AN EMPIRICAL ANALYSIS ON INTERNATIONAL TOURIST FLOW AND HOTEL ROOM PRICES: THE CASE OF MALDIVES

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Abstract

Since the 1950s, international tourism has played a major role in economic development in the developing world in general and small island developing states (SIDS) in particular. The Maldives, for example, has transformed itself from sleepy fishing villages into a luxury destination for rich tourists and has achieved the status of upper-middle-income country.

This study extends the scope of empirical analysis of international tourism considerably by covering not only the demand side (e.g. tourist income) but also the supply side factors (e.g. security and environmental amenities). First, using panel data, the study examines the relationship between supply-side factors and tourist inflow from cross-country perspective as well as for the single country case of the Maldives. A major finding is that international tourist inflow is not very sensitive to price compared with tourist income and security issues.

Second, primary data from a survey of guesthouses in the Maldives is used to examine the extent of congestion, the relationship between service quality and prices and the problem of free-riding on others' efforts to preserve the natural environment. Its findings, especially the ones about the externality problems and the impact of security on tourist arrivals, are interesting and offer some policy implications.

Dedication

To my family, especially “the favorite girls,” without their support I would not have been able to complete this study

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Summary

International tourism has played an important role in economic development in the developing world in general and small island developing states(SIDS) in particular. In Maldives, for example, the rapid economic growth at 8.4 percent per year since 1970 has been driven mainly by its rapidly expanding and upgrading oftourism industry, which has transformed sleepy fishing villages into a luxury destination for rich tourists.

A large number of existing studies focus on demand-side or push factors, such as income levels of originating countries, as major determinants of how many people go traveling. By contrast, only a few rigorous studies have been conducted to explore the roles of supply-side or pull factors in attracting tourists to destination countries. An example of supply-side factors is the level of security in their potential destination countries, which tourists care. Another example is natural landscape, historical buildings, and other amenities that attract tourists. In many cases, access to amenities is open, which creates externality problems, such as congestion and free-riding in maintenance or preserving efforts. The lack of attention to the supply-side factors of tourism amounts to the lack of policy implications for these policy issues and for the strategy of economic development.

This study is an attempt at filling this gap by using a set of cross-country panel data available from the World Tourism Organization and also a set of primary survey data of guesthouse collected by myself in the Maldives. With the panel of many countries, the study examines the relationship between supply-side factors and tourist flow from cross-country perspective as well as for the single country case of the Maldives. A major finding is that international inbound tourism is not very sensitive to

price compared with tourist income and security issues. The latter are found to be closely associated with tourist flow. Another major finding from the panel data analysis is that infrastructure investment and transport cost reductions are closely associated with international tourist flow to low-income countries.

To reinforce the above findings, a more detailed analysis is conducted by focusing on the tourist flow into Maldives. In this analysis, special attention is paid to the changing relative prices of travels to this and other destinations as well as the declining security level of Maldives. The results suggest that the stagnation in the number of tourist arrivals from Europe since 2004 is likely to be ascribed to the adverse economic conditions in EU and the declining security indicators in the Maldives.

With the guesthouse survey data from Maldives, this dissertation addresses the issues of externality problems that have been emerging due to the recent proliferation of guesthouse. When one considers these problems, Maldives deserves a special attention because it has had a unique policy called One Resort on One Island (OROI), which banned hotel business in inhabited islands and instead allowed each resort firm to monopolize one of thenumerous tiny coral islands. Unlike many other goods and services, international tourism is consumed by foreigners and, hence, consumer surplus is taken away from the destination country. If the demand is inelastic with respect to price, as this dissertation actually finds, monopoly pricing may be better from the national (as opposed to global) welfare point of view than marginal-cost pricing. Moreover, amonopoly in each resort island internalizes externalities.

Recently, however, the OROI policy has been partly amended so that not just rich resort firms but small firms are now allowed to operate hotel business called guesthouses on inhabited islands as a result of democratization. Naturally, the question

arises as to what the consequences of the policy change are. The survey data are used to examine the extent of congestion, incentives for preservation, the relationship between service quality and human (or managerial) resource development, and the relationship between service quality and prices, and so on.

Compared with the existing empirical studies of international tourism, this study extends the scope of analysis considerably to cover not only the demand side but also the supply side. Although it has some limitations, its findings, especially those about the externality problems and the impact of security on tourist arrivals, are interesting and offer some policy implications.

Chapter 1 : Introduction

One of the notable trends in the post-1950 has been the rising importance of international tourism activities. Tourist arrivals increased from 25 million globally in 1950 to 1.133 billion in 2014 (World Tourism Organization [UNWTO] *Tourism Highlights, 2015 Edition*, 2015). UNWTO also reports that global tourism expenditure reached a record amount of USD 1.2 trillion, making the tourism activities a substantial share of total exports. This spectacular growth has attracted the attention of researchers to international tourism. A large number of the empirical papers investigating growth factors have been published in journals that specialize in tourism studies. [1]

Most of the existing studies look at only demand-side factors, such as tourist income and exchange rate(e.g., Dogru, Sirakaya-turk, & Crouch, 2017; Eilat & Einav, 2004).[2]Until recently,only a few empirical studies have been conducted to explore what supply-side factors attract or repel tourists to particular destination countries. [3]As a result, this literature has had few policy implications as to what the national or local governments of destination countries can, should, or should not do for promoting their tourism industries, what the consequences of tourism on environment preservation are, and other welfare issues.

The purpose of this study is to contribute to filling this gap. More concretely, it aims to examine the link between supply-side factors and international tourist flow andhotel room prices with the main objective of analyzing three aspects: destination

[1] Notable examples are Annals of Tourism Research, Tourism Management, Journal of Travel Research and Tourism Economics.

[2] For reviews of studies (see Sinclair, 1998; Song, Dwyer, Li, & Cao, 2012; Witt & Witt, 1995).

[3]Demand-side factors, in this study refers to tourist's own decision to travel that includes economic (e.g. income) and psychological motives (e.g. seek new experience). Supply-side factors, refers to tourist motives aroused by destination attributes (e.g. beach quality) or perceptions about the destination such as security (see Crompton, 1979; Stabler, Papatheodorou, & Sinclair, 2010c).

specific characteristics (e.g. price, infrastructure and security indicators), environment characteristics (e.g. beach quality) and hotel level characteristics (e.g. service quality).These supply-side factors deserve more attention. In many cases, access to tourism products (e.g. historical and cultural sites or beaches and reef) is free. Some of them have a high degree open access (i.e. characteristic of public goods). It is little wonder that many sight-seeing destinations are congested and that many tourist service providers face free-rider problems, such as a failure to make sufficient efforts to maintain or improve the quality of amenities. Of course, demand-side factors which depend on economic conditions in tourist originating countries (TOC) are also important. For the tourism industry in destination countries, for example, responding to changing market conditions is an issue of critical importance(Sinclair, 1998). Nevertheless, both demand-side and supply-side factors should be considered in a more balanced manner than in the existing literature.

An important reason why the supply-side is missing in the literature is that examining the supply-side has been hampered by the availability of quality data(Song, Dwyer, Li, & Cao, 2012). The present study addresses this problem by using both secondary data from UNWTO as well as primary data collected through online and a survey of hotels in the Maldives. [4]

The Maldives deserves a special attention of those who are interested in issues of international tourism. It is a small island country in South Asia. The economy of this country is highly dependent on international tourism. Moreover, history of tourism

[4] From November 1-7, 2015, I conducted preliminary interviews with industry experts and policymakers in the Maldives. The hotel survey was carried out during August – September 2016. More details about the primary data are discussed in Chapter 4, and pictures of islands visited are available from www.izuct.com.

development in this country offers insights into the roles of supply-side factors. The history is as short as just six decades, but it is unique. Its tourism model was free from free-rider problems because of its unique industrial structure until recently, but the industrial structure has rapidly been changing in recent years. In addition, the political stability has been declining. The special industrial structure and the recent changes make the case of the Maldives interesting.

The rest of the chapter is organized as follows.I conclude this introduction with a review of several facts that motivate the research. Section 2 describes the methodologies, while Section 3 presents the main findings of the study. Finally, Section 4 gives an overview of the structure of the study.

1.1. Purpose of the Study: Motivation

1.1.1. Tourism as an engine of economic development

The rapid growth of international trade in tourism services raises the question: *Can tourism be an engine of economic development?* The commonly accepted strands of literature advocates for economic development (industrialization) to be achieved through promotion of labour-intensive manufacturing sector (tradable goods) in developing countries (Hayami & Godo, 2005; Krugman, 1979; Otsuka & Sonobe, 2011). They argue that most labor-intensive services sectors (e.g. hotel and restaurant services) are considered non-tradable and assumed not appropriate for unskilled labor-abundant economies.

However, in the presence of international tourism, many service sectors can become tradable. For example, we can think of tourism as an indirect method of a service trade. Instead of producing a good for itself and exporting, foreign customers

visit the country to consume the desired goods and services. Indeed, the UNWTO defines international tourism as an export industry because they provide services to foreign visitors and draws spending from abroad.

Recent data from UNWTO and World Bank's World Development Indicators (WDI, 2014) highlights the tourism sector's contribution to the national economies. Interestingly, as Figure 1.1 shows, even some OECD countries (Greece, Portugal, Turkey, Spain, New Zealand, and Australia) make 11 to 21 percent of export earnings from international tourists. Table 1.1 shows a summary of top tourist destinations in absolute and relative terms, and the share of tourism receipts in total exports of goods and services. Available data suggests, on average, the share of tourism receipts stands at 14.8% of total exports, with most of the Island nations showing tourism contributing more than 20 percent.

Indeed, reviews by Sinclair (1998) and Stabler, Papatheodorou, and Sinclair (2010a)discussa large body of work confirming positive impact of tourism on economic growth. They present evidence of tourism sector linkages with other sectors of the economy, creating jobs and generating foreign currency earnings for the government. With regards to island economies, Durbarry (2004) and Kim, Chen, and Jang (2006) claims tourism has promoted growth for the case of Mauritius and Taiwan respectively. Likewise, using panel data analysis of 19 island economies, Seetanah (2011)argues that tourism significantly contributes to the economic growth of island economies. [5] However, the question of economic contribution is not entirely settled. For example,

[5] Refer to Pratt (2015), for review of economic impact of tourism in small island states.

Milne (1992) finds none of the five SouthPacific microstates islands rely heavily on tourism.

Nonetheless, according toUNWTO (2012), tourism has become the main economic activity for many SIDS, creating much-needed job opportunities and bringing in necessary income and foreign exchange earnings. In the case of Maldives, for example, tourism receipts reached a record amount of $ 2.645 billion in 2014, making the tourism activities more than 76% of the total exports of the Maldives (Tourism Year Book [TYB], 2015). Available data also show higher volumes of tourist arrivals appear to be associated with higher measures of Human Development Index (HDI), particularly literacy and health, for most of the SIDS (UNWTO, 2004; World Tourism Organization, 2012). Further, the tourism industry has become part of the 2030 Agenda for Sustainable Development, and it is included as targets in Goals 8, 12 and 14 of the Sustainable Development Goals (UNWTO, 2015).

Given the magnitude of tourism arrivals and the impact of the industry on the national economy, especially to SIDS, it would only be natural to investigate the factors relevant to tourism demand, which may have significant implications to policy-making in tourism-dependent nations. As such, citing a number of earlier research,Jensen and Zhang (2013) and Zhang and Jensen (2007) claim that international tourism lies within the scope of trade flows, thus, existing trade theories can be extensively applied to tourism flow. They summarize, for example:

i. *Price competition among tourist destinations as reflections of the difference in destinations' productive efficiency is linked to the Ricardian theory of comparative advantage.*

ii. *Countries with specific endowments (e.g. sun, sea, sand) may have acomparativeadvantage as highlighted by Heckscher-Ohlin model.*

iii. *Trends such as international hotel chains, internet marketing, and tourism clusters can account for more recent growth theories related to ownership advantages, innovation patterns, and agglomeration economies.*

Consequently, a vast majority of the empirical papers are availabe that estimates the determinants of international tourism. Most of these studies, however, use small cross-section datasets and Ordinary Least Squares (OLS) techniques, to report tourist income, prices and exchange rate as the major determinants of tourism (Dogru, Sirakaya-turk, & Crouch, 2017; Eilat & Einav, 2004). On the other hand, studies utlizing large datasets to examinesupply-side factors such as security, infrastructure, and environmental amenities are limited. One of the motivationsforthis study is to contributefilling this gap, whichis discussed in more detail in Chapter 3.

1.1.2. Dynamic changes to tourism industry in the Maldives

This study is also motivated by the following changes that have been taking place in the Maldivian tourism industry. It may be noted that Chapter 2 provides a more detailed description of the evolution of thetourism industry in the Maldives.

1.1.2.1. Stagnation of European market

In 1972, only 1000 tourists visited the Maldives when two tourist resorts with the total capacity of 280 beds became operational. However, by the year 2013, Maldives celebrated the arrival of more than 1.2 million tourists, three times the population of the

country (TYB, 2015). Although total visitors have increased over the years, a closer analysis of data reveals interesting insights. [6]

The traditional tourism market for the Maldives has been Western Europe. [7]However, since 2004, Europeans have been surpassed in numbers by the Chinese. Figure 1.2 illustrates tourist arrivals from major tourist markets. Changes in the tourism market suggest that, since 2004, the growth rate of the European market is nearly zero with an annual average of 500 thousand tourists. The observation in Figure1.2 appears to be consistent with Butler's (1980) 'tourist area life cycle (TALC)' model, which is discussed in Chapter 2 in more detail.

Did tourist arrivals from Europe stagnate because there was no appropriate intervention (e.g. investment in infrastructure) to increase carrying capacity[8] of the Maldives? Has Maldives become too expensive compared to similar destinations? Is stagnation related to changes to destination image due to factors such as political instability and security concerns or congestion problems relating to pollution?

1.1.2.2. Sustainability of tourism in the Maldives

Accommodation sector in the Maldives offers two distinct products with unique characteristics. First, since 1983 Maldives has adopted One-Resort One-Island (OROI) concept. Geographical nature of Resorts allows well-established property rights and cost internalization mechanisms. In contrast, the guesthousesegment that emerged after 2010

[6]Refer to Figure 2.3 for total tourist arrivals over time

[7]Interviews with industry practitioners reveal that they treat tourists from different country or region as different markets. For example, taste preference for European market (tourists) is very different from Middle-East.

[8]Butler (1980, p6)identifies carrying capacityas in terms of environmental factors (e.g. beach quality), physical infrastructure (e.g. accommodation) and social factors (e.g. resentment by the local residents).

has many unpriced public goods bundled into the tourism product. [9] For example, in guesthousesegment, tourists share the public space including the beach and marine resources (e.g. reef) with the population of the island. Such models may be unsustainable due to thefree-rider problem and potential negative externalities (e.g. congestion) leading to depletion of natural resources.

Indeed, recent studies have paid considerable attention to the relationship between tourism sustainability and the environment, especially market failure associated with unpriced public goods and externalities (see Stabler, Papatheodorou, & Sinclair, 2010;Song et al., 2012; Sinclair, 1998). According to Sinclair (1998), for example, if market imperfections cannot be resolved through the internalization of costs and allocation of property rights, then prices do not reflect the full social cost, thus, often results in over-use of natural resources.

As a result, in the case of Maldives, there is a need for a better pricing strategy that reflects negative externalities of tourism. In other words, unlike resorts,guesthouse segment may require more government intervention to address externalities arising from thefree-rider problem.

1.1.2.3. Human capital investment in the tourism industry

Despite stagnation of European market, Maldives has managed to enjoy continued increase in tourist arrival. This raises the following development related questions. *Did tourism industry in the Maldives follow dynamic changes of development that bring improvements in production and management of tourism activities?Can*

[9] As discussed in chapter 2, key reasons for emergence of guesthouse tourism are change of governance to multiparty democracy and public demand for more inclusive tourism.

tourism be a high value added industry generating high income for local people? Recent growth literature argues that one of the most important strategies of development is continuous improvements of products (Hayami & Godo, 2005; Sonobe & Otsuka, 2011). They argue that the quality of the product must be improved by using better technology as well as employing more competent workers

Recent studies confirm that dynamism can occur in the tourism industry (Crouch & Ritchie, 1999; Stabler, Papatheodorou, et al., 2010b). Interestingly, contrary to conventional thinking, tourism industry's ability to provide relatively skill-intensive nature of employment was pointed as early as the 1970s and later confirmed by a number of empirical case studies (see Sinclair, 1998). In the case of Maldives, for example, many local tourism brands have imitated not only technologies from abroad but also developed new innovative tourism products (TYB, 2014; personal communications, November 2, 2015). However, how do we know if employing skilled people produce returns in the tourism sector?

1.1.3. Knowledge gap

Despite the variety of demand models on determinants of international tourism, there are some notable knowledge gaps in the existing empirical literature. First, most of the existing applied economic research focus mainly on the demand-side factors of tourism (Sinclair, 1998; Song et al., 2012; Witt & Witt, 1995),but this study arguessupply-side factors deserve more attention.This isprimarily because of externalities and free-rider issues related to unpriced public goods bundled into tourism products such as natural environment (e.g. beach and reef).

Second, according to Song, at. el. (2012), an important reason for this lack of research on supply-side factors has been the absence of quality data. However, previous studies have not taken full advantage of new sources of data available, using recent advancement of information communication technology (ICT). For instance, Cavallo, Rigobon, Cavallo, & Rigobon (2016) argue that improvement in ICT allows gathering quality information online.

Third, the common theoretical framework for analyzing tourism demand isSingle Equation Models (SiEM), which lacks rigorous theoretical basis that includes the tourist(consumer) decision-making process, using the microeconomic theory of demand. A recent response to this issue is theapplication of Rosen's (1974) hedonic pricing (HP) approach to take account of consumer behavior.

Fourth, although recently researchers have begun to study supply-side effects of tourism (see Song, Dwyer, Li, & Cao, 2012), however, most of the existing studies focus on developed countries in North America, Europe, and East Asia while island economies are mostly ignored. To the best of my knowledge, for example, there is no empirical analysis investigating supply-side factors influencing tourist flow or the hotel room prices in the Maldives.

1.1.4. Research objectives and our contribution

The purpose of the study is to contributeto filling some of the gaps discussed in the previous section. This study includes three chapters based on my original work and aims to contribute both theoretical and empirical literature that examine factors relevant to international tourism. From a practical perspective, my study also attempts to provide some understanding of issues that are of interest to hotel managers and policymakers in the Maldives and elsewhere.

1.1.4.1. Academic contribution

First, this study describes dynamic changes that have taken place in the Maldives tourism industry and contributes to theoretical insights provided by Butler's (1980)Tourist Area Life Cycle (TALC) framework. Second, the study examines country-level factors associated with international tourism flows focusing on supply-side factors: price, security indicators, and investment in tourism related infrastructure. Third, as a micro-level analysis, the study attempts to demonstrate that hotel room price is positively correlated with quality improvements of environment where the hotel is located and the education and training of hotel managers.To the best of my knowledge, this study is the first attempt to apply hedonic pricing framework to data collected from the field in the island economies. Finally, this study improves upon the recent literature by Rigall-I-Torrent & Fluvià, (2007, 2011)to describe 'hotel room ratings' by tourists as consumer surplus and offer some suggestive evidence that welfare gain by improving quality can be (mostly) captured by the producers.

1.1.4.2. Policy contribution

In the Maldives, there is less clarity to determine whether tourism policies regarding mass-tourism (guesthouse segment) or luxury tourism (Resorts) are appropriate. Another point to focus on the government is how to enhance and manage tourism related training to improve the quality of services and increase the revenues from the industry. In this study, we attempt to examine both of these issues.

Finally, compared to resorts, guesthouse business model has a number of negative externalities such as congestion, waste management issues, and friction between tourist lifestyle and social values of Maldivian people. In this study, we attempt to investigate an appropriate pricing for the preservation of natural resources (e.g. beach) and examine if the recent introduction of, 'green tax (GT)' of USD 3 for each tourist per day falls within the range of tourists' willingness to pay for a clean environment. [10]

1.2. Methodologies

The objectives of the study require both descriptive and regression analyses. Given the scarcityof tourism data, the descriptive statistics is especially important to demonstrate the properties of the data conforms with well-known facts about the tourism trends in the Maldives, which in turn informs the selection of the appropriate regression methods.

This study begins with the research question of what the supply-side factors relevant to international tourism are. My hypothesis is that key factors include price,

[10] Initial amount debated in the parliament was $6, but eventually it was reduced to $3 for guesthouse segment while keeping the $6 for the resort sector.

investment in tourism related infrastructure (e.g. accommodation, transport and information technology (ICT)), safety and security of the destination (e.g. stability) and human capital (e.g. education and training). This study employs three different methods to examine the research question and associated hypotheses. These steps are illustrated in Figure 1.3.

First, the study describes the evolution of tourism industry in the Maldives. Research on the evolution of tourist destination and viability of tourism sector has a long history, but Butler's (1980) tourist area life cycle (TALC) model has received most attention (Agarwal, 2001; Butler, 2011; Putra & Hitchcock, 2006). Using the Maldives case, Chapter 2 contributes to this strand of literature by describing different stages of the tourism sector and particularly highlighting the contribution of skilled labor and FDI in the development of the industry. Empirical analysis of the contribution of human capital to tourism is performed in Chapter 4.

Second, this study improves the existing reduced form models of the determination of international tourist arrival (Culiuc, 2014; Durbarry, 2008; Eilat & Einav, 2004; Jensen & Zhang, 2013; Naudé & Saayman, 2005). Specifically, it improves the findings of Jensen and Zhang (2013)by using a more comprehensive dataset and by augmenting their theoretical model to include additional supply-side variables such as security indicators. Using the gravity-equation framework and taking econometric advantages of panel data, Chapter 3 performs cross-country analysis focusing on SIDS as well as the single country case of the Maldives. Dataset consists of more than 198 countries (14,987 country-pairs) over the period of 1996 to 2013.

Third, in addition to country characteristics, existing literature indicates that travelers' preference for where to spend their holidays depends on product quality at the firm-level (Rigall-I-Torrent & Fluvià, 2007). In chapter four as a consumer-level analysis, the paper utilizes hedonic pricing model developed by Rosen (1974) to demonstrate that hotel room priceis correlated with the education and training of hotel managers (a proxy for quality of services) as well as quality of the environment where the hotel is located.This study also proposes an augmented model to the recent literature by Rigall-I-Torrent and Fluvià, (2007, 2011)to utilize ' hotel room ratings' as a dependent variable that reflects tourist's consumer surplus. For the purpose of this chapter, the most comprehensive primary database ever compiled on hotels in the Maldives was gathered. Using online data and a survey instrument, it consists of original data from 92 resorts, 239 guesthouses and 24 islands across 5 atolls in the Maldives.

1.3.Major findings

This Section presents major findings based on the three research objectives outlined above and concludes with implications of the study for public policy. It may be noted that contribution of the study to the knowledge of tourism literature, a detailed discussion of results and limitation of study are covered in chapter 5.

Objective I. Describe the evolution of tourism industry in the Maldives

Descriptive analysis and interviews with industry experts reveal that the downturn of European market, security incidences and transition to a multi-party democracy were the main factors that changed the industrial structure (i.e. introduction of guesthouse mass-tourism) of the tourism industry in the Maldives. Data also indicate that the

Maldives as a tourist destination may be in a consolidation phase, as proposed by Butler's (1980) TALC model.

Objective II. Estimate a model explaining country-level factors relevant to tourism flow, with the aim of understanding supply-side factors that may have contributed the stagnation of tourist arrivals to the Maldives from Europe.

First, the findings suggest about 70% of total arrivals to the Maldives can be attributed to consumer loyalty and habit persistence in favor of the Maldives. Chasapopoulos and Butter (2014) reports about 74% of total international arrivals to Greece attributed to habit persistence, while Garín-Muñoz and Montero-Martín (2007) found habit persistence of Balearic Islands tourism at 54%.

Second, study finds that tourism demand is not sensitive to price changes in island economies. However, apart from few exceptions (e.g., Chasapopoulos & Butter, 2014)most of the existing literature shows higher and significant coefficient for relative price, suggesting competitiveness is necessary to attract more tourists (Durbarry, 2008; Garín-Muñoz & Montero-Martín, 2007; Jensen & Zhang, 2013).

Third, results of this study indicate that tourist demand is sensitive to security indicators. For instance, cross-country results show 1 point increase ininstability leads to about 7% decrease in visitors. Culiuc (2014) finds magnitude at 7.9 % using a different indicator for stability. As such, findings from the study appear to support the hypotheses that deteriorating level of security indicators after 2004 may have also contributed to the stagnation of European market.

Fourth, all three proxies used for investment in tourism related infrastructure are statistically significant, and the coefficients suggest that impact is greater for the lower income countries and island economies.

Objective III. Estimate correlation between firm-level (internal) and island-level (external) characteristics to hotel room prices.

First, the finding indicates island-level and location characteristics contribute to explaining part of the variation in the final price of hotel rooms. For example, the coefficient of variable 'location in front of the beach' is highly significant across all the specifications. The magnitude suggests hotels located in front of the beach can set (on average) price 21 % more than a hotel with otherwise identical internal characteristics but which is not located in front of the beach. This is consistent with existing literature whereby Espinet et al., (2003) found this difference to be 19.4%, while Rigall-I-Torrent et al., (2011) report the value between 12.9% to 16.8%.

Second, one of the notable findings of the study is that the suppliers mostly capture the added benefit that comes with improving the quality of environment or service as means of increasing price rather than growth in tourist's consumer surplus.

Third, study finds that tourists value the natural environment. Findings suggest hotels located in islands with lengthy beaches can quote a higher room price, on the other hand, overcrowding due to free-rider problem, and poor waste management practices are having adverse effects on prices. For example,an additional household using unsafe waste management practices, theroom pricedecreases by 3.7%. Alternatively, when beach cleanliness index increases by one unit (the beach is more cleaner), theprice increases by 1.1%. In other words, given our average price of the hotel room is $94, this translates into willing to pay additional USD 1 to 3.5 for improvements in beach quality.

Fourth, findings suggest that the tourist's value manager's experience and training (i.e. proxies for quality of services). For example, when staff in the guesthouses

can speak an additional foreign language, the price increases in the range of 4-7% (MWTP $4-7). Also, hotels having managers with at least three months of training can set (on average) price 17% (MWTP $15) more than a hotel with otherwise identical characteristics but without trained managers.

Implications of this study for public policy

Based on the findings of the study, several recommendations can be made for the sustainable development of tourism industry in the Maldives. First, price inelasticity suggests that compared to guesthouse tourism, resorts might be welfare enhancing for Maldives. Second, given high percentage for habit persistence and sensitivity of tourist flow to security indicators, the government together with the industry needs to improve safety measures in the guesthouse islands to maintain the image of the country as a peaceful tourist destination. Third, high travel cost suggests the importance of devising policies to increase direct flight connections between the Maldives and TOCs and invest more in tourism infrastructure such as domestic airports.

Fourth, the study indicates external and location characteristics contributes to explain part of the variation in the final price of hotels. This suggests the importance of promoting joint initiatives between the island municipal councils and the private sector to implement an appropriate combination of policies (e.g. waste management and tax) for managing free-rider problem and externalities associated with guesthouse tourism. Finally, study suggest tourist's value the quality of service, so providing subsidized technical and vocational education targeted to the guesthouse sector would increase revenue to both private hotels and the government.

1.4. Organization of Thesis

The thesis is organized into five chapters. The introductory chapter describes motivation, knowledge gaps and purpose of the study. The emerging research questions are then presented together with the methodology for analysis. Chapter 2 describes the evolution of tourism industry in the Maldives. It begins with background on the Maldives followed by a brief overview of Butler's (1980) TALC model. Next, it highlights different stages of development.

In Chapter 3 the study focuses attention on country-level factors associated with international tourism flow. It describes the literature relevant to the present study, particularly focusing on tourism as a service trade and on the gravity model of trade flow. Using cross-country data obtained from UNWTO and the gravity equation, chapter 3 empirically examines the relationship between tourism inflows (as the dependent variable) from both demand-side and supply-side factors (as explanatory variables).

The aim of Chapter 4 is to develop a hedonic model for the tourism accommodation sector of the Maldives economy and test the model econometrically. It begins by reviewing the relevant literature on hedonic pricing model developed by Rosen (1974). The Chapter also details how primary data from online data was obtained, and the survey instrument was carried out. In particular, the chapter contributes to emerging literature (Rigall-I-Torrent and Fluvià, 2007, 2011) that estimate tourists' marginal willingness to pay (MWTP) for nonmarket attributes such as services and neighborhood quality, and how they impact decision-making and policy change.

Chapter 5 summarizes the academic contributions of the findings from Chapters 3 and 4, as well as the practical significance of results to industry practitioners and policymakers. The Chapter also explains the limitation of this study and suggestions for the future research.

Chapter 2 : Evolution of tourism industry in the Maldives

2.1. Introduction

Research on the evolution of tourist destination has a long history. The most well-known is Butler's (1980) tourist area life cycle (TALC) model (Agarwal, 2001; Butler, 2011; Putra & Hitchcock, 2006). While adapting TALC, this chapter outlines the evolution of the tourism industry in the Maldives, which has unique features as mentioned in Chapter 1, so as to further motivate this dissertation research.

This chapter is organized as follows: The next section gives a brief overview of the political economy of the country. Section 3 describes dynamic changes that have taken place in the Maldives tourism industry highlighting different stages of development. Section 4 describes the recent emergence of a new tourism product called guesthouse and the accompanied challenges of managing environmental resources which are closely linked to the sustainability of the industry. Section 5 offers the summary of this chapter.

2.2. Background: A brief overview of political economy of Maldives

Maldives is located to the southwest of Sri Lanka in the Indian Ocean. It has 26 natural atolls and 1190 coral reef islands (see Figure 2.1 for the map of Maldives). With an average ground elevation of 1.5 meters above sea level, these islands form a chain over 820 km in length and scattered over an area of 90,000 square kilometers. Maldives is also the smallest country in South Asia having a land area of 298 square kilometers and a population of 341,256 (National Bureau of Statistics [NBS], 2015). People inhabit

196 islands, and 111 islands operate exclusively as tourist resorts. The capital city of Malé, which is less than 2 square kilometers, has about 35 percent of the country's total population. Accordingly, only 15 islands have a population of more than 2,000 while 52 islands have a population less than 500 people each. Maldivians are a relatively homogenous society with a native language and script. Since adopting the British system of education in 1965, the country has achieved a literacy rate above 98%and an equally high primary enrolment rate.

