the factor mentioned above. Personal preference of the author was only in force after academic arguments equalled out. The negative impact of Airbnb on city destinations is the basis for the developed benchmark model.

According to Henley (2019) there are many European cities that took measurements against STR. Among them are Amsterdam, Barcelona, Berlin, Brussels, Krakow, Munich, Paris, Valencia and Vienna. In 2019, these cities requested the European Commission to add the explosive growth of Airbnb to their agenda. At the same time Italy is dealing with mass tourism in cities like Venice, Rome and Florence. Based on the number of listings in 2016 cities like Venice, Rome and Florence provided a basis for this research (Picascia et al., 2019). To indicate on how Airbnb is reshaping city structures Jiao and Bai (2019) conducted



a research in three major cities in the USA: New York, Chicago and Los Angeles. The intensity and pressure of listings was measured by listings per 10.000 households and provided different results per city. Therefore, Jiao and Bai recommend a different approach towards regulating Airbnb per city destination. Their paper shows the gravity of Airbnb on American cities.

According to Oskam (2019) San Francisco, Singapore, Amsterdam and Barcelona already made attempts to regulate STR platforms like Airbnb and are therefore interesting for this research. As Airbnb is mostly present in Europe and the USA most of the city destinations are located here. All mentioned city destinations are analysed on current impacts through available literature and present the selection of cities where the negative impact of Airbnb is most visible. Based on this reasoning any other city destination with Airbnb listings experiences the negative impact of the platform and is also interesting for this research and is freely added while conducting the literature review.

### **3 METHODOLOGY**

The research methodology of this master thesis is of a qualitative nature. Based on the indicators determined in the literature review a model for measuring Airbnb's negative impact is created. The first idea was to create a benchmark model from the found indicators. Benchmark models are often based on one company or destinations compared to other companies/destinations performing worse or better (Zairi, 1994, p. 12). During the process it became clear that this would be too difficult because of the complexity of the topic and the global general approach of this research. The final result will therefore be a model for measuring Airbnb's negative impact. This model shows the negative impact on the four main categories found in the literature: economy, social, environment and legal. And it offers the opportunity to compare the impact of Airbnb and the approach on regulating Airbnb of the different destinations based on measurable indicators.

#### **3.1 Delphi Method**

This Delphi research has been conducted using two research methods. Firstly, the models' indicators were subtracted from existing literature, research and theoretical background on negative impact of Airbnb on destinations worldwide. This desk research has been conducted to provide a solid basis and starting point for the development of the final model. The second part of this research is conducted via the Delphi method. This method is used through history as a tool for structuring models, tackling difficult topics by generating external expertise and to discover the strengths and weaknesses of models and theories (Linstone, Turoff, & Helmer, 1975). In the Delphi method a panel of experts is selected to discuss a topic on which no consensus exists. The experts provide their opinion on a proposed topic or model as tool a of improvement (Hohmann, Brand, Rossi, & Lubowitz, 2018, p. 349).

The Delphi method has been suitable for this master thesis because of the wide scope of the topic. Airbnb and P2P accommodation platforms are relatively new research topics, therefore not many data-based theories and sources are available and the relatively small number of experts that wrote about the topic often differ in opinion. The fact that Airbnb does not provide direct insight in its data makes it even more of a challenge to create useful, measurable indicators without the expert opinion of specialists from various city destinations. The two rounds idea of the Delphi method is suitable for this research because it provides an opportunity to improve the model for measuring Airbnb's negative impact and then again collect the feedback of the experts. This results in a well evaluated model of high quality based on experts' opinions and their consensus.

For this research the Delphi method did consist of two rounds of feedback, conducted via online communication. The first round focused on a detailed evaluation of the model by the approached experts. In this evaluation the general opinion on indicators was asked along with comments on their measurability, usability, completeness and possible improvements. Next to that the experts were asked to point out indicators that could be left out or if certain indicators were still missing. A total of 55 indicators were presented to the experts with the aim of narrowing this number down and improve the model based on the experts' opinions. The design of the second round was different. The experts were asked to give feedback on the quality of the renewed model and if in their opinion their feedback has been used adequately. The research instruments used during the first and second round of the Delphi method are presented in appendix 3 "Research tool".

During this Master thesis the Delphi method is used with a more liberal interpretation of the models' function. Normally the Delphi method would consist of multiple rounds of questionnaires, where the input on every round would flow back into the following questionnaire. In this Master thesis the first round of questionnaires followed the original structure of the Delphi method. Experts were asked to provide their opinion through a structured document on the created model. The input they provided was used to adjust and improve the model that afterwards was sent back to the experts for the second round of feedback. During this second round the function of the questionnaire changed slightly as a more general opinion was asked. This was done because of a switch in purpose during the process of the research. Next to that the second version of the model resulted in satisfying reactions from the panel of experts, indicating that their first round of feedback was well taken into account while improving the model. Therefore, it deemed unnecessary to conduct a third questionnaire round and this way of using the Delphi method will be seen as successful and fitting for this Master thesis. The second draft of the model for measuring Airbnb's negative impact can be found in appendix 2 "Second draft of the model".

### **3.2 Expert Selection**

The selection method of the experts is based on the destination analysis and their direct connection with the selected destinations. The respondents did consist of a selection of experts on Airbnb, university professors (mostly on tourism) and policy makers. Experts are also selected and found based on used literature, often authors of used sources are requested to share their opinion on this research. The experts were required to have deep knowledge of the economic, social and environmental impact of Airbnb and the regulatory actions that followed (Rowe & Wright, 1999). If selected experts were not willing to cooperate others were approached, mostly through the network of already collaborating experts. Eight experts participated during the first round of this research; this number dropped to five active participants during the second round of the Delphi method.

### **3.3 Indicator Selection**

As mentioned before, the benchmark model will be directed from the four fields of impact discussed by Gordo, Da Rivera and Cassidy (2020) and confirmed by the literature review: Economic, Social and Environmental supplemented with the legal reactions. These dimensions of impact will be preceded by a set of basic indicators measuring the performance of a destination. Based on the brief introduction of KPIs during the literature review only arrivals and overnights spent seem truly relevant influencing the impact of Airbnb. The current COVID-19 pandemic has had a major impact on the international arrivals, overnights spent and amount of Airbnb listings at the selected destination. According to the UNWTO (2020) the pandemic drove back international arrivals by 75% in general and the expectation is that total recovery might take up to four years.

Positive economic impacts of Airbnb are widely discussed such as transforming under-utilised assets into money for the local house owner. But the presence of Airbnb brings many negative economic impacts. Increasing numbers of listing tends to increase the rental prices, the property value and affordability of living for local inhabitants (Edelman & Geradin, 2015, p. 313). A negative social impact is the loss of support for Airbnb if costs of living seem to increase (Yeager, Boley, Woosnam, & Green, 2019, p. 969) and money flows to multilisting owners and international cooperations instead of the local citizen (Oskam & Boswijk, 2016, p. 28). Multilistings often exist without neighbours giving consent, causing more negative social impacts (Oskam, 2019). The traditional hotel industry argues that Airbnb operates as unfair competition, by not having to face the same tax burden or safety restrictions (Benner, 2017; Malhotra & Van Alstyne, 2014, p. 25), negatively influencing revenue per available room, average daily rate and occupancy rates (Dogru, Mody, & Suess, 2019, p.28). Airbnb is often used as cheaper substitute for the low/medium hotel sector (Guttentag & Smith ,2017; Nowak et al., 2015). No clear disturbance is visible in employment in tourism caused by the presence of Airbnb (Fang, Ye, & Law, 2016, p. 265;

Dogru et al., 2020, p. 104001). A possible connection might exist between the total tourism employment and the hotel employment rate.

Also social impact protest has occurred as a reaction to increasing noise, pollution and burdening of public services with the threat of increasing gentrification of neighbourhoods (Wachsmuth & Weisler, 2018, p. 1148). Next to that international social encounters are a positive influence of Airbnb, but it is questionable if these encounters happen more than once and if they cause lasting results or impacts for both users, hosts and the surrounding communities (Gordo, Da Rivera & Cassidy, 2020). The burden of presence of Airbnb on the community causes social complaints through protest marches against cities being used as “theme parks” by tourists (Ciccarelli, 2020), influencing the quality of life of locals. This burden is partly caused by the unbalanced number of tourists per inhabitant, not necessarily directly caused by Airbnb (Henley, 2019).

Environmental impact by Airbnb can partly be indicated by looking at the original purpose of the property, the size of the property and the environmental measures taken at the property (Juvan, Hajibaba, & Dolničar, 2017, p. 271). Skjelvik, Erlandsen and Haavardsholm (2017, p.9) argue that STRs’ could prevent the construction of new hotels in the long-run and therefore prevent CO<sub>2</sub>-emission. Negative or positive impact compared to hotels can be measured by difference in added polluting services offered by traditional hotels (Bastič & Gojčič, 2012, p. 1018). As Airbnb lowers accommodation costs for travellers it indirectly opens up more budget for extra trips. Airbnb could therefore indirectly stimulate extra trips causing extra pollution (Skjelvik, Erlandsen and Haarvardsholm, 2017, p.9).

The last field of interest are the legal impacts and taken actions. Oskam and Boswijk (2016) identify legislative actions based on taxation, resident protection and customer protection. A simpler observation done by Nieuwland (2017) and Lines (2015) is that government approach is often based on laissez-faire (no actions taken), a full ban or STRs’ or specific regulations. The last option matches the approach identified by Oskam and Boswijk. Many destinations already attempted to put regulations in place mostly focused on taxation, rental days limit, registration of rental owners and safety restriction (Hajibaba & Dolničar, 2017, p. 121-130).

The result of this thesis will be a model measuring Airbnb’s negative impact on city destinations. This model can in the future be used as literature on negative impact of Airbnb. The research has a cross-sectional character based on deductive reasoning, carried out at a specific moment in time measuring the situation at that specific moment.

### **3.4 First Draft of the Model**

The indicators of the first draft are derived from the model presented at the end of subchapter 1.6. The model starts off with basic tourism performance indicator, those indicators are

essential to put the measured data further on in the model in perspective. The model below is the one presented to the experts, prior to any form of improvement or adjustment.

### 3.4.1 Basic indicators, draft version

As a starting point to measure negative impact the basic performance indicators of a tourism destination have to be determined. For this model the development of tourism arrival, overnights spent, and the development of Airbnb listings are added. The impact of COVID-19 on those three basic indicators is added to create a complete overview of the current situation and the trend of development before the global pandemic changed the market.

*Table 1: Negative basic performance indicators, draft version*

<b>Indicator</b>	<b>Sources</b>
Amount of tourism arrivals at the destination indicating the development of tourism over the last 5 years*	(‘Global and regional tourism performance   UNWTO’, 2020)
Amount of tourism arrivals per capita at the destination indicating the development of tourism over the last 5 years*	(‘Global and regional tourism performance   UNWTO’, 2020)
Amount of overnights spent at the destination indicating the development of tourism over the last 5 years*	(‘Accommodation – Demand and Capacity   UNWTO’, 2020)
Amount of overnights spent at the destination indicating the development of tourism over the last 5 years*	(‘Accommodation – Demand and Capacity   UNWTO’, 2020)
Amount of tourism arrivals at the destination indicating the development of tourism as result of COVID-19 global pandemic**	(‘Global and regional tourism performance   UNWTO’, 2020)
Amount of overnights spent at the destination indicating the development of tourism as result of COVID-19 global pandemic**	(‘Accommodation – Demand and Capacity   UNWTO’, 2020)
Amount of Airbnb listings (entire houses, single rooms and shared rooms) registered via official institutions or external sources	(AirDNA, 2020)
Amount of Airbnb listings (entire houses, single rooms and shared rooms) registered via official institutions or external sources over the last 5 years	(AirDNA, 2020)
Change in amount of (registered) Airbnb listings due to the COVID-19 global pandemic**	(AirDNA, 2020)

>>(table continues)<<

>>(continued)<<

\*2021 will not be considered, because of severe impact of the global COVID-19 pandemic

\*\*this data is only relevant in the years following the global pandemic until the point the tourism industry is “recovered”

Source: own work.

### 3.4.2 Negative economic indicators, draft version

The economic indicators are measuring impact on housing market, multilistings, money flow, tourism employment and unfair competition.

Table 2: Economic impact indicators, draft version

Indicator	Sources
Increase in value of real estate properties and housing prices in areas popular among tourists in %	(Edelman & Geradin, 2015, p. 313; Yeager, Boley, Woosman & Green, 2019, p. 969)
Increase of the rental price for long-term rental possibilities in areas popular among tourists in %	(Edelman & Geradin, 2015, p. 313; Yeager, Boley, Woosman & Green, 2019, p. 969)
The substitution of long-term rental accommodations to short-term rental accommodations in areas popular among tourists in %	(Edelman & Geradin, 2015, p. 313; Yeager, Boley, Woosman & Green, 2019, p. 969)
Amount of change in the local population of neighbourhoods due to the increasing housing prices and unaffordable living opportunities in %	(Edelman & Geradin, 2015, p. 313; Yeager, Boley, Woosman & Green, 2019, p. 969)
Amount of Airbnb listing owners with 3 listing addresses or more as % of the total amount of listing owners	(Oskam & Boswijk, 2016, p. 28)
The total revenue made by multilistings (listing owners with 3 or more addresses registered) in €	(Guttentag & Smith, 2017; Nowak et al., 2015)
Number of Airbnb substitutes for accommodations * amount of tax paid per comparable accommodation sector in €	(Stulberg, 2016; Oskam & Boswijk, 2016, p. 28)
Change in employment rate in the tourism sector in % compared to the development of Airbnb listings	(Fang, Ye & Law, 2016, p. 265)
Change of employment rate in the low/middle-sized hotel sector in % compared to the development of Airbnb listings	(Zervas, Proserpio & Byers, 2017, p. 697)
Substitution rate in % between Airbnb listings and comparable rooms in the accommodation sector	(Guttentag & Smith, 2017; Nowak et al., 2015)

>>(table continues)<<

>>(continued)<<

Change in the amount of available Airbnb listings during the high tourism season and peak periods	(Guttentag & Smith, 2017; Nowak et al., 2015)
Change of revenue per available room in % in the middle/low hotel segment	(Dogru, Mody & Sues, 2019, p.28; Zervas, Proserpio & Byers, 2017, p. 697; Neeser, 2015; Haywood, 2016)
Change of occupancy rate in % in the middle/low hotel segment	(Dogru, Mody & Sues, 2019, p.28; Zervas, Proserpio & Byers, 2017, p. 697; Neeser, 2015; Haywood, 2016)
Change of average daily rate in % in the middle/low hotel segment	(Dogru, Mody & Sues, 2019, p.28; Zervas, Proserpio & Byers, 2017, p. 697; Neeser, 2015; Haywood, 2016)

Source: own work.

### 3.4.3 Negative social indicators, draft version

The social indicators have a close connection to all other types of indicators and are measuring the burden on society and the number of complaints occurring among the local population.

Table 3: Social impact indicators, draft version

Indicator	Sources
Number of Airbnb listing per capita at the selected destination	(Henley, 2019)
Number of Airbnb overnights a per capita at the selected destination	(Henley, 2019)
Change in number of listings in a neighbourhood, area or whole destination per capita in % indicating the burden on society	(Henley, 2019)
Development of the population number in a specific neighbourhood, area or destination	(Wachsmuth & Weisler, 2018, p. 114)
Number of complaints, either officially registered or measured by research, on Airbnb in general and Airbnb listings on location	(Oskam, 2019)
Number of complaints, either officially registered or measured by research, on pollution, damage or noise done by Airbnb in general and Airbnb listings on location	(Oskam, 2019)

>>(table continues)<<

>>(continued)<<

Number of complaints, either officially registered or measured by research, on damage on public facilities done by Airbnb in general and Airbnb listings on location	(Oskam, 2019)
The amount of complaints, either officially registered or measured by research, on damage on overcrowded public facilities done by Airbnb in general and Airbnb listings on location	(Oskam, 2019)
Number of registered and reported protests against mass tourism, Airbnb or P2P accommodation sector	(Reyes, 2020; Ciccarelli, 2020)

Source: own work.

#### 3.4.4 Negative environmental indicators, draft version

The approach of the environmental indicators is more neutral than the other impacts, in general seems to have a more positive impact on the environment than the services it substitutes. Therefore, it is only possible to measure environmental impact when compared to comparable alternatives. Property use, substitution, environmental initiatives and returning travel are the topics of the used indicators.

Table 4: Environmental impact indicators, draft version

Indicator	Sources
Amount of Airbnb listings located in a building build with tourism purpose measured in number or % of total listings	(Juvan, Hajibaba, & Dolničar, 2017, p. 271)
Amount of Airbnb listings registered as anything else than primary residence in number or % of total listings	(Juvan, Hajibaba, & Dolničar, 2017, p. 271)
Amount of listings being entire houses as a % of total amount of Airbnb listing	(Juvan, Hajibaba, & Dolničar, 2017, p. 271)
The amount of hotel nights substituted by Airbnb as less environmental damaging alternative	(Bastič & Gojčič , 2012, p. 1018; Skjelvik, Erlandsen & Haavardsholm, 2017, p.9)
Relative change of available hotel rooms in % compared to the relative change of available Airbnb listings in % OR change in total nights spent at destination compared to change in available hotel rooms	(World Economic Forum, 2016; Skjelvik, Erlandsen & Haavardsholm, 2017, p.9)
Number of initiatives mentioned in the media, via the Airbnb platform or other source indicates the environmental consciousness of Airbnb	(Airbnb, 2017)

>>(table continues)<<



>>(continued)<<

Number of listings mentioning the presence of environmentally friendly appliances and the average amount of appliances indicate the environmental consciousness and activism of the Airbnb hosts and platform	(Juvan, Hajibaba, & Dolničar, 2017, p. 271)
Number of extra trips taken as a result of remaining budget because of using Airbnb as more economical accommodation option.  *This indicator requires a personal approach towards travellers to acquire this data	(Skjelvik, Erlandsen & Haavardsholm, 2017, p.9)

Source: own work.