Geopolitical strategic location of Maldives, which connects Southwest Asia and the Middle East, makes the country relevant to foreign powers. Thus, beginning from the eleventh century, the political economy of Maldives has been strongly influenced by the Indian Ocean Trade. During the Arab expansion of trade into the Indian Ocean, the strategic position of the Maldives became relevant, and Red Sea-based merchants learned that Indonesian seamen have been using the Maldives as a port of call on their way to East Africa and back. Interestingly, Maloney (2013, p.98-104) claims that the Buddhist King of Maldives in 1153 may have converted to Islam to take advantage of new economic order in the Indian Ocean, provided by the Arabs. [11]

By the eighteenthcentury, the international cowrie trade affected the Maldives as a geopolitical unit. For example, to control the supply from a Maldivian cowrie source, Portuguese occupied the Maldives for 15 years from 1558. As Portuguese influence in the Indian Ocean reduced, Dutch monopolized the cowrie trade and established hegemony over Maldivian affairs. Apart from the cowrie trade, during the 1800s,

[11] Maldivians followed Buddhism until 1153 AD when the king converted to Islam. Since then moderate sect of Islam has remained the only religion the in the country.

European Oriental Trade via the Indian Ocean also expanded significantly. Thus, when British expelled Dutch from Sri Lanka in 1796, Maldives was included as a British protected area. In 1887 Maldives Sultan accepted British influence over Maldivian external relations and became an official British protectorate.

From the 1940s onwards, the political economy of the Maldives was closely related to British military presence in Addu Atoll Gan, known as Royal Air Force Station Gan (RAF Gan). Indeed, during World War II, RAF made significant use of this base. It is important to realize that the local community in the Atolls benefited significantly from the British presence. Estimates suggest that in 1975 economic contribution was between 1 to 2 million pounds a year to the local economy whose total GDP was estimated to be about 3 million pounds (the Guardian, 1975).[12] After World War II, RAF Gan was closed and eventually Maldives gained independence from British on July 26th 1965.

During the last four decades, Maldives has managed to record steady growth. GDP per capita (at constant 2005 $) increased more than 18 times from just US$ 315 in 1970 to US$ 5,680 in 2013 at an average rate of about 8.4 percent per annum (NBS, 2005; United Nations Development Programme [UNDP], 2014). In general, the primary driver of the economic transformation in the Maldives has been the rapid development of tourism and related sectors. For example, the country had a robust fishing industry that accounted for 11.8 percent of GDP in 1984. In 2014, fisheries and agriculture contributed just 4 percent of GDP, whereas the tourism sector accounts for 28 percent of GDP and 76 percent when counting both direct and indirect contributions of the

[12]https://www.theguardian.com/world/2015/sep/15/gan-maldives-diego-garcia-island-1975

serviceindustry(Asian Development Bank, 2015).

2.3. Evolution of tourism industry in the Maldives

Although Maldives is a small country, it presents an interesting case to anyone interested in those factors associated with tourism flow because it has one of the most well-developed tourism industry among island economies. However, the questions arise as to how Maldives has transformed from a sleepy seaside hamlet in the 1970s to an icon of luxury tourism in the 1990s.

It is true that the underlying characteristics that give Maldives a comparative advantage in tourism are and were the sun, blue ocean, and white sand today and four decades ago. Without the entrepreneurship of the pioneering entrepreneurs, however, tourism would not get started in the country in the 1970s. Without considerable technology transfers, human resource development, and physical investment, the significant transformation of the tourism in terms of quality and quantities that the country has gone through would not take place. In this sense, Iagree completely with Crouch and Ritchie (1999), who argue in the context of tourism that factor endowments can be both naturally occurring as well as intentionally accumulated or transformed over time. More specifically, Maldives have specialized in a niche called luxury tourism. According to Rodrik (2003), filling a particular niche cannot be attributed only to natural endowments. What have led Maldives to its specialization to the niche?

Although some authors have discussed the contribution of early entrepreneurs to the development of the Maldives tourism industry as well as private sector in general (Niyaz, 2002; Scheyvens, 2011; Shakeela, Ruhanen, & Breakey, 2011; Shareef, Hoti, &

McAleer, 2008), there is limited knowledge about dynamic changes to the industry.In the following sections, using tourist area life cycle (TALC) model developed by Butler (1980), this study examines the evolution of tourism industry in the Maldives.

2.3.1. Tourist area life cycle (TALC) model

This framework draws on two key concepts. First, tourism activities are treated as products in a similar way to the production of other goods and services. Second, the model considers dynamic changes to reflect survival in a competitive environment. Thus, it is assumed that Resorts undergo a cycle of acceptance and rejection depending on the marketability of the product. Indeed, Butler (1980, p.11) warns policymakers and industry managers that '[t]ourist attractions are not infinite and timeless but should be viewed and treated as finite and possibly non-renewable resources.'' [13]

As illustrated in Figure 2.2, the TALC model goes through six key phases: exploration, involvement, development, consolidation, stagnation, and decline and/or rejuvenation. There are no facilities for tourists at the initial exploration phase. Afterward, the locals get involved in providing tourists with low-quality basic services using domestic resources whereby the government provides basic transport infrastructure. Local involvement and control, however, decline in the development phase when foreign firms start investing in transport and accommodation infrastructure as well as marketing. At the consolidation stage, the destination reaches maturity with capital-intensive investment and new technologies available mostly through foreign

[13]For recent review of the model and its application in the literature refer to Butler (2011)

direct investment (FDI), even though at this phase rate of tourist flow starts to decrease. Finally, the stagnation stage represents a gradual decline.

According to Butler (1980), post-stagnation is a critical juncture whereby if carrying capacity[14]is reached compared to other areas then destination would lose the relative appeal that is reflected in decline (marked by point E) of visitors number and investment in infrastructure. On the other extreme, rejuvenation (marked by point A) can occur either through newly created assets or reorientation of the industry to cater for a new market.

The existing literature on the TALC model is more descriptive than quantitative.Agarwal (2001)argue that the model is essentially only theoretical. Aguiló, Alegre, and Sard (2005), however, have used the model to empirically examine characteristics of sun and sand tourism to the Balearic Islands. Debate on the validity of the TALC is outside the scope of this paper. Instead, the rest of this chapter aims to classify dynamic changes of the tourism sector in the Maldives into five phases following the TALC framework.

2.3.2. Exploration phase, 1965 - 1972

During the 1970s, the economic situation in Maldives was deteriorating due to two factors. First, Briton was reducing its defense commitments in Asia and started negotiation to close RAF Gan. Second, relations between Maldives and Sri Lanka became strained, and eventually market for Maldives' main export of dried fish collapsed (US Department of States Diplomatic Cables [USDS], 1973). For these

[14]Butler (1980, p6)identifies carrying capacityas in terms of environmental factors (e.g. beach quality), physical infrastructure (e.g. accommodation) and social factors (e.g. resentment by the local residents).

reasons, the government was actively pursuing the diversification of its economy, but a government-commissioned study, with the assistance of UNDP, found that tourism was not feasible in the Maldives predominantly due to limited infrastructure.

An opportunity presented itselfin 1971 when Ahmed Naseem, then a junior with the Maldives Embassy in Colombo, convinced anItalian travel enthusiast, George Corbin, to travel to the Maldives and explore the pristine environment of the island nation (Niyaz, 2002). [15] Regardless of multiple challenges, in October 1971, Naseem visited Maldives in a cargo ship, together with Frenchesco Benini, a travel photographer.

In Maldives, Naseem met the young entrepreneur Mohamed Umar Mainku, a college graduate who was working in the government as an agriculture officer. They took the two visitors to nearby islands including a now famous resort called KurumbaMaldives. The Maldivian guide who accompanied them was Hussain Afeef, 21 years old who had recently returned from his studies in Sri Lanka. [16] On 16 February 1972, 22 tourists, mostly writers and photographers, landed at the tiny airstrip on the Hulhule Island. The main challenge in those days was the poor transportation conditions. Naseem and his partners asked the government to make arrangements to charter a flight of Air Ceylon fly from Colombo to Male'.

2.3.3. Involvement Phase, 1972 - 1983

Tourism statistics coupled with interviews with industry experts provide crucial facts about the evolution of tourism sector in the Maldives. Figure 2.3 illustrates the

[15] Later from 2010-2012, Mr. Naseem served as the Foreign Minister of Maldives.
[16] In November 2015, I conducted a detailed interview with Hussain Afeef.

annual visitors and the number of resorts in operation from 1972 to 2012. These data indicate there are at least four major developments that appear to have a significant impact on the tourism industry in the Maldives.

At the initial stage, according to Hussain Afeef with whom I had a personal interview in November 2015, the major constraints for the industry were the poor transport and communication conditions and the difficulty in finding trained workers. In 1972, the common mode of commuting by the island communities was the sailboat. [17] As noted by Butler (1980), with the local involvement in the tourism sector, pressure was put on the government to make investments in basic tourism related infrastructure. Accordingly, during the first half of the 1970s there was a nationwide effort to mechanize sea transport vessels using diesel engines imported from Japan.

With regards to services, according to Afeef, at the beginning of the industry, tourists were provided with very basic services by local people who had no formal training (personal communication, November 2, 2015). The tourists in those days were mainly European divers who were attracted to the underwater beauty and less concerned with the quality of food and other services. As a result, the industry remained underdeveloped until 1976. Figure 2.4 shows number and percentage of different categories of resorts leaseholders from 1975 to 2014. Data reveals that by 1975 the number of resort investment undertaken by the government was 6 while private sector has only two resorts.

[17]Hussain Afeef, Ahmed Naseem and Umar Manik (koli) are the three Maldivian entrepreneurs who initiated toruism industry in the Maldives.

Between 1976 and 1985, however, more than 47 new resorts became operational (37 resorts were private sector investments) and annual tourist arrivals increased to 100,000. The turning point in 1976 was the British decision to abandon its military presence in Addu Atoll Gan,[18] where about 900 Maldivians from Southern Atolls were employed to support the RAF personnel (Fairhall, 1975).[19] When the British left the country, these employees could supply cheap labor with various levels of training to service Europeans in tourists resorts. Furthermore, new entrepreneurs from Southern Atoll started investing in the tourism industry. Indeed, more than 20 % of the local population of Addu Atoll migrated to Male' permanently between 1976 and 2000 to work in the tourism industry(Khadheeja Mohamed, 2001).

2.3.4. Development Phase, 1983 - 2009

The development stage came in the second half of the 1980s when the quality of service was improved rapidly through the establishment of institutions, learning from abroad and investment in infrastructure. For instance, with the passage of Tourism Master Plan (TMP) in 1983, the government institutionalized **one-resort one-island (OROI)** concept and banned local islands with inhabitants from having accommodation facilities for foreign tourists. Moreover, the government also started encouraging FDI in the industry. In fact, as illustrated in Figure 2.5, the timeline of Maldives development strategies shows TMP came even before the National Development Plans (NDP).

[18]As discussed before, From 1940s onwards, political economy of the Maldives was closely related to British military presence in Addu Atoll Gan, known as Royal Air Force Station Gan (RAF Gan). During World War II, RAF used its base in Gan.

[19]https://www.theguardian.com/world/2015/sep/15/gan-maldives-diego-garcia-island-1975

In the OROI, most of the tourism production and consumption (e.g. lodging, restaurant, recreation) take place only on selected uninhabited islands. Figure 2.6 shows a typical resort. These islands are leased exclusively for tourism purpose. The building of physical infrastructure in resorts requires an Environment Impact Assessment (EIA), and owners must abide by the strict standard to protect the ecosystem. For instance, only 20 percent of the land area is allowed to be developed to provide tourism service (e.g. accommodation and restaurant), thus imposing are striction on the total capacity of tourist on each island. There are two significant consequences of OROI policy.

First, exclusivity of tourism production out of inhabited islands means all the facilities, as well as utilities, have to be independently provided by the proprieties of the resort, making sunk cost very high. To compensate for the high fixed cost, the government placed restrictions on new market entry. Restrictions on market entry allowedincumbents to gain a market power and hence oligopolistic rents, which motivated heavy investments in new properties, promotion, and building links with the transport sector and other related sectors.

Moreover, the resort owners formed the Maldives Association of Tourism Industries (MATI) that became an influential lobby group in the formulation of tourism-related policies. As a result, oligopolistic competition among the major players emerged in the tourism and travel industry. Although market concentration allows firms to reinvest profits to maintain competitiveness, Debbage (1990) finds evidence fromBahamas that resorts there, after long-lasting oligopoly experiences, eventually declined because of an emphasis on market share at the expense of innovation and diversification.

Second, the main tourism products in the Maldives (sun, sea, and beach) all have a high degree of open access (i.e. characteristic of public goods). For instance, nature of these goods suggestsit is difficult to exclude users who have not purchased the good from enjoying/suffering them. On the one hand, a model that depends on higher quantities of the publicgood would bring more revenues to private firms and government. On the contrary, overutilization of beach or reef can lead to pollution, thus reducing the brand name of the whole industry. Therefore, the introduction of exclusive resorts allows internalization of most of the costs associated with negative externalities.

The emergence of OROI is consistent with Butler (1980) observation of well-defined brand to market tourism.This is because OROI creates more incentives to improve quality and the reputation of providing quality services creates positive externalities.

Similar to other island economies, Maldives faced high transportation and communication costs due to the geographic isolation of islands. Consequently, as Figure2.7 illustrates, at the early stage, tourist resorts were developed only near the international airport. This is because local firms did not have enough financial resources to invest in costly transport infrastructure to take tourists and goods to more remote islands. Thus, the third significant change came in the late 1990s when the government further liberalized FDI in the industry which improved incentives for foreigners to operate and manage resorts. One of the major attraction for FDI was low

bed tax rate of just 6 USD per accommodation bed per night and increased resort lease period to 25-35 years (Maldives Tourism Act, 2014). [20]

According to Hussain Afeef, new FDI injected additional capital necessary for the improvement of transport infrastructure (e.g. speed boat and air travel), and production of innovative and high standard tourism products such as Water Villas or underwater restaurants in the Maldives (personal communication, November 2, 2015). He also highlights that adoption of new management techniques brought in by foreign participation played a crucial role in improving the standard of service in the industry as well as opened up additional markets for the Maldives.

2.3.5. Consolidation Phase, 2010 -

According to Butler (1980), one of the indicators of consolidation phase is the presence of major international chainsin the country. Figure 2.8 shows the ownership percentage of resort operators in the Maldives in three different periods. Data shows by 2005, 30 % of resort operators are foreigners, and another 18% are joint ventures between foreign and local parties. Indeed, today more than 35 major international brands (e.g. Hilton, Shangri-La and Four-Seasons) have at least one property in the Maldives.

Data also shows that although foreign operators increased to 37% in 2010, the percentage remained same by 2014. Obviously, the number of resorts in operation during this period rose to 88, 98 and 111, respectively. Nevertheless, available data

[20]The bed-tax was first introduced in 1978 with an initial levy of USD 3 per night on every occupied bed by tourists from resorts, hotels, guesthouses and safari vessels. It was increased to USD 6 in 1998 and USD 8 in 2004.At the early years the government renewed lease period every 5-12 years.

suggests while existing firm's increases their presence, but only a few additional international brands have invested in the industry.

Butler (1980) also claims that an alternative indicator of consolidation phase is marketing efforts made to extend the visitor season and market area. *Do we observe such trend in the case of Maldives?* Tourist arrivals to the Maldives are seasonal with a dip in May to July due to Monsoon. Meanwhile, arrival is high from December to March that coincides with winter in Europe (MTAC, 2013). The seasonal trend is confirmed by data in Figure 2.9 which shows the percentage of bed capacity utilization (occupancy rate) decreases significantly during May to July.

The trend over the years suggests rapid improvement in occupancy during off seasons. For example, in 1980 occupancy in June was at just 10% which was improved to 30% in 1990, and by 2010 percentage was above 50. Likewise, considerable improvements in occupancy were observed in the second half of year. Thus, data suggests marketingefforts to extend tourism season in the Maldives in the early years have paid off. However, generally speaking, compared 2010 occupancy went down in 2015. [21]

To summarize, it is possible to argue that Maldives has been in the consolidation phase since 2010, but disaggregated arrival data by the country of origin suggests the stagnation of European market dates back to 2004.

2.3.6. Stagnation of European market since 2004

[21] New tourism segment (guesthouse) emerged in 2010 with large number of additional beds. This issues is addressed later in the chapter.

Since 2004, at least three events have had significant influences on tourist arrivals in Maldives. The first event came with the Indian Ocean tsunami that struck the Maldives on 26 December 2004. Following the tsunami, visitors reduced significantly in 2005. Although the number of arrivals recovered quickly, data suggests that since the tsunami the traditional European market hasstagnated while arrivals from the Asianmarket (mainly Chinese) increased significantly.

Second, the European and Chinese markets have quite different trends in tourist incomes, which is known to be one of the most important determinants of tourism demand (Sinclair, 1998; Song et al., 2012; Witt & Witt, 1995). For example, in contrast to the high growth rate in China, Europe was experiencing economic problems since 2002 followed by the financial crises in 2009.

Third, the year 2004 was also critical on the political and security fronts. On the one hand, political stability and one person rule that had existed in the Maldives since 1979 started facing tremendous pressure and instability. Consequently, in 2008, Maldives became a multiparty democracy. Moreover, with the democracy, the general public started questioning the market structure of the tourism industry in the Maldives. For example, critics claim that tourism has aggravated income inequalities in the country (Human Development Report, 2014).

During the same period, Maldives also experienced a wave of religious radicalization and an act of terrorism. For example, on 29 September 2007, in the first attack on the Maldives's tourism industry, 12 tourists, eight Chinese, two Japanese and two British, were injured in an explosion in the capital city (Sultan Park). The industry did not anticipate an attack, as Maldives had been considered to be a peaceful

destination. However, following the explosion news spread fast and tourist arrivals decreased significantly, impacting the whole country. There is plenty of research suggesting that tourist flow fluctuates depending on stability and security situation of the destination country (Jensen & Zhang, 2013; Putra & Hitchcock, 2006). For example, Putra and Hitchcock applied TALC model in reviewing tourist visitation in the aftermath of the Bali bombing in 2002. They find that bombings had the greatest impact than any other crisis in the island's history.

Regarding changes to tourism industry since 2004, the events discussed above are consistent with three observations made by hotel managers and industry experts with whom I made personal communications in September 2016: (1) public demand for more inclusive tourism model, (2) reduction in European arrivals, and (3) industry adjustment to the increase in tourists from China who differ much from European tourists in taste preference. Consequently, a major structural change came in 2010 when the government deregulated entry restrictions, and *guesthouses* emerged as a new segment of the market.

2.4. Guesthouse segment

The emergence of guesthouse segment in the Maldives presents at least three important features that deserve attention. First, the guesthouse sector is more inclusive. It allows for the development of infrastructure in inhabited islands and provides more job opportunities through the division of labor by the outsourcing of services such as laundry, diving school, and spa,etc.

Second, compared with the more exclusive resorts operating on uninhabited islands, the guesthouse market is more competitive. This is because accommodation in a guesthouse can be set up on inhabited islands in local residences. Family members can

operate the business, and the marketing only requires registering on one of the online travel agencies (OTAs). In such cases, the associated financial outlays can be significantly less. Thus, if the business is not profitable, it is easy to exit the market.

While market competition is healthy in many cases, however, international tourism is a special case where the consumers are foreigners. As discussed in Chapter 4, competition will drive the price down, and in the end, it would be only tourists who would benefit. Indeed, my discussion with industry experts reveals that the guesthouse tourism is becoming increasingly competitive in some islands (hotel managers and industry experts, personal communication, August-September 2016). Thus, there is a risk of 'race to the bottom' as new entrants with low price and low quality enter the market. Without guesthouses, OROI would continue to extract rents from foreign tourists, which might be welfare enhancing for Maldives from the strategic trade policy perspective advocated byBrander and Spencer (e.g., 1981, 1984)among others.

Third, compared to the resorts under OROI, the guesthouse segment has more free-riding due to unpriced public goods bundled into the tourism product. For example, on inhabited islands, tourists share the public space including the beach and marine resources (e.g. reef) with the island population. In other words, the marginal cost of tourist enjoying beach or reef is zero to individual guesthouse owners. Thus, there is a greater possibility of building more hotels to accommodate increasing demand. For example, Maafushi shown in Figure 2.10 is a guesthouse Island having more than 80 guesthouses and 1600 beds, which is almost four times the bed capacity of most of the resorts in the country. Such mass-tourism models are unsustainable due to potential pollution issues leading to depletion of natural resources. One such critical issue is solid waste management in the islands.

Most of the islands I visited during my field survey have already establishedWaste collection sites (WCSs). Except for few islands, however, most WCSs have no boundary walls, and there are no established mechanisms to dispose waste from these locations. For instance, Figure 2.11 shows waste dumping area in Maafushi. Accordingly, when WCS's reaches its capacity, island residents discard waste on other areas including the beach. I observed waste thrown on the beach not only is visually unsightly but also they often float into the sea and sink onto the reef, thus, likely having considerable negative impact on the natural environment.

According to Rigall-I-Torrent and Fluvià (2007), preservation of the natural environment such as beach is critical for the sustainable development of tourism industry. Preservation of beach, for example, requires appropriate pricing, which is difficult because common goods such as beach are not explicitly traded on the market. Accordingly, since October 2016, the government introduced a flat 'green tax' of USD 3 per tourist per day for the guesthouse segment. However, this amount was decidedarbitrarily. Thus, it may be crucial to investigate how much tourists are willing to pay for a clean environment.[22]

Moreover, negative externalities may be detrimental to the destination image that may have long-term consequences for the industry. Accordingly, some industry experts argue that guesthouse segment requires more government interventions and be regulated. In other words, it could be argued that if higher tourism prices in the Maldives are not affecting its international competitiveness, instead of mass tourism

[22] Initial amount debated in the parliament was $6 dollars, but eventually it was reduced to $3 for guesthouse segment while keeping the $6 dollars for the resort sector.

alternative policies including tax instruments can be used to make tourism more inclusive.

Figure 2.12 provides bed capacity for four different types of accommodation available in the Maldives, and as categorized by the Ministry of Tourism. Data shows that the growth rate of beds in resorts has remained stable over the year. It may be noted that Hotel is categorized as a higher standard than guesthouses, but except few hotels, they are not large scale accommodation facilities as observed in other countries. Also, until 2010, both hotels and guesthouses offer accommodation mainly for locals and business travelers, thus, not considered as leisure tourism accommodation. As expected, the number of beds in guesthouse category decreased after the institutionalization of OROI, but increased significantly since 2010 when guesthouses re-emerged as a new segment. Finally, Safari vessels are exclusively used for divers and growth rate of bed capacity hadgrown until 1996 when foreign companies started investing in the Maldives. This is consistent with industry observation whereby all resorts now provides international standard diving schools and need for separate Safari Vessels has become less relevant.

2.5. Summary of the Chapter

This chapter demonstrates that Maldives tourism industry has undergone considerable changes since the first tourists visited the Maldives almost 45 years back. On the one hand, based on Bulter's (1980) TALC hypothesis, the momentum of the growth in total visitor arrivals, foreign investment and occupancy rate suggests that the Maldives as a tourist destination may be in consolidation phase since 2010. On the

other hand, arrival numbers for the European market show obvious stagnation from 2004. Such was the downturn from Europe, both adjustments of tourism service to Chinese taste preference and structural change to the industry with the introduction of mass tourism (guesthouse tourism) were necessary to maintain tourism growth rate.

It can be argued that shortly the Chinese market could also face stagnation. For this reason, from policy and the industry perspective, it would be crucial to have a better understanding of factors associated with tourism, especially the reasons for the decline in tourist arrivals from Europe. Moreover, the emergence of guesthouse segment has generated considerable debate about the long-term benefit and cost of mass-tourism.

This chapter has highlighted some economic, social as well as security factors that may have contributed development, growth and eventual decline of tourist arrival in the Maldives. The discussions above will have considerable policy implications if the empirical evidence supports them. The following chapters try to test some of these factors using econometric methods. Accordingly, in Chapter 3 the study focus on country-level macro factors associated with international tourist's arrivals, while in Chapters 4 attention is given to micro-level (island and hotel) indicators that affect guesthouse room prices in the Maldives.

Chapter 3 : Factors relevant to international tourist flow

3.1. Introduction

As stated in Chapter 1and highlighted through a survey of early studies of international tourism by Sinclair (1998), income from tourism contributes significantly to the developing countries, in particular to the SIDS. Yet, few studies have rigorously investigated the factors that influence international tourist flow to the destination countries. As such, this chapter extends the line of the recent tourism literature that frequently employs the single equation model (SiEM) with a focus on country-level factors (Chasapopoulos & Butter, 2014; Culiuc, 2014; Durbarry, 2008; Jensen & Zhang, 2012; Naudé & Saayman, 2005).

Specifically, this chapter improves analysis by Jensen and Zhang (2013) to establish the empirical link of the extent to which the supply-side factors such as price, infrastructure and security indicators can influence tourist arrivals while accounting for the other common demand and supply factors studied in the similar studies.Jensen and Zhangstudy used data from 101 countries for the period 1982-2001 to test effects of supply-side factors on tourist flow. This studyextends their theoretical model to include both demand and supply side variables, and also this study employsaricher panel dataset. It consists of more than 198 countries (14,987 country-pairs) over the period of 1996 to 2013 and 187,973 observations.

This chapter finds, among other things, that tourist inflow to SIDS, is not very sensitive to price compared with tourist income and security issues. For instance,elasticity on the tourist income remains in the 0.8–0.9 range for the full sample

and elasticity increases to 1.7 for SIDS. Result also shows that 1 point increase in instability leads to about 7% decrease in visitors. Culiuc (2014) finds magnitude at 7.9 % using a different indicator for stability. As such, findings from the study appear to support the hypotheses that adverse economic situation in Europe, and deteriorating level of security indicators in the Maldives have contributed to the stagnation of European market.

The study also finds that 70% of total arrivals to the Maldives can be attributed to consumer loyalty and habit persistence in favor of the Maldives. Further, all three proxies used for investment in tourism related infrastructure are statistically significant, and the coefficients suggest that impact is greater for the lower income countries and island economies.

The rest of chapter is organized into seven major Sections. Section 2 presents a review of relevant literature. Section 3 describes the model specification and hypotheses. Section 4 describes attempt made to compile a large panel dataset. Section 5 presents static cross-country regression analysis, while Section 6 presents dynamic model and factors relevant to tourist flow to the Maldives. [23]In Section 7 a summary is provided to conclude the chapter.

3.2. Relevant literature

This section provides an overview of related literature focusing on economic and noneconomic factors affecting tourism flow; examination of both the theoretical

[23] Static and Dynamic model of tourist flow is explained in section 3.2.3

literature and empirical studies on SiEM; and the application of gravity model that considers bilateral trade flows between two countries.

3.2.1. Demand

As mentioned in the Chapter 1 above, tourism is considered as bilateral trade flows between two countries and lies within the scope of vast existing literature on international economics. In the cross-country analysis, the quantity of tourism flow is predominantly measured by the total number of tourist arrivals or share of arrivals to the destination countries (Jensen & Zhang, 2013; Song & Witt, 2006; Zhang & Jensen, 2007). In the case of bilateral tourism flow, a measure is taken as total tourist arrivals from individual tourist originating country (TOC) to the destination country (Culiuc, 2014; Durbarry, 2008; Eilat & Einav, 2004).

Other researchers have used alternative variables such as tourism receipts (Papatheodorou, 1999) and overnight stay (Albaladejo, Gonzalez-Martínez, & Martínez-García, 2016) to estimate tourism demand. Zhang and Jensen (2007) claims tourism receipt may be a better indicator of tourism flow because it indirectly includes the number of days spent by tourists at the destination. However, the review of existing studies by Song et al. (2012) suggests the availability and reliability of data on tourist arrivalsis better than those of data on receipts and overnight stay. Moreover, unlike receipts, the number of arrivals avoids the problem of cross-country comparison due to the exchange rate. Thus, this chapter takestourist arrivals as the measure of tourism flow (i.e. dependent variable).

3.2.2. Determinants of demand

The three most important determinants of tourism demand, as identified in the literature overview (Sinclair, 1998; Song et al., 2012; Witt & Witt, 1995), are tourist's income, the price of tourism product, and exchange rate. Most studies suggest that explanatory power of income depends on tourists originating country. Thus, GDP per capita income, expressed in purchasing power parity, is often used as a proxy for tourist income (Chasapopoulos & Butter, 2014). [24]

Predominantly, the price of tourism product is examined at three levels. First, destination price level (Jensen & Zhang, 2013) or the relative price between TOC and the destination country (Chasapopoulos & Butter, 2014; Eilat & Einav, 2004)is examined. Second, researchers examine the relative price between a destination and a competing country as an alternative destination (Durbarry, 2008). In some studies, price and exchange rates are combinedas real effective price, while in other studies exchange rate is included separately (Naudé & Saayman, 2005). According to Dogru, Sirakaya-turk and Crouch (2017), however, the inclusion of exchange rates and prices, as mutually independent variables in the regression, will give biased estimates.

Third, the cost of traveling is considered to represent a significant part of tourism price(Sinclair, 1998).This is because tourism is a special trade whereby the consumer needs to travel to the destination to consume the goods. Khadaroo and Seetanah (2008) argue that travel-cost is closely linked to air connectivity. However, due to the problem of measuring effective airfare, except few exceptions (e.g. Dritsakis,

[24] GDP in purchasing power parity is taken to homogenize the values for the different countries of origin

2004), many published papers use proxy variables. For examples, Eilat & Einav (2004) make use of population weighted distance between the countries whileCuliuc (2014) utilize both distance and the time difference between origin and destination countries.

Using these measures of international tourism flow, most existing studies have examined how the flow is associated with tourist income and other demand-side factors. It, however, is more likely that the observed tourism flow is determined by the interaction of demand and supply-side factors. The supply side was missing in the previous literature. Recently, researchers have begun to study several supply-side (destination) factors such as tourism infrastructure and public safety. For instance, Khadaroo and Seetanah (2008) claim that investment in transport infrastructure leads to significant increases in tourism inflows into a destination. Jensen and Zhang (2013) find that in addition to infrastructure, provision of security is important to attract more tourists. Some other studies also suggest that international tourist arrivals fluctuate depend on stability and security situation of the destination country (e.g., Aran˜a, &Leo´n, 2008; Fleischer & Buccola, 2002; Neumayer, 2004). The evidence presented by these studies, however, is generally weak.

3.2.3. Methodological developments in tourism demand

Methods used to estimate the demand for tourism can be divided into two broad groups; namely (i) non-causal, mainly time-series forecasting, and (ii) causal econometric techniques. Given the limited applications of time-series forecasting

models for policy purposes (Song & Li, 2008), here, for the purpose of this chapter, our focus is on the application of the causal methods.[25]

Most studies have used the method of single equation model (SiEM) to explain tourism demand, measured as arrivals or receipts, at aggregate cross-country level (Sinclair, 1998; Stabler, Anderson, & Sinclair, 2010). [26] As Equation (1) depicts, it involves theorizing the determinants of demand and using multiple regression techniques to estimate the relationship between the dependent variable 'demand' (D) and each of the explanatory variables $(x_1, x_2, \dots, x_n)$ which determine the demand.

$$D = f(x_1, x_2, \dots, x_n) \qquad (1)$$

One issue highlighted in the literature is the appropriate functional form of the equation (1). As illustrated in equation (2), Zhang and Jensen (2013) try to identify export supply equation for tourist arrivals to destination country (j) in year (t) as a linear function of price (P_{jt}) and a number of other explanatory variables (X_{jt}), where X_{jt} is a vector.

$$\text{arrival}_{jt} = \alpha_0 + \beta_0 P_{jt} + X_{jt}\gamma_n + \varepsilon_{jt}. \qquad (2)$$

Until the 1990s, the most studies relied on the different specification of equation (2) in static form is in traditional regression analysis based on ordinary least squares (OLS) (Peng, Song, & Crouch, 2014). The above model suffers from some problems, however.

[25] For reviews of time-series methods (see Peng, Song, & Crouch, 2014; Song & Li, 2008)

[26] There are a number of studies (for reviews see Shen, Li, & Song, 2011; Song et al., 2012; Song & Li, 2008; Stabler et al., 2010) that estimates tourism demand for individual countries, regions and even local areas. These studies also sometimes analyses demand for different categories (e.g. leisure or business) as well as different tourism products (e.g. sports or ecotourism)

First, it ignores dynamic nature (habit persistence or word of mouth effect) of the tourism products. However, experiences of previous visitors and word of mouth effect could be an important factorthat influences tourist demand.In the case of Maldives, for example, the Internet reviews (26%) and word of mouth (22%) are the most important sources of information about the Maldives tourism sector, according to the survey data collected by the government at the airport from visitors who are leaving the country (Ministry of Tourism, *Maldives Visitors Survey* (MVS), 2016). Moreover, Survey indicates that one out of three international visitors to the Maldives refer to 'TripAdvisor' to discover the Maldives. [27]

By the mid-1990s, dynamic specifications such as the error correction model (ECM) and autoregressive distributed lag model (ADLM) began to appear in the tourism literature. Indeed, most of the recent studies (see Durbarry, 2008; Naudé & Saayman, 2005; Dogru, Sirakaya-turk, & Crouch, 2017) have included lagged demand as an explanatory variable to represent the dynamic nature of the demand. The standard dynamic model takes the form:

$$\text{arrival}_{jt} = \alpha_0 + \psi_0 \text{arrival}_{j(t-1)} + \beta_0 P_{jt} + \gamma_n X_{jt} + \varepsilon_{jt} \qquad (3)$$

where the lagged dependent variable $\text{arrival}_{j(t-1)}$ is taken as an explanatory variable.

Second, although paired observations of price and quantity are the outcome of the interaction between demand and supply equation, Zhang and Jensen (2013) focus mainly on supply-side factors and ignore demand-side factors. Song and Li (2008)argues such specifications can lead to spurious relationships due to unobserved

[27] Ministry of Tourism. (2016). Maldives Visitor Survey, http://www.tourism.gov.mv/

factors influencing the results, but that the use of panel data would overcome this problem by adopting General Method of Moments (GMM). [28]

Third, it is important to mention that equation (2) takes no account of critical explanatory variables such as competing destinations or of traveling cost. Accordingly, in the following section, we discuss the gravity framework as an alternative approach to analyze factors relevant to tourism flow.

3.2.4. Gravity model for tourism demand

The gravity model traces its origins to the Newton's law of gravitation. It has been used for predicting bilateral trade flows between countries based on economic sizes and the distance between the countries (Kilman, 1981; Taplin & Qui, 1997).According to Witt and Witt (1995), the gravity equation can be reformulated and applied to explain bilateral tourism movements on the basis that ''the degree of interaction between two geographic areas varies directly with the degrees of concentration of persons in the two areas and inversely with the distance separating them'' (p. 459). During the last decade, however, the application of gravity equation within the tourism demand literature increased significantly, notably due to the success of the gravity model among international trade researchers. In particular, Anderson and Van Wincoop (2003) developed a robust methodology that consistently and efficiently estimates a gravity equation and calculates the comparative statics of trade frictions (p. 170). Kimura and Lee (2006) claim that trade in services is better predicted by gravity

[28] Detail discussions of recent economic advancements could be found in (Lim, 1997; Peng et al., 2014; Song & Li, 2008)

equations than trade in goods. Recently, researchers have used gross domestic product (GDP) instead of the population (Morley et al., 2014). [29]

The studies that have explored the validity of the gravity equation to explain tourism flows are divided into two main types. The first type uses cross-country panel data (Culiuc, 2014; Durbarry, 2008; Eilat & Einav, 2004; Naudé & Saayman, 2005; Neumayer, 2004). Researchers have predominantly attempted to see how demand depends on the income of origin country; tourism prices; the distance between destination and origin country; and exchange rates as explanatory variables (Song et al., 2012; Song & Li, 2008; Witt & Witt, 1995). Recently researchers augmented the gravity model to explain different categories of impacts including supply-side factors such as stability and security of destination.

The second type estimates the determinants of tourism for a single country. Compared with cross-country studies, the number of single countries case studies is limited. One relevant paper by Durbarry (2008) uses the theoretical framework developed by Van Wincoop (2003) and finds tourism demand in the UK is price sensitive, offering some tax implications. Garín-Muñoz and Montero-Martín (2007)conclude that the demand is heavily dependent on the economic condition of each of the origin countries as well as the relative prices. More recently, Chasapopoulos and Butter (2014) examined the impact of the social, economic and geographical determinants of foreign tourism demand in Greece. They find that distance and trade have more explanatory power than prices, and that nontraditional factors such as political stability seem to play an important role.

[29] Refer to Morley et al. (2014) for a recent review of theoretical foundation and use of the gravity equation in tourism.

This chaptercomplements both types and considers the role of security factors as a nontraditional factor.

3.3. Model Specification and Hypotheses

This section explains gravity model in the context of international tourism and defines the variables that will be used to estimate the gravity model. The model may be given by equation (4), which can be transformed into a linear expression (5) using natural logarithms:

$$arrival_{ij} = \alpha_0 \frac{(gdp_i)^{\beta}(gdp_j)^{\gamma}}{(d_{ij})^{\delta}} e^{\varepsilon_{ij}} \quad (4)$$

$$\ln arrival_{ij} = \ln \alpha_0 + \beta \ln gdp_i + \gamma \ln gdp_j + \delta \ln d_{ij} + \varepsilon_{ij} \quad (5)$$

Where $arrival_{ij}$ is tourist flows from originating country (i) to the destination (j), gdp_i and gdp_j are gross domestic product for respective countries, d_{ij} is the distance between the destination and origin, and ε_{ij} is error term.

The specification (5) is likely to suffer from omitted variable bias as it only accounts for GDP and distance but doesn't recognize many other variables discussed in the literature. Accordingly, the preferred specification of the gravity equation that fits panel dataset has gone through some changes. The analysis in this chapter adopts the following general form of the equation (see Morley, Rosselló, & Santana-Gallego, 2014):

$$\ln arrival_{ijt} = \alpha_0 + \sum_{s=1}^{S} \beta_s \ln ZO_{it}^{s} + \sum_{p=1}^{P} \gamma_p \ln ZD_{jt}^{p} + \sum_{r=1}^{R} \delta_r \ln ZOD_{ijt}^{r} + \varepsilon_{ijt}, \quad (6)$$

where, for a given period *t*, ZO*s* is a vector of *s* variables determining the push factors for tourism from tourist originating countries *i* (e.g., gdp_{it}); ZDp is a vector of p variables representing pull factors from destination *j* (e.g., gdp_{jt}); ZODr is a vector of *r* variables representing attractiveness of visiting from TOC to destination *j* (e.g., rp_{ijt}); and ε_{ijt} is the error term.

It may be noted that restricting to supply-side alone (see Jensen &Zhang, 2013) without the bilateral flow, the equation (6) will be reduced to a linear combination of variables determining pull factors from destination *j*:

$$\ln arrival_{it} = \alpha_0 + \sum_{p=1}^{P} \gamma_p \ln ZD_{jt}^{p}$$

With the economic model in (6), the aim is to estimate parameters$\alpha, \beta_s, \gamma_p$and δ_r.

3.3.1. Hypotheses

In addition to the standard hypotheses studied in the existing tourism literature, this chapter focuses on the following hypotheses:

Hypothesis 1. *A decrease in the price level of the destination country relative to the tourist originating countries(TOC) as well as competing destinations increases tourist arrivals.*

This hypothesis comes first because of the obvious importance of relative price changes. The price for tourists can change for a variety of reasons including taxation. Since international tourism is a special service of which consumers are foreigners, governments can raise the rate of tax on tourism without much political cost. In the case of Maldives, for example, Bed Tax imposed on international tourists was USD 8 until it

was replaced in 2012 with the Tourism Goods and Service Tax (TGST) that now stands at 12 percent.[30] In November 2015, an additional green tax of USD 6 was introduced to resorts, and from October 2016 green tax of USD 3 was introduced to the guesthouse segment as well. In addition, most hotels in the Maldives include a service charge between 8 to 10%. Further, tourist firms have to pay business profit tax of 10%.

Do high TGST rates place tourism in the Maldives at a disadvantage in relation toits competitors? The empirical literature regards price as an important variable when choosing a holiday destination is inconclusive. According to Durbarry (2008) the level of taxation can lead to higher prices that negatively influence tourist arrivals. In contrast, Chasapopoulos and Butter (2014) and Jensen and Zhang (2013) find the price has less explanatory power than other determinants such as transport or infrastructure. As such, this chapter estimates the price sensitivity of the tourism flow into the Maldives.

Hypothesis 2. Deteriorationin security indicators (e.g. instability) have a (negative) impact on the tourist arrivals.

Following the democratic movement in 2004, Maldives continue to face issues of political instability accompanied by mass demonstrations, confrontation with police, as well as repeated national elections. Additionally, during this period, Maldives also experienced a wave of religious radicalization and an act of terrorism. In particular, on 29 September 2007, 12 tourists were injured in an explosion in the capital city. Following the incidence, tourist arrivals decreased significantly from markets such as Japan.Indeed, there is plenty of research suggesting that tourist flow fluctuates

[30]There are two primarysources of income to the government from tourism. First, based on contractual agreements, revenues come from resort lease rents, resort land rents, and royalties. The other source of revenues comes from tourism taxes.

depending on stability and security situation of the destination country (Jensen & Zhang, 2013; Putra & Hitchcock, 2006). For example, Putra and Hitchcock findsignificant decrease in tourist visitation in the aftermath of the Bali bombing in 2002. On the negative side, the political stability indicator (described later) confirms instability in the Maldives since 2004. Hence, it would be interesting to see if stagnation in the European market is related to instability in the country. Along with stability, this chapter also tests for other security indicators such as freedom status and democracy that are studied in previous studies (Jensen & Zhang, 2013).

Hypothesis 3. Investment in infrastructure increases tourist arrivals.

The findings of some recent studies suggest that adequate provision of infrastructure facilities (e.g. transport infrastructure) also influence tourists destination choice (Durbarry, 2008; Jensen & Zhang, 2013; Khadaroo & Seetanah, 2008; Rigall-I-Torrent & Fluvià, 2011). Accordingly, we examine the effect of investment in tourism related infrastructure on tourist flow in the island economies and in particular to the Maldives.

3.4. Data

UNWTO aggregates data from a number of countries and publishes an annual Compendium of Tourism Statistics (World Tourism Organization, 2015), including bilateral tourism flows. Like most of the cross-country research on determinants of tourism demand this chapter uses the data on tourist flow obtained from World Tourism Organization (2015). Using STATA 14 software, the data is then converted into a panel dataset consisting 214 countries and covering the period of 1995 to 2014.

Although there is no other choice than relying on this UNWTO dataset, it may be useful to note that the dataset has several limitations. First, countries practice differ regarding the way of gathering tourist arrivals information: while some countries use the number of arrivals at the national border, others count arrivals at hotels. Likewise, the country of tourist origin may be determined based on nationality or residence. Second, statistics on outbound tourism is rarely collected. Third, although total arrivals in 214 destination countries are available, information on bilateral tourist flow is missing for many countries because of ambiguity in the identification of country of origin.

The data sources for the variables on the right-hand side of equation (6) are as follows: macroeconomic indicators (e.g. GDP and exchange rate) are taken from the Penn World Tables (PWT) and World Bank's World Development Indicators (WDI), and country-specific data are taken from online. The CEPII (French Institute for Research on the World Economy) datasets provide bilateral distances and time differences. [31]

As security-related variables, I use governance indicators (e.g. political stability and absence of violence) published by the World Bank (see Kraay, Kaufmann, & Mastruzzi, 2010). As an alternative indicator, I also include 'freedom status,' published by Freedom House. Table 3.1shows that the resulting unbalanced panel dataset from 1996 to 2013 that contains 187,973 observations distinguished by the combination of the origin country (i), the destination country (j), and year (t).

Of these, about 26 percent of observations have to be dropped because at least one key explanatory variable (GDPs, price factor, security indicators) was not available.

[31]CEPII dataset utilize bilateral distance using city-level data to account for the geographic distribution of population inside the countries.

We also exclude from the sample those observations of tourists who are from low-income or lower-middle-income countries and instead focus on tourists whose origin countries belong to either high-income (HINC) or upper-middle-income (UMINC) economies, based on World Bank categorization.[32]This is because tourists from less developed countries may be mostly due to other reasons such as immigration(Eilat & Einav, 2004). Moreover, following the lead of Culiuc (2014), I also exclude those combinations of originating countries, destination countries, and year whose annual bilateral tourist flows are less than 100 persons in order to reduce noises in data. [33] It may be noted that after transformation of data, we still keep more than 40% of observations and 80% of the arrivals.

An important observation from the data is that while island economies have a tiny market share (MSH) of total tourist flow, the ratio (CADV = MSH/POPSH) of market share to the population share (POPSH) is much higher for many SIDS than larger economies. In the tourism literature, MSH is considered as measures of absolute advantage while CADV is seen as a comparative advantage a country has in attracting tourists (Jensen & Zhang, 2013). A comparison for the year 2013 is shown in Table 3.2.

For the Maldives, a critically important variable is the total number of registered speed boats. The data on this variable was obtained from the Maldives National Bureau of Statistics (NBS). Given the geographical distribution of islands, this variable is arguably the most important type of transport infrastructure in the Maldives. Some

[32]Upper middle-income economies are those with a GNI per capita between $4,036 and $12,475; high-income economies are those with a GNI per capita of $12,476 or more.

[33]Culiuc (2014) claims that eliminating small differences will reduce noise in fixed effects.

details about the dependent and independent variables will be mentioned in due course in the subsequent sections.

3.5. Static cross-country regression

This section presents the estimates fo the gravity model as specified as equation (6) to test the hypotheses discussed in the Section 2.3.4. The dependent variable is AR_{ijt}, the ratio (per capita) oftotal tourist arrivals from individual tourist origin country (i) to the destination country (j) at year (t). Dividing the number of arrivals by the population reduces heteroscedasticity (Eilat & Einav, 2004; Garín-Muñoz & Montero-Martín, 2007).

According to Dogru, Sirakaya-turk, and Crouch (2017), one of the most frequently used explanatory variable in the tourism literature is tourist's income. Since data on disposable income is not available for some countries, many studies use GDP per capita ($GDPcap_i$)as a proxy for income. [34]

Other most important explanatory variables for analysis are the price of tourism product, risk indicators, and tourism related infrastructure. Although several measures of tourism prices are used, this chapter focuses on relative price (RP_{ij}) between origin country and the destination and the cost of travelling ($TCOST_{ij}$). RP_{ij} is obtained by taking ratio of consumer price indices (CPI), adjusted for the exchange rate, between origin and destination country. It is defined as:

$$RP_{ijt} = \frac{CPI_j}{CPI_i} \times \frac{E_j}{E_i}$$

[34] GDP in purchasing power parity is taken to homogenize the values for the different countries of origin

The cost of traveling ($TCOST_{ij}$) may be captured by two proxies. First, the distance, D_{ij}, measures population-weighted distance between cities. Second, the time difference, T_{ij}, measures the time difference between the origin and destination countries.

Turning to risk indicators, the political stability and absence of violence, $PSTAB_j$, measures country's stability ranging from approximately -2.5 to 2.5 (higher being more stable)(Kraay, Kaufmann, & Mastruzzi, 2010). [35] In addition, the study also examines the effects of freedom status ($UNDEMC_j$) in destination countries ranging from 1 to 7 (higher indicating less perceived safety).

Jensen & Zhang (2012), among many other authors, interpret in GDP per capita ($GDPcap_j$) in the destination as a proxy for infrastructure and technology. Another frequently used proxy for tourism infrastructure is the number of hotel rooms available in the destination country ($AROOM_j$). Recently, internet has been used as both advertising and information gathering tool in tourism industry. The number of internet users per 100 people in the destination country is included in the gravity model as a proxy for adoption of communication technologies (ICT) technologies (ICT_j). Table 3.3 provides definitions and source of data, while descriptive statisticsare summarized in Table 3.4.

[35] More details about the Worldwide Governance Indicators (WGI) project is available at http://info.worldbank.org/governance/wgi/index.aspx#home

Fitting the equation (6) to the data, the equation to be estimated takes the following specification:

$$\begin{aligned}\ln AR_{ijt} &= \ln \alpha_0 + \beta_0 ln\, GDPcap_{it} \\ &+ \gamma_0 ln\, GDPcap_{jt} + \gamma_1 ln\, ICT_{jt} + \gamma_2 ln\, AROOM_{jt} \\ &+ \gamma_3 PSTAB_{jt} + \gamma_4 UNDEMC_{jt} \\ &+ \delta_0 lnRP_{ijt} + \delta_1 lnTCOST_{ij} \\ &+ v_{ijt} \end{aligned} \quad (7)$$

where $v_{ijt} \equiv \tau_t + \mu_{ij} + \varepsilon_{ijt}$ consists of time effect τ_t, country-pair specific effect μ_{ij}, and error term ε_{ijt}. A positive sign is expected for the coefficients, $\beta_0, \gamma_0, \gamma_1, \gamma_2,$ and γ_3 while a negative sign is expected for the coefficients of γ_4, δ_0, $and \delta_1$. All variables except security variables have been natural logarithm (ln) transformed, so parameters may be interpreted as elasticities and semi-elasticities.

3.5.1. Empirical results

For the estimation,I have used STATA econometric software. Table 3.5 reports the empirical results for the estimation of equation (7). The first column estimates the equation using simple Ordinary Least Squares (OLS) with panel-clustered standard errors. OLS perform poorly in the sense that relative price ($lnRP_{ijt}$) takes a counterintuitive sign if the regression equation is intended to capture the demand function. According to Jensen and Zhang (2012), OLS provide inconsistent estimates because explanatory variables are correlated with the error term which may include effects from omitted variables (e.g. visa regime of the countries), biasing its coefficients upward.

Panel data allows controlling for unobserved individual effects. These effects can be treated as country-pair random effects (RE) or fixed effects (FE) for the country-

pair dummiesμ_{ij}. In the column 2, I use country-pair random effects (RE). Hanuman test rejects random-effects model as consistent. An alternative approach that has been used in tourism literature (Culiuc, 2014) is Hausman and Taylor (HT) (1981) estimator. Columns 3 and 4 presents results for Hausman and Taylor (HT) with time difference (T_{ij}) and population weighted distance (D_{ij}) between the origin and destination countries as the transport cost. However, specification in column 6 is preferred because majority of tourists travel via air, thus, variable T_{ij} is a better proxy than distance variable often used in the trade is goods analysis. Columns 5 and 6in present results for the country-pair fixed effects using two different proxies for tourism price. In column 5 is relative consumer price(RP_{ijt}) adjusted for exchange rate. In column 6 is PPP factor ratio (IPP_{ijt}) between origin and destination. [36]

Income levels or structural challenges of the countries may be important in a supply side perspective. For example, higher-income destination countries (e.g. France and Switzerland) would be expected to have achieved basic infrastructure requirements (e.g. better transportation network) for tourism industry to flourish. Thus, some coefficients are expected to be different depending on income levels of the destination countries. There are other reasons for expecting countries to have different coefficients. For example, island economies and economies in a continent may differ in coefficients on variables representing geographical distance because the same values of such variables may have different meanings depending on geographical nature. Thus, Table 3.6 reports the estimates for different sub-samples. Columns #1 to #4reports higher income countries (HINC), upper-middle income countries (UMINC), lower-middle

[36]IPP is obtained by taking ratio of GDP in PPP to GDP at the market exchange rate

income countries (LMINC) and lower income countries (LINC), respectively. [37]Columns #5 and #6 is estimates for small island developing states (SIDS). Table 3.7 reports the estimates for different sub-samples for Hausman and Taylor estimator.

3.5.2. Discussions

In this section, I discuss results of different specifications that were analyzed. To begin with, it is reassuring that coefficients on the main explanatory variables in Table 3.5 show expected signs and reasonable orders of magnitude. Moreover, coefficients are stable across the different specifications in our model. For example, the elasticity on the origin $GDPcap$ remains in the 0.8–0.9 range. Comparing the results in Table 3.6, the coefficient of GDP increases to 1.7 for SIDS. Existing literature suggests great variation in income elasticity to SIDS, depending on the model specification. For example, Jensen and Zhang (2012) found value to be between 0.19 for low income countries, while Eilat and Einav (2004) found elasticity in the range of 0.4-1.4. Finding of this study suggests that tourism to the island nations is considered by foreigners a luxury good. This interpretation is consistent with the fact that island nations like Maldives focus on wanderlust resort style tourism (Peng et al., 2014).

With regards to the price of tourism service, the coefficient of relative prices is statistically significant only in higher income countries. Nevertheless, the effect on tourist arrivals is small with a coefficient of -0.014, suggesting if the price in the destination reduces by 1% tourist arrivals will increase by just 0.01%. These findings

[37]Based on the GNI per capita income, World Bank categorizes four income levels: Countries having GNI per capita above US$12,475 is considered HINC, between US$ 4,126-12,745 is UMINC, US$ 1,046-4,125 LMINC and less than US $ 1,045 as LINC.

indicatethattourist arrivals to lower income countries including SIDS are not sensitive to prices. This is consistent with the related literature, for example, Eilat and Einav (2004) argues that cost of living in low-income countries are relatively low and transport cost mainly drives the tourism price.

However, most of the existing literature suggests higher magnitude for price competitiveness than our findings. For example, Culiuc (2014) finds price elasticity in the range of -0.2 to -0.5, using PPP factor ratio. Accordingly, in column (6) we use the same indicator ($lnIPP_{ijt}$) and the magnitude of coefficient becomes -0.238. Table 3.8 reports results for different income levelsand SIDS replacingRP_{ijt} withvariableIPP_{ijt}. Coefficients shows -0.19 for higher income countries and -0.531 for SIDS. However, we expect price variable takes on greater importance within high-income countries because they are expected to be more competitive. One possible explanation for this inconsistency may be due to strong correlation between variable IPP_{ijt} and income variable GDPcap. [38] Indeed, the coefficient on GDPcap in Table 3.8is considerably smaller across all income level. Thus, result indicates consumer price index adjusted for exchange rate is a better proxy for price competitiveness.

Results reported in Table 3.5 shows that travel costs are significant. For example, Hausman-Taylor estimator suggests increasing travel cost by 1% leading to reduce the arrivals by 1.1%. For SIDS, Table 3.7suggests that the likely impact of travel cost is twice as much as the high-income countries. In tourism literature, traveling cost is closely linked to air connectivity (Eilat & Einav, 2004; Khadaroo & Seetanah, 2008). One possible explanation of our result is given that the number of tourist arrivals to

[38]Correlation coefficient of variables are reported in Table 3.9.

islands is small if not many airlines travel to these countries. Khadaroo & Seetanah finds that increasing direct flights by 1% increase tourist arrivals by 0.3%.

With regards to risk indicators, results show that stability and absence of violence are relevant for attracting more tourists. Except for SIDS, the coefficient is quite stable around 0.08, suggesting that, on average, an increase of one point instability (which is scaled from -2.5 to 2.5, high being better) increases incoming tourists by about 8%. An alternative indicator used in the literature is Freedom House ranking of country's freedom status which is scaled from 1 to 7, high being a country more undemocratic associated with more risk. It is observed that 1 point increase in risk decreases tourist arrival by 7.4%. Findings are within the range of existing literature because Culiuc (2014) finds magnitude at 7.9 % using a different indicator for stability. For SIDS, the coefficient on $PSTAB_{jt}$ is negative, which is counterintuitive, while freedom variable ($UNDEMC_{jt}$) has a coefficient of the expected negative sign and a reasonable magnitude of 6.7%. One possible interpretation for this result may be due to the construction of the risk index. For example, $PSTAB_{jt}$ measures only political instability whereas $UNDEMC_{jt}$ includes other risk factors such as rule of law or individual freedom which could be more accurate in describing variation in risk over countries. Alternatively, our results may be indicating that for island economies, risk factor is not really an issue because many island nations are isolated destinations with prevalent resort style tourism products.

The coefficients on $GDPcap_{jt}$, which can be interpreted as a proxy for the level of infrastructure development, are positive and statistically significant among all income levels. The magnitude of the coefficient suggests that compared to higher income

countries, impact is 2-3 times more for the lower income countries (LINC) and SIDS. This suggests that most of higher income countries have reached certain a threshold of basic infrastructure (e.g. roads and transportation system) necessary for tourism. For many lower income countries and SIDS, tourist arrivals can be increased through improved infrastructure spending. With regards to investment in information technology, except the case of UMIC, our results indicates that (ICT_{jt}) will have greatest impact in LINC and SIDS. Surprisingly, the coefficient on UMIC shows counterintuitive sign. One possible explanation could be that given the spread of ICT in these countries, tourism industry is not taking full advantage of the available resources.

As expected, adding new hotel rooms increases the arrivals. One potential problem with this variable is that one cannot be sure about the direction in which causality runs. That is, causality is not necessarily running from accommodation capacity to tourist arrivals. It is possible that the positive coefficient comes from the reverse causality, even though Culiuc (2014)argues that this is unlikely because the decision to add hotel rooms takes time and can rarely be implemented within the same year.

3.6. Dynamic regression model for tourism flows

3.6.1. Cross-country analysis

The model discussed in the cross-country case is static. As we have highlighted in the literature review above, especially in section 3.2.3, however, recent studies tend to use dynamic model for international tourism flow analysis (Chasapopoulos & Butter, 2014; Garín-Muñoz & Montero-Martín, 2007; Jensen & Zhang, 2013). The dynamic

nature of tourist preference is taken into consideration by including lagged dependent variable ($\ln AR_{ij(t-1)}$) in equation (7).

One obvious problem with OLS is that OLS does not cope with unobserved heterogeneity among countries. In the dynamic panel nature, the lagged dependent variable is positively correlated with the error, biasing its coefficient upward. A commonly used approach isthe fixed effect model, which takes account of this bias. However, according to Nickell (1981), fixed effect estimates are biased downwards when there is a small number of time series data. This is the case for my sample.

As a response to the this problem, Dogru et al. (2017), Eilat & Einav (2004), Garín-Muñoz & Montero-Martín (2007) propose to estimate the first-difference gravity equation by using generalized method of moments (GMM) framework proposed by Arellano and Bond (1991) and improved by Blundell and Bond (1998).[39] Following their lead, this section uses the GMM framework to estimate the determinants of tourism for the cross-country as well as thesingle country case of the Maldives. The dynamic model may be written

$$\begin{aligned}\Delta \ln AR_{ijt} &= \alpha_1 \Delta \ln AR_{ij(t-1)} + \beta_0 \Delta ln\ GDPcap_{it} \\ &+ \gamma_0 \Delta ln\ GDPcap_{jt} + \gamma_1 \Delta ln\ ICT_{jt} + \gamma_2 \Delta ln\ AROOM_{jt} \\ &+ \gamma_3 \Delta \ln PSTAB_{jt} + \gamma_4 \Delta ln\ UNDEMC_{jt} \\ &+ \delta_0 \Delta lnRP_{ijt} + \Delta \varepsilon_{ijt} \end{aligned} \quad (8)$$

where$\Delta \ln AR_{ijt} = \ln AR_{ijt} - \ln AR_{ij(t-1)}$, and, analogously, for the other variables. For the GMM estimation, we use STATA command 'xtbond2' written by Roodman (2006). In the Table 3.10, Columns (1) to (4)report results from applying the GMM estimator proposed by Arellano and Bondfor thesub-samples of countries with different income

[39] For our analysis of GMM estimator, I used STATA command xtbond2 written by David Roodman. For more details refer to Roodman (2006).

levels, while Column (5) reports estimates for the SIDS.It should be noted that the estimated coefficients are short-run demand elasticities and the corresponding long-run elasticities can be calculated by multiplying each of the estimated coefficients with$1/(1-\alpha_1)$.

Further,I also include an additional explanatoryvariable to capture effect of natural disaster on tourist flows. This is because,first,immediately after the natural disaster, it may bephysically impossible for tourists to visit many holiday spots. Second, disasters often leaves considerable damages to the tourism related infrastructure, leaving the destination unreachable for some time,depending on the pace of recovery. For example, following the 2004 Indian Ocean Tsunami, many resorts in the Maldives required large scale renovations, so resorts suspended their operations for several months. Third, following the disaster potential tourists may also develop a perception that the destination is a dangerous place and its effects may be persistent and hence have lagged effects.