### 3.4.5 Negative legal action indicators, draft version

The legal actions taken by destinations are important to take into account as they show how far a city destination is developed in regulating P2P accommodation platforms such as Airbnb. It is difficult and little functional to qualify this analysis and by simply pointing out which types of regulations exist we can already provide a source for future policy making. The “Legal Actions” tables below present the globally existing, and most used regulations.

Table 5: General legal action indicators, draft version

Indicator	Details regulations	Sources
Amount and description of regulations in the categories laissez-faire, specific regulations or a full ban of Airbnb	Laissez-faire: <ul style="list-style-type: none"> <li>• .....</li> </ul> Specific regulations: <ul style="list-style-type: none"> <li>• .....</li> </ul> Full ban: <ul style="list-style-type: none"> <li>• .....</li> </ul>	(Oskam, 2019; Dongen, 2019)

Source: own work.

Table 6: Taxation indicators, draft version

Indicator	Details regulations	Sources
Number and description of regulation taken towards taxing Airbnb hosts and Airbnb in general	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Hajibaba & Dolničar, 2017, p. 121-130)

>>(table continues)<<

>>(continued)<<

Number and description of regulations taken towards taxing Airbnb hosts and Airbnb in general collected and paid by Airbnb in order of governments	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Ciccarelli, 2020; Oskam, 2019; Woolf, 2017)
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Source: own work.

Table 7: Resident protection indicators, draft version

Indicator	Details regulations	Sources
Number and description of regulations concerning the limitation of rental days for all types of STRs	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Bort, 2014; Hajibaba & Dolničar, 2017, p. 121-130; Oskam, 2019)
Number and description of regulations concerning a limitation of maximum rental days for entire house	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Hajibaba & Dolničar, 2017, p. 121-130)
Number and description of regulations concerning a limitation on capacity per P2P STR listing	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Hajibaba & Dolničar, 2017, p. 121-130)
Number and description of regulations to determine the purpose of property of buildings used as P2P STR listings	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Hajibaba & Dolničar, 2017, p. 121-130)
Number and description of regulations concerning the division of properties in use, between private living and STR holiday accommodations	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Hajibaba & Dolničar, 2017, p. 121-130)
Number and description of regulations obligation the regular presence at the property of the owner of the listing	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Hajibaba & Dolničar, 2017, p. 121-130)
Number and description of regulations defining maximum number of properties managed per owner	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Hajibaba & Dolničar, 2017, p. 121-130)

>>(table continues)<<

>>(continued)<<

Number and description of regulations prohibiting presence of Airbnb in certain areas/neighbourhoods	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Ciccarelli, 2020)
Number and description of regulations taken on the accessibility and/or visibility of Airbnb listings for the public	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Oskam, 2019)

Source: own work.

Table 8: Consumer protection indicators, draft version

Indicator	Details regulations	Sources
Number and description of regulations concerning mandatory administration of listings	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Hajibaba & Dolničar, 2017, p. 121-130)
Number and description of regulations on safety restrictions	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Hajibaba & Dolničar, 2017, p. 121-130)
Number and description of regulations on safety restrictions comparable to accommodation sector	<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>	(Hajibaba & Dolničar, 2017, p. 121-130; Malhotra & Van Alstyne, 2014, p. 25)

Source: own work.

## 4 RESEARCH RESULT

During the Delphi method 40 experts in the field of tourism, experienced with the complex situation Airbnb creates at city destinations, were requested to participate. Out of these 40 experts a total of 8 (20% response rate) completed the first round of research and 5 (62,5% response rate) remained and also completed the second round of research.

The general feedback on the structure of the model suggested a better clarification of the connection between certain indicators and the way of measuring and valuing the data

belonging to those indicators. The idea of creating a measuring benchmark model therefore has changed into creating a model indicating potential fields of negative impact caused by the presence of Airbnb. Mostly because it has become clear that creating an all covering model taking all external factors into account is too much of a challenge in the available timeframe and requires a higher specialism in all areas impacted than the author of this research possesses. Below the feedback, used to improve and adjust this model into a indicating tool, is described. The analysis combines round 1 and 2, showing both the general opinion of all experts together supplemented with direct quotes made by experts.

#### **4.1 First Round of Research**

The first round of research provided detailed feedback on the model in general and the specific indicators. Per dimension the general results of the first round of research are shown below accompanied with data on values given to the indicators by the experts and direct quotes added as comment to their values.

##### **4.1.1 Results basic indicators**

The use of basic tourism performance indicator has been received as a logical start while analysing impact and development at a city destination. Out of nine indicators presented, two were removed and two others were combined based on the provided feedback. According to the feedback the global approach of this model might not be the most suitable way to go as Airbnb is of destination specific influence. Various experts state that it is quite crucial for effectively measuring the impact of P2P accommodation providers like Airbnb to address such a model as this one from a destination specific point of view:

With some of these indicators you will have great tools to monitor Airbnb activity, but I do not to measure their negative impact. The difficulty will be to obtain homogenised data as each destination is different. You might first need to determine a list of destination that will make sense with these indicators.

Next to this the experts presented a more practical and technical point of critique on the created model. The experts advise making a clear distinction in the time frame of the indicators and the geographical body used, indicating the investigated area. Destinations often struggle with providing necessary data as data collection systems might not have been operational yet in the past. To deal with this possible issue a constant time range should be added, providing at least some structure and consistency even if destinations struggle with providing data. The same clarity and consistency is required for the geographical approach for the indicators that are in need of a geographical distinction, “You need to choose which scale you are working with and be consistent. Neighbourhoods are usually delineated by official zoning policies which is the scale I would recommend.” Using neighbourhoods as geographical framework provides the opportunity to distinguish highly touristic areas like

downtowns, cultural hubs and historical city centres from quiet non visited areas. This is specially of value when measuring impact per capita, based on the following opinion:

Might also consider the size of the metropolitan area vs the tourist city - e.g., most urban destinations have a strong clustering of overnights in a limited part of the city, while the population is often calculated over a larger area (sometimes even metropolitan regions)

If these indicators are based on the whole population of the city destination, per capita data might provide an unrealistic picture. Some neighbourhoods might show more negative impact than is actually present and experienced in the neighbourhood and other neighbourhoods show data suggesting little negative impact while in reality the impact is more severe. The basic indicators should therefore be focused on per capita data in neighbourhoods. To make sure the basic indicators capture the whole influence of the STR market they should be improved by focusing on the development of P2P accommodation providers in general, not only Airbnb. As one of the experts stated:

I would argue that you should not focus on "Airbnb". Rather, it is more appropriate to focus on "peer-to-peer accommodations" or "short-term vacation rentals" for a comprehensive understanding of the impacts of this lodging sector. In some cities, VRBO is just as prevalent as Airbnb.

This specification provides a better way of measuring the development of P2P accommodations on the economic, social and environmental factors.

The first round of feedback resulted in a more complete set of indicators improved on time frame, specificity in type of accommodation and sensitivity in treating the influence of the COVID-19 global pandemic. The influence of COVID-19 creates a delicate situation according to experts,” how you treat the years 2020 and 2021 is a tricky point. But I would consider them separately to see if it's possible to detect some (although faint) possible trends.” Dividing both COVID-19 impacted years provides a better insight into the recovery of international tourism, directly influencing the overnights spent at all types of accommodations including Airbnb listings. Separating 2020 and 2021 is in this case essential as limiting measurements enforced by governments are quickly changing and therefore also the amount of inbound international tourists.

Table 9 shows the indicators values based on experts’ feedback gathered during the first round of the Delphi method. The measurability, usability and completeness of indicators combined resulted in a final total score. This total score combined with the need for improvement and written feedback decide if the indicators remain as part of the model, if they will be removed or if there is need for improvement. Red numbers in the total score mean that indicators are not valued as being of decent quality by at least 50% of the experts, red numbers in the column “need for improvement” indicate direct and severe need of improvement of the given indicator. Based on written feedback each indicator has been

improved and adapted to the experts' collective opinion. For all following tables in this chapter this method of reading the tables applies.

All basic indicators reached a consensus among experts, being at least 50% suited for the model. On indicator 7 and 8 half of the experts mentioned that the indicators need improvement, crossing the 50% barrier set, demanding direct improvement of the indicator. Next to the values visible below adjustments and improvements are necessary based on the rest of the qualitative data as described above. All values showed are the means of the values provided by the experts.

*Table 9: Experts Feedback – Basic indicators*

Indicators	Measurability	Usability	Completeness	Consensus	Need for improvement
1	1,00	1,00	0,86	0,95	0,38
2	1,00	0,88	0,71	0,86	0,25
3	1,00	1,00	0,86	0,95	0,25
4	1,00	1,00	0,86	0,95	0,13
5	1,00	1,00	0,57	0,86	0,38
6	1,00	1,00	0,57	0,86	0,38
7	1,00	1,00	0,57	0,86	0,50
8	0,75	0,75	0,57	0,69	0,38
9	0,88	0,88	0,29	0,68	0,50

*Source: Derived via the Delphi Method.*

4.1.2 Results economic indicators

Following the feedback provided on the fourteen economic indicators a total of four indicators is removed at first resulting in ten remaining indicators. The remaining indicators were judged to be impractical to measure and there were some questions about data collection possibilities. Some guidelines and clarity in data collection is required to take away worries about “where the data will be available” and via “what sites” data can be collected.

In general, the set of economic indicators mostly shows possible connections and impacts, sometimes looking more like causality than correlated, as pointed out by one of the experts; “what data analysis are you proposing to put this data into? It sounds like you are trying to suggest causality instead of correlation.” The set of experts also agrees on the influence of external sources on the determined indicators:

This might be tricky, decrease of long-term rent can be because of many reasons. E.g., what happens if an international real estate crisis happens? Or if popularity for

a city as a place to live increases? And how would you be able to calculate this/get data on this? How will you distinguish the tourism and non-tourism influence?

How will you be able to confirm that a traditional lodging option might have developed instead of an Airbnb?

The effect of Airbnb on property and short/long term rental prices is possibly impacted by Airbnb but there might be an even bigger possibility that other forces also have an impact, such as migration, increasing popularity of neighbourhoods or scarcity on the housing market because of economic reasons. It also seemed questionable for experts if this development of increasing property value is necessarily a bad one:

Are you looking at changes in property value over a period of time? I would recommend the same time frame as your basic indicator questions. Also, increasing property value is not necessarily a negative impact for some stakeholders. Increasing property value can increase the value of other houses in a neighbourhood which might be a desire of some residents.

Also measuring the lost tax income by destinations based on the substitution of hotels by Airbnb listings seems like a step too far, making it too complex to actually measure. Experts agreed on the fact that this substitution happens, but it is rather difficult to put a value on this missed tax income. Mostly because it is almost impossible to simply indicate the substitution rate of hotels by Airbnb, without conducting a separate analysis, and therefore calculating tax loss. Too many external sources influence the economic situation to be able to clearly show a correlation between many of the indicators and Airbnb's impact on these indicators. The indicators on multilistings are received as easy to avoid, "it's quite easy to get around this by making multiple host profiles." As a solution was suggested to differentiate between owners with a maximum of two listings that are owner occupied and owners with three listings or more that are used for pure economic exploitation. This was suggested by one of the experts as follows: "I would differentiate having 2 listings that are owner occupied (1 city + 1 holiday destination) with listings that are pure investments (usually 3+ listings per host)."

Experts agreed that some language technicalities and time frames should be improved in some of the indicators, such as clearly distinguishing commercial listings (multilisting) from personal Airbnb listings. For this set of indicators, the same time frame and geographical distinction should be used as implemented in the basic indicators. On the matter of competition and impact on the hotel sector there is a positive consensus, although "You might want to differentiate by class of hotels", the hotel segments need some specification. Also, the negative impact on employment in tourism is not necessarily the case. The employment rate in middle/low class hotels might drop but it can be expected that other parts of the industry will see growth in tourism employment numbers. While measuring negative economic impact on a city destination it is crucial to keep in mind the presence of many other, more important factors that might influence the stated indicator. Table 10 shows the

indicators values based on experts’ feedback gathered during the first round to of the Delphi Method. All economic indicators reached a consensus among experts, being at least 50% suited for the model, except for indicator 7 that was therefore deleted from the model. Indicators 1, 2, 4, 5, 6, 7 and 8 were valued in need of improvement by at least 50% of the experts, demanding direct improvement of the indicator of removal from the model. Next to the values visible below adjustments and improvements are necessary based on the rest of the qualitative data as described above. All values showed are the means of the values provided by the experts.

Table 10: Experts Feedback – Economic indicators

Indicators	Measurability	Usability	Completeness	Consensus	Need for improvement
1	0,75	0,88	0,86	0,83	0,50
2	0,63	0,75	0,86	0,74	0,50
3	0,50	0,63	0,71	0,61	0,38
4	0,63	0,88	0,71	0,74	0,50
5	1,00	0,88	0,57	0,82	0,50
6	0,75	0,88	0,57	0,73	0,50
7	0,13	0,38	0,43	0,31	0,75
8	0,63	0,88	0,86	0,79	0,50
9	0,88	1,00	1,00	0,96	0,25
10	0,75	0,63	0,86	0,74	0,38
11	0,75	0,63	0,86	0,74	0,00
12	1,00	1,00	1,00	1,00	0,00
13	1,00	1,00	1,00	1,00	0,00
14	1,00	1,00	1,00	1,00	0,00

Source: Derived via the Delphi Method.

4.1.3 Results social indicators

The main difficulty among social factors and indicators is that many of them are either not directly linkable to Airbnb and STR accommodation platforms or are connected to bigger underlying developments on social level. Therefore, many indicators might show some relevant negative influence caused by Airbnb but at the same time these impacts can be the result of bigger movements, developments in cultural diversity and population structure like gentrification and austerity. Also, the focus on protests and complaints against Airbnb and comparable STR platforms are often part of a bigger movement and underlying reasons and tourism is easily used as a scapegoat and a responsible phenomenon:



Many responses (complaints, protests) are part of processes outside of tourism (gentrification, austerity etc.). Tourism is often used as a scapegoat. Some complaints might be about nuisance in general, and tourism/Airbnb often is a scapegoat.

Concerning the structure of neighbourhoods and the feeling of still belonging to the city citizens once knew, experts suggest a careful approach in stating that change in social structure is necessarily caused by the presence of Airbnb. It remains important to identify social structure change and once again putting it against the bigger social development at the neighbourhood or destination. The approach on indicating the change in social structure by measuring cultural background and especially the change of this seems too far fetched. Nevertheless, a change in the size of the population can be an indicator of a certain negative or positive trend suggesting change in the social structure of the neighbourhood. Again, it is hard to determine if these changes are linkable to Airbnb or P2P accommodation platforms. Indicators concerning the number of listings, overnights spent and social structure change at neighbourhoods are said to be repetitive from the basic indicators but should remain in the social dimension, slightly improved, to indicate the burden on society.

Although table 11 below only shows three indicators in need of improvement this set of indicators needs some kind of redoing. It is especially important to keep in mind the scapegoat function of tourism and Airbnb in negative developments at destinations. From a practicality point of view the feedback suggested reshaping the indicators in a more measurable way. Complaints can be found via platforms and reviews but might never reach the official institutions that can do something with these complaints. “I would only focus on complaints officially filed” shows the way to go with this issue. The filed complaints are more reliable for indicating the unsatisfactory ones among societies. In the matter of protests official media channels might provide a reliable source of objective information as suggested by the experts, “I would identify these in local media outlets (e.g., news articles)”. For both complaints and protest, a more general approach is requested, merely indicating the total amount of all types of complaints and from that point trying to analyse if these complaints are caused by Airbnb directly or if they are part of the bigger ongoing developments as mentioned before.

In addition, it is essential to keep in mind that some destinations might operate a well functioning complaints system while others do not, so what does the number tell us. Consistency of measurement should be equal through the model, “You need to choose which scale you are working with and be consistent. Neighbourhoods are usually delineated by official zoning policies which is the scale I would recommend”. So, it is essential to create an equal time frame and the geographical division of neighbourhoods. The social indicators dropped from nine to seven indicators in the adjusted model.

Table 11 shows the indicators values based on experts’ feedback gathered during the first round to of the Delphi Method. All social indicators reached a consensus among experts, being at least 50% suited for the model. On indicators 6, 7 and 8 half of the experts mentioned

that the indicators need improvement, crossing the 50% barrier set, demanding direct improvement of the indicator. Next to the values visible below adjustments and improvements are necessary based on the rest of the qualitative data as described above. After reshaping this set of indicators, the starting amount of nine indicators is reduced to seven, combining some of the original indicators and adding a new one of the changes in social structure. All values showed are the means of the values provided by the experts.

Table 11: Experts Feedback – Social indicators

Indicators	Measurability	Usability	Completeness	Consensus	Need for improvement
1	0,88	0,88	0,86	0,87	0,13
2	0,88	0,88	0,86	0,87	0,13
3	0,88	0,88	0,86	0,87	0,13
4	0,88	0,75	0,57	0,73	0,38
5	1,00	0,63	0,57	0,73	0,25
6	0,63	0,63	0,57	0,61	0,63
7	0,75	0,63	0,57	0,65	0,50
8	0,63	0,50	0,57	0,57	0,50
9	0,88	0,75	0,86	0,83	0,25

Source: Derived via the Delphi Method.