As a proxy for strength of natural disaster, I use percentage of population affected by the natural disaster in the destination country *j*in the year *t* ($DISAS_{jt}$). Data is obtained from emergency events database (EM-DAD) from the Universite Catholique de Louvain. [40]When the regression was repeated for sub-sample (not shown here), coefficients of variable,$DISAS_{jt}$, show correct negative sign but was only significant for SIDS. This is consistent with existing literature(International Monetary Fund, 2016) that

[40] More details about the dataset and impact of natural disaster on SIDS refer to IMF policy paper (International Monetary Fund, 2016).

suggest island economies are more vulnerable to disasters.Regression results of $DISAS_{jt}$ for the SIDS arereported in Column (6) and (7)of the Table 3.10.[41]

The results reported in Table 3.10 show that the coefficient on the lagged dependent variable is larger (~0.50) for High-income countries compared with the low-income countries (~0.30). In the literature, lagged dependent variable is attributed to consumer loyalty and/or habit persistence (also known as repeated visits), thus finding of this study, for example, suggests SIDS generate repeated visits in the range of 25% to 50%. It was also reassuring that signs and magnitudes of the coefficients of other explanatory variables are consistent with what was observed in the static cross-country analysis. For example, coefficient of proxy for tourist income ($GDPcap_{it}$) is highly significant and has greater impact on tourist flow to island economies compared with high-income countries. On the other hand, the coefficient of relative prices is statistically insignificant across all specifications. Results also show that stability indicators as well as risk associated with natural disaster do affect tourist flow.

With regards to effects of natural disaster, $DISAS_{jt}$, finding indicate that natural disaster is likely to reduce tourist arrivals to island economies. Result reported in column (6) of Table 3.10 suggests that one percent increase in people affected by the disaster decreases tourist arrivals by 0.4 percent. Column (7) reports coefficients when lagged variables are included in the regression. Most of the coefficients are insignificant, likely due to significant decrease in the number of observation.[42] The coefficient of first lag, $DISAS_{jt-1}$, shows counterintuitive positive sign. This may be because tourist arrival

[41] It should be noted that country level data on natural disaster is limited, which is the reason why a number of observations are reduced in column (6).

[42] When the regressions were done in stepwise (with more observations), the signof the coefficient of first lag is positive (but insignificant) while lag 2 show correct negative sign and also significant at 5%.

data simply count number of incoming foreigners at the border. Hence, the positive sign may be indicating significant increase in inflow of foreigners (foreign aid workers, NGOs, emergency responders, etc.) who assist in disaster relief efforts. On the other hand, the coefficient of the second lag shows expected negative sign, suggesting possibility of persistence of negative view about the destination as an unsafe place to visit, following the natural disaster.

In the following sub-section, I expand dynamic analysis using GMM-estimator with a focus on the tourist flow to the Maldives.

3.6.2. Tourist flow to the Maldives

Per capita tourist arrivals from tourist originating country (TOC) to the Maldives (MDV) is taken as the dependent variable. In addition to the explanatory variables used in the cross-country case, here I include competitive price as additional variables adjusted by the time difference. The competitive price $CP_{k(mdv)t}$ is defined as:

$$CP_{k(mdv)t} = (\frac{CPI_{mdv}}{CPI_k} \times \frac{E_{mdv}}{E_i}) \times \frac{TD_{imdv}}{TD_{ik}}$$

Where$\mathrm{CPI_{mdv}}\mathrm{CPI_k}$are consumer price index in the Maldives and competitive countries while E represents exchange rates. TD represents the time difference (as transport cost) between TOC's and the Maldives as well as competitive countries. This variable is difficult to construct when the analysis covers many destination countries, so based on the Maldives Visitors Surveys and characteristics similar to the Maldives, only four countries (Seychelles, Mauritius, Fiji and Sri Lanka) are taken as likely competitors.

In addition, specific supply-side factors in the Maldives that are likely to affect tourist demand are included in the analysis. For example, for investment in transport infrastructure ($BOAT_{jt}$), total number of registered speed boats is obtained from the Maldives National Bureau of Statistics (NBS). Given the geographical distribution of islands, this variable is arguably the most important type of transport infrastructure in the Maldives.

Table 3.11 reports the empirical results for the estimation, and variables, descriptive statistics, and their definitions are summarizedin Table 3.12. In Table 3.11, the first column estimates the equation using simple OLS with panel-clustered standard errors. In this column, tourist income, relative prices, and time differences are used to explain the international demand for Maldives tourism services.

Column (3) reports the empirical results applying the GMM-system estimator proposed by Arellano and Bond. Columns (4) to (8) extend this basic model by including one or more additional determinants of foreign tourism demand. Column (4) includes the distance between the capital cities of TOCs and the Maldives as an alternative variable to the time difference. The Column (5) includes competitive price between the Maldives and other competing destinations, and the columns (6) to (8) shows Maldives specific variables.

The results indicate that, in general, the model performs satisfactorily. The magnitudes and signs of the coefficients seem to be theoretically reasonable and statistically significant, except for the coefficient on relative price. Given the opposite directions of bias present in OLS and FE estimates, consistent estimates for lagged dependent variable should lie between 0.897, the estimate obtained from OLS and

0.473, that from FE. Indeed, it is reassuring that the coefficient of our GMM estimator falls between these two values.

No signs of serial correlation are found. The result of the F-test indicates the joint significance of the explanatory variables. Estimated coefficients are short-run demand elasticities and the corresponding long-run elasticities are reported inside { } in the Table 3.11.

3.6.3. Discussion

The results show that the coefficient on the lagged dependent variable is large∼0.70compared to the cross-country case for SIDS (∼0.50),and remains relatively stable across the specifications. Findings suggest that about 70% of total arrivals can be attributed to consumer loyalty and/or habit persistence on the consumer decisions in favour of the Maldives. This result is consistent with our expectation because arrivals to the Maldives include 25%repeated visitors. Moreover, the result is also within the range of similar empirical studies. For example, Chasapopoulos and Butter (2014) reports that about 74% of total international arrivals to Greece can be attributed to habit persistence, while Garín-Muñoz and Montero-Martín (2007) find habit persistence of Balearic Islands tourism by at 54%.

The estimated coefficient of the short-run income elasticity of 0.27 and the long-run income of 1.18 suggest that tourist arrivals do depend on the economic conditions of TOCs. In other words, long-term economic recessions in the main tourism markets will have a significant impact to the tourist destinations such as the Maldives. For this reasons, it can be argued that the economic downturn in the European Union would

have significantly contributed to the stagnation of European market in the Maldives. So, diversification of market to China in 2004 was crucial to maintaining the high tourism growth rate.

In contrast to other similar studies (Garín-Muñoz & Montero-Martín, 2007), the estimates show that the relative price is not a significant determinant of tourist arrivals to the Maldives. The coefficient on relative prices is positive, which is counterintuitive, but it is not statistically significant. Moreover, the estimates from columns 5 suggest that Maldives does not face competition. Only Seychelles appears to be competing with the Maldives, but the magnitude of the effect is very small (- 0.08). One possible explanation for this finding could be that traditional customers of Maldives are countries with relatively high standards of living (e.g. Europeans). Thus, the decision to visit Maldives is determined by the level of personal income rather than by the relative cost of living.

With regards to the cost of traveling, the estimated results show that, in the long-run, the price of travel is a significant determinant of tourism demand to the Maldives. The estimated short- and long-run values, when the time difference is taken as the explanatory variable, are -0.21 and -0.91, respectively. Likewise, short-run and long-run values, for distance as an explanatory variable, are -0.31 and -1.34.

Column (6) to (8) extends the basic specification by including Maldives specific variables. In agreement with our hypothesis, all coefficients on the explanatory variables have the expected signs and are significant. Investment in tourism infrastructure and transport does appear to have beneficial effects. Political instability and social unrest in the Maldives are likely to have an adverse effect on the tourist

arrivals to the Maldives. However, it is worth pointing out that these Maldives specific variables are only about changes over time in the Maldives. The magnitudes of the coefficients on these variables are less important for comparative purposes.

3.7. Summary of the Chapter and conclusion

This chapter has examined determinants of international tourism focusing on supply-side factors such as price, stability and tourism infrastructure. Taking advantage of panel data, static cross-country analysis and dynamic single country analysis have been performed based on the gravity model framework. The study on SIDS is relevant because as descriptive analysis shows, despite small market share, island economies have a comparative advantage in attracting tourists, and revenue from tourism is a significant portion of total exports of these countries.

The results of the econometric estimation support the hypothesis formulated, and results are robust within static and dynamic specifications. The results have indicated a number of interesting observations that show coefficients within a similar range of existing studies. First, one of the crucial conclusions of the study is that the loyalty and/or habit persistence, and word of mouth significantly affects tourist flows to the Maldives.

Second, analysis finds that in the long-run tourism demand depends on the economic conditions of tourist originating countries. In particular, cross-country analysis shows that the coefficient is two times larger for island economies. Further, estimation for the Maldives supports this conclusion.

Third, the study finds that tourist demand is price inelastic, thus, not so sensitive to price changes, especially in the case of Maldives. However, most of the existing literature shows higher and significant coefficient suggesting price competitiveness is necessary to attract more tourists (Durbarry, 2008; Garín-Muñoz & Montero-Martín, 2007; Jensen & Zhang, 2013). For this reason, further analysis is required to understand both short-term and long-term impact of tourism price, especially to the Maldives.

Fourth, consistent with earlier empirical studies (Chasapopoulos & Butter, 2014; Culiuc, 2014; Jensen & Zhang, 2013; Khadaroo & Seetanah, 2008), transport cost show statistically significant results. For example, results show that, in the long-run, the price of travel is a significant determinant of tourism demand SIDS as well as to the Maldives. However, it may be noted our analysis can be improved by including airfare in the travel cost, which is not used in the paper due to data unavailability.

Fifth, the finding suggests that tourist demand is sensitive to risk indicators. For these reasons, findings appear to support the hypotheses that deteriorating level of risk indicators after 2004 may have also contributed to the stagnation of European market. Policy recommendation in this respect is that government as well as tourism industry needs to put more attention on the image of the country as a peaceful tourist destination.

Finally, all three proxies for investment in tourism related infrastructure ($GDPcap_{jt}, ICT_{jt}$ and $AROOM_{jt}$) are positive and statistically significant. As expected, the magnitude of the coefficients suggest that impact is greater for the lower income countries and island economies. This suggests that for most of lower income countries, including SIDS, tourist arrivals can be increased through improved infrastructure spending. In the case of Maldives, we also find the investment in domestic transport

infrastructure (BOAT) is having significant impact for a long-termimprovement in tourist arrivals.

Chapter 4 : Factors associated with hotel room prices in Maldives

4.1. Introduction

What do consumers value in tourism? This question is of practical interest to the $1.2 trillion/year world tourism industry, policy makers in tourism-dependent countries such as Maldives, as well as economists interested in the theory of consumer behavior.[43]Answering this question is difficult, primarily because most of the tourism services (e.g. hotel accommodation) are a bundle of many characteristics that are not separately traded on the market (Rigall-I-Torrent & Fluvià, 2007, 2011). For example, for tourists, the choice of a hotel to stay depends on not only room rate but also various characteristics of hotels, such as the design of the building, the number of rooms, food quality, other service quality, and the utility that they would derive from physical environments surrounding the hotels (Espinet et al., 2003; Rigall-I-Torrent & Fluvià, 2007, 2011).

In order to consider the growth potential and sustainability of tourismin many developing countries, it must be important to examine how the tourism industry can provide quality services and attractive amenities and preserve environments. This applies in particular to small island developing states (SIDS), where tourism is a leading sector employing a large part of the population and the beauty of beaches, the sea, and the sky is an important part of national wealth. A considerable compilation of micro-oriented empirical studies seems to be called for to understand what can be done and what areactually being done by tourist businesses for enhancing their growth

[43]UNWTO (2015). For more information about the economic contribution of tourism refer to Chapter one.

sustainability. To my knowledge, however, there have been very few attempts to gather firm-level data in the literature on theeconomic analysis of tourism (Song et al., 2012).

Chapter 2 described the dynamic changes taken place in the Maldives tourism industry. In particular, the emergence of the guesthouse segment has generated interesting debates in the country as follows. First, industry experts believe that mass tourism is driving down tourism price due to new entrants with poor quality services. An important point is how to enhance and manage tourism related training to improve the quality and increase the revenues from the industry. Second, compared to resorts, the guesthouse business model is believed to be more exposed to free-rider problem, congestion, waste management issues, and friction between tourist lifestyle and social values of Maldivian people. For example, open access in guesthouse islands suggests that the marginal cost of tourist enjoying beach or reef is zero to individual guesthouse owners. Thus, it is likely that an even larger number of hotels are built to accommodate increasing demand. The mass-tourism model is said to be unsustainable due to pollution leading to depletion of natural resources. The real problem, however, may be that while there are hot debates, there are few cool-headed studies.

In my view, it is important to examine tourists' willingness to pay for a clean environment and to explore an appropriate pricing strategy. As mentioned above, it seems appropriate to view tourism services as a bundle of characteristics when we consider pricing. In other words, it seems appropriate to adopt the hedonic priceapproach. Among the applications of the hedonic approach to tourism, Rigall-I-Torrent and Fluvià (2007) and Rigall-I-Torrent et al. (2011) exceptionally investigate the correlation between the price and hotel characteristics while paying attention to both private and public characteristics of hotels in Catalonia, Spain. The present study

attempts to extend this line of research by examining the effects of improved service quality and beach quality, among other changes, on hotel room prices in the Maldivian guesthouse sector.

According to Kuminoff, Smith and Timmins (2013), there are a number of 'equilibrium sorting models' that integrate the analysis of willingness to pay for public goods and the analysis of pricing for differentiated products. [44] For example, hedonic equilibrium modeling technique has been used extensively in the analysis of the housing market to estimate consumer's marginal willingness to pay (MWTP) for environmental amenities such as clean air (Bajari, Fruehwirth, Kim, & Timmins, 2013).

Like housing, most tourism services can be viewed as differentiated goods which, according to Taylor (2003, p331), are "products whose characteristics vary in such a way that there are distinct product varieties even though the commodity is sold in one market (e.g. houses, cars, computers, [hotel rooms])." Despite the obvious application potential, only a few studies have applied this approach to tourists' evaluation of environmental amenities (Sinclair, Clewer & Pack, 1990; Rigall-I-Torrent & Fluvià, 2007, 2011). According to Song et al., (2012), this lack of research is due to the absence of data measured in a consistent way across firms. The main purpose of this chapter is to contribute to filling this gap by collecting and analyzing firm-level data from the Maldives.

One of the major findings of this chapter is that the suppliers mostly capture the added benefit that comes with improving the quality of environment or service as means of increasing price rather than growth in tourist's consumer surplus. Study finds that tourists value the natural environment. Findings suggest hotels located in islands with

[44] For detail review of hedonic sorting model refer to Kuminoff, Smith and Timmins (2013).

lengthy beaches can quote a higher price, on the other hand, overcrowding due to free-rider problem, and poor waste management practices are having adverse effects on prices. For example, results indicate thatMWTP for clean environment (e.g. beach) varies between USD 1 to 3.5.

Second, findings suggest that the tourist's value manager's experience and training For example, when staff in the guesthouses can speak an additional foreign language, the price increases in the range of 4-7%. Also, hotels having managers with at least three months of training can set (on average) price 17% more than a hotel with otherwise identical characteristics but without trained managers. It was also observed that more educated and experience managers are aware of environmental challenges.

The rest of this chapter proceeds as follows. Section 2 presents review of hedonic literature. Section 3 discusses our model specification and hypotheses. Section 4 describes collection of original data. Section 5 presents descriptive statistics and econometric estimator. Section 6 reports the results of applying the estimator to our data and discussion of the results. Section 7 concludes with some recommendations.

4.2. Review of relevant literature

4.2.1. Empirical research on hedonic pricing

Since the 1920s, economists have been using hedonic approach to estimate the demand for goods derived from the intrinsic qualities of individual characteristics (Taylor, 2003). Well-known papers are from Court (1939) and Griliches (1961). They use hedonic analysis to estimate quality-adjusted price indices for automobiles. Lancaster (1966) demonstrates that consumers derive utility not directly from the goods,

but from their intrinsic characteristics. Moreover, Lancaster (1966) argues that consumers receive additional utility depending on how and where the productwas consumed.

In his seminal paper, Rosen (1974) first proposes a theoretical framework for understanding the market process generating a hedonic equilibrium. Building on the ideas of Lancaster (1966), Rosen defined hedonic prices "as the implicit prices of characteristics and are revealed to economic agents from observed prices of differentiated products and the specific amounts of characteristics associated with them" (p. 34). More importantly, Rosen established the connections between consumers' preferences for characteristics of goods and market prices. Rosen also outlined an econometric procedure to estimate the hedonic price function. Rosen's Hedonic Price framework (hereafter HP) is referred to as a first-stage and second-stage analyses and will be the basis for my hedonic estimation procedure described in detail in Section 4.

In the Rosen's (1974) first-stage analysis, the hedonic price function is estimated using sales prices of a differentiated good as the dependent variable and the characteristics of the good as the independent variable. He argues that the hedonic regression analysis allows researchers to recover the estimates of marginal willingness to pay (MWTP) for individual characteristics, commonly referred to as hedonic (implicit) prices. The coefficients are interpreted as the effect on the market price of increasing a particular product attribute while holding the other attributes fixed. In other words, consumer's MWTP for a small change in particular characteristics can be inferred directly from an estimate of its implicit price.

In the second-stage, the estimated implicit prices of characteristics are regressed on the characteristics of consumers, such as age and income. The second-stage is of

particular importance because it enables researchers to identify demand and supply functions for use in valuing larger policy changes or welfare analysis.

In the forty years since Rosen (1974) established his approach, a large number of papers have explored its potential applications, including housing market (Witte, Sumka, & Erekson, 1979), automobiles industry (Atkinson & Halvorsen, 1984), valuing environmental externalities (Greenstone & Gallagher, 2008; Harrison & Rubinfeld, 1978) and quality of education (Black, 1999).Recently, areas of interest have been expanded to characteristics of personal computers (Pakes, 2003), valuing consumer products such as wine (Pierre, Sébastien, & Michael, 1997) and tourism products (Espinet et al., 2003; Rigall-I-Torrent & Fluvià, 2007 2011; Rigall-I-Torrent et al., 2011). Our primary interest here is the literature that focuses on valuing local public goods, such as quality of the environment.

4.2.2. Application of Rosen model and Improvements

In the broad area of environmental economics, HP belongs to the family of 'revealed preference' approaches that use market information to assess the quality of environmental amenities.[45] According to Bishop and Timmins (2011), for example, the HP model has been used extensively to analyze local public goods and quality preferences in the housing market. The first major application of the HP model to public goods was Harrison and Rubinfeld's (1978) study of willingness to pay for clean air. They found that housing prices decrease with increase in air pollution and also consumer's WTP for pollution varies depending on their income.

[45]For review of literature on various assessment methods for valuing non-marketed goods , such as environmental quality, refer to Champ, Boyle, & Brown , (2003)

Empirical literature that focuses on the cost-benefit analysis of policy change has also utilized the HP method. For example, Greenstone and Gallagher (2008) investigates the benefits of Superfund cleanups compared to the cost of implementation of the policy.[46] However, they propose improvements to Rosen's strategy because of endogeneity issues highlighted by earlier researchers.

According to Bartik (1987) and Epple (1987), Rosen's approach suffers from well-known econometric problems. Thus, a great deal of hedonic literature has been devoted to the identification and sorting process. First, Rosen's (1974) approach suffers from the problem of omitted variable bias (OVB) because he assumed perfect information about product characteristics. It is unlikely for a researcher to observe all the features that are relevant to consumers. For example, in the case of hotel room price, it is possible to get information about characteristics such as room size, hotel amenities, and location characteristics. On the other hand, characteristics such as service quality and neighborhood noise disturbance may be unobserved by the researcher, but tourists are likely to drive utility from these characteristics. So, if omitted attributes are correlated with the observed attributes, then OLS estimates for implicit prices will be biased.

Second, Bartik (1987) and Epple (1987), among others, argues that estimation procedure for second-stage regression based on Rosen's (1974) assumptions produce biased results due to endogeneity problems when the hedonic price function is non-linear. For example, tourists with a high preference for a certain characteristic would naturally book hotel rooms that contained more of this characteristic. They argue that

[46]Refer to Greenstone and Gallagher (2008) for more details on the Supperfund program

Rosen's suggestions of using supplier attributes will also not work because it is correlated with the implicit price due to sorting problem underlying hedonic equilibrium.

When panel data is available and unobserved variables are time-invariant, OVB can be accounted by fixed effects (Bajari et al., 2013). However, obtaining panel data for most of the differentiated goods such as tourism is difficult. Moreover, unobservable attributes such as beach cleanliness and service quality are likely to change over time. When panel data is not available or unobserved variables are time-variant, some researchers have suggested using instruments variables (Bartik, 1987; Epple, 1987) and others settled for the semiparametric approach (Black, 1999; Chay & Greenstone, 2005). More recently, Bajari et al. (2013) propose a strategy that relies on an assumption about consumer's rationality, under which just two repeated observations are required to obtain consistent estimator.

Third, Rosen (1974) also made an assumption about the continuum of the products and perfect competition about the market under investigation. Bajari and Benkard (2005) argue that these assumptions are unreasonable in many markets because of imperfect (oligopolistic) competition. Moreover, they claim that imperfect markets often contain only few hundred products. Accordingly, they relax these two assumptions proposed by Rosen and outlined a general model for his first-stage and semi-parametric approach to his second-stage.

Given the identification and sorting problems, the hedonic literature has mostly ignored Rosen's second-stage (Bajari et al., 2013; Bishop & Timmins, 2011). The main focus of this chapter is to recover implicit prices for characteristics bundled in a tourism service (internal characteristics) and features external to hotels and other tourism service providers (external characteristics) such as valuing environmental amenities.

4.2.3. Hedonic literature on tourism and the contribution of this study

Rigall-I-Torrent & Fluvià (2007, 2011), among others, demonstrate that the Rosen model could be applied to hotel rooms as well. Similar to the housing market, internal attributes of hotels (e.g. room size, the number of room, facilities, etc.) vary considerably. Hartman (1989) was the first to use the HP method to develop a pricing strategy for differentiating products in luxury hotel market. Predominantly, however, HP regressions have been used to evaluate internal characteristics, including holiday packages (Thrane, 2005), bed and breakfast amenities (Monty & Skidmore, 2003), holiday hotels (Chen & Rothschild, 2010; Eduardo & Santos, 2016; Espinet et al., 2003) and ski resorts (Falk, 2008).

By contrast, tourist valuation of external attributes or environmental amenities have seldom been investigated. But there are some exceptions. A pioneering study by Sinclair, Clewer and Pack (1990) included both hotel attributes and local facilities in the Spanish province of Malaga as independent variables. Recent papers including Rigall-I-Torrent and Fluvià (2007, 2011), investigated how prices depend on both hotel and neighborhood characteristics. Rigall-I-Torrent et al. (2011) examined effects of beach characteristics and hotel location on hotel room prices. Their findings suggest that external attributes such as safety and better natural environment (e.g. beach quality) are associated with higher hotel room prices. The analysis below belongs to this line of research.

Hotel room pricing can be studied from 'stated preferences' (recall data) and 'revealed preferences' (market data). Monty and Skidmore (2003) used survey data of consumers to estimate their willingness to pay for hotel attributes. Taylor (2003)

discusses a number of advantages of using market data instead of recall data collected from consumers. The present study follows and estimates an equation that explains the price of a hotel room per couple per day. Most of the existing studies use price information from tour operator's broachers. Notable exceptions are Chen and Rothschild (2010) and Eduardo and Santos (2016). We use online prices, as described in detail in Section 5, taking advantage of the advancement in ICT (Cavallo et al., 2016).

In addition to hotel room prices, we estimate an equation explaining *hotel room rating* by guests. Section 4.3.5 provides a detailed explanation to test my hypothesis that hotel-rating indicate consumer surplus. Note that this study uses hotel room rating as a dependent variable. This is a deviation from Rigall-I-Torrent and Fluvià (2011), who use rating as an explanatory variable in regressions of hotel room price. They claim that *rating* indicates quality factors such as aesthetic or visual beauty that are not capturedby the observed variables. Most likely, however, *rating* is endogenous. [47] Price and rating would be affected by the same unobservable characteristics internal or external to hotels.

Thus, this study attempts to contribute the economic literature on tourism in three respects. First, it applies the HP method to the context of tourism in the small island developing states (SIDS) for the first time by collecting primary data through my own survey. Second, it pays attention to both internal and external characteristics, which is not new but relatively new. Third, it uses not only hotel room price but also rating as dependent variables based on myown theoretical reason which will be explained below.

[47]Booking.com ask guests to give a score between 1 to 10 based on each of following items (services) of the hotels: cleanliness, comfort, location, facilities, staff and value for money

4.3. Model

4.3.1. Hotel room as a differentiated good

Consider hotel rooms in one geographical location k (island).In the following explanation, tourists wishing to book these hotel rooms may be referred to as *consumers*, hotels as *firms,* and managers that run the hotels as *producers.* .

Hotel rooms can differ from each other in internal and external characteristics. Hotels can differentiate their rooms by changing their characteristics, including room size, view from window, room equipment, quality of beach. In general, any hotel room could be described by the vector:

$$\boldsymbol{z} = (z_1, z_2, \ldots . z_n),$$

where$z_j (j = 1\ to\ n)$completely describes the services available to tourists by staying in the hotel room. In the case of hotel room, these characteristics may include structural attributes (e.g., size of room), neighborhood attributes (e.g., community education standard), and local environmental amenities (e.g., quality of beach).

4.3.2. Hedonic Price Function

Different consumers would have different preferences over$z_1, z_2, \ldots . z_n$.It is assumed that consumers know the set of these characteristics of each hotel room and its price fully when they choose which room to book. For example, if the tourist value 'beach cleanliness' more than other features, then she would prefer hotels located in islands where reviews on beach cleanliness is better, assuming all the other aspects

remains the same. If many consumers appreciate beach cleanliness greatly, hotel rooms in front of a clean beach will command a high price. In the HP model, it is not difficult to show that the price of a hotel room i is a function of characteristics:

$$\boldsymbol{P_i} = P(z_{i1}, z_{i2}, \ldots z_{ij} .. z_{in}). \qquad (1)$$

The equation (1) is the price of hotel room, P, as a function of the vector of values, **z**, describing its characteristics. In other words, this is the price each tourist pays for the room in exchange of enjoying services derived from the characteristics of the room per period.

Inherent in our description above are the following two assumptions. First, as mentioned above, all tourists accurately perceive the characteristics represented by the vector **z** at every location. This assumption is strong but plausible because rapid improvements in ICT allows effective dissemination of information about hotels characteristics as well as consumers feedbacks about their experience. High-quality and detailed information are available from hotel websites as well as some online travel agencies (OTAs) such as Booking.com, Trip Advisor, Hotel.com, etc. Indeed, one in three visitors to the Maldives refers to an OTA before finalizing their booking (Maldives Tourism Survey, 2015).

Second, it is assumed that there is sufficient variation in the characteristics$\boldsymbol{z}$of hotel rooms so that the function P(Z) is continuous with continuous first and second partial derivatives. Indeed, hotel rooms in Maldives vary widely in grades and types (e.g., standard, beachfront and deluxe), amenities, services, and location.

4.3.3. Hedonic price schedule

The first step of our estimation is to find hedonic price schedule (HPS) that emerges from the equilibrium interaction of tourists demanding different combinations of characteristics Z and managers supplying them. Rosen (1974) argues that HPS represents a market clearing equilibrium, which mean in our context that the hotel room market is in short-run equilibrium and all tourists book (rent) one room at the market price.

In our model, an individual tourist utility depends on consumption of a composite private good (or a numeraire), **x** (with unit price), and a bundle of tourism service characteristics$\boldsymbol{z}$**:**

$$U = U(\boldsymbol{x}, \boldsymbol{z}) \qquad (2)$$

subject to the budget constraint:

$$I - [\boldsymbol{x} + P(\boldsymbol{z}) + T] = 0 \qquad (3)$$

Where $I$is the tourist income, P(z) is the hedonic price of a room and T is the cost of transportation. For simplicity, we shall ignore T and associate the a single characterisitc z_j, with measure of quality of service or environment amenities (e.g. quality of beach).[48] Then, assuming that spartial varaiation in hotel room characterisitcs (in cluding z_j) are capitalized into differential in hotel room price, the first order condition for utility maximization of (2) subject to (3) reveals that each tourist will choose level of z_j to satisify:

$$\frac{\partial U}{\partial z_j} \Big/ \frac{\partial U}{\partial x} = \frac{\partial P}{\partial z_j}$$

[48] In the analysis we control for transport cost by including a distance variable, between the islands and the airport.

where $\frac{\partial P}{\partial z_j}$ is the partial derivative of *Price function*, $P(z)$, with respect to the*j*th characteristic, referred to as the *marginal implicit price*. In other words, it is the marginal willingness to pay (MWTP) for the*j*th characteristic implicit in the overall priceof the hotel room, holding all the other characteristics constant. The equilibirum condition also means that MWTP for z_j must equal to marginal cost of procuring an extra unit of z_j from the market.

4.3.4. Tourist Bid function and Supplier offer function

It is possible to gain better insight into tourist's choice behavior if we refer to the ratio of marginal utilities, $\frac{U_{z_j}}{U_x}$, with a negative sign as tourist willingness to substitute one unit of z_j for one more unit of x without changing maximum utility. Rosen (1974) termed $\frac{U_{z_j}}{U_x}$ as bid function, B_j , which is commonly refered as indifference curve. Accordingly, we follow Greenstone & Gallagher's (2008) explanation of hedonic equilibrium in the housing market to describe our model for tourist bid functionand supplier offer function and estimate economic value for quality of service and environment.

It is obtained by first substituting equation (3) into utility function (2), which gives $u = U(I - P, z_1, .. z_j \dots, z_n)$. Inverting this equation and keeping constant all characteristic except z_j, an expression for bid function (willingness to pay [WTP]) for z_j is obtained:

$$B_j = B_j(I - P, z_j, Z^*_{-J}, u^*) \qquad (4)$$

where, u^* is the maximum utility given the budget constraints and $Z^*_{-J}$are the optimal quantities of other charactristics. Expression (4) reveals the maximum amount that a tourist is willing to pay for different values of z_j, keeping utility constant. It also reveals that toutist's choose different level of z_j depending on their income and/or preferences.

The other side of the market is composed of hotel managers (suppliers) offering accommodation services. So supplier's profit function is define by:

$$\pi = \mathrm{P(z)} - \mathrm{C(z)} \qquad (5)$$

Where P(z)is the rental price per period and C(z) is the cost-function. To make our analysis compatible with the demand side of the market, we can invert equation (5) and derive what Rosen (1974) termed *offer function,* O_j*,* for the characteristic z_j

$$O_j = O_j(z_j, Z^*_{-J}, \pi^*) \qquad (6)$$

Where π* is the maximum available profit given its cost function and the HPS.

Using Greenstone and Gallagher (2008) model, Figure 4.1 in illustrates HPS, bid functions and offer functions for three types of consumers and suppliers. Heterogeneity in tourist bid functions arisesdue to taste and/or income as tourists choose different quantities of preferred characteristic. For example, let us denote as three types of tourists 1, 2, and 3. The three types of tourists choose hotels in locations where their MWTP for z_j is equal to the market determined marginal implicit price, which occurs at z_j^1, z_j^2 and z_j^3, respectively. Given market prices, these tourists' utilities would be different at sites with higher or lower levels of quality.

Likewise, heterogeneity among individual suppliers arises due to differences in their cost functions. For example, better quality services mean more training needed for managers or other supervisory and operational level staff. Alternatively, if the beach is dirty due to waste management practices of islanders, then Guesthouse managers have to hire additional people to clean the beach and provide a high level of local environmental quality.

The HPS runs through tangencies between consumers' bid and suppliers' offer functions. At each point on the HPS, the marginal price of a hotel room characteristic is equal to an individual consumer's marginal willingness to pay for that characteristic and an individual supplier's marginal cost of producing it. From the supplier's perspective, hotels providing poor quality services or located in areas with poor environmental quality must have lower prices to attract potential tourists. The HPS gives the price that allocates consumers across locations. Thus, the HPS can be used to infer the effects of a marginal change in a characteristic. In other words, it is possible to identify the demand for the characteristics in principle, even though whether or not we can do so empirically depends on the availability of good indicators of characteristics.

To guide empirical analysis to be conducted below, it may be useful to advance testable hypotheses on the impacts of some observable characteristics of hotel rooms on prices. Among various characteristics, this study pays special attention to those representing the quality of the environment and that of services because their impacts are considered to have policy implications as will be discussed later. The first variable of interest represents accessibility to the location of the hotel.

Hypothesis 1- The room price of a hotel increases with the accessibility of the island/beach in which the hotel is located.

The second variable of interest is waste management practiced in the island.

Hypothesis 2- Locations with poor waste management procedure have lower hotel room prices.

The third variable of interest is the human capital of owners or managers of hotels, which must be closely related to the quality of service.

Hypothesis 3-Hotels with more educated/experienced owner/manager (proxy to quality of service) will have higher hotel room prices

4.3.5. Hotel room rating by guests

In the HP framework, it is often difficult to discuss the welfare effects of quality change because it is difficult to infer the effects on welfare from the estimated effects on price (Greenstone & Gallagher, 2008). In the case of hotel rooms, however, data is available for not only prices but also consumer ratings. Actually, consumer rating data are as rich as room price data. How can we use this rich data on consumer rating for the analysis of welfare effects? What does consumer rating indicate or represent? During my field survey of guesthouses, I learned from survey respondents, who were hotel managers, that they dedicated considerable amount of time and other resources to maintain a high rating for their hotels. Rating is important for them because potential

visitors do care how previous visitors rated their hotels. Why do consumers or tourists care other rating by other consumers?

My hypothesis is that *rating* changes in the same way as consumer surplus changes. To see this, consider hotel rooms in an island. In many cases, island beach is 'non-exclusive' because it is difficult to exclude either tourists or islanders using the beach that is generally considered a common good. This free-access property of beach can result in congestion. Suppose imaginefor a while that the beach on this island is congested and has bad waste management practices, and that tourists do not appreciate the beach at all.

In Figure 4.2, the height of the downward sloping demand curve, D_1, indicates the marginal value or marginal willingness to pay for internal characteristics. Since tourists do not appreciate the external characteristics, that is beach in this example, D_1 is the marginal willingness to pay for hotel rooms. The supply of rooms is assumed to be perfectly inelastic in the short run and depicted by vertical line S_1 because of the limited availability of hotel rooms (i.e. availability of land for Guesthouse s is fixed to begin with). The short-run equilibrium is (p_1, q_1). The corresponding consumer surplus is the sum of areas A_1 and A_2, which is given by:

Consumer surplus = [(Benefit/day) – (expenses/day)].

Now, let us consider an improvement of beach quality, due to the installment of a waste incinerator in the island. The improved quality will increase the willingness to pay for hotel room on this island, which is indicated in Figure 4.2 by the upward shift of

the demand curve to D_2. With fixed number of rooms, price increases to p_2. More importantly, this shift in demand is captured by price change, $\Delta p = (p_2 - p_1)$.

We see, however, that the consumer surplus remains the same due to the improvement of the quality of the beach that compensated for the additional price. Thus, the welfare gain due to the shift in demand is the sum of A1 and A3, all of which goes to the producers. This is equal to Δp times the quantity of tourism product consumed.

Like consumer surplus, consumer rating would not go up much in this case. Although the improvement in beach quality will increase the marginal willingness to pay and the total benefit for consumers, the accompanied price rise will disappoint consumers, canceling out the increased appreciation, thereby leaving the consumer rating largely unchanged.

In the long run, however, a number of hotel rooms will not be fixed. The higher price will lead guesthouses to increase rooms. More private land will be converted to guesthouses. If the long-run supply curve is horizontal, like S_2, there is a considerable increase in quantity pushing down the price to the initial level. In this case, the entire welfare gain goes to consumers and is given by the sum of shaded area A_1, $A_3$and B_2. With the room price being as low as before, and with beach quality being higher than before, the consumer rating will be higher than before. Thus, it is likely that consumer rating can serve as a proxy for consumer surplus.

4.4. Original data from the Maldives

There have been no systematic studies on hotel room prices in Maldives. Indeed, prices have not been even systematically collected by any official statistics office. As such, for this study, I constructed the most comprehensive database ever compiled on hotels in the Maldives. It contains microdata obtained online about prices and characteristics of 92 resorts as well as more than 249 Guesthouses in 51 islands in the Maldives. It also includes hotel room ratings, reviews and room choice by tourists visiting the Maldives. Next, I merged the dataset with the data from the Census of Maldives (2006, 2014). In particular, I obtained from this source the information about waste management practices of islands. Finally, a survey instrument was used to expand the database to include education and training information about 147 Guesthouse managers and environmental characteristics of 24 islands. This section describes collection of data in details.

4.4.1. Online Data

Hotel room prices, characteristics, and tourist reviews are obtained from online sources. According to data available from the Ministry of Tourism (MOT) website, as of January 2015, there were 116 resorts and 323 Guesthouse s registered in the Maldives, of which 106 resorts and 107 Guesthouse s were operational. Our analysis shows that all the operational resorts post their room prices online, either through their website or one of the online travel agencies (OTAs). Interestingly, however, more than 161 Guesthouse s posted their prices in just one of the popular OTAs known as "booking.com."

To collect and process online data I followed an approach similar to the Billion Prices Project (Cavallo et al., 2016). It involves identifying an appropriate OTA that posts hotel information including prices and reviews; using a web-scraping software to collect the data; then using MS Excel to clean and categorize the data, and finally exporting information to STATA so it can be utilized for analysis.

There isa number of OTAs (agoda.com, booking.com, hotel.com, etc.) that post prices and relevant hotel information. In addition, tour operators and print media guides such as 'Lonely Planet' also provide similar information to potential consumers. Indeed, most of the existing studies use price data from tour operators' brochures (Rigall-I-Torrent & Fluvià, 2011).

Two factors drive our choice of an OTA. First, out of the 68% of international visitors to the Maldives who book their holiday online, more than 86% used OTAs (Maldives Visitor Survey [MVS], 2015). Those who did not book online used methods such as tour operators, visiting travel agencies, and direct bookings over the phone. However, our preliminary interviews with industry experts in November 2015 suggests that guesthouse owners do not have enough room capacity or finances to make contact with large tour operators or travel agencies. Thus, it is understood that the Guesthouse owners almost exclusively use OTAs.

Second, in selecting a particular OTA, I focused the attention on the information needed for web-scraping. For example, in addition to price data I was also interested in obtaining other information such as structural attributes of the guest house and types of rooms tourists choose to stay in the Maldives, etc. Indeed, 'booking.com' provides price data and most of the other required information. Coincidently, in 2015 most travelers to

the Maldives (28%) also used the same platform for their booking (MVS, 2015). A simple search of the platform also reveals that it posts information about 95 resorts and 170 Guesthouse s, that is, 80% of operational resorts and more than 50% of the registered Guesthouse s.

The next step is data collection. I used web-scraping software called 'DataMiner'to collect relevant information from booking.com. Using simple codes, the software is trained to collect the price of hotel rooms, guest ratings, number of reviews, structural attributes, facilities available in the Guesthouse, meal plans, etc. In addition, the software is also used to gather online feedback called 'reviews' from the customers who have used the platform to book hotels in the Maldives. Next step is cleaning and sorting scraped data in Microsoft Excel before exporting to STATA for further analysis. This is necessary to standardize price to be used as dependent variable and also extract the information to create a set of control variables.

4.4.2. Survey data

Iconducted a field survey of Guesthouses in the Maldives to obtain information about education and work experience of Guesthouse owners/managers as well as the quality of the environment where the hotels are located.

To measure the quality of services and the waste management practices in the island I developed a survey based on interviews with the Guesthouse owners and/ormanagers, who are involved in the day-to-day operations. The structure of this survey is borrowed from the World Bank Service Module (The World Bank, 2013). Additional input for the types of questions was also taken from "the Case of Caribbean

Tourism" (Poon, 1990); "the Caribbean Regional Sustainable Tourism Development Programme" (The Caribbean Tourism Organization, 2007); and "Tourism destination competitiveness"(Enright & Newton, 2004). The survey is then modified for context and relevance to our hypothesis and the Guesthouse in the Maldives

The questions were designed to assess three broad areas. First, focuswas placedon collecting proxies or indicators for the quality of service. The survey included a number of direct questions to evaluate years of education and tourism related work experience of owners and managers*: how many years have you worked in a tourist resort?*I also tried to get information about the additional training received during the past 12 months, and methods of learning new skills by the employees. Further, I also sought to get the quality information indirectly. For example, the question was asked "*during the past year, has this Guesthouse introduced new or significantly improved hotel management software?* Here the intuition is that such improvements will require additional training that is likely to improve the quality of services.

The second set of questions evaluate the *waste management practices* in the island. I decided to get the feedback from owners and managers because they can directly observe the waste management practices, and they also regularly deal with complaints from the tourists. I asked to what degree waste management is an *obstacle* to the current operations of the Guesthouse that scores from positive five ("no obstacle") to negative five ("very severe obstacle"). In addition, I asked about the *relationship* and/or *contribution of local municipal council to Guesthouse* tourism industry that scores from positive five ("adequate") to negative five ("inadequate"). This questionwas asked with an emphasis on waste management and other public service delivery in the island. Further, I also requested the respondents to rate how frequently tourists *complain*

about the '*untidy beach'* that scores from one ("always") to five ("not at all").

Third, I collected information such as the age of owners and managers; the number and types of rooms; the number and designation of employees, and how often managers meet with operation level staff. Also, I asked questions about the tourism industry in general, particularly focusing on factors that impact tourist arrivals such as transport infrastructure; and challenges related to government tax. These questions were asked as open-endedquestions, and then once a general answer was given, the interviewer asked for a specific score. I dropped questions on financial data because our pilot run indicated that managers are reluctant to answer them.

Finally, in each broad area of questioning, I included 'double-check questions' to test for the accuracy of answers. For example, while asking questions if waste management was an obstacle, I repeated the same question for water or electricity, so that I could identify if the answers are not just random comments. Moreover, I also interviewed or had discussions with other relevant stakeholders to collect anecdotal evidence of the impact of Guesthouse segment in the islands. This includes, among others, a former Tourism Minister, relevant government officials, local council administrators and local islanders. Table A1-4.1 in Appendix shows a list of people interviewed followed by the Survey questions in Table A1-4.2. An electronic copy of the responses to the survey is available upon request.

The survey questions were exported to a software called 'Quicktapsurvey' purchased from quicktapsurvey.com, and it was installed in the tablets to be used for field interviews. To ensure high-quality data collection, I hired two graduate students as research assistants (RAs) and two high-school students as support staff. The RAs helped

to collect information from two major Guesthouse clusters in the Maldives: Maafushi Island and Hulhumale' Island. For the rest of the islands, Itraveled to conduct the interviews. Support staff assisted making phone calls, logistics arrangements of traveling as well as sometimes in data collection.

The survey was carried out from August to September 2016. During the first week of August 2016, I trained the two RAs and two support staff on how to make calls, seek appointments, and conduct the interviews using the survey software. This task was undertaken as a pilot round with some managers who agreed to participate in the mock interviews. Although questions are typed in English, during the interview, we ask questions in the local language 'Dhivehi.' Moreover, we also made show-cards for relevantQuestions both in English and Dhivehi. However, we found that show-cards were not needed in most interviews. After the first week of interviews and based on the feedback, I made a few modifications to our questions.

One of the advantages of *Quicktapsurvey* software is that it allows real-time monitoring of RA's performance. Our target was for each RA to conduct at least one interview per day. Each RA was given a signed letter from the GRIPS, explaining the purpose of the survey and other relevant details. Every 20 days I met with the RAs to discuss the progress of the Survey. Moreover, during this period I also independently conducted interviews with few Guesthouse managers within the same island as the RAs worked. The purpose was to check the consistency of the RAs' interviews.

The sample Guesthouses were randomly (stratified) chosen from the population of all Guesthouses that post their prices on the booking.com. Geographically, I restricted the survey to islands where more than two Guesthouses are in operation and

the atolls that are close to the international airport because this reduced our travel time and costs. This yielded a sample of 147 Guesthouses and 24 islands across five atolls. The following section presents descriptive analysis of the key variables.

4.5. Descriptive statistics

4.5.1. Price variable

The estimated frequency plots of the average price of hotel rooms in the Guesthouse segment and resorts for the month of July 2016 are shown in Figure 4.3. To standardize the comparisons; prices are for a one-night stay in a double room per couple. As expected there is a considerable difference between the prices of resorts and Guesthouse segment. Priceof Guesthouse rooms varied from $30 to $450 with a mean value of $108, while resorts room prices ranged from $107 to $8000 with an average value of $873.

Table 4.1 shows room types in Guesthouse segment and resorts. Guesthouse offer room types: Standard, Deluxe and Suites. Resorts offer Garden Villas, Beach Villas and Water Villas. Deluxe room category is most common among the Guesthouse s, while “Garden Villa” is the most common among the resorts. Moreover, hotels also offer different meal plans: bed and breakfast, half-board (breakfast and lunch), full-board (breakfast, lunch, and dinner) and all inclusive (meals and selective drinks).

4.5.2. Hotel room rating variable

The estimated frequency plots of the average rating of hotel rooms in the guesthouse segment and resorts for the month of July 2016 are shown in Figure 4.4.

Once again, to standardize the comparisons, ratings are fordouble room on bed and breakfast basis. [49] Data shows, in the guesthouse segment, ratings varies from 5.9 to 9.9 with a mean value of 8.48. In the case of resorts, accept few outliers, rating ranges from 8 to 9.6 with an average value of 8.74. We should also note that the ratings has more within-guesthouse variations compared to resorts, implying that resorts have to maintain certain minimum quality. This is consistent with existing literature (Shareef et al., 2008) and my interviews with industry experts that suggest resorts have to operate under heavy government regulations.

In the analysis below, I focus on room rates on the bed and breakfast basis in the Guesthouse segment. The reason being, in addition to points highlighted above, Guesthouse segment has more unpriced public goods embedded into the tourism product. In other words, compared to resorts, the emergence of Guesthouse segment is likely to have more policy implications to the Maldives.

4.5.3. Seasonality

As discussed earlier, price heterogeneity of guesthouse rooms is due to many reasons, and a determining factor highlighted in the literature is seasonality (Espinet et al., 2003). Tourist arrivals to the Maldives are seasonal with May to July considered off-season due to Monsoon. Meanwhile, demand is high from December to March, that is, winter in Europe (MTAC, 2013). This is confirmed by our data. Figure 4.5 shows monthly mean price of hotel rooms from April 2016 to April 2017. The lowest price is $ 93 in July, and the highest recorded price is $115 in January. Although price varies

[49] In case of resorts, I also restricted rooms located on Garden Villas and Beach Villas (other accommodation facilities are built in water called Water Villas)

over time, seasonality across the islands remains the same, so the effects of high or low seasons will be constant across islands.

4.5.4. Distance variable

In the Maldives, one critical factor that can likely affect prices is the distance of each island from the international airport. This is because to reach the guesthouse, tourists have to use sea transportation. Accordingly, I use the distance between the islands and the airport as reported in the Maldives Census data set 2014. Figure 4.6shows the average price of hotel rooms in the islands and the distance from the airport. To standardize the comparisons, prices are for a one-night stay in a double room on bed and breakfast basis. As expected, the room ratesdecrease with distance from the airport. However, there are some interesting observations to report. For example, except Maafushi Island, prices for the rest of the islands in K. Atoll are below the trend line. Indeed, islands Gulhi and Guraidhoo marked in 'diamond' and they are just a few minutes from Maafushi, but the room price in these islands is 50% less than that of Maafushi. On the other hand, UkulhasIsland from AA. Atoll has the highest price, which also has the most comprehensive waste management policy among the islands visited during theguesthouse survey.

Maldives mainly offer wanderlust (Sun, Sea, and Sand) tourism. The differences in prices are likely to represent some quality characteristics (e.g. quality of environment or services) of the hotels apart from seasonality or distance from the airport. Accordingly, I restrict the locations of the Guesthouses to Maafushi, so that island characteristics (environment) are fixed. Figure 4.7 shows hotel room prices in Maafushi.

Once again considerable heterogeneity in price variable is observed, suggesting sorting behavior by tourists based on their taste preference. The difference in prices may be due to private attributes (e.g. room standard), localized environmental characteristics (e.g. distance to the beach) or quality of services offered.

The data set provides each Guesthouse's GPS position. Thus it is possible to estimate the distance of each guesthouse from the beach. Many islands have more than one beach. Therefore, I restrict the analysis to the beach specifically designated for the tourists, referred to as 'bikini' beach. [50]In addition, I also keep a separate indicator for guesthouses located right in front of any of the given beaches on the island.

4.5.5. Island level (external) characteristics

Island level (public or external to hotels) characteristics have been obtained from the Maldives Census Data Ministry of Tourism, and my Guesthousesurvey. These characteristics include population, the length of thebeach, number of households using **unsafe** waste management practices (**hhunsafewaste)** andguestcomments about beach cleanliness (**cbeach**). Figure 4.8 illustrates, Census Data shows thepercentage of households using unsafe waste disposal methods varies from 0 to 5%, but reviews from booking.com suggest in most islands guests commenting negatively about beach cleanliness ranges from5% to 30%. Moreover, from my field research, it isevident that there are many households practicingunsafe waste disposal methods in each island.As a result, I constructed beach cleanliness index (**bcindex**) for the surveyed islands. More details about the indicator **bcindex**is explained in Appendix 2. In addition, among the

[50] Tourists had to maintain decent dress codes in the public areas, and each island has designated specific area of the beach for tourists.

external characteristics of islands, I also create the following index as a proxy to **crowdedness**:

$$\text{Room_km}^2 = \frac{total\ number\ of\ rooms\ in\ the\ island}{area\ of\ island}$$

4.5.6. Quality of service variables

An indicator for quality of service is hard to obtain from our online data. However, each guesthouse lists the total number of foreign languages spoken by staff in the guesthouse.For instance, the highest number of foreign languages spoken by the Guesthouse staff is 5 with an average value of 1.831. Learning a foreign language requires additional education or work experience, so I use this indicator as a proxy for quality of service variable.

Other indicators for the quality are the manager's educational level and years of experience in the tourism industry. Both of these indicators are obtained from the guesthouse survey. On average guesthouse managers have 9.6 years of experience in the tourismindustry, and this variable ranges from 0.1 to 28 years. The education level of managersis relatively high with 41%, 11% and 26% of managers having secondary, diploma and degree level education. Moreover, about 40% of the managers have received more than three months of tourism related technical training.

I also focus on the manager's perception of waste management in the island as a proxy to the awareness about beach cleanliness. In our survey, 66% of managers indicated waste management practices in the island are negatively affecting Guesthouse tourism in the islands.

4.5.7. Datasets for analysis

From online data, more than 50 hotel-level attributes can be created. Many items on the list, however, take similar values for most of the hotels, and the number of items is too large to keep statistical analysis tractable. Thus, the most relevant attributes were selected based on considerations of opinion expressed during our interviews with industry experts in the Maldives as well as recent hedonic studies (e.g., Chen & Rothschild, 2010; Espinet et al., 2003; Rigall-I-Torrent et al., 2011). The variables (and code names) selected for the statistical analysis and data sources are reported in Table 4.2.

Table 4.3 shows summary of observation in the dataset. It contains information for a sample of 249 Guesthouses and 51 islands. However, our survey covered only 147 Guesthouses and 24 islands. Moreover, some Guesthouses do not report bed and breakfast prices, and survey sample has additional Guesthouses that became operational after April 2016. Thus, two datasets are created for analysis. Table 4.4 reports descriptive statistics of our dataset for selected variables. [51]

The first dataset (referred to as Sample 1) is similar to the data set from Spain used by Rigall-I-Torrent & Fluvià (2011). It has prices and both internal and external characteristics of 157 Guesthouses across 23 islands from June to December 2016. The second dataset (Sample 2) combines price data from December 2016 with the survey

[51] Examination of Guesthouse prices at atoll level clusters suggest that price differences between the atolls are small, with a maximum difference of about 20%. On the other hand, we found large price difference among the islands even within the same atoll. Therefore, macro analysis at atoll level is misleading and we cannot say hotels in one atoll is cheaper than the other. This is because external characteristics of hotels differ at island level which we hypothesized to be one of the significant indicator of price.

data. It has prices and characteristics of 124 Guesthouses across 23 islands for a single month. In the following chapter, I run hedonic regressions to test the hypotheses outlined in section 4.3.4.

4.6. Estimation and discussion of results

4.6.1. Model specification

Our objective now is to estimate the implicit price of quality characteristics, after controlling for hotel and location characteristics. Thus, we are interested in estimating a hedonic price function:

$$P_i = f(h_{ij}, l_{ij}, z_{ij}) \quad (7)$$

Where P_i denotes the price of hotel room$i = 1,2,,\dots n$, $h_{ij}$is an $\boldsymbol{H}$ vector of hotel-room (internal) characteristics, l_{ij} is an $\boldsymbol{L}$ vector of location (external) characteristics including accessibility, and z_{ij} an $\boldsymbol{Z}$ vector of quality characteristics, which are both internal and external characteristics that are new to this study. Our dataset consist of n observations of hotel-room prices. Each hotel-room is described by hotelcharacteristics, $\boldsymbol{H}$, location characteristics, $\boldsymbol{L}$, and quality characteristics $\boldsymbol{Z}$.

Drawing from previous analyses (Chen & Rothschild, 2010; Espinet et al., 2003; Rigall-I-Torrent & Fluvià, 2007, 2011), a popular specification to estimate the above function is log-linear hedonic regressions of the form:

$$\log P_i = \alpha_0 + \sum_{j=1}^{n} \beta_j H_{ij} + \sum_{j=1}^{n} \gamma_j L_{ij} + \sum_{j=1}^{n} \theta_j Z_{ij} + \varepsilon_i \quad (8)$$

Where log price is the natural logarithm of i^{th}hotel room price, $\beta_j, \gamma_j, \theta_j$ are parameters to be estimated and ε_i is a random (i.i.d.) error term, with zero mean and constant variance.

The analysis begins with similar to Rigall-I-Torrent & Fluvià (2007, 2011) and Rigall-I-Torrent et al., (2011). The dataset one used in the analysis has seven waves of monthly data (June-December) for 157 guesthouses should produce 1099 observations. The actual dataset has 886 observations because some guesthouses do not report prices for bed and breakfast while few guesthouses stop posting their prices in booking.com.

Table 4.5 reports the results of estimating different specifications of equation (8) by OLS using standard errors clustered by island and month.[52]This is the preferred method in the similar literature (Rigall-I-Torrent et al., 2011; Rigall-I-Torrent & Fluvià, 2011).In specifications #1 to #3, the dependent variable is room price, while in #4 and #5 the dependent variable is the room rating. Specification #2 shows effects of dropping the variable 'distance to the beach' because it is closely correlatedwith the variable 'Guesthouse in front of the beach.' In specification #3 and #5I replace the variable 'unsafewaste ' with the variable 'beach cleanliness index.' Our preferred specifications are #3 and #5.

The adjusted R^2 indicates our model explain about 34-46% of the variation in prices. Our analysis employs both continuous and discrete (dummy) variables. For continuous variables, multiplying the estimated coefficient by 100 gives the percentage change in price caused by changing the variable by 1 unit. To approximate the effect of the dummy in percentage terms, the estimated coefficient, β is transformed by $(e^{\beta} - 1)$, where e is the base of the natural logarithm. The marginal willingness to pay (MWTP) is then obtained by multiplying the $(e^{\beta} - 1)$ with the mean price of hotel room. Next, I

[52] To estimate OLS using two level clusters, I employ method proposed by Cameron, Gelbach, & Miller (2006).

discuss tourist's marginal willingness to pay (MWTP) for both external and internal characteristics relevant to guesthouse prices in the Maldives.

4.6.2. Effects of external characteristics

With regards to external characteristics, the following suggestions appear to emerge from our analysis in Table 4.5:

1. All coefficients have expected sign, except the coefficient on 'safewaste'in Specification #4. This unexpected sign of the coefficient on safe waste may be due to accuracy of data used for constructing the variable'hhunsafewaste', which was highlighted in our descriptive analysis of data. Indeed, when variable 'hhunsafewaste'was replaced with 'bcindex' coefficients show the correct sign.Regarding beach cleanliness, the result suggests that with an additional household using unsafe waste management practices, the price is expected to decrease by 3.7%. Alternatively, when beach cleanliness index increases by one unit (the beach is more cleaner), theprice increases by 1.1%. In other words, given our average price of the hotel room is $94, this translates into willingness to pay additional USD 1 to 3.5, for improvements in beach quality.
2. Results suggest that a 100 people increase in island population are associated with 0.13% decrease in price and 0.44% decrease in consumer surplus. Findings indicate tourist preference for less populated (or isolated) islands,

and guesthouse islands may be losing the exclusivity that is often associated with tourism products in the Maldives.

3. When the beach length increased by 1m, hotel room prices increase by 0.062%. Moreover, results also indicate consumer surplus of tourist's increase by 0.082%. Thisis expected as aunit increase in the length of the beach should increase the marginal benefit to the tourists.Rigall-I-Torrent et al. (2011) found no statistically significant effect of beach length on the price of coastal hotels of Catalonia, Spain. It may well be that field visits have contributed to more precise measurement of the tourists' beach, thus reducing the standard error of the estimated coefficient
4. The negative and marginally significant coefficient on 'crowdedness' provides some suggestive evidence of the effect of congestion on hotel room prices, even though the coefficient on the same variable in the room rating equation is not significant as shown in column #5. [53] One possible explanation is that congestion has not yet become a serious issue. This maybe because with the increase in bed capacity, more beach area is being dedicated for tourism consumption. For example, due to the rapid growth of tourism industry, in 2016 Maafushi Island has doubled its dedicated beach area for tourism consumption. However, as observed in our field survey, such allocations will potentially reduce the opportunity for local people to enjoy the beach.

[53] When crowdedness is restricted bikini beach (i.e. number of tourists/length of beach), coefficient becomes significant at 5% and magnitude shows with increased crowdedness index, price decreasesby about 5.3%. But room rating equation isstill not significant.

4.6.3. Effects of location characteristics

5. The coefficient on 'distance from the airport' has expected sign and is statistically significant, butits rating counterpart is not significant. Result suggets, while the long distance from the airport reduces willingness to pay (or benefit), it does not necessarily reduce consumer surplus substantially if the room price is lower sufficiently.
6. The existing literature suggests 'location in front of the beach' matters a lot (Rigall-I-Torrent & Fluvià, 2011). Our result is highly significant across all the specifications and magnitude suggests hotels located in front of the beach can set (on average) price 21 % more than a hotel with otherwise identical private characteristic but which is not located in front of the beach. Espinet et al., (2003) found this difference to be 19.4%, while Rigall-I-Torrent et al., (2011) report the value between 12.9% to 16.8%.
7. Our result also indicates if hotels do not have direct access to the beach, actual distance to the beach is less relevant. When hotel distance from the beach increased by 10 m hotel room prices decrease by 0.3%.

4.6.4. Effects of hotel (internal) characteristics

8. Increasing the number of rooms of a hotel by 1 unit increases the price by 1%. However, in the existing tourism literature, the coefficient of this variable is mainly negative (Rigall-I-Torrent et al., 2011; Rigall-I-Torrent & Fluvià, 2007, 2011). This may be because, in these studies, they consider large hotels with number of rooms ranging between 40 to 250, so increase in numbers of rooms become an inconvenience (e.g. noise, service delayetc.) for the guests. On the other hand, in our case, the number of rooms varies

between 3 to 50 with an average value of 9 rooms. So the number of rooms is not large enough to cause inconvenience for guests. Indeed, the estimate of Specification #5 shows the correct sign but not significant, implying consumer surplus is not affected. For this reason, similar to housing literature (Harrison & Rubinfeld, 1978) this study considers rooms to represent some quality factor of the hotel. Indeed, during our survey, it was apparent that Guesthouse s with more number of rooms have better quality while Guesthouse s with fewer rooms are just ordinary residential houses converted to Guesthouse s. Moreover, hotels with many rooms require better management, thus rooms may also capture service quality to some extent.