4.1.4 Results environmental indicators

The problem with measuring the environmental impact of Airbnb is that it can only be determined compared to other accommodation types. The second issue is that in that case the other accommodation type should be comparable to the Airbnb listing in size, features and other technical characteristics. To truly tackle the environmental impact of Airbnb on city destinations in general, both positive and negative, a separate study is necessary, conducting a Life Cycle Analysis (hereinafter LCA):

My general feedback on these indicators is that you can only truly compare the natural resource consumption of a given P2P with a traditional lodging option by conducting a Life Cycle Analysis of the structures and then conducting a study to measure a baseline for natural resource consumption within each structure.

During this LCA the accommodations of Airbnb should be divided by type based on set characteristics. These types of accommodations should then be lined up next to comparable accommodation units from originating from the traditional lodging industry. In this way the environmental impact of Airbnb could be best indicated by setting a baseline of natural resources consumption present in the created accommodation structure. Therefore, the current set of indicators seem not suited to use as measurement tools for indicating the

(negative) environmental impact of Airbnb on city destinations. As said before, it needs a full study firstly, to create accommodation categories comparable to traditional accommodations before being able to start thinking about the impact on natural resources.

Also, the way of approaching the data would create some problems as it becomes more difficult to separate Airbnb listings from other accommodations as platforms start to cover both, “In the last years many hotels started to list on Airbnb, also websites such as booking.com are blurring the line between hotels and airbnb. I think this will be difficult to indicate.” The environmental developments among comparable accommodations also follows a very comparable path and therefore is less relevant to compare.

The idea that Airbnb has a more positive impact on the environment than the traditional lodging industry created a consensus among the experts, “I agree that the environmental indicators are more neutral than the others and they should have more positive impact than negative on the environment.” This suggests a more superficially approaching to the environmental impact than Airbnb might have on city destinations.

All together in this way it seems only possible to measure the impact of Airbnb on the environment via an LCA. The most general indication remains the separation of listings purely used for economic tourism purpose only and listings serving as address of primay residence. According to the research it seems possible to indicate the contribution Airbnb has on the increase in trips and in which way the company is promoting and developing environmentally friendly initiatives and appliances. But also, this development is under the influence of many external factors and can therefore not be completely connected to the presence of Airbnb solely.

From a total of eight indicators the existing ones were adjusted based on the comments and reduced to a new set of five indicators. Table 12 shows the indicators values based on experts’ feedback gathered during the first round to of the Delphi method. The experts did not reach a consensus on indicators 3, 5 and 8 based on measurability, usability and completeness. These indicators were therefore either deleted or improved and combined with other indicators. On indicators 2, 3, 4, 5 and 8 half of the experts agreed that the indicators need improvement, crossing the 50% barrier set, demanding direct improvement of the indicator. Next to the values visible below adjustments and improvements are necessary based on the rest of the qualitative data as described above. All values showed are the means of the values provided by the experts.

Table 12: Experts Feedback – Environmental indicators

Indicators	Measurability	Usability	Completeness	Consensus	Need for improvement
1	0,75	0,75	0,57	0,69	0,38
2	0,63	0,75	0,29	0,55	0,63
3	0,50	0,63	0,29	0,47	0,63
4	0,38	0,63	0,57	0,52	0,50
5	0,38	0,25	0,14	0,26	0,88
6	0,88	0,75	0,71	0,78	0,13
7	0,63	0,50	0,57	0,57	0,38
8	0,38	0,63	0,29	0,43	0,63

Source: Derived via the Delphi Method.

#### 4.1.5 Results legal action indicators

According to the experts there is a major gap between the implementation of regulations and the possibility of enforcement. They state that the current tools, mostly the lack of them, and the workforce needed to reach and control the Airbnb hosts is out of proportion and creating an unbearable pressure on responsible institutions. The door-to-door control method is time consuming and intense but at this moment still seems to be the most used method at this moment and therefore possible future methods of enforcing regulations on Airbnb and other STR platforms should be taken into account and considered:

In general, I think that you might have a hard time actually demonstrating whether or not regulations are enforced. Enforcement procedures are put in writing all the time and often do not have as many resources as needed to actually follow through with them. I would recommend restructuring this to look at the presence or lack thereof of methods for enforcement.

The method and efficiency of enforcing existing regulations is also received as essential when looking at the total number of regulations. This number is not indicating anything if it is not taken into account how efficiently the enforcement has been done:

Why would you want to know the number of regulations? This says more about how policy/regulations are formulated and can vary between different countries without affecting how policy works out

Focusing on the effectiveness of enforcement might be a better way of indicating the impact or influence of Airbnb at city destinations. Although the feedback on the individual indicators was mostly positive some indicators were dropped and new ones, focused on future possibilities, were added resulting in a decrease of three indicators from fifteen to

twelve in the renewed version of the model. Table 13 shows the experts feedback gathered during the first round to of the Delphi Method. All legal action indicators reached a consensus among experts, being at least 50% suited for the model. Although the table shows that none of the indicators needs improvement the structure of this dimension is slightly changed based on the feedback. The two original indicators on taxation are combined into one covering the whole topic, the same was done to the three indicators on consumer protection. Mostly, this is because the number of regulations is less interesting than the effectiveness of enforcing them as mentioned before. As well as these three new indicators are added concerning future enforcement methods already present at destinations. These enforcement methods are about self-regulation done by Airbnb, host-specific targeting while enforcing and about the possible, modern, enforcement tools put in place at city destinations. All values showed in the table are the means of the values provided by the experts.

*Table 13: Experts Feedback – Legal action indicators*

Indicators	Measurability	Usability	Completeness	Consensus	Need for improvement
1	1,00	0,86	0,83	0,90	0,14
2	1,00	0,86	1,00	0,95	0,14
3	1,00	0,86	1,00	0,95	0,14
4	1,00	1,00	1,00	1,00	0,14
5	1,00	1,00	1,00	1,00	0,14
6	1,00	1,00	1,00	1,00	0,14
7	1,00	1,00	1,00	1,00	0,14
8	1,00	1,00	1,00	1,00	0,14
9	1,00	1,00	1,00	1,00	0,14
10	1,00	1,00	1,00	1,00	0,14
11	1,00	1,00	1,00	1,00	0,14
12	0,86	0,86	0,83	0,85	0,29
13	1,00	1,00	1,00	1,00	0,14
14	1,00	1,00	1,00	1,00	0,14
15	0,86	0,86	0,83	0,85	0,29

*Source: Derived via the Delphi Method.*

## 4.2 Second Round of Research

During the second round of feedback the experts were asked to provide a general opinion on the improved version of the model. This resulted in a short list of positive comments concerning the quality of the work done based on their feedback provided in the first round of research. According to the experts the improved version, the second draft, most definitely captures the major negative impacts, although staying on the surface of the problem. As they

argue, Airbnb has a complicated, difficult to measure, influence on city destinations, especially when approached on global level and not destination specific. There is a clear consensus (5 out of 5 respondents, 100%) on the decision to decrease the number of indicators from 55 to 40. They agree that it makes the model “more doable”, arguing that “it was a great idea to reduce the number of indicator and focus on the important ones.” The same unanimous consensus exists on that the second draft is of higher quality than the first version provided.

Although the model has been received very positively, one of the experts stresses the need of for consistency and the combination of all indicators while using the model. It is crucial for this model not to look at the indicators on individual level but take all of them into account and aim for trends and developments among them. This feedback is comparable to the connection between social indicators and all other indicators mentioned before. When approached individually most of the indicators show a useless piece of data but seen as a whole the model aims to provides a tool indicating where the negative impact is connected to Airbnb and where no connection is (directly) visible.

The difficulty of gathering the required data and measuring necessary parts of the indicators remains a point of critique during the second round of feedback. For example, “change of revenue, occupancy and average daily revenue per available room in percentage in middle/low segment hotels will be difficult to measure” and “the same goes for the difference in energy use, water and natural resources consumption, between categorised Airbnb listings and comparable accommodation types”.

Also, consistency in scale of measuring, unit to measure and time frame were mentioned as points of improvement on specific indicators. When measuring impact on a city destination it seems more feasible to look at the whole P2P sector instead of just Airbnb as “Airbnb is not the only contender in this marketplace.” This mostly goes for the basic indicators measuring the performance of a city destination on certain data influenced by tourism practices.

Some of the social indicators keep creating a difficult situation when it comes to measurability. As Airbnb seems to influence the social structure of neighbourhoods by being a possible reason driving up rent prices it is interesting to indicate the change in social structure and try to discover a correlation between one another. The difficulty lies in the possibility of measuring the change in the social or cultural structure of a neighbourhood. This indicator is also connected to the extent that citizens feel like being part of society, and most importantly keep feeling like this. To conclude the question asked by one of the experts remains “how will you measure culture diversity?” Most probably the answer will be not, unless it is not done by conducting a separate research on population development based on factors such as income, education, cultural background and former place of residency.

On the matter of measuring complaints in the social dimension of negative impact some unclarity occurred concerning the institutions registering these complaints. Are complaints registered by official governmental institutions (police, city hall, etc.) or “are complaints found on the P2P platforms also relevant for the indication of social impacts”. It seems more useful to only indicate official registered complaints, based on two arguments. First of all, the measurability of complaints via official sources is easier, faster and more reliable. Secondly, the complaints on the P2P accommodation platforms are mostly about the host-customer relationship and not that much about the disturbance Airbnb might create at city destinations.

Based on the provided feedback received during the second round of research the second draft of the model will be improved, transformed into the finalised version of the Model for Measuring Airbnb’s Negative Impact.

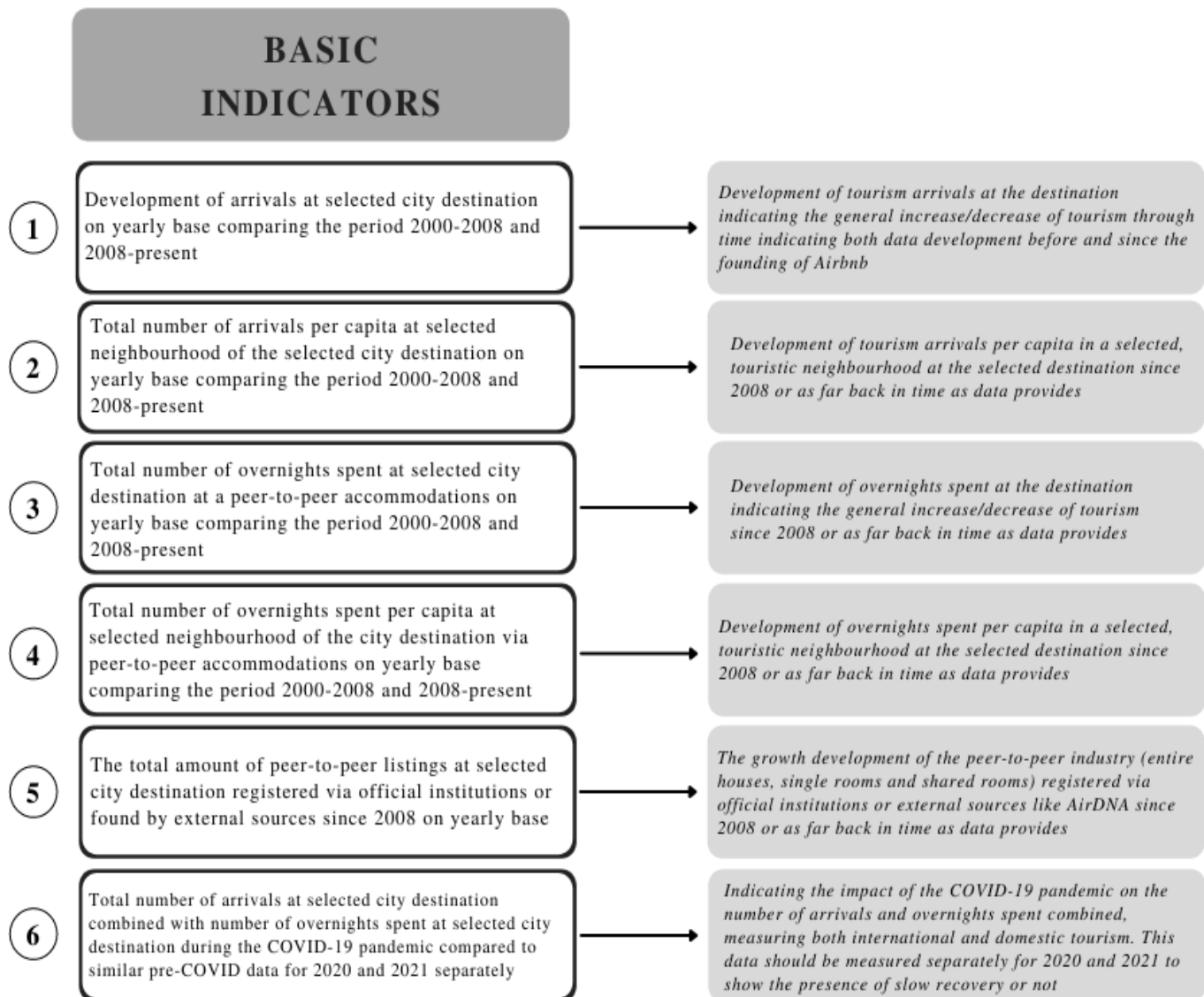
### **4.3 Model for Measuring Airbnb’s Negative Impact**

The result of this Master thesis is the final version of the Model for Measuring Airbnb’s Negative Impact. This model is presented below divided by the dimensions used through this whole thesis. As result of the research process it is clear that the model serves as an indication of the negative impact Airbnb has on city destinations. To successfully read and use this model, external factors have to be taken into account at all times.

#### **4.3.1 Basic tourism performance**

Firstly, the basic performance indicators of a tourism destination are essential to determine. For this model the tourism arrivals, overnights spent, and the development of Airbnb listings is interesting. A specific approach on pre- and post-Airbnb is essential determining the impact of the company and the total impact of P2P accommodations. The impact of COVID-19 on arrivals is added to create a complete overview of the current situation and the trend of development before the global pandemic changed the market. Figure 8, shown on the next page, presents the basic indicators of this model.

Figure 8: Model Basic Indicators



Source: own work.

#### 4.3.2 Economic dimension

The economic indicators are showing a possible impact on housing market, multilistings, money flow, tourism employment and impact on the middle/low hotel segment. Figure 9, shown on the next page, presents the economic indicators of this model.



Figure 9: Model Economic Indicators



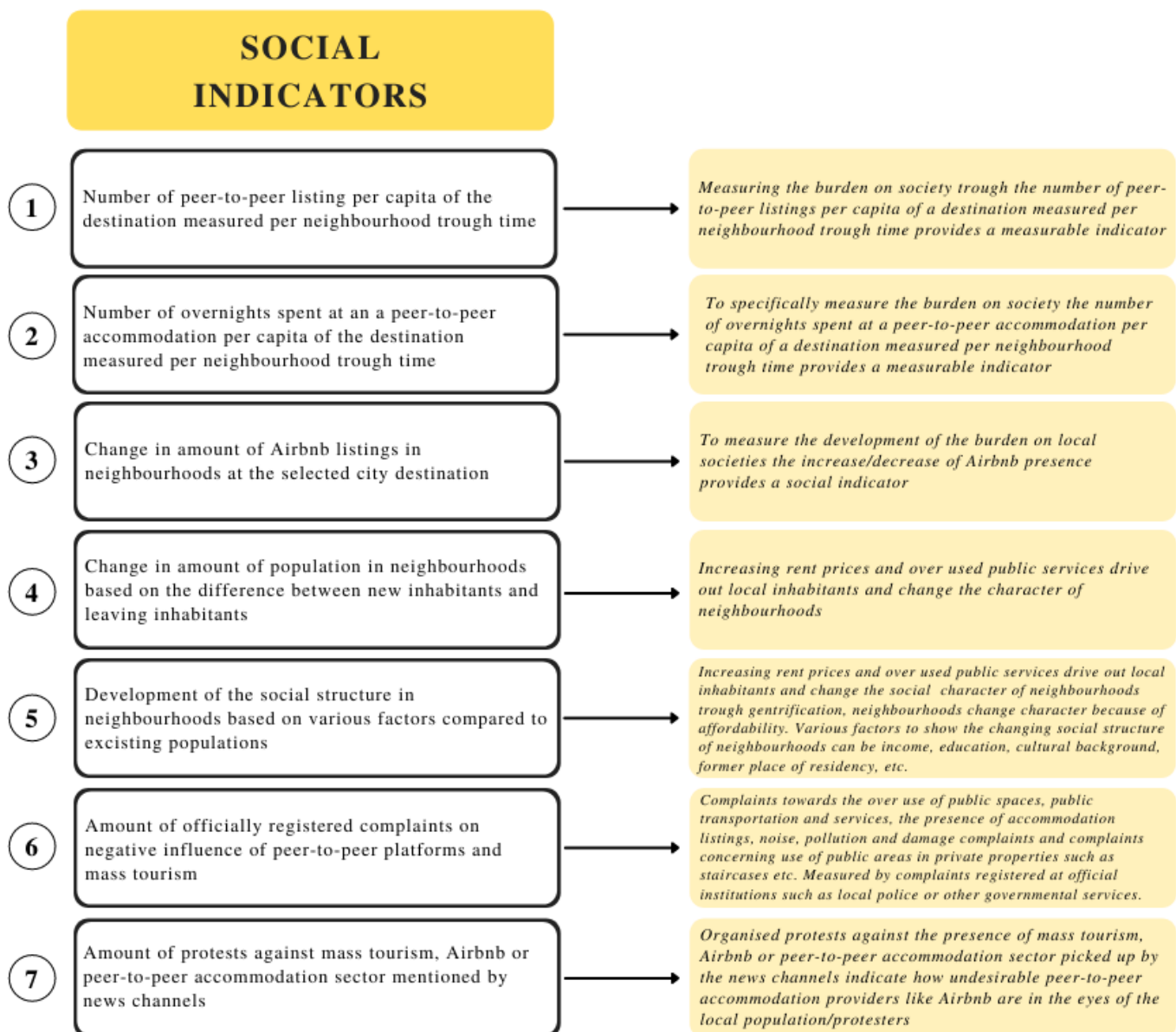
\*take for this indicator always external developments into account affecting the housing market

Source: own work.