9. Hotel rooms with a terrace can set (on average) price 13.5 % more than a hotel with otherwise identical private characteristic but without a terrace. Saló, Garriga, Rigall-I-Torrent, Vila, & Fluvià, (2014) found availability of Garden or Terrance in the hotel increases the price by 12%.
10. Finally, when staff in the Guesthouse s can speak an additional foreign language, the price increases 4.1 %. Given our average price of the hotel room is $94, this translates into willing to pay additional $4 for service improvements.

4.6.5. Seasonal effects

11. Hotel room prices vary considerably between July and December: compared to June prices on average are higher by 5%, 15% and 20% during October, November and December, respectively. As discussed before, this change is mainly due to factors effecting tourist originating countries (e.g. winter

season in Europe). However, results could be improved by including destination variable (e.g., rainfall) in the regression analysis.

4.6.6. Effects of service quality on hotel room prices

Using dataset 2, this section expands the analysis to include effects of education and industry experiences of managers on the hotel room prices. Table 4.6 reports the results of estimating different specifications of equation (8) by OLS. Specification # 1 includes both hotel and location characteristics using cluster-robust standard errors at island level and guesthouse level. According to Taylor (2003), the hedonic analysis is often plagued by correlations between the independent variables. [54] For example, the manager speaks several languages because she has more years of industry working experience or even explicitly studied languages during her higher education. As such, from specification #2 to #5 analysis introduce service quality characteristics in stepwise. In specification #6, regression is run with the dependent variable, log(room rating).

Finally, Table 4.7 reports the coefficients of our estimates for the two most importantguesthouse clusters in the country: Hulhumale' and Maafushiislands. The primary reason is Table 4.7 may provide better estimates of quality of service indicators because it avoids complications dues to external effects. This is because both Maafushi and Hulhumale' is close proximity to the international airport and capital city Male'. Moreover, compared with some other islands, these two clusters also have well developed public services such as transportnetwork. Using the estimates in Table 4.6 and Table 4.7, the following observations can be made:

[54]Table 4.8shows Pairwise correlations of our variables.

1. Control variables have expected sign, and in Specification #6, where room-ratingis used as a dependent variable, the only significant variable is population.
2. Our result also suggests that in the case of Hulhumale' and Maafushi, hotels located in front of the beach set their price 38% higher. This observation supports our discussions with hotel managers, where they complain that hotels located in front of the beach have additional (unfair) advantages such as open public space in front of the hotel. Alternatively, increased competition in these two clusters means distance to the beach would play a significant role in the land price of the guesthouses. Thus, ahighervaluemaybe indicating higher cost.
3. Changes to the robustness of the 'room' variable confirm our earlier assumption that increasing number of rooms represent quality characteristics. This is because, as specification #1 and #3shows, when we control for quality characteristics (e.g. industry experience) significance and magnitude of 'room' variable on prices is smaller.
4. When managers perceive that waste management practices in the island are an obstacle for guesthouse tourism, as expected, we observe a negative coefficient. Interestingly, theresult is only significant when both education and industry experience is included in the regression, suggesting higher awareness about waste management problems among them is associated with lower room prices. Our result suggests islands with poor waste management practices, hotel room prices is expected to decreases by 8.7 %.

5. When staff in the guesthouse can speak an additional foreign language, the price increases by 7 %. Given our average price of the hotel room is $94, this translates into MWTP of about $7 for service improvements.
6. For each additional years of manager's industry experience, price increases by about 1.5%, but it is significant at 10%. This translates into MWTP of $1.5.
7. In the full sample (Table 4.3), education coefficients are positively correlated (specifications #1 and #4), but they are insignificant. In the case of Maafushi and Hulhumale', however, certificate level education becomes significant above 5% level. It may be noted that certificate level education is mostly associated with technical and vocational education. Thus, it is likely that we are observing the impact of tourism relevant qualifications rather than general education.
8. Hotel having managers with at least three months of training can set (on average) price 17% ($15) more than a hotel with otherwise identical characteristics but without trained managers.

4.7. Summary of the chapter

The main purpose of this chapter was to examine two sets of attributes embedded in Guesthouse tourism in the Maldives: island-level (external) characteristics and hotel-level (internal) characteristics. For this purpose, I conducted a field survey and collected island-level and hotel-level data. Using hedonic regressions, Ihave shown

suggestive evidence that knowing the implicit prices of public and private attributes can have practical implications for hotel managers as well as policymakers.

First, a major finding of this chapter is that additional benefit that comes with improving the quality of service or environment is mostly captured by the suppliers as means of increasing price rather than increase in tourist's consumer surplus. More to the point, tourism price appears to be close to optimal level, so additional competition in Guesthouse islands is likely to benefit foreign tourists rather than hotel managers.

Second, the study finds that tourists value the natural environment, and the island characteristics contribute to explain part of the variation in the final price of hotels. For example, the findings suggest that hotels located in islands with lengthy beaches can quote a higher price. On the other hand, overcrowding or poor waste management practices are having negative effects on prices. Our findings suggest MWTP for a clean environment (e.g. beach) varies in the range of USD 1-3.5, however, mainly due to the limitation of data, it is difficult to say that current rate of USD 3 as 'green tax' appropriately reflect the environmental cost associated with negative externalities. Nevertheless, informative insights for public policymakers wishing to address waste management issues in the islands and well as tourism tax policies may be drawn from the paper's analysis.

Third, with regards to quality of service, the finding suggests that the tourists value industry experience, as well as minimum level of tourism related training. This suggests that both firm and government revenue can be improved through tourism related training.

Chapter 5 : Conclusion and recommendations

The main objective of this study was to investigate supply-side factors relevant to international tourism, especially viewed from Island economies perspective. To achieve this goal, it became necessary to conduct both qualitative and quantitative inquiry.

A brief survey of existing literature on the subject it became apparent that international tourism has contributed significantly to the development of many developing countries. Moreover, existing empirical studies also highlighted that tourism is connected with the field of international trade flow and sustainable use of natural resources (i.e. environmental economics). The study then went on to identify key factors that affect international tourism that has either received limited and no attention in the literature. To this end, the main knowledge gaps identified include how supply-side factors such as infrastructure and security indicators are related to international tourist flow, in particular to the island economies such as Maldives. Moreover, it became apparent that there are no studies on how external characteristics (e.g. quality of beach) and internal characteristics (e.g. quality of service) explains hotel room prices in the Maldives. It was also pointed out that examining the supply-side has been hampered by the availability of quality data. In line with these knowledge gaps, an analytical model was developed to examine the following three research objectives:

I. Describe the evolution of tourism industry in the Maldives
II. Estimate a model explaining country-level factors relevant to tourism flow, with the aim of understanding supply-side factors that may have contributed the stagnation of tourist arrivals to the Maldives from Europe.
III. Estimate correlation between firm-level (internal) and island-level (external) characteristics to hotel room prices.

The rest of the chapter is organized as follows. Section one discusses the contribution of the study to knowledge on tourism literature and presents the key findings. Section two outlines recommendations for practitioners and policymakers in the tourism sector. Finally, Section three concludes with the limitations of the study and the directions for future research.

5.1. Contribution to knowledge

As the main contribution to knowledge, this study has advanced understating of supply-side factors relevant to international tourism by offering descriptive and quantitative results. This study includes three chapters based on my original work and makes the following contributions to knowledge on tourism literature.

First, taking advantage of interviews from the field and descriptive statistics, Chapter 2 is devoted tounderstanding the evolution of tourism industry in the Maldives and contributes to theoretical insights provided by the Butler's (1980) tourist area life cycle model. Maldives case shows that economic, social as well as security factors have contributed to development, growth and eventual decline (e.g. European market) of tourist arrivals in the Maldives. For example, my analysis suggests supply-side factors such as skilled labor and infrastructure played a major role in the evolution of tourism industry in the Maldives. Chapter 2 also highlighted implications of the emergence of mass tourism (guesthouse) in the Maldives, raising the importance of empirical investigation into supply-side factors that are related to free-rider problem and sustainability of the tourism industry.

Second, in Chapter 3, the quantitative results supported the view that supply-side factors such as security indicators and infrastructure can enhance international tourist flow to destination countries. In particular, Chapter 3 brings two specific improvements to similar studies done by Jensen and Zhang (2013). First, using gravity equation,an empirical framework was developed to explain three supply-side factors (i.e.price, infrastructure and security indicators) that could influence bilateral tourist flow while accounting for the other common demand and supply factors studied in the similar studies.Second, given the scarcity of studies using large dataset, especially for island economies, the study outlined attempt made to compile a large panel dataset. It consists of more than 198 countries (14,987 country-pairs) over the period of 1996 to 2013. To the best of my knowledge, the only study using similar dataset comes from IMF's working paper by Culiuc (2014) that covers UNWTO data from 1999–2009.

Third, this study also contributes to two strands of literature used to examine factors relevant to international tourist flow: static cross-country analysis and dynamic single country analysis. For instance, fixed-effect estimator was used to examining factors influencing bilateral tourism flow focusing on static cross-country analysis. In the meanwhile, as a more advanced econometric technique, GMM estimator was used to studying dynamic analysis for cross-country as well as the single country case of Maldives. The Later analysis is of significance because as of today there is no empirical analysis explaining full spectrum of factors affecting tourist flows to the Maldives.

Fourth, in Chapter 4, the study utilizes hedonic pricing framework developed by Rosen (1974) to outline a model for accommodation sector in the Maldives to estimate tourists' marginal willingness to pay (MWTP) for nonmarket attributes such as

neighborhood (e.g. beach) and services quality. Indeed, as far as I know, this study is the first attempt to use field research from island economies in hedonic price setting. The only other similar literature by Rigall-I-Torrent & Fluvià, (2007, 2011) investigate the correlation between the price and the quality of both internal and external characteristics of tourist accommodation facilities of Catalonia, Spain. However, in addition to price, Iproposed augmented model to utilize 'hotel room ratings' as a dependent variable that reflects tourist's consumer surplus.

Fifth, Chapter4 also described the collection of the most comprehensive primary dataset ever compiled on hotels in the Maldives. Price data were collected from booking.com monthly for the period April 2015 to April 2016. To collect and process online data I followed an approach similar to the Billion Prices Project (Cavallo et al., 2016). Further, a new survey instrument was used to gather data on education and industry experience of hotel managers as well as management and location characteristics of 147 guesthouses and 24 islands across five Atolls.

5.2. Summary of the main findings of the study

In this Section, I summarize the results based on the three research objectives and hypotheses outlined in the study.

Objective I: *Describe the evolution of tourism industry in the Maldives*

First, descriptive analysis and interviews with industry experts reveal that the critical point for tourism industry came in 1976 with British decision to abandon its military presence in the Maldives. More to the point, it was the involvement of skilled labor force and new entrepreneurs from Southern Atolls that led to the success of tourism industry.

Second, the introduction of 'One-resort one-island' concept and government decision to allow FDI was instrumental in the development of industry and quality improvement of tourism products to cater for luxury tourism. On the other hand, data indicate that security factors such as Tsunami in 2004, terrorism incidence in 2007 and economic downturn in Europe may have contributed stagnation of European market.

Third, the downturn of European market and transition to a multi-party democracy significantly contributed to the structural change to the industry and the introduction of mass tourism (guesthousesegment). It was noted that private nature of Resorts in the Maldives allows internalization of most of the costs associated with externalities, however, guesthouse segment has many unpriced public goods embedded into tourism product.

Finally, the momentum of the growth in tourist arrivals, foreign investment and occupancy rate suggest that the Maldives as a tourist destination may be in a consolidation phase since 2010.

Objective II: *Estimate a model explaining country-level factors relevant to tourism flow, with the aim of understanding supply-side factors that may have contributed the stagnation of tourist arrivals to the Maldives from Europe.*

Findings suggest that about 70% of total arrivals to the Maldives can be attributed to consumer loyalty and habit persistence in favor of the Maldives. Chasapopoulos and Butter (2014) reports about 74% of total international arrivals to Greece attributed to habit persistence, while Garín-Muñoz and Montero-Martín (2007) found habit persistence of Balearic Islands tourism by at 54%. The coefficient obtained in this study is within the range of related literature, and high level of repeat visitors to the Maldives further suggests the validity of our results.

The analysis also finds that in the long-run tourism demand depends on the economic conditions of tourist originating countries. In particular, cross-country analysis shows that the coefficient is two times larger for island economies. Further, estimation for the Maldives supports this conclusion. Thus, it can be argued that the economic downturn in the European Union would have significantly contributed to the stagnation of European market in the Maldives. Next, I discuss findings of the study in relation to specific hypothesis drawn in Chapter 2.

i. *Decrease in the price level of the destination country (j) relative to the tourist originating countries(TOC)(i) or a competitive destination (k) increases tourist arrivals.*

The study finds that tourist demand is price inelastic, thus, not so sensitive to price changes, especially in the case of Maldives. However, most of the existing literature show higher and significant coefficient, suggesting price competitiveness may be necessary to attract more tourists (Durbarry, 2008; Garín-Muñoz & Montero-Martín, 2007; Jensen & Zhang, 2013). For this reason, further analysis is required to understand both short-term and long-term impact of tourism price, especially to the Maldives.

ii. *Deterioration in security indicators (e.g. instability) have a (negative) impact on the tourist arrivals.*

Finding suggests that tourist demand is sensitive to security indicators. For instance, cross-country results show 1 point increase instability leads to about 7% decrease in visitors. Culiuc (2014) finds magnitude at 7.9 % using a different indicator for stability. In the case of Maldives, stability indicator was 1.03 before 2004, and then deteriorated to lowest -0.3 in 2012 losing about 1.3 points.With regards to effects of natural disaster, $DISAS_{jt}$, finding indicate that natural disaster is also likely to reduce tourist

arrivals to island economies. As such, findings from the study appear to support the hypotheses that deteriorating level of security related indicators after 2004 may have also contributed to the stagnation of European market.

iii. Investment in tourism related infrastructure increases tourist arrivals.

All three proxies for investment in tourism related infrastructure ($GDPcap_{jt}, ICT_{jt}$ *and* $AROOM_{jt}$) are positive and statistically significant. As expected, the magnitude of the coefficients suggest that impact is greater for the lower income countries and island economies. This suggests that for most of lower income countries, including SIDS, tourist arrivals can be increased through improved infrastructure spending. In the case of Maldives, we also find the investment in domestic transport infrastructure (BOAT) is having significant impact for a long-term improvement in tourist arrivals.

Objective III: *Estimate correlation between firm-level (internal) and island-level (external) characteristics to hotel room prices*

The descriptive analysis shows that monthly variation in price is consistent with generally accepted seasonal patterns in the Maldives. Thisreassures the quality of data on dependent variable, price. On the other hand, variable 'distance from airport' shows a more puzzling behavior on price. This leads us to investigate preference by tourists based on hotel attributes (e.g. room standard), localized environmental characteristics (e.g. quality of beach) or quality of services offered.

The most significant finding of this chapter is the suppliers mostly capture the added benefit that comes with improving quality environment or service as means of increasing price rather than growth in tourist's consumer surplus. More to the point,

additional competition in guesthouse islands is likely to benefit foreign tourists rather than hotel managers.

i. Effects of external characteristics

Study finds that all the external characteristics have expected sign and contributes to explaining part of the variation in the final price of hotels. For example, results suggest that a 100 people increase in Island population are associated with 0.1.3% decrease in price and 0.4.4% decrease in consumer surplus. Moreover, when the beach length increased by one-meter hotel room prices increases by 0.062%. Results also indicate consumer surplus of tourist's increase by 0.082%.

ii. The room price of a hotel increases with the accessibility of the island/beach in which the hotel is located

Findings indicate that while the long distance from the airport reduces willingness to pay (or benefit), it does not necessarily reduce consumer surplus substantially if the room price is lower sufficiently.

The coefficient of variable 'location in front of the beach' is highly significant across all the specifications and magnitude suggests hotels located in front of the beach can set (on average) price 21 % more than a hotel with otherwise identical internal characteristics but which is not located in front of the beach. Given our average price of the hotel room is $94, this translates into willing to pay additional USD 20. Espinet et al., (2003) found this difference to be 19.4%, while Rigall-I-Torrent et al., (2011) report the value between 12.9% to 16.8%.

Result also suggests that in the case of Hulhumale' and Maafushi, hotels located in front of the beach set their price 38% higher. Increased competition in these two clusters means distance to the beach would play a significant role in the land price of the guesthouses. Thus, a higher valuemay be indicating higher cost.

iii. Locations with poor waste management procedure have lower hotel room prices.

With regards to beach cleanliness, the result suggests that an additional household using unsafe waste management practices, the price is expected to decrease by 3.7%. Alternatively, when beach cleanliness index increases by one unit (the beach is more cleaner), the price is likely to increase by 1.1%. In other words, given our average price of the hotel room is $94, this translates into willing to pay additional USD 1 to 3.5 for improvements in beach quality.

When managers perceive that waste management practices in the island are an obstacle for guesthouse tourism, as expected, we observe a negative coefficient. Interestingly, the result is only significant when both education and industry experience is included in the regression, suggesting more educated and experienced managers are aware of environmental challenges. Our result suggests islands with poor waste management practices, hotel room prices is expected to decreases by 8.7 %

iv. Hotels with more educated/experienced owner/manager (proxy to quality of service) will have higher hotel room prices

Finding suggests that the tourists value industry experience, as well as minimum level of tourism-related training. For example, when staff in the guesthouses can speak an additional foreign language, the price increases in the range of 4-7 (MWTP $4-7). Also, hotels having managers with at least three months of training can set (on average)

price 17% ($15) more than a hotel with otherwise identical characteristics but without trained managers. Moreover, although significance is only at 10%, the study indicates for each additional years of manager's industry experience, price increases by about 1.5% (MWTP of $1.5).

However, results of the study show even through education coefficients are positively correlated, but they are insignificant, except in the case of Maafushi and Hulhumale' whereby certificate level education becomes significant at 5%. Thus, it is likely that we are observing the impact of tourism relevant qualifications rather than general education.

5.3. Implications for industry practitioners and policymakers

In this Section, I discuss implications of the findings of this study for industry practitioners and policy makers.

5.3.1. Implications for industry

First, one of the crucial conclusion of the study is that the loyalty and word of mouth significantly affect tourist flows to the Maldives. Thus, the implication to the industry is that the tourism products and services should continue to be improved to maintain loyal customers. However, with the emergence of guesthouse tourism, it was observed, from the field survey, that many hotels are providing lower accommodation and service quality. Unlike resorts, guesthouse segment is less regulated by the government, and (like MATI) there is no single institution/association to coherently

coordinate the price strategy or lobby with the government on policy issues relevant to guesthouses.

Second, the results of the micro-level analysis in Chapter 4 suggests that guesthouse managers will benefit from considering both island-level and hotel-level characteristics as an integral part of their tourism product. This is because knowing tourists' MWTP and consumer surplus for external and internal attributes can allow managers to target those consumers who associate price and quality accurately. For example, study suggests that the suppliers mostly capture additional benefit that comes with improving the quality of service or environment as means of increasing price rather than growth in tourist's consumer surplus. For this reason,additional competition in guesthouse islands is only likely to benefit foreign tourists rather than hotel managers.

Finally, with regards to quality of service, study suggests that the tourist's value industry experience, as well as theminimum level of tourism related training. This suggests that hotels can post a higher price by employing more skilled workers. Larger firms that run resorts often undertake in-house training or send their employees abroad for further studies. On the other hand, family businesses that runs guesthouses are not able to provide quality training for their employees. Indeed, from the survey it became apparent that managers and staff often use online including 'Youtube' to learn basic hospitality and tourism skills such as housekeeping. This is consistent with existing literature on skill shortages in the Maldives that identified the lack of skilled labor constraining investment decisions in the tourism sector (Asian Development Bank, 2015, p25-32). Accordingly, industry should further invest in providing vocational and technical education and training relevant to the tourism.

5.3.2. Implications for policymakers

First, the study finds that tourist arrival is sensitive to security indicators. Thus, unlike private resorts, guesthouse segment is more vulnerable to security issues (e.g. terrorism) targeted to the tourists. The recommendation in this respect is that:

- *Government together with the industryneeds to enhance security measures in the guesthouse islands to maintain the image of the country as a peaceful tourist destination.*

Second, study finds that the relative price is not a significant determinant of tourist arrival to the Maldives. This may be because traditional customers of Maldives are countries with relatively high standards of living (e.g. Europeans). Thus, the decision to visit Maldives is determined by the level of personal income rather than by the relative cost of living. Thus findings appear to suggest that:

- *The government can devise tax policies to obtain a significant share of tourism profits without losing competitiveness. In other words, attempts to increase the price (e.g. government tax) are unlikely to cause major fall in tourist arrivals to the Maldives*.

However, care must be taken by policymakers in interpreting these results because with the recent introduction of guesthousetourism, Maldives has become more accessible to middle-income countries and competition from several emerging destinations such as Sri Lanka can be considered as close substitutes. Moreover, the analysis uses only proxies for tourism price, so findings may change (significantly) by

including better measurements of actual prices such as accommodation and food (microeconomic relative prices) tourist pay for tourism services.

Third, both country-level and hotel-level analysis suggest that transport cost (or inconveniences) is a significant part of the tourism price. Moreover, study findings suggest that for most of lower income countries, including SIDS, tourist arrivals can be increased through improved infrastructure spending. In tourism literature, traveling cost is closely linked to air connectivity (Eilat & Einav, 2004; Khadaroo & Seetanah, 2008). For this reason, one policy choice would be to:

- *Increase direct flight connections between the Maldives and TOCs and invest more in tourism infrastructure such as domestic airports.*

Fourth, informative insights for policymakers wishing to devise pricing strategy to combine external characteristics and tourism tax policies may be drawn from the study's analysis. For example, findings suggest hotels located in islands with long beaches can quote a higher price. On the other hand, overcrowding or poor waste management practices are having adverse effects on prices. The study reports MWTP for clean environment varies in the range of USD 1-3.5. However, mainly due to the limitation of data, it is hard to say that current rate of USD 3 as 'green tax' appropriately reflect the environmental cost associated with negative externalities.

Moreover, from our field survey, it was observed that additional revenue opportunity had tempted private sector to lobby for more beach area from the island to be dedicated for tourism consumption. However, such allocations will potentially reduce the opportunity for local people to enjoy the beach. The recommendation in the regards is:

- *It may be useful to promote joint initiatives between the island municipal councils and the private sector so as to implement appropriate policies for managing social cost associated with guesthouse tourism.*

Finally, study suggests that employing skilled people produce returns in the tourism industry, thus potentially generating more revenues for the government. However, unlike resorts, guesthouse owners do not have the financial capacity to train their staff. Therefore, it is recommended that the government to:

- *Provide subsidized technical and vocational education targeted to the guesthouse sector.*

5.4. Limitations of the study and suggestions for future research.

Although this study has improved knowledge about international tourist flow and hotel room prices in the Maldives, it has also revealed a number of inherent limitations. First, except the cross-country analysis, the main focus of the study was limited to the Maldives. Thus, future research efforts can extend this study to other island economies and compare the findings. Moreover, Chapter 4examines few variables from the rich primary dataset gathered during the survey. Thus, an important extension of this study would be to test the significance of other variables. Further, it may be relevant to expand analysis in Chapter 4 to other accommodation options offered in the Maldives, such as resorts and safari vessels. Indeed, the complete analysis of the accommodation sector could help to improve policy planning among all tourism stakeholders involved. Moreover, such a study would improve information about the economic and the social impact of tourism in the Maldives.

Second, the study on tourist flow relied mostly data on proxies as key variables, which can differ from actual measurements. As a dependent variable, for example, a product of tourism sales and number of days would be a better measurement of tourism output than arrivals. Similarly, analysis can be improved by including better measurements of tourism prices such as airfare in the travel cost. Hence, future research could explore the same subject with data from alternative sources.

Third, in Chapter 4, care should be taken when interpreting coefficients of external characteristics. For instance, in our analysis external characteristics are assumed to have the same effect on all hotels located on the same island. According to (Rigall-I-Torrent & Fluvià, 2011) with a small sample (which is the case in our sample) it is possible that results are incorrect due to interactions and overlapping between the external characteristics. So including data from more Islands would improve the findings.

Fourth, there is always the issue of omitted variable bias, which may have a considerable impact on our estimates. Due to data requirements, for example, only part of the external effect is captured in this study. New variables to include in the future research can be the quality of reef, education level or medical services in the island. On the other hand, to obtain more robust results some variables (e.g. length of beach or beach cleanliness index) used in the paper could be improved with additional information about public beaches in the islands. Considering policy-level implications, future exercise may also include budget indicators such as the amount of expenditure on public infrastructure or in tourism promotion by the government and local councils.

Fifth, the robustness of analysis on service quality (i.e. education and training experiences of manager's) can also be enhanced by adding more data. Moreover, it would be interesting to repeat the survey after two years and use more advanced economic techniques (e.g. fixed-effect) to isolate the impact of service quality from other endogenous external indicators. Finally, an important extension of this study would be to include tests for robustness of supply-side variables, including causality tests.

5.4.1. Conclusion

Summing up, in addition to knowledge contribution to existing literature, the insights obtained in this study can allow the hotel managers and policymakers to identify weaknesses and strengths of supply-side factors relevant to international tourism. Accordingly, despite the limitations, it is my hope that this study will contribute not only industry practitioners and policymakers in the Maldives but also tourism stakeholders in the other small island developing states.

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Table 1.1. Top Tourist Destinations, 2012.

Rank	By absolute tourist arrivals			share of tourism receipts in total exports of Goods and Service	
	Country/territory	Arrival (millions)	% of world arrivals		% exports
1	France	83.1	8.1	Macao SAR, China	94.7
2	United States	66.7	6.5	Maldives	78.1
3	China	57.7	5.7	Vanuatu	76.5
4	Spain	57.5	5.6	Bahamas, The	63.5
5	Italy	46.4	4.5	Samoa	61.2
6	Turkey	35.7	3.5	Cabo Verde	60.1
7	Germany	30.4	3.0	Grenada	59.1
8	United Kingdom	29.3	2.9	Antigua and Barbuda	58.9
9	Russian Federation	28.2	2.8	St. Lucia	55.8
10	Malaysia	25.0	2.5	Montenegro	50.3
11	Austria	24.2	2.4	St. Vincent and the Grenadines	49.9
12	Hong Kong SAR, China	23.8	2.3	Dominica	47.4
13	Mexico	23.4	2.3	Tonga	47.2
14	Ukraine	23.0	2.3	Jamaica	46.3
15	Thailand	22.4	2.2	Albania	45.6
16	Canada	16.3	1.6	Sao Tome and Principe	45.5
17	Greece	15.5	1.5	Aruba	44.8
18	Poland	14.8	1.5	Comoros	43.9
19	Saudi Arabia	14.3	1.4	Fiji	40.6
20	Macao SAR, China	13.6	1.3	West Bank and Gaza	39.2
All countries					
	Mean	5.5			14.8
	Median	1.1			7.1
	Std. dev.	11.7			16.9
	Count	185			200

Note: International tourism receipts are expenditures by international inbound visitors, including payments to national carriers for international transport. These receipts include any other prepayment made for goods or services received in the destination country. Source: Data from UNWTO, World Development Indicators

Table 3.1.Summary Observations, Cross-Country Analysis (1996 -2013).

	Observations	Origin	Destination	country pairs	Total tourist arrivals (millions)	Observations kept (%)	Arrivals kept (%)
UNWTO Full Data (Country of origin unambiguously identified)	187,973	198	180	14,987	15,300	100	100
Key variables (GDPs, price factor, stability) available	138,601	182	152	12,368	13,500	74%	88%
Country of origin restricted to higher income countries	97,824	108	151	8,332	12,400	52%	81%
Minimum 100 tourists annually	80,434	108	151	6,772	12,400	43%	81%
Small island developing states	11,272	104	26	906	312	6%	2%

Table 3.2. Absolute Advantage and Comparative Advantage of tourism flow, 2013.

	Absolute advantage rank		Comparative advantage rank	
Rank	**country**	**Market share (%)**	**country**	**Market share/pop share)**
1	France	7.85	Andorra	205.6
2	United States	6.57	Macao SAR, China	168.4
3	Spain	5.69	Sint Maarten (Dutch part)	85.5
4	China	5.22	British Virgin Islands	84.5
5	Italy	4.48	Aruba	63.8
6	Turkey	3.55	Turks and Caicos Islands	58.9
7	Germany	2.96	Monaco	58.6
8	United Kingdom	2.91	Northern Mariana Islands	54.6
9	Russian Federation	2.89	Guam	54.2
10	Thailand	2.49	Bahrain	45.5
11	Malaysia	2.41	Cayman Islands	39.6
12	Hong Kong SAR, China	2.41	Virgin Islands (U.S.)	37.8
13	Austria	2.33	Palau	34.6
14	Ukraine	2.31	Malta	25.1
15	Mexico	2.27	Bermuda	24.3
16	Greece	1.68	Bahamas, The	24.2
17	Canada	1.51	Hong Kong SAR, China	23.9
18	Poland	1.48	Austria	19.6
19	Saudi Arabia	1.48	Curacao	19.2
20	Macao SAR, China	1.34	Maldives	19.2
21	Netherlands	1.20	Antigua and Barbuda	18.1
22	Korea, Rep.	1.14	Croatia	17.2
23	Singapore	1.12	Seychelles	17.1
24	Croatia	1.03	Iceland	16.7
25	Japan	0.97	San Marino	15.2

Note. Market share is the country's share of the global tourism sector and comparative share is the number of tourists served per year per capita. Author calculation based on UNWTO data for 2013. Full list is available upon request.

Table 3.3. Definition of Study Variables Used in the Cross-Country Analysis.

Variable	Description	Data sources
AR_{ijt}	Per capita tourist arrivals from country origin (i) to the destination country (j) in the year t.	UNWTO, National Bureau of Statistics [NBS], Maldives
$AR_{ij(t-1)}$	lagged dependent variable denotes the dynamic nature of tourist preference or habit persisitance of tourists, a positive sign is expected	
$GDPcap_{it}$	Gross Domestic Product calculated US$ (constant. 2005), a positive sign is expected	Pen World Table, WDI
$GDPcap_{jt}$	Income per capita as calculated US$ (constant. 2005) measures the level of development and general state of technology, a positive sign is expected	Pen World Table, WDI
RP_{ijt}	The ratio of consumer price indices (CPI), adjusted for the exchange rate, between origin and destination country	WDI, IMF, NBS
IPP_{ijt}	Relative price between country of origin and destiantion calcualted using purchasing power parity (PPP) factor of the destination to the PPP factor of the origin. A negative sign is expected	WDI
$TCOST_{ij}$	Travel cost from origin to destination, two proxies distance D_{ij} which measures weighted bilateral distance and time difference (T_{ij}) between origin and destination countries.	CEPII
$PSTAB_{jt}$	Stability in destination country (the government will be destabilized by unconstitutional/violent means, including terrorism). Estimate gives the country's stability, ranging from approximately -2.5 (lowest) to 2.5 (highest) rank.A positive sign is expected	(Kraay, Kaufmann, & Mastruzzi, 2010)
$UNDEMC_{jt}$	Average of political rights, rule of law, and civil liberty indices. Values between 1-7 where a higher index means less political freedom or less perceived safety, a negative sign is expected	Freedom House
$DISAS_{jt}$	Percent of disaster affected population in destination country at a given year t, a negative sign is expected	EM-DAD
$AROOM_{jt}$	the absolute number of hotel rooms, a proxy for investment in tourism infrastructure in the destination country, a positive sign is expected	UNWTO
ICT_{jt}	number of internet users per 100 people in the country, a proxy for investment in communication, a positive sign is expected	WDI
$\text{REGION}_{i,j}$	variable to differentiate between regions of origin or destination countries as categorized by UNWTO	UNTWO
$INCOME_{i,j}$	Variable to differentiate between income level of countries (origin or destination) as categorized by World Bank	WDI
SIDS_j	dummy variable for small island developing states (SIDS) as categorized by United Nations	United Nations

Table 3.4. Summary Statistics,Cross-Country Panel.

	Observations	Mean	Std. Dev.	Min	Max
Dependent Variable					
Bilateral tourist arrivals, in 1000	80,434	154.64	1,396.43	0.10	79,400
AR_{ijt} −per capita arrivals	80,434	0.017	0.534	7.76e-08	54.97
Origin characteristics					
$GDPcap_{it}$ −GDP per capita, US $	80,434	22,831.98	18,043.40	650.14	87,773
Consumer Price Index (CPI)	77,432	87.22	20.68	0.43	296.01
Price level (PPP factor)	80,434	0.79	0.34	0.12	1.86
Destination characteristics					
$PSTAB_{jt}$ −Stability rank	80,434	49.89	26.50	0.96	100
$UNDEMC_{jt}$ −Undemocratic Status	80,434	3.05	1.89	1.00	7.00
$GDPcap_{jt}$ −GDP per capita, US$	80,434	12,937.05	15,179.33	127.02	87,773
$AROOM_{jt}$ − hotel rooms, in 1000	80,434	242.32	696.36	0.16	4,927
ICT_{jt} − internet users per 100	80,434	28.01	26.81	0.00	97
Consumer Price Index (CPI)	76,919	83.25	25.09	1.22	296
Price level (PPP factor)	80,434	0.59	0.31	0.11	2
$DISAS_{jt}$ − percent of disaster affected population	33,588	1.89	5.30	0	82.7
Destination-origin characteristics					
RP_{ij} −Relative price	76,919	1.38	7.95	.0008	968
IPP_{ijt} −Price Ratio	80,434	0.93	0.71	0.08	12
T_{ij} −Time difference in hours	80,434	4.03	3.41	0.00	12
D_{ij} −Population weighted distance, km	80,434	6,407	4,595	115	19,650

Table 3.5.Estimated Cross-country Panel Data Models of Tourist Arrivals,Full-Sample.

	(1) OLS	(2) RE	(3) HT	(4) HT1	(5) FE	(6) FE1
Push factor from tourist originating country (TOC)						
$ln\ GDPcap_{it}$	0.898***	0.912***	0.977***	0.979***	0.964***	0.843***
	(0.022)	(0.012)	(0.016)	(0.016)	(0.016)	(0.015)
Resistance factors between TOC and destination						
$lnRP_{ijt}$	0.003	-0.015***	-0.014***	-0.014***	-0.015***	
	(0.006)	(0.001)	(0.001)	(0.001)	(0.001)	
$lnIPP_{ijt}$						-0.238***
						(0.010)
T_{ij}	-1.361***	-1.147***	-1.133***			
	(0.027)	(0.025)	(0.045)			
D_{ij}				-1.114***		
				(0.036)		
Supply-side (Pull) factors from destination						
$PSTAB_{jt}$	0.009	0.076***	0.081***	0.082***	0.085***	0.083***
	(0.032)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
$UNDEMC_{jt}$	-0.003	-0.055***	-0.064***	-0.063***	-0.071***	-0.064***
	(0.015)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
$ln\ GDPcap_{jt}$	0.060*	0.383***	0.539***	0.509***	0.634***	0.652***
	(0.029)	(0.012)	(0.014)	(0.014)	(0.017)	(0.017)
$ln\ ICT_{jt}$	0.067***	0.026***	0.038***	0.039***	0.036***	0.036***
	(0.016)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
$ln\ AROOM_{jt}$	0.821***	0.455***	0.281***	0.280***	0.256***	0.287***
	(0.013)	(0.007)	(0.008)	(0.008)	(0.009)	(0.009)
Year fixed effects	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
Country-pair Fixed effect	*NO*	*NO*	*NO*	*NO*	*YES*	*YES*
Additional multilateral dummy	*YES*	*YES*	*YES*	*YES*		
Observations	74,450	74450	74450	74,450	74,450	80434
Country-pairs	6,403	6,403	6,403	6,403	6,403	6,772
R^2	0.636	0.556			0.345	0.332
F	443.783		135	1367	1380	1406

Note: The dependent variable is ln (arrival/pop_i). All variables are convertedin their natural logarithmic form except security variables ($PSTAB_{jt}, UNDEMC_{jt}$) . Results are reported for ordinary least square (OLS), random-effects (RE), Hausman-Taylor (HT) and country-pair fixed effect model (CFE) and, Standard errors are in parentheses, significance at*10%; ** 5%; *** 1%, Hanuman test rejects random-effects model as consistent, and test also suggests superiority of FE estimator over HT. Additional multilateral dummies include common language spoken by 9% population and common legal system .

Table 3.6. Estimated Fixed-effects Cross-country Panel Data Model of TouristArrivals,

Sub-samples

	(1) HINC	(2) UMINC	(3) LMINC	(4) LINC	(5) SIDS	(6) SIDS
$ln\ GDPcap_{it}$	0.909***	0.985***	1.084***	1.010***	1.693***	1.681***
	(0.021)	(0.032)	(0.038)	(0.101)	(0.048)	(0.047)
$lnRP_{ijt}$	-0.011***	-0.027***	-0.001	-0.032**	-0.000	-0.001
	(0.002)	(0.003)	(0.004)	(0.012)	(0.005)	(0.005)
$PSTAB_{jt}$	0.071***	0.040***	0.109***	0.297***	-0.090***	
	(0.010)	(0.011)	(0.012)	(0.028)	(0.019)	
$UNDEMC_{jt}$						-0.067***
						(0.011)
$ln\ GDPcap_{jt}$	0.323***	0.623***	1.209***	0.974***	0.767***	0.725***
	(0.024)	(0.030)	(0.056)	(0.102)	(0.047)	(0.047)
$ln\ ICT_{jt}$	0.049***	-0.054***	0.060***	0.128***	0.055***	0.067***
	(0.006)	(0.007)	(0.006)	(0.023)	(0.009)	(0.009)
$ln\ AROOM_{jt}$	0.260***	0.533***	0.095***	0.386***	0.357***	0.387***
	(0.016)	(0.020)	(0.017)	(0.024)	(0.043)	(0.042)
Observations	36662	21397	14988	3263	9802	9858
Country-pairs	2,775	1,966	1,345	470	800	814
R^2	0.296	0.381	0.390	0.565	0.274	0.275
F	569.147	477.954	347.986	143.808	135.543	137.067
p	0.000	0.000	0.000	0.000	0.000	0.000

Note: The dependent variable is ln (arrival/pop_i). Results are reported for country-pair fixed effect model (CFE). Standard errors are in parentheses, significance at* *10%*; ** *5%;* *** *1%.*

Table 3.7.Estimated Hausman-Taylor Cross-country Panel Data Model of TouristArrivals, Sub-samples

	(1) HINC	(2) UMINC	(3) LMINC	(4) LINC	(5) SIDS	(6) SIDS1
$ln\ GDPcap_{it}$	0.904***	0.938***	1.027***	0.950***	1.625***	1.618***
	(0.019)	*(0.028)*	*(0.033)*	*(0.077)*	*(0.043)*	*(0.043)*
$lnRP_{ijt}$	-0.010***	-0.028***	-0.000	-0.037***	0.000	-0.000
	(0.002)	*(0.003)*	*(0.004)*	*(0.011)*	*(0.005)*	*(0.005)*
T_{ij}	-1.264***	-1.399***	-1.386***	-0.417*	-2.534***	-2.525***
	(0.057)	*(0.079)*	*(0.110)*	*(0.174)*	*(0.142)*	*(0.141)*
$PSTAB_{jt}$	0.070***	0.037***	0.099***	0.281***	-0.094***	
	(0.010)	*(0.010)*	*(0.012)*	*(0.026)*	*(0.018)*	
$UNDEMC_{jt}$						-0.061***
						(0.010)
$ln\ GDPcap_{jt}$	0.310***	0.596***	1.153***	0.957***	0.720***	0.676***
	(0.023)	*(0.029)*	*(0.053)*	*(0.095)*	*(0.043)*	*(0.044)*
$ln\ ICT_{jt}$	0.046***	-0.053***	0.057***	0.129***	0.052***	0.063***
	(0.005)	*(0.007)*	*(0.006)*	*(0.022)*	*(0.009)*	*(0.009)*
$ln\ AROOM_{jt}$	0.302***	0.569***	0.133***	0.401***	0.406***	0.445***
	(0.015)	*(0.018)*	*(0.016)*	*(0.023)*	*(0.040)*	*(0.039)*
Year fixed effects	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
Observations	36662	21397	14988	3263	9802	9858
Country-pairs	2,775	1,966	1,345	470	800	814
F	605	499	355	153	145	147

Note: The dependent variable is ln (arrival/pop_i). Results are reported for Hausman-Taylor (HT) estimator. Standard errors are in parentheses, significance at**10%*; ** *5%;* *** *1%*.

Table 3.8.Estimated Fixed-effectsCross-Country Panel Data Model of Tourist Arrivals with Price Variable IPP_{ijt}, Sub-samples

	(1) HINC	(2) UMINC	(3) LMINC	(4) LINC	(5) SIDS	(6) SIDS1
$ln\ GDPcap_{it}$	0.810***	0.781***	0.980***	0.990***	1.239***	1.230***
	(0.021)	*(0.029)*	*(0.036)*	*(0.092)*	*(0.044)*	*(0.044)*
$\boldsymbol{lnIPP_{ijt}}$	**-0.190*****	**-0.439*****	**-0.182*****	**-0.392*****	**-0.539*****	**-0.531*****
	(0.013)	*(0.018)*	*(0.022)*	*(0.059)*	*(0.027)*	*(0.027)*
$PSTAB_{jt}$	0.061***	0.041***	0.122***	0.217***	-0.081***	
	(0.010)	*(0.010)*	*(0.012)*	*(0.025)*	*(0.018)*	
$UNDEMC_{jt}$						-0.036**
						(0.011)
$ln\ GDPcap_{jt}$	0.349***	0.670***	1.220***	1.223***	0.528***	0.491***
	(0.024)	*(0.028)*	*(0.056)*	*(0.070)*	*(0.043)*	*(0.044)*
$ln\ ICT_{jt}$	0.054***	-0.025***	0.061***	0.077***	0.064***	0.068***
	(0.005)	*(0.006)*	*(0.006)*	*(0.019)*	*(0.007)*	*(0.007)*
$ln\ AROOM_{jt}$	0.300***	0.620***	0.111***	0.349***	0.443***	0.473***
	(0.016)	*(0.019)*	*(0.016)*	*(0.024)*	*(0.042)*	*(0.042)*
Constant	-21.514***	-27.564***	-27.119***	-28.849***	-28.789***	-28.572***
	(0.292)	*(0.371)*	*(0.549)*	*(0.983)*	*(0.570)*	*(0.578)*
Observations	38530	24486	15532	3840	11272	11394
R^2	0.276	0.376	0.382	0.534	0.253	0.252
F	545	537	349	150	140	140
p	0.000	0.000	0.000	0.000	0.000	0.000

Note: The dependent variable is ln (arrival/pop_i). Results are reported for country-pair fixed effect model (CFE). Standard errors are in parentheses, significance at**10%*; ** *5%; *** 1%.*

Table 3.9.Correlation Coefficients,Cross-country Panel Data

	$\ln AR_{i(mdv)t}$	$\ln GDPcap_{it}$	RP_{ijt}	IPP_{ijt}	D_{ij}	D_{ij}	$GDPcap_{jt}$	ICT_{jt}	$AROOM_{jt}$	$PSTAB_{jt}$	$UNDEMC_{jt}$
$\ln AR_{ijt}$	1.000										
$\ln GDPcap_{it}$	0.490	1.000									
RP_{ijt}	0.126	0.393	1.000								
IPP_{ijt}	-0.209	**-0.603**	-0.397	1.000							
D_{ij}	-0.478	-0.055	0.022	-0.011	1.000						
D_{ij}	-0.360	-0.002	0.033	0.001	0.843	1.000					
$GDPcap_{jt}$	0.212	0.038	-0.302	0.563	-0.042	0.011	1.000				
ICT_{jt}	0.144	0.034	-0.154	0.376	0.001	0.036	**0.666**	1.000			
$AROOM_{jt}$	0.461	-0.022	-0.087	0.205	0.056	0.108	0.327	0.289	1.000		
$PSTAB_{jt}$	0.067	0.095	-0.125	0.367	-0.040	-0.022	**0.618**	0.371	-0.034	1.000	
$UNDEMC_{jt}$	-0.110	-0.084	0.080	-0.413	0.014	-0.010	**-0.529**	-0.369	-0.079	-0.539	1.000

Table 3.10. Estimated GMM Cross-country Panel Data Model of Tourist Arrivals, Sub-samples

	(1) HINC	(2) UMINC	(3) LMINC	(4) LINC	(5) SIDS	(6) SIDS	(7) SIDS
$ln\ AR_{imdv(t-1)}$	0.528***	0.576***	0.423***	0.368***	0.495***	0.255*	0.419*
	(0.031)	(0.039)	(0.042)	(0.053)	(0.057)	(0.111)	(0.172)
$ln\ GDPcap_{it}$	0.830***	0.852***	0.863***	1.396***	1.334***	1.338*	1.584**
	(0.106)	(0.111)	(0.118)	(0.304)	(0.118)	(0.658)	(0.561)
$lnRP_{ijt}$	-0.002	-0.011	0.012	-0.015	0.005	-0.015	0.124
	(0.004)	(0.008)	(0.007)	(0.014)	(0.008)	(0.028)	(0.157)
$ln\ GDPcap_{jt}$	0.311***	0.399***	0.674***	0.661**	0.409**	1.003*	0.430
	(0.059)	(0.084)	(0.121)	(0.254)	(0.130)	(0.419)	(0.262)
$ln\ ICT_{jt}$	0.030*	-0.010	0.027**	0.201***	0.043*	0.102	0.143
	(0.013)	(0.011)	(0.010)	(0.035)	(0.018)	(0.071)	(0.077)
$ln\ AROOM_{jt}$	0.258***	0.128**	0.209***	0.357***	0.213*	0.089	0.462
	(0.038)	(0.039)	(0.027)	(0.052)	(0.085)	(0.175)	(0.364)
$PSTAB_{jt}$	0.068***	0.060***	0.140***	0.011	0.058*		
	(0.016)	(0.016)	(0.017)	(0.044)	(0.030)		
$UNDEMC_{jt}$	-0.074***	-0.031**	-0.042**	-0.193***	-0.005	-0.058*	0.041
	(0.014)	(0.011)	(0.013)	(0.031)	(0.014)	(0.023)	(0.097)
$\boldsymbol{DISAS_{jt}}$						**-0.004****	**-0.036**
						(0.001)	(0.025)
$\boldsymbol{DISAS_{j(t-1)}}$							**0.026**
							(0.015)
$\boldsymbol{DISAS_{j(t-2)}}$							**-0.008**
							(0.005)
Observations	28713	17320	12111	2280	8020	1448	556
AR(2)	0.326	0.654	0.467	0.353	0.072	0.099	0.28
F	216	177	111	44	34	9	7
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note. The dependent variable is the per capita tourist arrivals from origin country to destination country j. All variables are convertedto logarithmic form, except variables ($PSTAB_{jt}$, $UNDEMC_{jt}$ and $DISAS_{jt}$), p-values are reported in ( ). Standard errors are in parentheses, significance at*10%; ** 5%; *** 1%. AR(2) is Arellano and Bond test for second-order autocorrelation which has a null hypothesis of no second-order serial correlation.

Table 3.11.Estimated Models of Tourist Arrivals in the Maldives.

	1	2	3	4	5	6	7	8
	OLS	FE			GMM			
$ln\ AR_{imdv(t-1)}$	0.897***	0.473***	0.769***	0.773***	0.715***	0.615***	0.624***	0.709***
	(0.014)	*(0.060)*	*(0.043)*	*(0.045)*	*(0.075)*	*(0.064)*	*(0.057)*	*(0.055*
$ln\ GDPcap_{it}$	0.091***	1.720***	0.272***	0.235***	0.338***	0.489***	0.476***	0.351***
	(0.022)	(0.263)	**{1.18}**	**{1.04}**	**{1.19}**	**{1.27}**	**{1.27}**	**{1.21}**
			(0.081)	*(0.069)*	*(0.113)*	*(0.125)*	*(0.115)*	*(0.099)*
$lnRP_{i(mdv)t}$	0.011*	0.145**	0.029	0.036	-0.017	0.018	0.018	0.031
	(0.007)	*(0.066)*	*(0.034)*	*(0.033)*	*(0.036)*	*(0.040)*	*(0.039)*	*(0.037)*
$ln\ T_{i(mdv)}$	-0.13***		-0.210*			-0.398**	-0.388**	-0.271**
	(0.027)		**{-0.91}**			**{-1.03}**	**{-1.03}**	**{-0.93}**
			(0.108)			*(0.165)*	*(0.155)*	*(0.128)*
$lnD_{i(mdv)}$				-0.305*				
				{-1.34}				
				(0.155)				
$lnCP_{fiji(mdv)t}$					-0.007			
					(0.019)			
$lnCP_{sey(mdv)t}$					-0.077**			
					{-0.27}			
					(0.031)			
$lnCP_{mau(mdv)t}$					0.093*			
					{0.25}			
					(0.048)			
$lnCP_{sri(mdv)t}$					0.016*			
					{0.02}			
					(0.010)			
$lnAROOM_{(mdv)t}$						0.801***		
						{2.08}		
						(0.142)		
$ln\ BOAT_{(mdv)t}$							0.509***	
							{1.35}	
							(0.084)	
$ln\ PSTAB_{(mdv)t}$							0.190**	
							{0.51}	
							(0.078)	
$ln\ UNDEMC_{(mdv)t}$								-0.29***
								{-0.99}
								(0.079)
	0.95	0.53	0.83	0.84	0.81	0.78	1.05	0.46
R2/.AR(2)			(0.406)	(0.401)	(0.419)	(0.438)	(0.293)	(0.645)
			83.62	83.35	68.52	83.00	82.95	83.69
Hansen test (overid)			(0.430)	(0.438)	(0.794)	(0.418)	(0.389)	(0.397)
			434.80	449.31	459.80	290.15	242.60	409.57
F test (d.f.)			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of instruments			87	87	87	87	87	87
Number of groups			84	84	69	84	84	84
Observations			878	878	726	878	878	878

Note. The dependent variable is the per capita tourist arrivals from origin country to Maldives. All variables are converted to logarithmic form. **Long-run elasticities are reported in { }** and p-values are reported in ( ). Standard errors are in parentheses, significance at *10%; ** 5%; *** 1%. AR(2) is Arellano and Bond test for second-order autocorrelation which has a null hypothesis of no second-order serial correlation. Hansen test tests the null hypothesis of exogeneity of the instrumental variables. In all specifications lag arrival and GDP variables are considered as endogenous.

Table 3.12. Definitions of the Variables Used in the Single Country Analysis

Variable	Mean and (SDV)	Description	Data sources
$\ln AR_{i(mdv)t}$	-9.871 (2.112)	Total number of tourist arrivals from toruist origin country (TOC), *i*, to the Maldives (MDV) in the year t, expressed in per capita terms.	UNWTO, National Bureau of Statistics [NBS], Maldives
$lnRP_{i(mdv)t}$	0.7319 (2.699)	Relative price between TOC and MDV. A negative sign is expected	WDI, IMF, NBS
$\ln GDPcap_{it}$	8.144 (1.632)	Income per capita of TOC as calculated US$ (constant. 2005) measures income level of tourists . A positive sign is expected	WDI, NBS
$lnD_{i(mdv)}$ $\ln T_{i(mdv)}$	8.894 (0.533) 1.368 (0.689)	Distance between TOC and MDV, population weighted Time difference between TOC and MDV, proxy to cost of traveling. A negative sign is expected	CEPII, U.S. department of transportation (http://www.rita.dot.gov/bts/airfares)
$\ln BOAT_{(mdv)t}$	7.028 (0.4763)	Number of speed boats in MDV (proxy to investment in transport). A positive sign is expected	NBS
$lnAROOM_{(mdv)t}$	9.912 (.2390)	Number of torusits beds in the Maldives (proxy to investment in tourist properties). A positive sign is expected	NBS
$lnCP_{fiji(mdv)t}$	-6.065 (0.822)	Relative price level between MDV and fiji. A negative sign is expected	WDI, IMF
$lnCP_{sey(mdv)t}$	0.871 (0 .499)	Relative price level between MDV and Seychelles. A negative sign is expected	WDI, IMF
$lnCP_{mau(mdv)t}$	-0.609 (0.284)	Relative price level between MDV and Mauritius. A negative sign is expected	WDI, IMF
$lnCP_{sri(mdv)t}$	-1.597 (0.548)	Relative price level between MDV and Sri Lanka. A negative sign is expected	WDI, IMF

Table 4.1. Summary Statistics of Room Types, Guesthouse and Resorts.

Guesthouse segment

	standard		deluxe		suite	
VARIABLES	N	mean	N	mean	N	mean
Room price ($)	148	82.65	528	104.3	17	181.7
Room size (m^2)	122	16.26	430	17.41	16	19.13
Guest rating	109	8.352	443	8.380	15	7.560

Resorts

	Water villa		Beach villa		Garden villa	
VARIABLES	N	mean	N	mean	N	mean
Room price ($)	250	752.0	343	790.2	348	1,042
Room size (m^2)	228	121.2	341	127.0	348	127.7
Guest rating	247	8.483	337	8.666	341	8.711

Table 4.2.Variable Descriptions and Source of Data, Hedonic Room Prices and Rating.

Variable name	Description	Source
Price (dependent variables)	room price per night for a couple (USD) , bed and breakfast basis	booking.com
Room rating	Hotel Room rating by the guests	Online
hotel characteristics		
room	number of rooms in the hotel, it represent structural quality of guesthouse, it should be positively correlated	Guesthouse survey and Online *
star	star rating of the hotel	Online
rsize	size of the room (square meters). It represent spaciousness and should be positively related	Online
ghterrace	dummy coded:1 for Hotel with terrace	Online
ghgarden	dummy coded:1 for Hotel that has a garden	Online
location characteristics		
ghbeach	dummy coded:1 for Hotel located in front of beach	Online
dbeach	distance to beach (meters), represents access to beach and should be negatively related	Guesthouse survey
dist	distance of island from the airport (km), it is a proxy to inconvenience of transport and should be negatively related	Maldives Census data 2014 (MCD14)
Island (external) characteristics		
hhunsafewaste (new)	Number of household in the island using **unsafe** way of waste disposal. It represent a proxy for beach quality and should be negatively related	Maldives Census data 2014
bcindex (new)	Beach cleanliness index (aggregate of 6 indicators each varies from 1 to 6, higher indicating better quality, so should be positively related)	Guesthouse survey
tp14	population in the island in 2014, proxy for exclusivity	(MCD14)
rooms_km2	Total number of hotel rooms per km2 in 2016, proxy for crowdedness	(MCD14)
blength	Length of the beach in meters, should be positively related	Guesthouse survey
Hotel (internal) characteristics (new to this study)		
flang	number of foreign languages spoken by staff, It represent quality of service and should be positively related	Online, Guesthouse survey
ywexp	working experience (in years) of managers in the tourism sector It represent quality of service and should be positively related	Guesthouse survey
tedu	education level of managers (dummy coded:1 for levels primary, 2 for secondary, 3 for certificate, 4 for diploma, 5 for degree)	Guesthouse survey
tm_ttrain	Total months of tourism related train (dummy coded:1 if mangers have received at least three months of training)	Guesthouse survey
obstacle_wastem	Waste management practice in the island is an obstacle for operation of guesthouse (dummy coded: 1 if managers said they are an obstacle). This is a proxy to the cleanliness or waste management practices of island	Guesthouse survey

Note. Online data mainly obtained from booking.com and then checked for errors using information from other OTAs as well as hotel websites

Table 4.3. Summary of observations, Hedonic Room Prices and Rating.

	# Guesthouse s	# islands	Available from
Online data	249	51	April 2016- April 2017
Survey data	147	24	December 2016 – April 2017
Sample 1	157	22	June – December 2016
Sample 2	124	23	December 2016

Table 4.4. Summary Statistics, Hedonic Room Prices and Rating.

	Sample 1 157 guesthouses, 22 islands and 7 months				**Sample 2** 121 guesthouses, 23 islands. Dec. 2017			
VARIABLES	MEAN	SD	MIN	MAX	MEAN	SD	MIN	MAX
Guesthouse room price (USD)	88.72	37.52	16.67	287.5	94.23	40.97	40	317
Guesthouse room rating (number 1-10)	8.54	0.71	6.00	10.00	8.488	0.828	6.03	9.90
Hotel characteristics								
Number of rooms in guesthouse	8.56	5.97	3.00	50.00	9.016	6.304	3.00	50
Average Room size (m^2)	17.14	5.16	8.00	45.00	17.06	5.156	8.50	37
Guesthouse has terrace	0.45	0.50	0.00	1.00	0.500	0.502	0	1
Guesthouse has restaurant	0.79	0.40	0.00	1.00	0.831	0.377	0	1
Location *characteristics*								
Guesthouse in front of beach	0.37	0.48	0.00	1.00	0.403	0.493	0	1
Distance to beach (m)	343.83	263.97	10.55	1222	304.6	270	9.59	1222
Distance to airport (km)	37.05	27.97	5.30	117.20	40.40	35.68	5.30	117.2
Quality *characteristics (new variables to this study)*								
hhunsafewaste	0.6	1.4	0.0	5	0.5	1.1	0.0	5
Beach cleanliness Index	28.4	3.9	21	36	28.3	3.3	21	36
Length of beach (m)	305	164	42	701	282	148	42	701
Total number of rooms in the island	323	307	7.0	802	346.	333	7	802
Island area (km squared)	62.5	65	4.0	173	69.3	69	4.0	173
Island population (in hundreds)	81.7	124.	1.1	320	101	7	1.1	320
number of foreign languages spoken by staff	1.73	0.97	1	5	1.831	0.977	1	5
Industry experience of managers (years)					9.592	6.622	0.1	28
Edu level of managers - *primary*					0.121	0.327	0	1
Secondary					0.411	0.494	0	1
Certificate					0.089	0.285	0	1
Diploma					0.113	0.318	0	1
Degree and above					0.266	0.444	0	1
Tourism training (more than 3 months)					0.395	0.491	0	1
Waste management practice (is an obstacle)					0.655	0.477	0	1

Note. Room price is the average price of a hotel room on bed and breakfast basis

Table 4.5. Estimated Models of Headonic Room Prices and Rating in the Maldives,Sample 1

	Dependent variable: log(room price)			DV: log(room rating)	
	(1)	(2)	**(3)**	(4)	**(5)**
Public characteristics					
Number of households using unsafe waste disposal methods	-0.03743*** *(0.00723)*	-0.04676*** *(0.00480)*		0.02449 *(0.04023)*	
Beach cleanliness Index			0.01067* *(0.00499)*		0.01284 *(0.01687)*
Population (in 100)	-0.00082* *(0.00032)*	-0.00077** *(0.00027)*	-0.00126** *(0.00044)*	-0.00381** *(0.00140)*	-0.00437*** *(0.00117)*
Beach length (m)	0.00073*** *(0.00008)*	0.00074*** *(0.00012)*	0.00062* *(0.00026)*	0.00076 *(0.00040)*	0.00082* *(0.00037)*
Crowdedness (room per km^2)	-0.00010*** *(0.00002)*	-0.00010*** *(0.00003)*	-0.00010* *(0.00004)*	-0.00002 *(0.00007)*	-0.00006 *(0.00005)*
location characteristics					
Distance to airport (ln)	-0.05065 *(0.04389)*	-0.03387 *(0.03208)*	-0.12773** *(0.03937)*	-0.02834 *(0.18097)*	-0.10852 *(0.15998)*
Guesthouse in front of beach	0.19858*** *(0.05680)*		0.21082*** *(0.05219)*	0.17097 *(0.09493)*	0.16919 *(0.09848)*
Guesthouse distance to beach	-0.00024** *(0.00009)*	-0.00029** *(0.00009)*	-0.00026 *(0.00021)*	-0.00018 *(0.00022)*	-0.00013 *(0.00023)*
Hotel characteristics					
Number of rooms in Guesthouse	0.01343*** *(0.00354)*	0.01584*** *(0.00393)*	0.01321*** *(0.00333)*	-0.00238 *(0.00608)*	-0.00347 *(0.00645)*
Guesthouse has terrace	0.13646*** *(0.03737)*	0.17506*** *(0.04116)*	0.13479*** *(0.03627)*	-0.10909 *(0.06904)*	-0.11429 *(0.07000)*
Foreign language spoken by staff	0.03946* (0.01760)	0.04508* (0.01865)	0.04134* (0.01648)	-0.00874 (0.03714)	0.00763 (0.03155)
Seasonality (June as the base case)					
July	-0.02543* *(0.01106)*	-0.01521 *(0.00967)*	-0.02730* *(0.01284)*	-0.00271 *(0.01447)*	-0.00345 *(0.00636)*
August	0.02254 *(0.02536)*	0.02483 *(0.02715)*	0.02037 *(0.02468)*	0.00924 *(0.01304)*	0.00303 *(0.00880)*
September	0.01201 *(0.02395)*	0.01595 *(0.02580)*	0.00901 *(0.02209)*	0.01123 *(0.02015)*	0.00681 *(0.00798)*
October	0.04773*** *(0.01146)*	0.05091*** *(0.00788)*	0.04607*** *(0.01056)*	0.01107 *(0.02201)*	0.00770 *(0.01267)*
November	0.14353*** *(0.02275)*	0.14522*** *(0.02289)*	0.13944*** *(0.02222)*	-0.00815 *(0.02178)*	-0.00943 *(0.01370)*
December	0.18194** *(0.05677)*	0.18029** *(0.05862)*	0.17871** *(0.05659)*	-0.00745 *(0.01920)*	-0.01301* *(0.00597)*
Constant	4.24156*** *(0.14543)*	4.22377*** *(0.12677)*	4.24135*** *(0.16032)*	8.78899*** *(0.72768)*	9.27222*** *(0.70616)*
Number of observations	886	886	886	886	886
Adjusted R^2	0.351	0.29654	0.34801	0.45853	0.46001
F	5751	8091	2668	1789	2547
p-value	0.000	0.000	0.000	0.000	0.000