### 4.3.3 Social dimension

The social indicators are in close connection to underlying developments in society and all indicators possibly affected by Airbnb often have more or bigger reasons behind their existence. Airbnb and tourism are often mentioned as scapegoats in the fight against bigger social problems. The best way to indicate social impact caused by Airbnb is to look at the total pressure of tourism on neighbourhoods, changing cultural dimensions in those neighbourhoods and the visible protest against mass tourism and Airbnb, fairly or unfairly. Figure 10 below presents the social indicators of this model.

Figure 10: Model Social Indicators

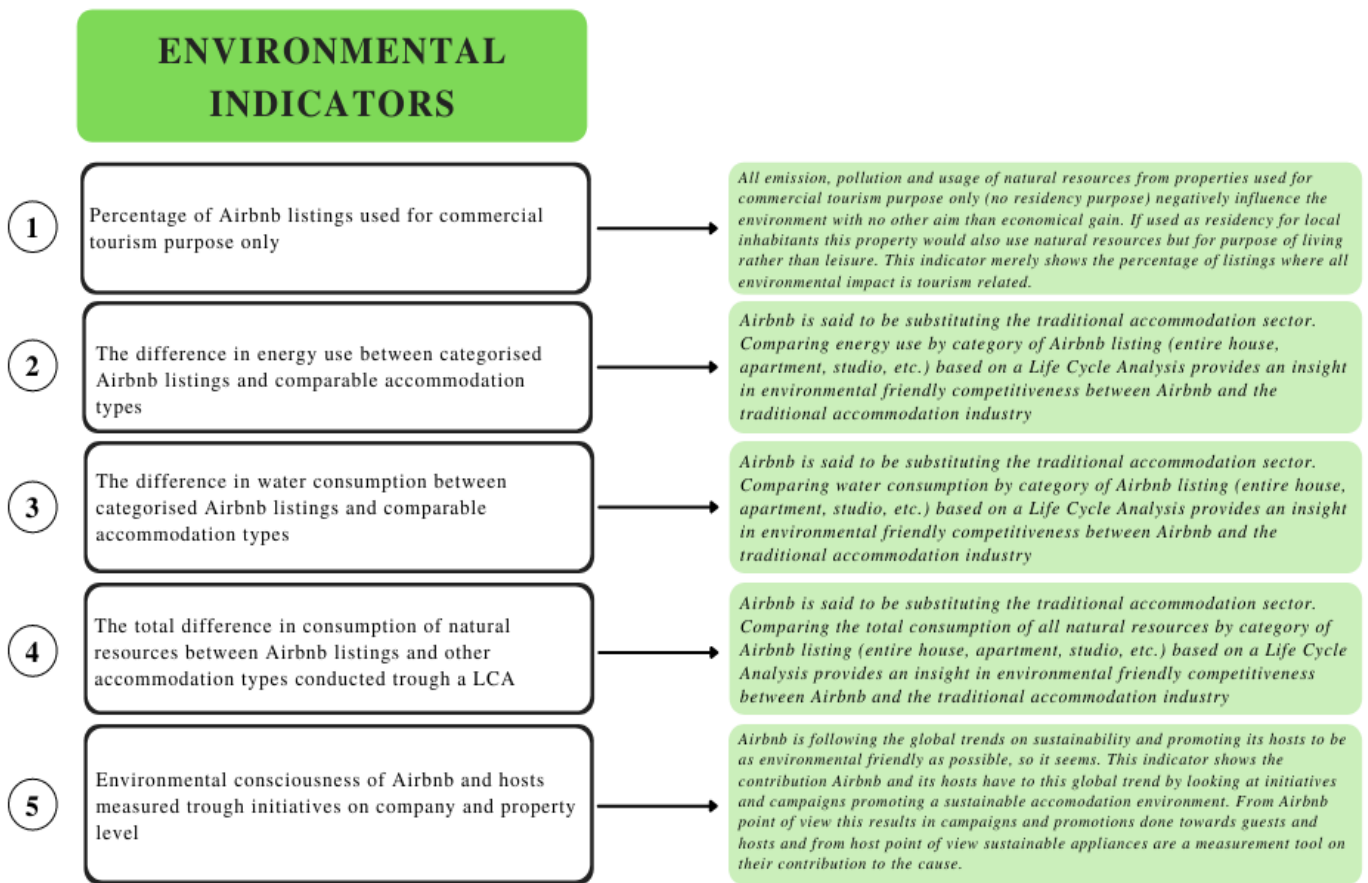


Source: own work.

#### 4.3.4 Environmental dimension

As it proves to be almost impossible to measure environmental impact without comparing Airbnb to a similar type of accommodation the indicators below remain on a superficial level. A Life Cycle Analysis will be the most suitable way to indicate the environmental impact of Airbnb. Next to that the indicators will focus more on the level of consciousness of Airbnb and its hosts through initiatives. Figure 11 below presents the environmental indicators of this model.

Figure 11: Model Environmental Indicators

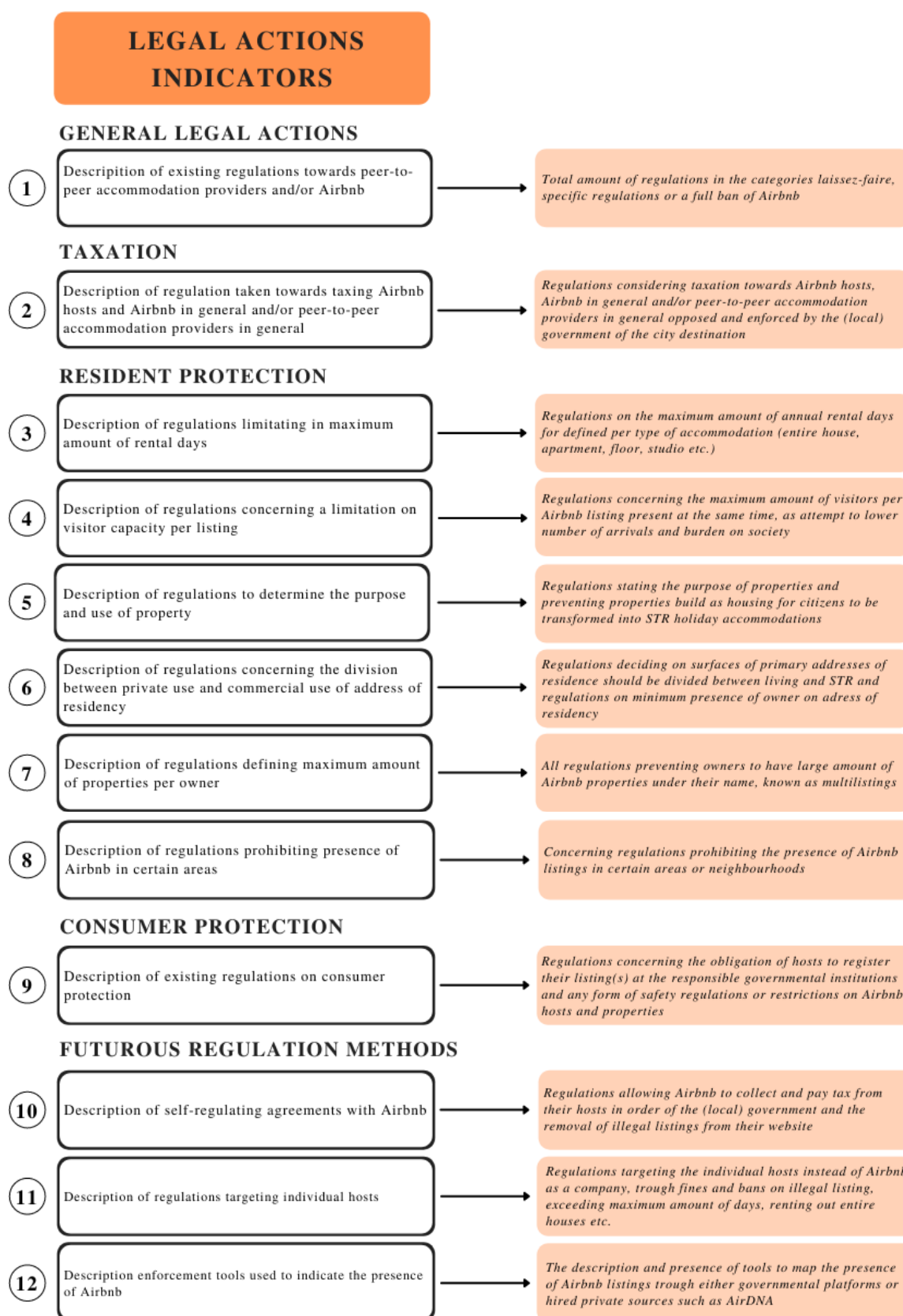


Source: own work.

#### 4.3.5 Legal actions

The biggest challenge for destinations remains the problem between implementation and enforcement of legislation. Limited available data on Airbnb listings and the high intensity of enforcing these regulations, often by door-by-door labour, are holding back effective control. The future seems to be building in self-regulatory deals with Airbnb and direct punishment of individual hosts, most effectively in the form of high fines. Figure 12 shows this set of legal action indicators.

Figure 12: Model Legal Actions



Source: own work.

## 5 DISCUSSION

The purpose of this research was to identify the factors of negative impact Airbnb has on city destinations and to create a model helping to identify and measure these negative impacts. In this chapter the main findings are presented. These findings originate from the result section, coming from both the process of reshaping the model and the final version of the model. In this chapter the findings will be compared and linked to the theories presented during the literature review. The end of the chapter discusses the limitations of this research and recommendations concerning future research and expansion of the model. The discussion will give a detailed answer to the main question of this Master thesis:

*How are global city destinations affected by negative economic, social, and environmental impact and legal actions caused by Airbnb?*

As for dimension the main findings will be presented and placed in the perspective of the theories presented during the literature review. The “three pillars” theory, used to identify the dimensions of impact, provided a clear and well received structure during this research. The experts unanimously agreed on the correctness of the dimensions presented by Purvis, Mao and Robinson (2019).

The main findings on the basic indicators are of a general nature because this set of indicators is used as a starting point, indicating the performance of touristic destinations. The basic indicators were narrowed down to the number of arrivals, overnights spent, and the number of listings present. Additionally, to these indicators the importance of measuring per capita per specific area was pointed out. Via this method a more specific result will be found providing more reliable data on the pressure coming from arrivals, overnights and listings at certain geographical areas. Also, the scope of development of P2P listings should be approached on the whole P2P market and not only for Airbnb, because the experienced impact is caused by all players on the market offering comparable services. There has been the need to adjust the KPIs presented by the UNWTO. The approach of the UNWTO on arrivals and overnights at destinations is limited as domestic tourism is mostly left out in their calculations (‘Global and regional tourism performance | UNWTO’, 2020). The final model is presenting data on all arrivals, not only international and therefore presenting the total performance on arrivals and overnight spent. The accommodation performance tool presented by the UNWTO was also partly suited for this research as there was the need to divide the performance of accommodations per capita and per neighbourhood of the destination (‘Accommodation – Demand and Capacity | UNWTO’, 2020). This leads on to focus more on the burden per neighbourhood and not generalise results because of the quantity of the population and the narrow focus of tourism activity.

The research shows that the negative impact of Airbnb on the housing market can be measured via the development of property value in neighbourhoods and via the development of rental prices and availability of long-term accommodations. It is essential while indicating

these developments to compare the data found in the period before the founding of Airbnb (2008) and the period after the founding of the company up till now. Experts state the importance of placing these developments in the situation a destination is in at the moment of measuring. Property prices and availability of rental accommodations are constantly under influence of a wide selection of factors. It is essential to consider the impact of a real estate crisis, increasing popularity of neighbourhoods and cities or that instead of P2P platforms traditional lodging developed. So, the main result of the set indicators is that Airbnb's negative impact on the housing market can partly be indicated in this way but a detailed analysis of the development of the specific indicator placing it in the right timeframe and situation is crucial. These findings support the theory presented by Edelman and Geradin (2015, p. 313) that the presence of P2P accommodations increases the rental prices and availability of long-term accommodations and increases the property prices as estate owners switch from long-term rental to STR. Although much of the literature suggests a direct connection between the presence of P2P accommodations and the changing character of neighbourhoods this research experienced trouble showing a direct connection. As example, Hinsliff (2020) mentions that locals in Barcelona can not afford to even rent there anymore it is hard to show the direct reason for this is a P2P platform like Airbnb. Therefore, it seems more fitting to add some nuance to the findings and to place the certain negative impact of Airbnb on the housing market in the right context considering all factors and developments on the housing market, destination specific. It is also questionable if increasing property value is necessarily a bad development. The experts argue that this development could also be positive as it helps a neighbourhood grow and Yeager, Boley, Woosnam, and Green (2019, p. 969) acknowledge this point of view. They make the side note that once the beneficial character of development changes into more burdens than benefits the presence of P2P platforms is negative once again. The findings in this research confirming this theory are of a more social character, indicating the change in social structure of neighbourhoods but also focussing on the money flow as discussed below.

In the attempt to indicate the money flow coming from Airbnb it is possible to do so through the number of listings owned by hosts that are solely using Airbnb for commercial exploitation. This can only be done if there is a clear division between commercial listings and personal listings. The best way to differentiate is by separating hosts with three listings or more from ones with one or two listings. The idea behind this is that hosts could rent out their primer address of residency and for example their private holiday house, in this way justifying the one or two listings per host. Any host with more listings than the two mentioned will in this way be qualified as a commercial host and it will be taken into account by indicating the money flow disappearing through the purely economic exploitation of the sharing economy idea that Airbnb is part of. Oskam and Boswijk (2016) have strongly pointed out the importance of this development and therefore this indicator and Cheng (2016) directly links the presence of these multilistings to the wrong division of benefits between commercial hosts and the local community. The literature nevertheless approaches this problem very theoretically while in practice a specification was needed to be able to

successfully separate commercial hosts, owning multiple listings for economical gain, from the local citizen renting out the address of residency and for example a holiday house in the countryside.

Airbnb's impact on tourism employment creates a more complicated situation. First of all, Airbnb is believed to have increased the total amount of employment in the tourism industry, as more tourists often mean more work. Nevertheless, experts agree on the possible exchange of tourism employment leaving the middle/low hotel sector disappearing into less measurable fields of tourism. The impact Airbnb has had on the hotel employment rate, classified as middle/low segment hotels can be indicated and provides an insight into the change of the employment structure of a destination. Comparing the general development of the employment in tourism to the one in the middle/low hotel sector indicates the disappearance of work in the hotel sector due to the presence of Airbnb listings. Fang, Ye and Law (2016, p. 265) already pointed out that the substitution of hotels in the middle/low segment by Airbnb is not necessarily causing job losses in the tourism industry. This research confirms this and offers destinations the tool to measure the development of tourism employment in general and the employment at middle/low hotels to indicate the difference of development and possible correlation between the presence of P2P accommodations and job loss in that specific sector. The theory suggests that there is no connection and although experts agreed on this, they still point out the importance of proving this lack of connection. Therefore, the indicator on measuring the development of tourism employment is still present in the model, creating a complete picture of development on this matter.

The last part of negative economic impacts is concerning the remaining accommodation industry and, specifically the middle/low segment hotel industry. Airbnb is influencing the general hotel performance and how this has developed through time, especially since the existence of P2P accommodation platforms. The development of the average daily rate, revenue per available room and occupancy rate are basic indicators measuring hotel performance over time. These basic hotel performance indicators are creating an insight into the development of the middle/low hotel sector. The way to set the indicators on hotel performance are completely based on the literature provided by Dogru, Mody, and Sues (2019, p.28) and Zervas, Proserpio, and Byers (2017, p. 697) and is confirmed to be adequate by the selection of experts during this research. The question is what the change of hotel performance tells us. As Neeser (2015) states that in Scandinavian countries no connection is visible which could show that Scandinavian hotels found a way to successfully compete with the disruptive force by of which Airbnb scoops the market. Although this research shows how to measure the impact on hotel performance by the presence of P2P accommodations such as Airbnb, no positive nor negative value can be put on the change in performance.

This sector is believed to be substituted by the Airbnb listings at the destination. The results show that this substitution can be measured by following both the change in number of nights spent at middle/low class hotels and the change in number of nights spent at Airbnb listings

over the same period of time by comparing those to each other. The theory agrees on this substitution and based on the findings from research done by Guttentag and Smith (2017) and Nowak et al. (2015) among tourists using Airbnb as substitution for a hotel. Wachsmuth and Weisler (2018, p. 1169) mention the unfair competition between the traditional accommodation industry and Airbnb. During this research the difficulty of measuring this unfair competition is shown as the experts only agreed on the impact of Airbnb on the profit of hotels based on seasonality. The possibility for Airbnb hosts to activate their listing during peak moments in accommodation demand scrapes away a part of the income of the accommodation sector without meeting the same regulations on safety and tax duty. Nevertheless, this research shows it is hardly impossible to show this unfairness more successfully. How this unfair meeting of regulations is in reality can be measured via the legal action indicators on tax regulations and consumer protection.

The limitation about these findings is that the substitution between the traditional accommodation sector and Airbnb is not necessarily a bad development. A new alternative next to hotels, bed and breakfasts or other types of lodging creates a new challenge and need for competitive advantage. Also, the literature suggests that some disruptive competition might be a good stimulation for the traditional hotel sector to keep improving (Rifkin, 2001). Another limitation is that because of the global approach of this research external developments, on destination level, were left out of consideration. This is now seen as a limitation for implementation of this model.

The main findings on the social dimension is that, although hard to measure, the change of social structure, the unhappiness of citizens on Airbnb and tourism in general and the pressure on society caused by the presence of P2P platforms are the type of indicators suiting this dimension best. The pressure on society can best be measured per capita while making a distinction per neighbourhood. It is important to measure per neighbourhood as some neighbourhoods might experience a much higher burden than others, if the unit of measurement would be the whole city destination the true pressure certain neighbourhoods experience might seem lower than it is in reality. In the literature Adamiak (2018, p. 70) show the severity at coastal destinations but most importantly confirms this finding based on past research. Nevertheless, he talks about the pressure per inhabitants but fails to make the division per neighbourhood, as advised by the experts during this research. It would be a mistake to only take Airbnb listings into account when indicating negative impacts on the social dimension. The whole P2P market has its impact and should therefore be measured. The burden on society caused by P2P accommodation platforms can be measured through the development of the total amount of listing per capita per neighbourhood in time. Next to that the development of overnights spent at P2P listings per capita per neighbourhood show the actual use of the present listings. These indicators are close to the ones described in the basic indicator section but are essential to show the change in pressure set on society. To refocus on the impact of Airbnb also the development of Airbnb listings through time might show the increasing pressure caused by Airbnb. The presence and pressure of listings on the



society also influences the quality of the living and natural environment mentioned by the EU (Eurostat Statistics Explained, n.d.). The experienced burden on the surroundings and facilities directly impacts one's perspective towards the quality of the living environment. Although other authors approach this dimension of the QoL based on environmental resources the interpretation of the EU is aligned with the findings of this Master thesis, as confirmed by the experts.

Society is supposed to be in constant development and undergoes a constant change caused by a long list of external factors. The results indicate that P2P platforms are contributing to these constant developments, although it is hard to truly prove this. An easy measurable indicator is the change in the amount of population in neighbourhoods. A strong decrease might suggest that citizens move out. Especially when this development is aligned with the increasing presence of P2P listings and the increasing property prices and rent prices this suggest a certain correlation. To take a step further in this reasoning the research finds, supported by the experts, that the increasing presence of P2P listings might create a change in the social structure of neighbourhoods. A change in the background of inhabitants, level of education, income or cultural background. The found literature only mentions a little the connection between the negative impacts and the effect they have on the structure of society. Lees, Slater, and Wyly (2007) point out that Airbnb can directly contribute to the gentrification of neighbourhoods and the moving away of local citizens. Hinsliff (2020) provides an example of locals not being able to buy and sometimes not even rent an accommodation anymore in the city they were born in. The experts agreed on the reasoning that the changing housing market influences the social structure of a neighbourhood. Although they strongly request approaching with caution the changing social structure, there is logically an impact on the social dimension as many external factors may be of bigger impact than Airbnb and P2P platforms in general. On the QoL this possible development is connected to both material well-being as the feeling of being part of one's community. Changes in social structures are decreasing this feeling of being part of one's community.

The limitation on this approach and the aligned indicators is that many other factors might have a bigger influence on the change of the social structure at a city destination neighbourhood. So, some connection or correlation might be visible but this could also be a causality. To tackle this limitation a more detailed approach to the development of the social structure is necessary, keeping in mind all types of developments including the increasing presence of P2P platform accommodations.

The best method to indicate unhappiness and dissatisfaction among local citizens towards P2P platforms is by showing the way of complaining and the amount or resistance that occurs at city destinations, and this is what the experts agreed on. The most reliable way to do so is by only measuring the complaints officially filed at trustworthy institutions. Although the web provides an unlimited source of information, especially through review platforms, for the matter of validity and reliability official sources provide the most consistent way of measuring. The type of complaints can best be approached generally, not categorising the

complaints by topic. This could provide an unwanted challenge in categorising while trying to indicate the negative impact. In the matter of protests against tourism, P2P platforms and Airbnb the (local) media might provide the best source of information as these protests are not necessarily always registered officially. The literature mostly provides insight into the existence and topic of the protests and less about how to categorise and measure them. As Ciccarelli (2020) did mention the growing protest against cities turning into theme parks, decreasing the liveability of destinations. The complaints and following protest directly link with the QoL dimension of feeling part of one's local community, or better said showing the lack or disappearance of this feeling. Although the literature suggests that protests are more a sign of unhappiness in general than directly linked to a decreasing feeling of being part of one's local community. Although the theories of the EU and Rahman, Mittelhammer and Wandschneider do not mention the number of protests or complaints as being directly connected to the QoL they do result from clear unhappiness. Unhappiness about the development of, for example, the housing market as mentioned by Edelman and Geradin (2015, p. 313) and the burden on public facilities as mentioned by Oskam (2019).

The limitation in this part of the model is the threat of directing negative social developments to the influence of tourism and Airbnb while in reality these developments occur from all kinds of reasons. Colomb and Novy (2018b) already pointed out the fact that problems around P2P platforms are often part of a bigger development. This was confirmed and elaborated by the experts during this research. In these situations, tourism and companies such as Airbnb are an easy scapegoat and receive all the blame that they are not responsible for at all or not completely. The only way to prevent this wrong addressing of negative factors is to analyse the social structure and developments at a city destination when indicating Airbnb's contribution to these negative developments.

The results suggest that Airbnb provides a more sustainable alternative to the traditional lodging industry. Experts agree on the fact the the core idea of P2P platforms is of a more sustainable nature indeed. Some difficulty was found on indicating the environmental impact of Airbnb on city destinations during this research. So, the main finding is that a detailed LCA is necessary to be able to indicate the impact of Airbnb on the environmental dimension. This LCA is in need of a baseline of natural resource consumption and a division of categories of accommodation. These accommodation categories provide the opportunity to compare similar Airbnb listings with other accommodation with the same characteristics, being therefore comparable in use of natural resources meeting the request for nuance done by Bastič and Gojčič (2012, p. 1018) in the literature review. Therefore, the result of this study and model is a small introduction to this topic. Indicating the difference in energy use and water consumption between Airbnb listings and other accommodation types based on comparable accommodation categories indicates some of the difference in impact. The all-conclusive indicator on the use of natural resources is based on the comparison of the total use of natural resources based on an LCA. This indicator is the basis of the suggestion to conduct a separate future research aiming to create a measurable model based on an LCA.

Gordo, De Rivera and Cassidy (2020) mentioned the need for comparison before but failed to point out the importance an LCA to be able to compare. Therefore, the fields of impact found and mentioned by Dolničar, Juvan and Hajibaba (2017, p. 267), purpose of property and size, and the environmentally friendly initiatives, have provided a good starting point but are still in need of the right perspective from the LCA.

Another, more simple finding in the environmental dimension is based on the purpose of the property. The use of natural resources of listing solely used for economic exploitation can be categorised as direct negative impact. The theory of Dolničar, Juvan and Hajibaba is very extensive on this topic but in practice it is valued as too complicated to measure the change in property purpose due to lack of registration of listings. For known properties this approach would be possible, especially separating them between commercial listings and non-commercial listings. The natural resources used at the commercial properties are solely meant for touristic purpose. If listings are a primer address of residency the use of resources is mostly for the owners normally living at the property and therefore less culpable on tourism exploitation. This indicator provides a starting point for indicating the use of natural resources purely for touristic purpose. An important finding during this research is that much of the theory on the impact of P2P accommodations on a destination is either not provable or not measurable without conducting a detailed LCA. The impact based on property size, user quantity or number of extra facilities can only be measured through this LCA and comparable categories of accommodation. On the other hand, theories by Skjelvik, Erlandsen and Haavardsholm (2017, p.9) on the decrease in building hotels at destination because of Airbnb presence or the increasing number of trips per person because of cheaper accommodation are found to be too hard to prove. Therefore, these possible impacts are perceived as not being useful and reliable enough for this model.

The last result concerning the environmental dimension is that it seems interesting to indicate in which way Airbnb is following the global trends of sustainability and how they stimulate both consumers and hosts in limiting their environmental impact as much as possible. Airbnb says to take responsibility according to the Clean Tech Group (2014). According Gordo, De Rivera and Cassidy (2020) Airbnb is fitting in the idea of sharing the burden on resources, mostly when it comes to the environment. By indicating the number of initiatives, campaigns and programs the company launches focused both on their own way of conducting business and focused on their hosts it becomes clear how Airbnb follows the global development. This is so especially if put in perspective on the global trends in the accommodation sector. The experts advised to keep this indicator superficial because the trend of more sustainable practice is very common in the lodging industry and therefore no big differences are found, which are useful to point out.

The environmental dimension in this research has experienced a lot of limitations because of difficulty of measurement. Many possible indicators, derived from theory, are impossible to measure and therefore too far fetched. For the measurable indicators is at the same time

more extensive research is needed on the LCA with categorising of comparable accommodation types.

The main finding on the possibility and existence of legal actions is the gap between implementation and regulation. This gap is one of the main findings and was mentioned by the experts during this research. Destinations worldwide struggle with successfully enforcing and controlling the implemented regulations. At the same time destinations seem to constantly add new legislation to the already non-functioning system in the attempt to regulate STR and sharing platforms. The experts do confirm that the fields of regulations do cover the main possible regulations that destinations put in place in their attempt to regulate P2P platforms. And the exploratory function of this dimension is in their opinion fitting the set of indicators. The result is that the existing regulations can be indicated by focusing on taxation law, consumer protection and resident protection. By comparing the existing regulations to these fields of law and to other destinations dealing with the same issues policy makers can decide where there are still possibilities for their destination for new types of regulations. The literature has the same approach to this dimension as impact is not really possible to indicate. Indicating the existence of possible regulations is what is suggested by Nieuwland (2017) and Lines (2015) with their three categories of action: laissez-faire, full ban and specific regulations. As both literature and the model are of exploratory nature not many disagreements or differences between literature and findings occur in this part of the research. Examples of regulations protecting residents described by Bort (2014) and Oskam (2019) show destination specific regulations. Those regulations are implemented at that destination for a reason and this research did show that existing regulations worldwide mostly function as best-practices for other destinations than as a way of measuring any impact caused by Airbnb.

Another finding is that the number of regulations is not telling us anything about the success destinations have in regulating Airbnb and other P2P platforms. The key here lies in the success of enforcement. To indicate this success a decrease in, for example, listings is not necessarily the way of measuring, also because many listings are not officially registered. The presence of the regulation types of the future gives a better view on how successful destinations are in regulating P2P platforms. Self-regulatory agreements between Airbnb and local governments seem to be the most successful as are regulations directly targeting individual hosts. These types of regulations are, as all others, again relying on a successful way of indicating where to find the P2P listings. Any initiative concerning recovering this type of data indicates the type of actions governments take in the attempt to regulate P2P platforms such as Airbnb. Woolf (2017) raises questions if self-regulatory is a preferred option, Airbnb remains in control and can basically do whatever it wants. Nevertheless, Leshinsky and Schatz (2018) argue that it might be the only way to successfully implement any type of regulation in the future, together with directly targeting hosts and charging high fines to set an example.

One of the main findings of this research is that although literature contains a lot about the impact P2P platforms have on destinations and what kind of developments, they stimulate the way of truly measuring those impacts is left out. During this research the aim was to find a way to measure the negative impacts but the main issues in this is the presence of many external influences, as mentioned before. But another issue is the access to reliable data. Airbnb does not provide much insight in their data on the amount and location of listings, host specific information and revenue made. The only way to gain access to useful data while measuring the negative impact of Airbnb is through services such as AirDNA, constantly updating their knowledge on the presence and performance of P2P accommodations at city destinations worldwide. This is more or less the only option for future policy makers and researchers to get to the necessary data as long as Airbnb keeps the doors shut.

After conducting this research, it became clear that although there are many thoughts, hunches and theories on what kind of impact Airbnb and peer-to-peer platforms can have on destinations there is no consensus and few measurable impacts existing. This already became clear in the literature review but also after both rounds of the Delphi method. Feedback on indicators was both positive and negative confirming the lack of consensus on measurability of factors and existence of correlation between certain developments and the role Airbnb might play in these developments. In particular the attempt to create indicators on specific and detailed topics of influence was not successful. The author of this research is partly satisfied with this conclusion as it confirms the difficulty of creating a well proven model for measuring the negative impact of Airbnb. The practical implementation of the Model for Measuring Airbnb's Negative Impact is thus more of an exploratory nature. It provides a tool and a starting point for policy makers to map the possible negative impact on all dimensions at their destination. For future research the model, and this Master thesis can be of use as a literature source and starting point for further expansion of this model and any indication of the impact of P2P accommodation platforms from global and destination perspective.

To improve the model, there is a need for more extensive research taking into account all factors of society, economy and environment. It would be interesting and useful for researchers with more expertise on the various fields of impact to expand this model and attempt to distinguish the impact of Airbnb and peer-to-peer platforms from the underlying developments of society. During this Master thesis, the author has experienced a lack of expertise on all individual aspects. Therefore, the result is a collection of the most logical and present indicators found in literature, confirmed, shaped and improved by the opinion of various experts.

The idea of creating a benchmark model has changed into creating a more general model indicating the areas Airbnb has a potential negative impact on. Proving direct correlation between negative developments at a destination and the presence of Airbnb is problematic because of all external factors influencing the same developments. It has also become clear that creating an all covering model taking all external factors into account is too much of a

challenge in the available timeframe this research will be done in. The feedback of experts on the structure of the model was diverse. Some experts suggested creating a framework connecting related indicators to each other and to give them value in an attempt to be able to quantify the negative impact of Airbnb. Other experts agreed with the current structure and had preference over the individual approach per indicator, stating that because of the influence of external factors each indicator should be approached with care and placed in its own context.

The result limitations per dimension have already been mentioned while discussing the main findings of the dimension. A general limitation of this research is the generality of the results. As also mentioned under some of the dimensions, the impacts measurable from this research are of a general nature because of the complexity of the topic. The indicators of the economic-, social-, and environmental dimension are only of use if placed in the wider context of a destination. Therefore, no correlation is shown between any of the indicators in this research and whether it will be destination and external factor depending if the found impacts are present at the selected destination. Also there remains a question if those impacts are in that case caused by Airbnb or are the result of different developments at the destination. Therefore, it can be said that the scope of this research was too big to truly specify the detailed negative impact of Airbnb on city destinations. Nevertheless, this research directly contributes to the existing knowledge on the (negative) impact of P2P accommodation platforms on city destinations. It shows the complexity of the topic and provides a clear starting point for the Airbnb performance at destinations and any judicial possibilities. Next to that it both agrees and disagrees with the existing literature and therefore adds caution to the approach on the impact of P2P accommodation platforms. Although a destination specific tool seems more appropriate and useful for measuring the negative impact this research contributes to the knowledge on the presence of impacts that are not destination specific and occur on global level at destinations spread over the world. It is beyond the scope of this research to address each dimension of impact on a detailed level and therefore it leaves out the severe existence of external factors, decreasing the possibility to show correlation between the presence of Airbnb and visible negative developments.

One of the practical limitations of the model is that it is not quantified and therefore is not suited to use for comparison between destinations. To be able to quantify this model it should be approached on destination level. On this level connection between indicators can be better identified and fitted into the economic, social and environmental structure of the destination. Another limitation, one often occurring when dealing with the impact of P2P platforms, is the presence of causality over correlation as they are such a big part of all types of economic, social and environmental systems.

The practical implementation of this Master thesis calls for two types of future actions following the results of this research. First of all, the Model for Measuring Airbnb's Negative Impact can be used by future research, policy makers and anybody interested in the impact

P2P accommodation platforms can have on city destinations as a starting point for research, policy making or as a research article.

The second type of future actions recommended based on this research is the call for further research. On the economic-, social-, and environmental dimensions further, detailed research is necessary to indicate a closer connection between the possible negative impact of Airbnb and the existing developments at a city destination. For both the economic-, and social dimension detailed research should be done placing the negative impact of P2P accommodation platforms in the right environment. With the environment is meant all influencing factors on the selected destination, so each destination should be analysed individually. For example, the development of the housing market (economic dimension) is impacted by the increasing presence of Airbnb but a full picture of the development of the housing market includes all external impact. For the social dimension all influences of the social structure of destinations should be investigated in combination with the current social structure.

In the environmental dimension of this model, there should in future be expanded research by adding an LCA based on categories of comparable accommodation types between Airbnb listings and the rest of the accommodation sector. This research could be of a general approach making it suitable for multiple destinations. Such an approach seems suitable for this type of future research because the use of natural sources seems not to be destination specific.

Another recommendation to directly improve this model is via further research into a model suitable to measure the performance of a destination. By quantifying this model and adding value to the indicators it will become a tool with a benchmark purpose. To do this work further research should identify internal connections between the indicators.

The last recommendation for future research is to transform this model into a destination specific one, capturing local developments and trends. In that way the model would be more suitable for the specific destination, based on the local structure, providing a useful tool for policy making.

## **CONCLUSION**

The aim of this Master thesis was to show how Airbnb negatively impacts city destinations worldwide. Based on the literature research and qualitative research done it can be concluded that this question has a wide and complex answer. The negative impact should first of all be categorised among the three main dimensions, based on the “three pillars” model: economic, social and environmental. Considering the reaction on the negative impact also legal actions have shown to be essential to indicate. To start the analysis of negative impacts the basic performance of a destination has to be shown through the arrivals, overnights spent and the development of listings over time. In the current timeframe the impact of the COVID-19

pandemic is an additional performance indicator. The basic performance is the basis for further indication of negative impacts and all results should be put into the perspective of the basic indicators.

In the economic dimension Airbnb has a negative impact on the development of the housing market based on increasing property prices, decrease in availability of long-term rental accommodations and a price increase in their rent. As suggested the employment rate in tourism is more positively impacted by Airbnb than negatively but a shift from the employment rate in the middle/low hotel segment towards the general tourism employment is to be expected. The impact of Airbnb on the hotel sector should be indicated by measuring hotel performance and setting it off against the change in number of P2P listings. Airbnb does negatively influence the performance of hotels in the middle/low segment, but this is not necessarily a bad development as it might create a more competitive market. In the social dimension Airbnb negatively influences the feeling of connection between citizens and their city. In combination with the impacts on the housing market it creates a situation where citizens can no longer afford to live in their city and communities tend to fall apart because of unhappiness towards tourism and P2P accommodations, resulting in complaints and protests. This is all caused by the increasing pressure on society, measurable by the number of listings, arrivals and overnights spent per capita of neighbourhoods at P2P accommodations such as Airbnb. The environmental dimension is more difficult to truly measure. Indicating which properties are purely used for tourism exploitation provides a basic idea of resources solely used for tourism but if not put in a framework of comparison the true environmental impact can not be measured. Therefore, an LCA is required categorising similar accommodation types from Airbnb and other accommodations and measuring their use of natural resources put against a basis line of usage. The number of legal actions destinations implemented does not show anything as it is the efficiency of enforcing that counts. The gap between implementing and enforcing regulations is the biggest challenge destinations face. The results of this research show that the types of regulations most effective dealing with Airbnb are based on self-regulation and direct targeting of hosts based on information gathered via external data sources.

One of the technical findings is that the model derived from the literature is partly not suited for use in practice. The literature suggests connections and correlation that often is experienced as more causality than true correlation. Or at least at the global level, this correlation seems more adequate on the destination level.

During this research the use of the Delphi Method had a positive influence on the results. The experts provided clear and honest feedback creating an extensive set of information to improve the first draft of the model. Finding the experts willing to participate in this research created a challenge. Many approached experts are university professors and therefore busy with finalising the academic year while this research was conducted. Also, the specific topic and approach of the research seemed to have prevented experts from participating or even replying. The author hoped for a higher response rate but is satisfied with eight respondents



for the first round of research and five for the second. The results of the research know some limitations. The biggest limitation of the results is that the research did not take into account the external factors per dimension. One example is the impact of a global economic crisis on the housing market or migration on the social structure of society. Therefore, the results per dimension remained superficial and in need of further expansion. Another limitation is that although many impacts occur on international level at various city destinations the most fitting approach remains the destination specific level. This was suggested by various experts as destinations experience different external factors, often of more influence than the negative impact Airbnb provides. A good contribution to the final model would be to quantify the model. This makes the model suitable for comparison between similar destinations by putting value on the negative impacts, resulting in a total performance score.

The advice based on this research is to use this exploration of the negative impact of Airbnb on city destinations while creating policy at destination level. The presented model and findings supporting this model provide a solid basis for future indication of Airbnb's impact and show insight into the existing and possible regulations destinations might consider. Therefore, the main recommendation is to take the created model as a starting point towards the negative impacts when dealing with the presence of P2P accommodation platforms such as Airbnb.

Recommendations concerning future research are based on the limitations of this research and will be complementary to the results found. To expand and specify the existing model future research per dimension is advised, more specifically indicating the connection between Airbnb's impacts and the external factors. Next to that future research could expand the presented model by adding quantifiable measures to it, based on a research done on the connection between the individual indicators and their importance towards each other.

This research has actively contributed to the expansion of knowledge on the negative impact P2P accommodation platforms, and especially Airbnb, have on city destinations. The research broadened the existing knowledge and showed the complexity of the topic. It also created a better understanding about the complexity of the fields Airbnb has impact on and on the importance of approaching most of the impacts on destination level. The research is also additional to existing literature and even sharpens this literature as many of the suggested impacts mentioned in the literature are not that straightforward and need a strong side note, considering the external factors present. This Master thesis should be seen as a starting point for a literature review, for destinations aiming to map the impact of P2P accommodation platforms and for future researchers interested in this topic.

## REFERENCE LIST

1. Accommodation – Demand and Capacity | UNWTO. (2020, October). Retrieved 23 June 2021, from <https://www.unwto.org/accommodation%E2%80%93demand-and-capacity>
2. Adamiak, C. (2018). Mapping Airbnb supply in European cities. *Annals of Tourism Research*, 71, 67–71. <https://doi.org/10.1016/j.annals.2018.02.008>
3. Airbnb Inc. (2021, February 2). About Us. Retrieved 4 February 2021, from <https://news.airbnb.com/about-us/>
4. AirDNA LLC. (2020, December 7). About Us: Data Science Meets Real Estate Investing in Vacation Rentals. Retrieved 6 April 2021, from <https://www.airdna.co/about>
5. Bastič, M. & Gojčič, S. (2012). Measurement scale for eco-component of hotel service quality. *International Journal of Hospitality Management*, 31(3), 1012–1020. <https://doi.org/10.1016/j.ijhm.2011.12.007>
6. BBC News. (2021, February 18). Scottish government withdraws new law on short-term lets. *BBC News*. Retrieved from <https://www.bbc.com>
7. Benner, K. (2017, April 17). Inside the Hotel Industry’s Plan to Combat Airbnb. Retrieved 19 February 2021, from [https://www.nytimes.com/2017/04/16/technology/inside-the-hotel-industrys-plan-to-combat-airbnb.html?\\_r=1](https://www.nytimes.com/2017/04/16/technology/inside-the-hotel-industrys-plan-to-combat-airbnb.html?_r=1)
8. Bort, J. (2014, October 10). San Francisco Makes Airbnb Legal At Last. Retrieved 22 February 2021, from <https://www.businessinsider.in/San-Francisco-Makes-Airbnb-Legal-At-Last/articleshow/44777476.cms>
9. Buckley, J. C. (2021, March 25). Venice and Florence demand a curb on Airbnb. *CNN*. Retrieved 25 March 2021, from <https://edition.cnn.com/travel/article/venice-florence-airbnb-restrictions/index.html>
10. Cheng, M. (2016). Sharing economy: A review and agenda for future research. *International Journal of Hospitality Management*, 57, 60–70. <https://doi.org/10.1016/j.ijhm.2016.06.003>
11. Ciccarelli, R. (2020, January 4). Stop Airbnb: «Le nostre città non sono alberghi». *il manifesto*. Retrieved from <https://ilmanifesto.it>
12. Colomb, C., & Novy, J. (2018). *Protest and Resistance in the Tourist City*. Abingdon, United Kingdom: Routledge.
13. *Cleantech Group (2014) Environmental impact of home sharing: Phase 1 report. A report prepared for Airbnb, Retrieved on April 31, 2016 from https://www.airbnbaction.com/wp-content/uploads/2016/10/Cleanteach\_Airbnb-Environmental-Impact-Report.pdf*
14. Dogru, T., Mody, M., & Suess, C. (2019). Adding evidence to the debate: Quantifying Airbnb’s disruptive impact on ten key hotel markets. *Tourism Management*, 72, 27–38. <https://doi.org/10.1016/j.tourman.2018.11.008>
15. Dogru, T., Mody, M., Suess, C., McGinley, S., & Line, N. D. (2020). The Airbnb paradox: Positive employment effects in the hospitality industry. *Tourism Management*, 77, 104001. <https://doi.org/10.1016/j.tourman.2019.104001>

16. Dolničar, S., & Zare, S. (2020). COVID19 and Airbnb – Disrupting the Disruptor. *Annals of Tourism Research*, 83, 102961. <https://doi.org/10.1016/j.annals.2020.102961>
17. Dongen, A. (2019, September 10). Banning Airbnb is the worst thing Amsterdam could do, says tourism expert. *Het Parool*. Retrieved from <https://www.parool.nl>
18. Edelman, B. G., & Geradin, D. (2015). Efficiencies and Regulatory Shortcuts: How Should We Regulate Companies like Airbnb and Uber? *SSRN Electronic Journal*, 313–315. <https://doi.org/10.2139/ssrn.2658603>
19. European Commission. (2017, June 28). European Tourism Indicators System for sustainable destination management. Retrieved September 10, 2021, from [https://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators\\_en](https://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_en)
20. European Union. (2016). *The European Tourism Indicator System ETIS toolkit for sustainable destination managem.* Publication Office of the European Union. <https://doi.org/10.2873/983087>
21. Eurostat Statistics Explained. (n.d.). Quality of life indicators - measuring quality of life - Statistics Explained. Retrieved 14 April 2021, from [https://ec.europa.eu/eurostat/statistics-explained/index.php/Quality\\_of\\_life\\_indicators\\_-\\_measuring\\_quality\\_of\\_life#The\\_8.2B1\\_dimensions\\_of\\_quality\\_of\\_life](https://ec.europa.eu/eurostat/statistics-explained/index.php/Quality_of_life_indicators_-_measuring_quality_of_life#The_8.2B1_dimensions_of_quality_of_life)
22. Fang, B., Ye, Q., & Law, R. (2016). Effect of sharing economy on tourism industry employment. *Annals of Tourism Research*, 57, 264–267. <https://doi.org/10.1016/j.annals.2015.11.018>
23. Global and regional tourism performance | UNWTO. (2020, May 31). Retrieved 23 June 2021, from <https://www.unwto.org/global-and-regional-tourism-performance>
24. Gordo, Á., De Rivera, J., & Cassidy, P. R. (2020). The measurement of the economic, social and environmental impact of Peer to Peer online platforms: The case of collaborative consumption. *Empiria. Revista de Metodología de Ciencias Sociales*, (49), 87–119. <https://doi.org/10.5944/empiria.49.2021.29233>
25. Guttentag, D. A., & Smith, S. L. J. (2017). Assessing Airbnb as a disruptive innovation relative to hotels: Substitution and comparative performance expectations. *International Journal of Hospitality Management*, 64, 1–10. <https://doi.org/10.1016/j.ijhm.2017.02.003>
26. Hajibaba, H., & Dolničar, S. (2017). Regulatory Reactions Around the World. In *Peer-to-Peer Accommodation Networks: Pushing the Boundaries* (pp. 120–131). Oxford, United Kingdom: Goodfellow Publisher Limited.
27. Haywood, J. (2016, February 9). STR: Airbnb's Impact Minor on Manhattan Hotels | CoStar. Retrieved 18 February 2021, from <https://www.costar.com/article/1663238210>
28. Henley, J. (2019, June 20). Ten cities ask EU for help to fight Airbnb expansion. Retrieved 20 February 2021, from <https://www.theguardian.com/cities/2019/jun/20/ten-cities-ask-eu-for-help-to-fight-airbnb-expansion>
29. Hinsliff, G. (2020, February 3). Airbnb and the so-called sharing economy is hollowing out our cities. *The Guardian*. Retrieved from <https://www.theguardian.com>

30. Hohmann, E., Brand, J. C., Rossi, M. J., & Lubowitz, J. H. (2018). Expert Opinion Is Necessary: Delphi Panel Methodology Facilitates a Scientific Approach to Consensus. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 34(2), 349–351. <https://doi.org/10.1016/j.arthro.2017.11.022>
31. Hu, M. R., & Lee, A. D. (2020). Airbnb, COVID-19 Risk and Lockdowns: Global Evidence. *SSRN Electronic Journal*, 2. <https://doi.org/10.2139/ssrn.3589141>
32. Impact assessment of the COVID-19 outbreak on international tourism | UNWTO. (2020). Retrieved 20 May 2021, from <https://www.unwto.org/impact-assessment-of-the-covid-19-outbreak-on-international-tourism>
33. Jiao, J., & Bai, S. (2019). Cities reshaped by Airbnb: A case study in New York City, Chicago, and Los Angeles. *Environment and Planning A: Economy and Space*, 52(1), 10–13. <https://doi.org/10.1177/0308518x19853275>
34. Juvan, E., Hajibaba, H., & Dolničar, S. (2017). Environmental Sustainability. In *Peer-to-peer Accommodation Networks: Pushing the Boundaries* (pp. 261–272). Oxford, United Kingdom: Goodfellow Publisher Limited.
35. Krouk, R., & Almeida, F. (2020). Exploring the impact of COVID-19 in the sustainability of Airbnb business model. *Journal of Smart Economic Growth*, 5(3), 89–107. Retrieved from <https://jseg.ro/index.php/jseg/article/view/115>
36. Lees, L., Slater, T., & Wyly, E. (2007). *Gentrification* (1st ed.). London, United Kingdom: Routledge. <https://doi.org/10.1111/j.1468-2257.2008.00443.x>
37. Leshinsky, R., & Schatz, L. (2018). “I Don’t Think My Landlord Will Find Out:” Airbnb and the Challenges of Enforcement. *Urban Policy and Research*, 36(4), 417–428. <https://doi.org/10.1080/08111146.2018.1429260>
38. Lines, G. (2015) *Hej, Not Hej Da: Regulating Airbnb in the New Age of Arizona Vacation Rentals*. *Arizona Law Review* 57, 1163
39. Linstone, H., Turoff, M., & Helmer, O. (1975). *The Delphi Method: Techniques and Applications*. Retrieved from <https://www.researchgate.net/file.PostFileLoader.html?id=563b341d5cd9e375988b45bc&assetKey=AS%3A292381292285964%401446720541026>
40. Luri Minami, A., Ramos, C., & Bruscatto Bortoluzzo, A. (2021). Sharing economy versus collaborative consumption: What drives consumers in the new forms of exchange? *Journal of Business Research*, 128, 124–137. <https://doi.org/10.1016/j.jbusres.2021.01.035>
41. Malhotra, A., & Van Alstyne, M. (2014). The dark side of the sharing economy . . . and how to lighten it. *Communications of the ACM*, 57(11), 24–27. <https://doi.org/10.1145/2668893>
42. Mihalič, T. (2014). *Proposed understanding of responsustable tourism (based on the three pillars and three requirements)*. [Illustration]. Retrieved from [https://www.researchgate.net/figure/Proposed-understanding-of-responsustable-tourism-based-on-the-three-pillars-and-three\\_fig2\\_272197418](https://www.researchgate.net/figure/Proposed-understanding-of-responsustable-tourism-based-on-the-three-pillars-and-three_fig2_272197418)

43. Mihalič, T. (2016). Sustainable-responsible tourism discourse – Towards ‘responsustable’ tourism. *Journal of Cleaner Production*, *111*, 461–470. <https://doi.org/10.1016/j.jclepro.2014.12.062>
44. Moldan, B., Janoušková, S., & Hák, T. (2012). How to understand and measure environmental sustainability: Indicators and targets. *Ecological Indicators*, *17*, 4–13. <https://doi.org/10.1016/j.ecolind.2011.04.033>
45. Neeser, D. (2015). *Does Airbnb Hurt Hotel Business: Evidence from the Nordic Countries*. <https://doi.org/10.13140/RG.2.1.4939.8248>
46. Nieuwland, S. (2017, July). *Help! Airbnb is taking over the city! A study on the impacts of Airbnb on cities and regulatory approaches* (Master’s Thesis). Retrieved from <https://theses.uibn.ru.nl/bitstream/handle/123456789/5434/Final%20VersionThesis%20S.Nieuwland.pdf?sequence=1>
47. Nieuwland, S., & van Melik, R. (2018). Regulating Airbnb: how cities deal with perceived negative externalities of short-term rentals. *Current Issues in Tourism*, *23*(7), 811–825. <https://doi.org/10.1080/13683500.2018.1504899>
48. Nowak, B., Allen, T., Rollo, J., Lewis, V., He, L., Chen, A., . . . Young, E. (2015, November). *Global Insight: Who Will Airbnb Hurt More - Hotels or OTAs?* Morgan Stanley Research. Retrieved from <https://docplayer.net/28102842-Global-insight-who-will-airbnb-hurt-more-hotels-or-otas.html>
49. Oskam, J. A. (2019). *The Future of Airbnb and the ‘Sharing Economy’: The Collaborative Consumption of our Cities (Volume 1) (The Future of Tourism (1))* (Vol. 1). Bristol, United Kingdom: Channel View Publications. <https://doi.org/10.21832/OSKAM6737>
50. Oskam, J., & Boswijk, A. (2016). Airbnb: the future of networked hospitality businesses. *Journal of Tourism Futures*, *2*(1), 22–42. <https://doi.org/10.1108/jtf-11-2015-0048>
51. Oxford University Press (OUP). (2021). key performance indicator. Retrieved 23 June 2021, from [https://www.lexico.com/definition/key\\_performance\\_indicator](https://www.lexico.com/definition/key_performance_indicator)
52. Picascia, S., Romano, A., & Teobaldi, M. (2019, November). *The airification of cities. Making sense of the impact of peer to peer short term letting on urban functions and economy*. <https://doi.org/10.31235/osf.io/vs8w3>
53. Purvis, B., Mao, Y., & Robinson, D. (2018). Three pillars of sustainability: in search of conceptual origins. *Sustainability Science*, *14*(3), 681–695. <https://doi.org/10.1007/s11625-018-0627-5>
54. Purvis, B., Mao, Y., & Robinson, D. (2019). *Three pillars of sustainability: in search of conceptual origins* [Illustration]. Retrieved from <https://link.springer.com/article/10.1007/s11625-018-0627-5>
55. Rahman, T., Mittelhammer, R., & Wandschneider, P. R. (2005a, January). *Measuring the Quality of Life across Countries: A Sensitivity Analysis of Well-being Indices*. Retrieved from [https://www.researchgate.net/publication/23566046\\_Measuring\\_the\\_Quality\\_of\\_Life\\_across\\_Countries\\_A\\_Sensitivity\\_Analysis\\_of\\_Well-being\\_Indices](https://www.researchgate.net/publication/23566046_Measuring_the_Quality_of_Life_across_Countries_A_Sensitivity_Analysis_of_Well-being_Indices)

56. Rahman, T., Mittelhammer, R., & Wandschneider, P. R. (2005b, January). *Measuring the Quality of Life across Countries: A Sensitivity Analysis of Well-being Indices*. Retrieved from [https://www.researchgate.net/publication/23566046\\_Measuring\\_the\\_Quality\\_of\\_Life\\_across\\_Countries\\_A\\_Sensitivity\\_Analysis\\_of\\_Well-being\\_Indices](https://www.researchgate.net/publication/23566046_Measuring_the_Quality_of_Life_across_Countries_A_Sensitivity_Analysis_of_Well-being_Indices)
57. Reinhold, S., & Dolničar, S. (2017). The Sharing Economy. In *Peer-to-peer Accommodation Networks: Pushing the Boundaries* (pp. 15–26). Oxford, United Kingdom: Goodfellow Publisher Limited.
58. Reyes, E. A. (2020, August 31). L.A., Airbnb launch system meant to help enforce rental rules. *Los Angeles Times*. Retrieved from <https://www.latimes.com>
59. Rifkin, J. (2001). *The Age of Access: The New Culture of Hypercapitalism, Where all of Life is a Paid-For Experience*. New York City, New York: TarcherPerigee.
60. Skjelvik, J. M., Erlandsen, A. M., & Haavardsholm, O. (2017). Environmental impacts and potential of the sharing economy. *TemaNord*, 9. <https://doi.org/10.6027/tn2017-554>
61. Spangenberg, J. (2002). Towards indicators for institutional sustainability: lessons from an analysis of Agenda 21. *Ecological Indicators*, 2(1–2), 61–77. [https://doi.org/10.1016/s1470-160x\(02\)00050-x](https://doi.org/10.1016/s1470-160x(02)00050-x)
62. Stulberg, A. (2016, August 24). Airbnb Probably Isn't Driving Rents Up Much, At Least Not Yet. Retrieved 19 February 2021, from <https://fivethirtyeight.com/features/airbnb-probably-isnt-driving-rents-up-much-at-least-not-yet/>
63. Taulli, T. (2020, November 21). How Airbnb Beat The Covid-19 Virus. Retrieved 6 April 2021, from <https://www.forbes.com/sites/tomtaulli/2020/11/21/how-airbnb-beat-the-covid-19-virus/?sh=574cfc572bcf>
64. Temperton, J. (2020, April 22). Is this the end of Airbnb? Retrieved 6 April 2021, from <https://www.wired.co.uk/article/airbnb-coronavirus-losses>
65. Thatcher, A. (2005, March). HFSD definition working paper 19 08 2013. Retrieved 19 May 2021, from [https://www.researchgate.net/publication/273965629\\_HFSD\\_definition\\_working\\_paper\\_19\\_08\\_2013](https://www.researchgate.net/publication/273965629_HFSD_definition_working_paper_19_08_2013)
66. UNEP & UNWTO. (2005). Sustainable development | UNWTO. Retrieved 18 May 2021, from <https://www.unwto.org/sustainable-development>
67. Uysal, M., Sirgy, M. J., Woo, E., & Kim, H. L. (2016). Quality of life (QOL) and well-being research in tourism. *Tourism Management*, 53, 244–261. <https://doi.org/10.1016/j.tourman.2015.07.013>
68. Wachsmuth, D., & Weisler, A. (2018). Airbnb and the rent gap: Gentrification through the sharing economy. *Environment and Planning A: Economy and Space*, 50(6), 1147–1170. <https://doi.org/10.1177/0308518x18778038>
69. Woolf, N. (2017, September 15). Airbnb regulation deal with London and Amsterdam marks dramatic policy shift. *The Guardian*. Retrieved from <https://www.theguardian.com>
70. World Economic Forum. (2016, December). *Understanding the Sharing Econo*. Retrieved from

[http://www3.weforum.org/docs/WEF\\_Understanding\\_the\\_Sharing\\_Economy\\_report\\_2016.pdf](http://www3.weforum.org/docs/WEF_Understanding_the_Sharing_Economy_report_2016.pdf)

71. Yeager, E. P., Boley, B. B., Woosnam, K. M., & Green, G. T. (2019). Modeling Residents' Attitudes toward Short-term Vacation Rentals. *Journal of Travel Research*, 59(6), 955–974. <https://doi.org/10.1177/0047287519870255>
72. Zairi, M. (1994). Benchmarking: The Best Tool for Measuring Competitiveness. *Benchmarking for Quality Management & Technology*, 1(1), 11–24. <https://doi.org/10.1108/14635779410056859>
73. Zervas, G., Proserpio, D., & Byers, J. W. (2017). The Rise of the Sharing Economy: Estimating the Impact of Airbnb on the Hotel Industry. *Journal of Marketing Research*, 54(5), 687–705. <https://doi.org/10.1509/jmr.15.0204>







## **APPENDICES**

## **Appendix 1: Povzetek (Summary in Slovene language)**

Vzpon peer-to-peer (P2P) platform je odprl vrata v svet popotnikom z različnimi finančnimi zmožnostmi. Prebivalci so pridobili možnost spreminjanja svojega premalo izkoriščenega premoženja v denar, popotniki pa poceni nastanitveno storitev, ki jih je hkrati neposredno povezala z lokalno skupnostjo. To je bila – in še vedno je – ideološka vizija P2P platform za oddajanje nastanitev, kot je Airbnb. Danes ima vse skupaj bolj komercialno funkcijo, ki vpliva na stanovanjski trg, socialne strukture in nastanitveno dejavnost. Protesti proti Airbnbju in P2P platformam so v največjih svetovnih mestih, ki se spopadajo z njihovo regulacijo, pogosti. Čeprav gre za razmeroma nove izzive, Airbnb obstaja šele od leta 2008, je bilo na to temo objavljene že kar nekaj literature. Ta opisuje tako pozitivne kot negativne vplive Airbnbja, pogosto z vidika destinacij. Namen tega magistrskega dela je prikazati potencialni negativni vpliv Airbnbja na mestne destinacije na splošno. Cilj je podati pregled obstoječe literature in teorij o omenjenih negativnih vplivih in nato na tej podlagi ustvariti sklop smernic za splošno uporabo. Vprašanje, na katerega raziskava odgovarja, se glasi: "Kako negativni ekonomski, družbeni in okoljski vplivi Airbnbja ter pravni ukrepi, povezani z njim, prizadenejo globalne mestne destinacije?«. Osredotočanje na ekonomsko, družbeno, okoljsko in pravno dimenzijo ne le odgovarja na zastavljeno vprašanje, temveč pogloblja tudi obstoječe znanje o tej temi ter ponuja usmeritve in vir literature za prihodnje raziskovalce in oblikovalce politik.

Ta raziskava k problemu Airbnbja pristopa z globalnega vidika. V ta namen je narejen izbor mestnih destinacij, ki služi kot izhodišče pregleda literature. Destinacije so izbrane na podlagi resnosti negativnih vplivov, števila ponujenih nastanitev in števila pravnih postopkov zoper kratkoročne najeme. Amsterdam, Barcelona, Berlin, Bruselj, Chicago, Firence, Krakov, Los Angeles, München, New York, Pariz, Rim, San Francisco, Singapur, Valencia, Benetke in Dunaj so mesta, uporabljena v pregledu literature. Da bi lahko prikazali negativni vpliv Airbnbja na destinacije, je ključnega pomena določiti referenčni okvir. Model "treh stebrov" ponuja temeljno izhodišče za nadaljnje primerjave. Ta teorija prikazuje zgodovinsko pogojen vpliv dejavnikov na ekonomske, družbene in okoljske dimenzije destinacij. Te tri dimenzije se zato uporabljajo kot negativno prizadeta področja in služijo kot osnovna področja zanimanja za preostali pregled literature. Pravni ukrepi so dodani kot dopolnilna dimenzija, ki zajema pozive k ukrepanju na destinacijah in učinkovitost že sprejetih ukrepov. Ta magistrska naloga kot trajnostno vidi tako turistično panogo, ki upošteva svoj vpliv na gospodarstvo, družbo, v kateri deluje, in okolje, na katerega vpliva; z namenom minimaliziranja vseh negativnih vplivov na ekonomske, socialne in naravne vire. Ekonomska dimenzija zajema vplive na stanovanjski trg, hotelski sektor in zaposlovanje v turizmu. Merimo jo skozi prisotnost ponujenih nastanitev, nelojalne konkurence in vrste denarnega toka. Na družbeni ravni se negativen vpliv na kakovost življenja lahko spremlja skozi breme družbe, spremembe v skupnosti in naraščanje pritožb s strani le-te. Zdi se, da je vpliv na okolje bolj pozitiven. Vedno ga je treba primerjati s podobno enoto, kaže pa se skozi uporabo nepremičnin, okolju prijaznih pobud, zamenjave

hotelov in vpliva turistov-povratnikov. Obstoječi pravni postopki, ki trenutno tečejo na destinacijah, so razdeljeni na laissez-faire (brez predpisov), popolne prepovedi in posebne predpise. Posebni predpisi so večinoma predpisi o davčnih dajatvah, zaščiti strank in zaščiti rezidentov.

Pandemija COVID-19 vpliva tudi na Airbnb. Ko so se leta 2020 mednarodni prihodi zmanjšali za 75%, se je svetovni turizem za trenutek ustavil. Trg sicer okreva, a bo učinek viden šele v prihodnjih letih. Obstajata dva možna scenarija za okrevanje in prihodnost Airbnbja. Prvi scenarij predvideva, da se bodo lastniki poslovnih nepremičnin zaradi večje stabilnosti vrnili k dolgoročnemu oddajanju, saj le-ta zagotavlja stabilnejši vir dohodka v občutljivem turističnem sektorju. Realnejši scenarij je, da se bo število prenočitev vrnilo skoraj na nivo pred COVID-19, število ponujenih nastanitev dolgoročno stagniralo, več kratkoročnih najemov pa postalo dolgoročnih šele po učinkoviti uvedbi predpisov.

Cilj te raziskave je bil razviti model za merjenje negativnega vpliva Airbnbja na mestne destinacije. Za začetek razvoja tega modela je bil – kot v vsaki raziskavi – opravljen podroben pregled literature. Med tem so bili opredeljeni glavni kazalniki, ki delujejo kot podlaga za preostanek raziskave. Kazalniki so del enega od stebrov modela "treh stebrov". Za izboljšanje razvitega modela je bil drugi del raziskave opravljen po metodi Delfi. Ta metoda uporablja znanje in mnenja strokovnjakov o različnih temah v dveh krogih povratnih informacij. V prvem krogu so strokovnjaki podali svoja mnenja glede opredeljenih kazalnikov in presojali, ali so ti merljivi, uporabni in popolni ali pa bi jih treba izboljšati. V drugem krogu so se strokovnjaki na kratko opredelili glede izboljšane različice modela na podlagi predhodno podanih mnenj. Ta metoda je bila uporabljena, ker omogoča razpravo o temi, o kateri ni soglasja; na primer o negativnih vplivih Airbnbja na mestne destinacije. V prvem krogu je sodelovalo osem strokovnjakov, v drugem pa pet. Strokovnjaki so bili izbrani glede na njihovo povezanost s tematiko in poglobljeno znanje o njej.

Model, ki je bil predstavljen strokovnjakom, je obsegal 55 kazalnikov, med postopkom odprave pa je to število padlo na 40. Izpadli kazalniki so bili zaznani kot nemerljivi, prezapleteni ali namišljeni ali pa so se preprosto zdeli nepomembni za raziskavo. Na podlagi povratnih informacij strokovnjakov so bili kazalniki izboljšani in včasih kombinirani, kar je ustvarilo merilno orodje, postavljeno v skladen časovni in geografski okvir. Glavni rezultati so pokazali potrebo po odpravi kompleksnih kazalnikov, temelječih bolj na možni vzročnosti kot na resnični korelaciji. Strokovnjaki so izpostavili pomen enostavnosti in merljivosti kazalnikov ter opozorili, da je treba vse pridobljene vrednosti iz kazalnikov prikazati v ustrezni perspektivi glede na destinacije. Kazalnike je bilo treba izboljšati na podlagi delitve na turističen in neturističen vpliv ter resnejših zunanjih dejavnikov, ki vplivajo na rezultat posameznega kazalnika. Strokovnjaki so dosegli soglasje o tem, da se raziskava posameznih dimenzij sicer loteva na pravi način, vendar so potrebne še podrobne raziskave o osnovnih zunanjih dejavnikih, ki vplivajo na te dimenzije. Po mnenju strokovnjakov bi se morali nekateri kazalniki osredotočiti na celoten P2P nastanitveni sektor in ne zgolj na Airbnb, zlasti ko je govora o pritisku na družbo. Opozorili so tudi na pomen zaznavanja tega modela

z vidika vseh dogodkov na destinaciji, saj imajo številni zunanji dejavniki enak ali večji vpliv na opredeljene kazalnike. Končni izdelek te raziskave je Model za merjenje negativnega vpliva Airbnbja, sestavljen iz 40 kazalnikov, razdeljenih na ekonomsko, socialno, okoljsko in pravno dimenzijo.

Zaključek te magistrske naloge je, da je negativni vpliv Airbnbja na mestne destinacije kompleksen, a vpliva na vse štiri dimenzije posamezne destinacije. Prisotnost Airbnbja povečuje vrednost nepremičnin, viša cene dolgoročnega najema ter vpliva na razpoložljivost stanovanj za lokalne prebivalce. Vse manjša razpoložljivost in cenovna dostopnost neposredno vplivata na socialno strukturo sosesk. Zdi se, da vse več P2P prenočišč spreminja strukturo prebivalstva in počasi ruši občutek povezanosti prebivalcev s svojo skupnostjo in mestom. To neuravnoteženo stanje med koristmi in bremenimi poslabša kakovost življenja lokalnega prebivalstva in posledično vodi v uradne pritožbe in proteste. Pritisk na družbo lahko najboljše prikažejo dejavniki, kot so prenočitve na prebivalca v soseski ali število prenočišč na prebivalca v soseski. Na področju nastanitvene dejavnosti je Airbnb disruptiven in predvsem hoteli v srednjem/nizjem razredu ga doživljajo kot hudo konkurenco. Airbnb in podobne P2P storitve negativno vplivajo na povprečno dnevno ceno, zasedenost in dohodek na razpoložljivo sobo. Okoljska dimenzija kaže, da je vpliv mogoče prikazati le v primerjavi s podobnimi nastanitvami. Zato je potrebna podrobna analiza življenjskega cikla, da bi lahko izmerili resnični negativni vpliv Airbnbja na okolje. Model tukaj predstavlja osnovni sklop kazalnikov, ki opredeljujejo namen posesti in rabo osnovnih naravnih virov v primerjavi s podobnimi vrstami nastanitve. Kar se tiče pravne dimenzije, na destinacijah, ki se spopadajo z Airbnbjem, obstaja vrzel med implementacijo in izvrševanjem ukrepov. Čeprav model ponuja najboljše prakse za oblikovalce pravnih ukrepov, prihodnost leži na zunanjih ponudnikih podatkov, specifičnem ciljanju na gostitelje in samoregulaciji ter odgovornosti Airbnbja.

Glavna omejitev rezultatov je, da so vsi negativni vplivi del večjega temeljnega razvoja na ravni destinacij. Zaradi zapletenosti in omejenosti s časom in viri v raziskavi tudi ni bila upoštevana teža zunanjih dejavnikov. Vsako dimenzijo bi lahko raziskali ločeno, s čimer bi poglobili znanje o osnovnih zunanjih dejavnikih, ki jih pogosto pripišemo P2P nastanitvenim platformam. Splošni značaj rezultatov najboljše razložimo z globalnim pristopom k raziskavi. Ta prinaša določene omejitve in predlog je, da se negativni vpliv določi na ravni destinacije. Kljub temu pa to magistrsko delo ponuja odlično izhodišče za nadaljnje raziskave pri merjenju negativnega vpliva Airbnbja na mestne destinacije in specifične dimenzije.

## Appendix 2: Second draft of the model

This appendix shows the improved and adjusted version of the model after the first round of research based on the detailed feedback and values given to the indicators by the panel of experts. The model shown below is the later in the research, after the second general round of research, adjusted into the final model presented in chapter five Research Results, sub-chapter 5.3 Final model.

Table 14: Basic indicators, second draft

Indicator	Description indicator
Development of arrivals at selected city destination on yearly basis comparing the period 2000-2008 and 2008-presenton.	Development of tourism arrivals at the destination indicating the general increase/decrease of tourism through time indicating both data development before and since the founding of Airbnb.
Total number of arrivals per capita at selected neighbourhood of the selected city destination on yearly basis comparing the period 2000-2008 and 2008-present.	Development of tourism arrivals per capita in a selected, touristic neighbourhood at the selected destination since 2008 or as far back in time as data provides.
Total number of overnights spent at selected city destination ia peer-to-peer accommodations on yearly basis comparing the period 2000-2008 and 2008-present.	Development of overnights spent at the destination indicating the general increase/decrease of tourism since 2008 or as far back in time as data provides.
Total number of overnights spent per capita at selected neighbourhood of the selected city destination via peer-to-peer accommodations on yearly basis comparing the period 2000-2008 and 2008-present.	Development of overnights spent per capita in a selected, touristic neighbourhood at the selected destination since 2008 or as far back in time as data provides.
The total amount of peer-to-peer listings at selected city destination registered via official institutions or found by external sources since 2008 on yearly basis.	The growth development of Airbnb listings (entire houses, single rooms and shared rooms) registered via official institutions or external sources like AirDNA since 2008 or as far back in time as data provides.
Total number of arrivals at selected city destination combined with number of overnights spent at selected city destination during the COVID-19 pandemic compared to similar pre-COVID data for 2020 and 2021 separately.	Indicating the impact of the COVID-19 pandemic on the number of arrivals and overnights spent combined, measuring both international and domestic tourism. This data should be measured separately for 2020 and 2021 to show the presence of slow recovery or not.  <i>*this data is only relevant in the years following the global pandemic until the point the tourism industry is “recovered”</i>

Source: own work.

Table 15: Economic indicators, second draft

Indicator	Description indicator
<p>Change in property value in touristic neighbourhoods on yearly basis comparing the period 2000-2008 and 2008-present.</p> <p>+ compared to basic indicator 5 "Development of Airbnb listings"</p> <p><i>*take for this indicator always external developments into account affecting the housing market</i></p>	<p>Increasing interest in real estate in areas popular among tourist drives up the value of the property in this area. Data collected via national/regional databases.</p>
<p>Change in rent price for long-term rentals in touristic neighbourhoods on yearly basis comparing the period 2000-2008 and 2008-present.</p> <p>+ compared to basic indicator 5 "Development of Airbnb listings"</p> <p><i>*take for this indicator always external developments into account affecting the housing market</i></p>	<p>Increasing interest in real estate and short-term rental because of tourism increase makes it more interesting for owner to switch to STR instead of long-term rental, driving up the prices of long-term rental. Data collected via national/regional databases.</p>
<p>Comparing the development of long-term rent availability in touristic neighbourhoods on yearly basis comparing the period 2000-2008 and 2008-present.</p> <p>+ compared to basic indicator 5 "Development of Airbnb listings"</p> <p><i>*take for this indicator always external developments into account affecting the housing market</i></p>	<p>Switch from long-term rental to STR because of economical profit creates a shortage on the long-term rental market. Property owners tend to change the purpose from long-term rental to STR for quick economic gain. By comparing the trend of long-term rent availability in the period before Airbnb was launched to the period after Airbnb was launched some connection might show. Data collected via national/regional databases.</p>
<p>The total revenue made by hosts owning more than two listing in € compared to total revenue made by Airbnb at a city destination.</p>	<p>Were Airbnb was intended to provide citizens with the opportunity to create revenue from underused assets, the platform is now often used by multilistings for only economical purpose. The difference between total revenue made by Airbnb hosts and the revenue made by hosts owning more than 2 listings shows how much money ends up at commercial Airbnb hosts.</p>

>>(table continues)<<

>>(continued)<<

<p>Change of employment rate in the low/middle-sized hotel sector compared to change in employment rate total tourism industry on yearly basis comparing the period 2000-2008 and 2008-present.</p>	<p>The substitution of hotels by Airbnb is said to have a negative effect on the employment rate of tourism and mostly in the low/middle-sized hotel sector. By setting off the employment rate of middle/low segment hotels to the employment rate of the total tourism industry it shows if these hotels are following general developments or is held back by the presence of Airbnb.</p>
<p>Substitution rate between Airbnb and middle/low segment hotels through increase/decrease patterns of both parties on yearly base.</p>	<p>Substitution rate of Airbnb for middle/low segment hotels measured through following the development of the increase in middle/low segment hotels and the amount of Airbnb listings over time.</p>
<p>Difference between the amount of Airbnb listing during high season/peak periods in tourism seasons and during low season.</p>	<p>Airbnb listings have the freedom to remove and add themselves from the website whenever they want. The difference between the presence of Airbnb during high season and low season show the year-round presence of the company and the competition power Airbnb has during high demand.</p>
<p>Change of revenue per available room in percentage in middle/low segment hotels.</p>	<p>Hotels performance in the low/middle-sized sector can be negatively influenced by the presence of Airbnb while the platform does not have to follow equal restrictions. Revenue per available room can directly be impacted.</p>
<p>Change of occupancy rate in percentage in middle/low segment hotels.</p>	<p>Hotels performance in the low/middle-sized sector can be negatively influenced by the presence of Airbnb while the platform does not have to follow equal restrictions. Occupancy rate can be directly impacted.</p>
<p>Change of average daily rate in percentage in middle/low segment hotels.</p>	<p>Hotels performance in the low/middle segment can be negatively influenced by the presence of Airbnb while the platform does not have to follow equal restrictions. Average daily rate can be directly impacted.</p>

Source: own work.



Table 16: Social indicators, second draft

<b>Indicator</b>	<b>Description indicator</b>
Number of Airbnb listing per capita of the destination measured by touristic neighbourhoods.	Measuring the burden on society through the number of Airbnb listings per capita in a touristic neighbourhood of a destination.
Number of overnights spent in an Airbnb per capita of touristic neighbourhoods of the destination.	To specifically measure the burden on society the number of overnights at an Airbnb listing per capita of a touristic neighbourhood of a destination provides a measurable indicator.
Change in number of listings in neighbourhoods at the selected city destination.	To measure the development of the burden on local societies the increase/decrease of Airbnb presence provides a social indicator.
Change in amount of population in neighbourhoods based on the difference between new inhabitants and leaving inhabitants.	Increasing rent prices and overused public services drive out local inhabitants and change the character of neighbourhoods.
Development of populations' cultural diversity in neighbourhoods based on cultural background new inhabitants compared to existing populations.	Increasing rent prices and overused public services drive out local inhabitants and change the multicultural character of neighbourhoods' through gentrification, neighbourhoods change character because of affordability.
Amount of officially registered complaints on negative influence of peer-to-peer platforms and mass tourism.	Complaints towards the overuse of public spaces, public transportation and services, the presence of accommodation listings, noise, pollution and damage complaints and complaints concerning use of public areas in private properties such as staircases etc.
Number of protests against mass tourism, Airbnb or P2P accommodation sector mentioned by news channels.	Organised protests against the presence of mass tourism, Airbnb or P2P accommodation sector picked up by the news channels indicate how undesirable peer-to-peer accommodation providers like Airbnb are in the eyes of the local population/protesters.

Source: own work.

Table 17: Environmental indicators, second draft

Indicator	Description indicator
Percentage of Airbnb listings used for commercial tourism purpose only.	All emission, pollution and usage of natural resources from properties used for commercial tourism purpose only (no residency purpose) negatively influence the environment with no other aim than economical gain. If used as residency for local inhabitants this property would also use natural resources but for purpose of living rather than leisure. This indicator merely shows the percentage of listings where all environmental impact is tourism related.
The difference in energy use between categorised Airbnb listings and comparable accommodation types.	Airbnb is said to be substituting the traditional accommodation sector. Comparing energy use by category of Airbnb listing (entire house, apartment, studio, etc.) based on a Life Cycle Analysis provides an insight in environmentally friendly competitiveness between Airbnb and the traditional accommodation industry.
The difference in water consumption between categorised Airbnb listings and comparable accommodation types.	Airbnb is said to be substituting the traditional accommodation sector. Comparing water consumption by category of Airbnb listing (entire house, apartment, studio, etc.) based on a Life Cycle Analysis provides an insight in environmentally friendly competitiveness between Airbnb and the traditional accommodation industry.
The total difference in consumption of natural resources between Airbnb listings and other accommodation types conducted through an LCA.	Airbnb is said to be substituting the traditional accommodation sector. Comparing the total consumption of all-natural resources by category of Airbnb listing (entire house, apartment, studio, etc.) based on a Life Cycle Analysis provides an insight in environmentally friendly competitiveness between Airbnb and the traditional accommodation industry.
Environmental consciousness of Airbnb and hosts measured through initiatives on company and property level.	Airbnb is following the global trends on sustainability and promoting its hosts to be as environmentally friendly as possible, so it seems. This indicator shows the contribution Airbnb, and its hosts have to this global trend by looking at initiatives and campaigns promoting a sustainable accommodation environment. From Airbnb point of view this results in campaigns and promotions done towards guests and hosts and from host point of view sustainable appliances are a measurement tool on their contribution to the cause.

Source: own work.

Table 18: General legal actions indicators, second draft

Indicator	Description indicator	Details enforced regulations
Description of existing regulations towards peer-to-peer accommodation providers and/or Airbnb.	Total amount of regulations in the categories laissez-faire, specific regulations or a full ban of Airbnb.	Laissez-faire: <ul style="list-style-type: none"> <li>• .....</li> </ul> Specific regulations: <ul style="list-style-type: none"> <li>• .....</li> </ul> Full ban: <ul style="list-style-type: none"> <li>• .....</li> </ul>

Source: own work.

Table 19: Taxation indicators, second draft

Indicator	Description indicator	Details enforced regulations
Description of regulation taken towards taxing Airbnb hosts and Airbnb in general and/or peer-to-peer accommodation providers in general.	Regulations considering taxation towards Airbnb hosts, Airbnb in general and/or peer-to-peer accommodation providers in general opposed and enforced by the (local) government of the city destination.	> ..... > ..... > .....

Source: own work.

Table 20: Resident protection indicators, second draft

Indicator	Description indicator	Details enforced regulations
Description of regulations limiting in maximum number of rental days.	Regulations on the maximum amount of annual rental days for defined per type of accommodation (entire house, apartment, floor, studio etc.).	> ..... > ..... > .....
Description of regulations concerning a limitation on visitor capacity per listing.	Regulations concerning the maximum number of visitors per Airbnb listing present at the same time, as attempt to lower number of arrivals and burden on society.	> ..... > ..... > .....

>>(table continues)<<

>>(continued)<<

Description of regulations to determine the purpose and use of property.	Regulations stating the purpose of properties and preventing properties build as housing for citizens to be transformed into STR holiday accommodations.	> ..... > ..... > .....
Description of regulations concerning the division between private use and commercial use of address of residency.	Regulations deciding on surfaces of primary addresses of residence should be divided between living and STR and regulations on minimum presence of owner on adress of residency.	> ..... > ..... > .....
Description of regulations defining maximum number of properties per owner.	All regulations preventing owners to have large amount of Airbnb properties under their name, known as multilistings.	> ..... > ..... > .....
Description of regulations prohibiting presence of Airbnb in certain areas.	Concerning regulations prohibiting the presence of Airbnb listings in certain areas or neighbourhoods.	> ..... > ..... > .....

Source: own work.

Table 21: Consumer protection indicators, second draft

<b>Indicator</b>	<b>Description indicator</b>	<b>Details enforced regulations</b>
Description of existing regulations on consumer protection.	Regulations concerning the obligation of hosts to register their listing(s) at the responsible governmental institutions and any form of safety regulations or restrictions on Airbnb hosts and properties.	> ..... > ..... > .....

Source: own work.

Table 22: Future regulation method indicators, second draft

Indicator	Description indicator	Details enforced regulations
Description of self-regulating agreements with Airbnb.	Regulations allowing Airbnb to collect and pay tax from their hosts in order of the (local) government and the removal of illegal listings from their website.	<ul style="list-style-type: none"> <li>&gt; .....</li> <li>&gt; .....</li> <li>&gt; .....</li> </ul>
Description of regulations targeting individual hosts.	Regulations targeting the individual hosts instead of Airbnb as a company, through fines and bans on illegal listing, exceeding maximum number of days, renting out entire houses etc.	<ul style="list-style-type: none"> <li>&gt; .....</li> <li>&gt; .....</li> <li>&gt; .....</li> </ul>
Description enforcement tools used to indicate the presence of Airbnb.	The description and presence of tools to map the presence of Airbnb listings through either governmental platforms or hired private sources such as AirDNA.	<ul style="list-style-type: none"> <li>&gt; .....</li> <li>&gt; .....</li> <li>&gt; .....</li> </ul>

Source: own work.

### Appendix 3: Research tool

Appendix 3 provides the tools used for conducting the rounds of questionnaire. Below the fields with text provided to the experts as instruction is shown in combination with the valuing syst and comment section. These fields were presented next to the first version of the model mentioned in chapter four Methodology, sub-chapter 4.3 First draft of the model.

This was the message presented firstly to the panel of experts in a excel document:

Dear expert,

In the first round of participation you are asked to provide your opinion on the found indicators of this benchmark model. Which indicators are useful, which are not relevant in your opinion and are there indicators missing in the model. A total of 55 indicators are created pointing out economical, social and environmental impact and mapping the legal reactions of destinations on the increasing negative presence of Airbnb. The basic tourism performance indicators are added because they seem essential for the comparison of other indicators and to be able to explain certain influences. The indicators are either divided by topic of interest or by certain themes they have impact on, based on literature and the researchers personal view.

The aim is to narrow down the number of indicators into an easy usable benchmark model, therefore feel free to add any comments you have on how suitable the format is and on the applicability of the indicators.

I want to thank you on forehand for your participation and hope you will also be of guidance during the second, confirming and ranking, round of feedback.

Kind regards,

Jelle Baas

This message was followed by the instructions described in text and visually explained by an exemplary table:

	<b>Measurable?</b>	<b>Useful?</b>	<b>Complete?</b>	<b>Improvement?</b>	<b>Additional comment:</b>
<i>Indic. 1.</i>	X	X	X		-
<i>Indic. 2.</i>	X	X		X	The direct link with competition is missing
<i>Indic. 3.</i>	X			X	Drop this indicator

## Instructions

As part of the Delphi method, the panel of experts is asked to participate in two rounds of research. The first round you are asked to share your opinion on the derived indicators based on:

1. Measurability of the indicator
2. Usefulness of the indicator
3. Completeness of the indicator (is this the right version of the indicator or would you adjust anything)
4. Improvement

When an indicator is measurable, useful and/or complete please mark the column with an X, when improvement is needed please mark that column with an X. If one of the columns is not marked with the X I want to ask you to add a brief description on how to improve the indicator in the additional comment section. If the indicator needs no alteration no comment is needed.

If, in your opinion, indicators are missing or unnecessary to add please mention this in the general comment section below each evaluation table. Feel free to add any comment in the document wherever necessary.

At each set of indicators at each dimension (basic performance, economic, social, environment and legal actions) such a table as above was presented supplemented with a text area to provide any additional comments. Below an example of this table is given plus the an example of a text area coming from the basic indicators dimension.

**Please provide your opinion in the part below**

<b>Measurable?</b>	<b>Useful?</b>	<b>Complete?</b>	<b>Improvement?</b>	<b>Additional comment:</b>

**General comment on basic indicators:**

The second round of research has been, as mentioned before, conducted in a brief and general way. The experts were asked to provide their general opinion on each set of indicators per dimension. No value was given to the indicators in this round, merely an agreement or disagreement with the set indicators was requested. The tool used for this was again an excel sheet with instructions, the second draft of the model and text areas where feedback could have been provided. Below the instructions given to the experts is shown in combination with another example of a used text area.

Dear expert,

In this second round of participation you are asked to provide your general opinion on how your feedback has been implemented and the general quality of the finalised set of indicators. The total of 55 indicators have been narrowed down to 38, a decrease as aimed for.

The aim is to finalise the existing indicators and at the end combine them into a set of indicators on potential negative impact of Airbnb on city destinations' economic, social and environmental structures and the regulatory developments.

As mentioned in the email correspondence, the previous round of feedback provided great insight in the complexity of this topic and made the researcher decide to simplify this model into a set of potential negative impacts instead of a measuring tool based on hard data. One of the conclusions is therefore that each impacted field (economic, social, environmental) is in need of an individual research, more destination specific, to be able to take all underlying external developments into account. With this in mind I ask you to provide a second look at this document and the created indicators.

I want to thank you on forehand for your second time of participation round of feedback.

Kind regards,

Jelle Baas

### **Instructions**

As part of the Delphi method, the panel of experts is asked to participate in two rounds of research. During this second round some quick feedback is sufficient for finalising the set of indicators. The feedback can be both on the quality of the indicators or if the previous given feedback is used properly in your eyes or not.

**General comment on improved Social indicators:**



#### Appendix 4: Expert selection

Below the experts that participated are presented. For the matter of privacy no names are given, only the country of origin and the profession of the experts is revealed. Next to that the table shows the level of participation. During the first round of the Delphi Method 8 experts participated providing their opinion on the created draft model. During the second round this number dropped to 5 (62,5% response rate in the second round).

Expert	Country of origin	Profession	Reply round 1	Reply round 2
1	The Netherlands	Academic/Professor	Yes	No
2	Australia	Academic/Professor	Yes	Yes
3	Slovenia	Researcher/Analyst	Yes	Yes
4	United States of America	Academic/Professor	Yes	Yes
5	Slovenia	Academic/Professor	Yes	No
6	Italy	Researcher/Academic	Yes	Yes
7	The Netherlands	Academic/Professor	Yes	No
8	United States of America	Academic/Professor	Yes	Yes