Standard errors clustered by island and month in parentheses, $^{*}p< 0.05$, $^{**}p< 0.01$, $^{***}p< 0.001$

Table 4.6.Estimated Models of Hedonic Room Pricesand Rating in the Maldives,Sample 2

	Dependent variable: log(room price)					log(room rating)
	(1)	(2)	(3)	(4)	(5)	(6)
Population (in 100)	-0.0011**	-0.0005	-0.0006	-0.0005	-0.0009*	-0.0005**
	(0.0004)	*(0.0003)*	*(0.0004)*	*(0.0004)*	*(0.0004)*	*(0.0001)*
Beach length	0.0004	0.0002	0.0003	0.0002	0.0003	0.0000
	(0.0002)	*(0.0002)*	*(0.0002)*	*(0.0002)*	*(0.0002)*	*(0.0001)*
Crowdedness	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000
	(0.0000)	*(0.0000)*	*(0.0000)*	*(0.0000)*	*(0.0000)*	*(0.0000)*
Distance to airport (ln)	-0.0800	-0.0036	-0.0408	-0.0027	-0.0486	0.0096
	(0.0485)	*(0.0458)*	*(0.0519)*	*(0.0490)*	*(0.0466)*	*(0.0228)*
Guesthouse in front of the beach	0.2311*	0.2210*	0.2487*	0.2623*	0.2008	0.0364
	(0.1018)	*(0.0865)*	*(0.0953)*	*(0.1012)*	*(0.1039)*	*(0.0181)*
Number of rooms in Guesthouse	0.0106*	0.0151***	0.0105*	0.0171***	0.0181***	0.0006
	(0.0043)	*(0.0031)*	*(0.0044)*	*(0.0037)*	*(0.0032)*	*(0.0010)*
Guesthouse has terrace	0.1349**	0.1293**	0.1237**	0.1300**	0.1559**	0.0086
	(0.0395)	*(0.0394)*	*(0.0388)*	*(0.0413)*	*(0.0430)*	*(0.0129)*
Waste management practice is an obstacle	-0.0870**	-0.0247	-0.0508	-0.0195	-0.0517	0.0086
	(0.0302)	*(0.0460)*	*(0.0350)*	*(0.0452)*	*(0.0303)*	*(0.0178)*
foreign languages spoken by staff	0.0619*	0.0715**				-0.0053
	(0.0227)	*(0.0215)*				*(0.0071)*
Industry experience (years)	0.0113*		0.0150*			-0.0020
	(0.0052)		*(0.0057)*			*(0.0010)*
Education (primary as the base case)						
secondary	0.1095			0.0992		0.0204
	(0.0709)			*(0.0653)*		*(0.0171)*
certificate	0.1159			0.0718		0.0331
	(0.1294)			*(0.1425)*		*(0.0230)*
diploma	0.1265			0.1371		0.0083
	(0.0955)			*(0.1145)*		*(0.0253)*
Degree+	0.0430			0.0641		0.0073
	(0.0791)			*(0.0738)*		*(0.0269)*
Tourism training (more than three months)	0.1233*				0.1713**	-0.0034
	(0.0549)				*(0.0513)*	*(0.0115)*
constant	4.1801***	4.0799***	4.2029***	4.0736***	4.2796***	2.1397***
	(0.1778)	*(0.1404)*	*(0.1827)*	*(0.1735)*	*(0.1550)*	*(0.0668)*
Number of Guesthouses	121	121	121	121	121	108
Adjusted R^2	0.3996	0.3231	0.3452	0.2991	0.3355	0.6367
F	86.44	40.09	43.54	38.66	94.78	14197
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: For specification #1 to #5 Dependent variable: log(room price) and for specification #6 Dependent variable: log(room rating). In all specifications island level clustered standard errors, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4.7.Estimated Models of Hedonic Room Pricesand Ratingin Maafushi and Hulumale Islands.

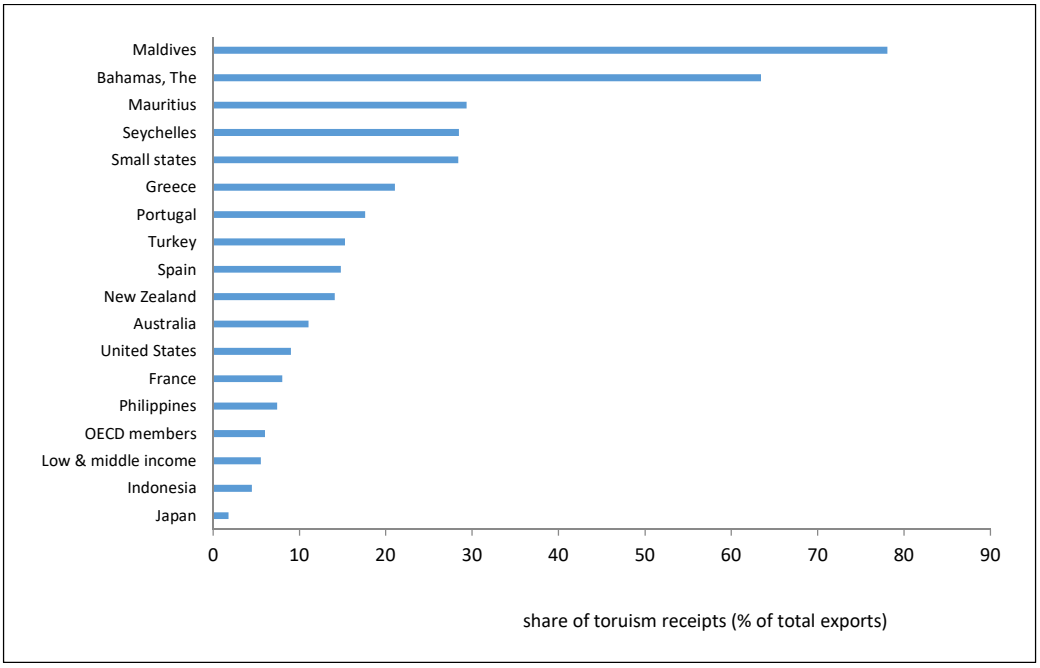
Dependent variable: natural logarithm of room price	(1)	(2)	(3)	(4)	(5)
Control variables					
Guesthouse in front of the beach	0.3804***	0.3220***	0.3778***	0.4174***	0.3349***
	(0.0947)	*(0.0896)*	*(0.0914)*	*(0.0990)*	*(0.0926)*
Number of rooms in Guesthouse	0.0110	0.0150*	0.0097	0.0159**	0.0171**
	(0.0059)	*(0.0061)*	*(0.0066)*	*(0.0057)*	*(0.0057)*
Guesthouse has terrace	0.1835	0.1314	0.1168	0.1818	0.1641
	(0.0993)	*(0.0878)*	*(0.0827)*	*(0.0954)*	*(0.0863)*
Additional Island level controls	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
foreign languages spoken by staff	0.0873*	0.0906*			
	(0.0382)	*(0.0418)*			
Industry experience (years)	0.0074		0.0176*		
	(0.0070)		*(0.0073)*		
Education (primary as the base case)					
secondary	0.0880			0.1003	
	(0.1367)			*(0.1427)*	
certificate	0.4920**			0.6156***	
	(0.1457)			*(0.1311)*	
diploma	0.1402			0.2203	
	(0.1704)			*(0.1891)*	
Degree+	-0.0364			0.0254	
	(0.1279)			*(0.1221)*	
Tourism training (more than three months)	0.0398				0.1260
	(0.0848)				*(0.0855)*
constant	3.5187***	3.7322***	3.8863***	3.6827***	3.7976***
	(0.2409)	*(0.1705)*	*(0.1427)*	*(0.2407)*	*(0.1740)*
Number of Guesthouses	58	58	58	58	58
Adjusted R^2	0.6041	0.4696	0.4927	0.5350	0.4445
F	8.495	10.83	13.96	10.06	12.03
p	0.0000	0.0000	0.0000	0.0000	0.0000

Note: Additional Island-level controls are distance from the airport and managers perception about the waste management in the island. For all specifications Guesthouse level clustered standard errors, $^{*}p< 0.05$, $^{**}p< 0.01$, $^{***}p< 0.001$.

Table 4.8.Correlation Coefficients,Hedonic Room Prices and Rating.

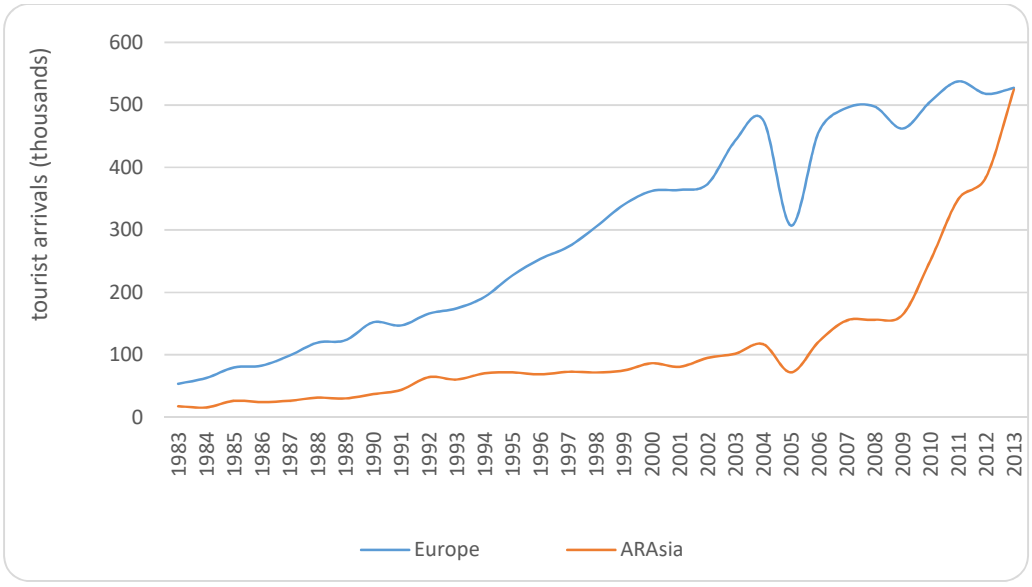
	Price (ln)	grating	rsize	ghterrace	ghrestu	ghbeach	room2	dist (ln)	flang	tywexp	tedu	tm_ttrain	wm_obstacle
Price (ln)	1												
grating	0.1395	1											
rsize	0.2197	-0.0167	1										
ghterrace	0.2804	-0.3042	-0.0178	1									
ghrestu	0.2404	0.1559	0.2817	-0.0693	1								
ghbeach	0.4008	0.0981	0.0157	0.1859	0.1442	1							
room2	0.3184	-0.0216	0.0143	0.198	0.078	0.1985	1						
dist (ln)	-0.0187	0.713	0.1283	-0.4438	0.2144	-0.0488	-0.1127	1					
flang	0.3377	-0.23	-0.0319	0.1795	-0.0207	0.1481	0.2405	-0.1767	1				
tywexp	0.3306	-0.0576	0.3106	0.0757	0.1525	-0.0042	0.3026	0.1284	0.2278	1			
tedu	0.0235	-0.3514	0.0099	0.1859	-0.053	0.093	0.1576	-0.3818	0.2764	-0.0364	1		
tm_ttrain	0.1801	-0.2024	0.0023	0.0908	-0.0626	0.1883	-0.028	-0.1684	0.1661	0.2911	0.2675	1	
wm_obstacle	-0.0439	0.2793	0.0859	-0.1589	0.1124	-0.1114	0.0431	0.3724	0.0488	0.2387	-0.0707	0.1605	1

Figure 1.1. Share of International Tourism Receipts, 2012.



Source: World Development Indicators, World Bank (2014)

Figure 1.2. Tourist Arrivals to Maldives from Europe and Asia, 1983-2013.



Source: Author's calculations based on data from National Bureau of Statistics [NBS], Maldives

Figure 1.3. Research Design.

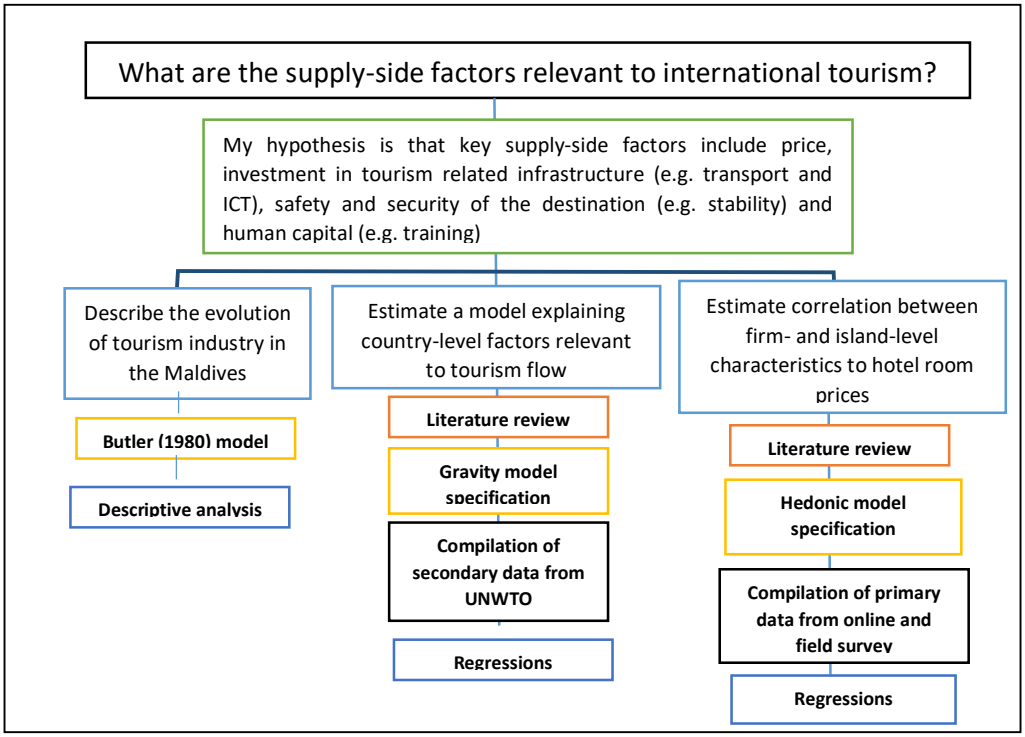
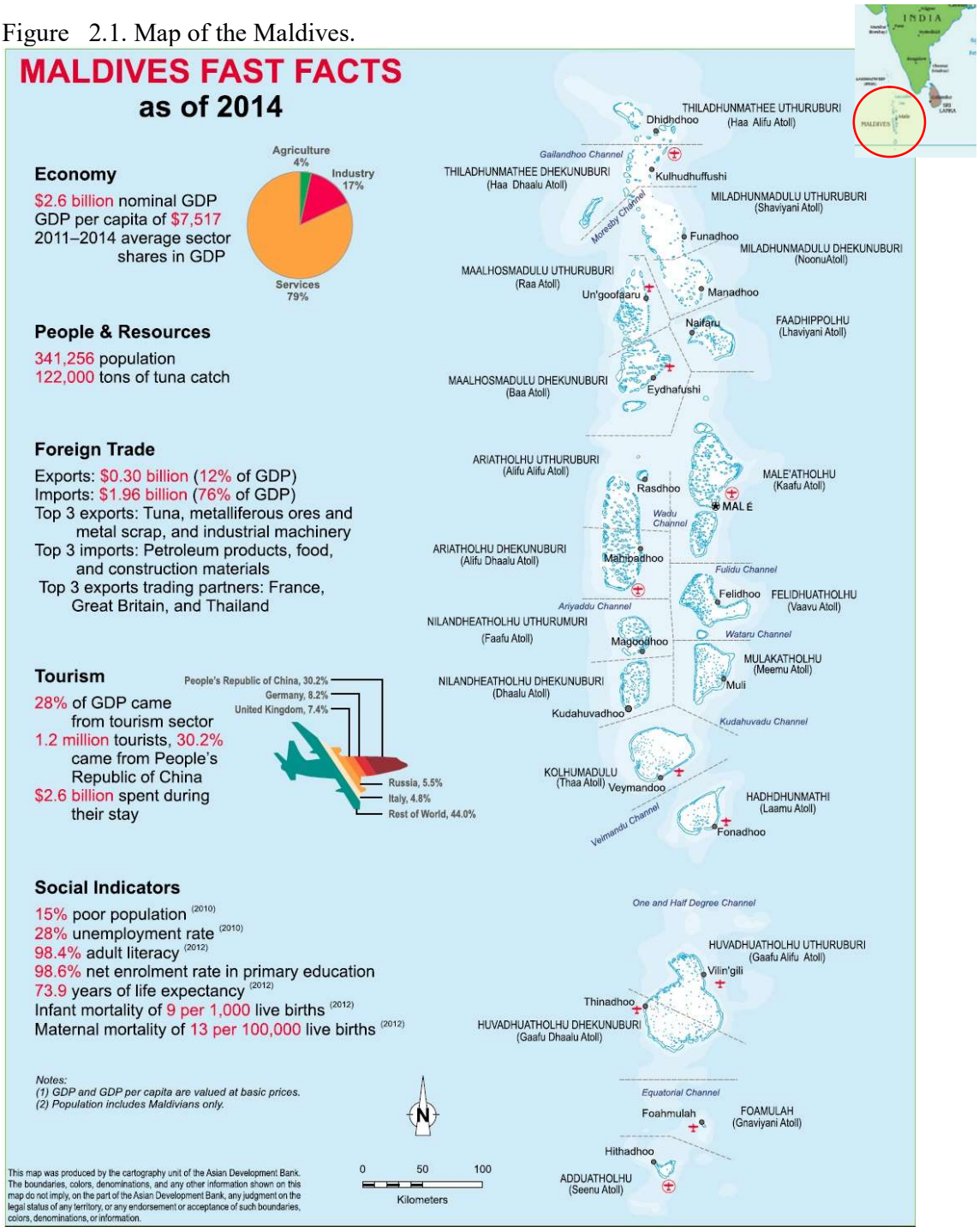


Figure 2.1. Map of the Maldives.



Source: Asian Development Bank (2015)
Note:- outer rings are the atolls while the blue dots indicate the reefs and shallow water with only some having land area (islands).

Figure 2.2: Hypothetical Evolution of a Tourist Area (Butler, 1980).

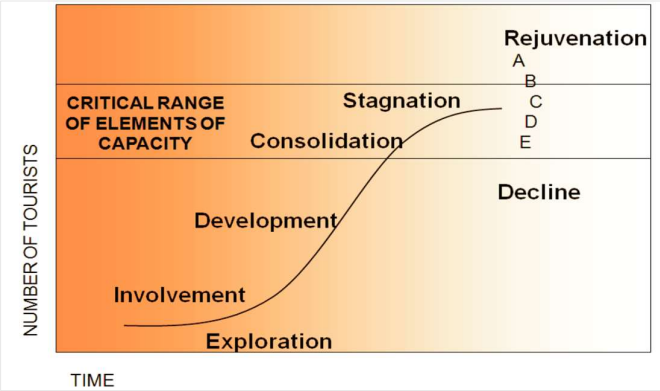
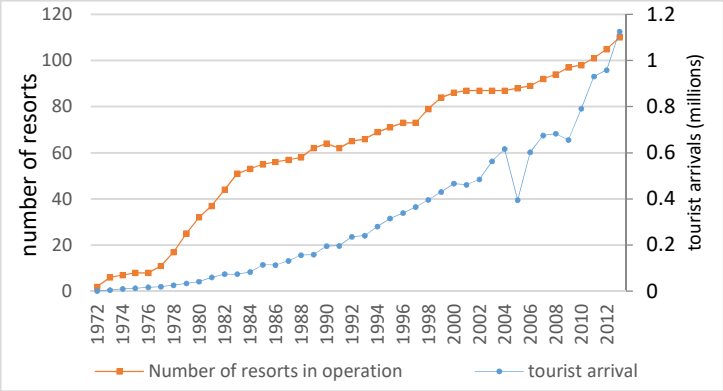
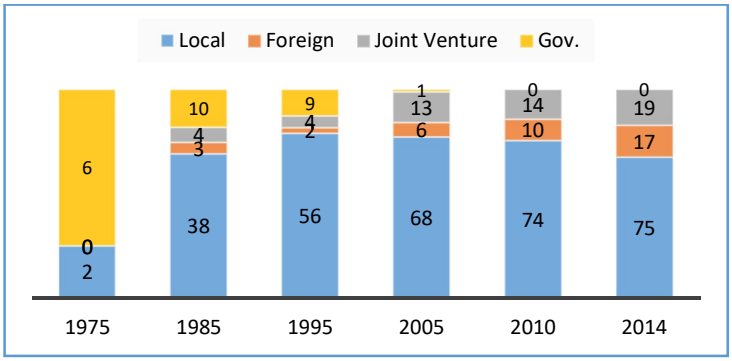


Figure 2.3. Tourist Arrivals and Number of Resorts in Operations, 1972-2012.



Source: Author's calculations using data from Ministry of Tourism, Maldives.

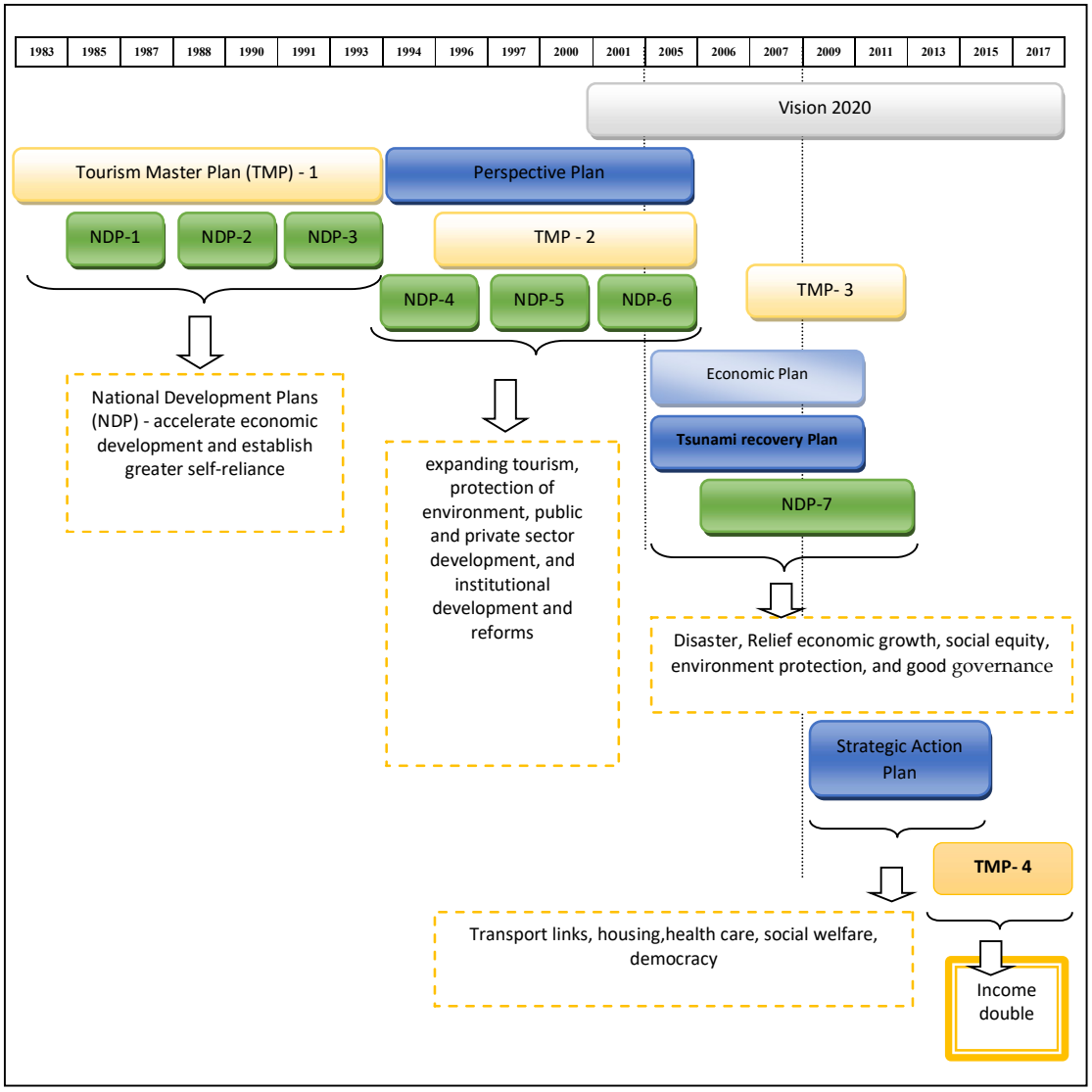
Figure 2.4.Number of Resort Leaseholders, 1975-2014.



Note: Height of the bars indicate the percentage of different lease holders for a given year while the numbers inside the bars shows absolute number of different categories of lease holders.

Source: Author's calculations using data from National Bureau of Statistics [NBS], Maldives

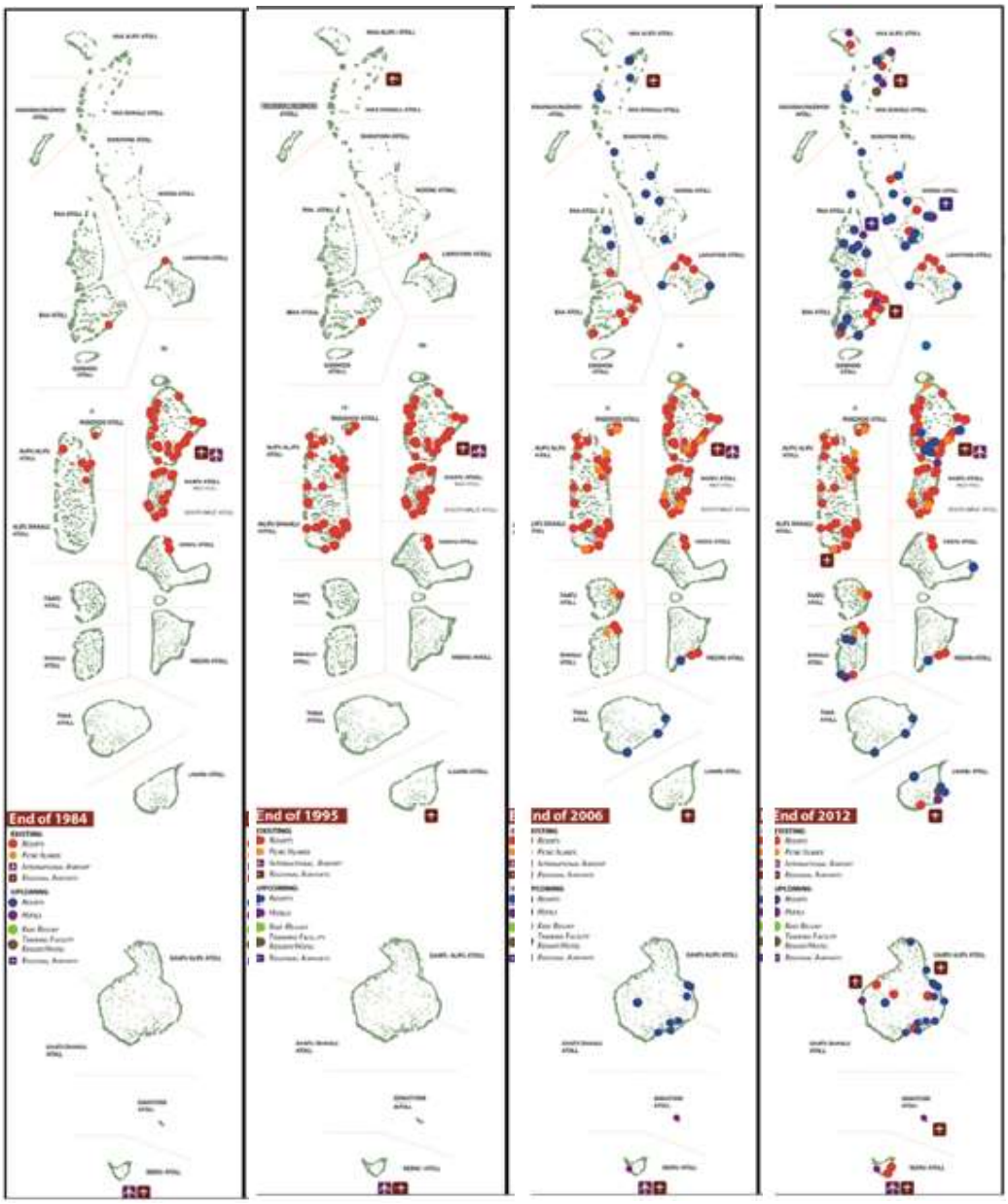
Figure 2.5. Timeline of Maldives Development Strategies.



Source: Author's interpretation based on data from National Bureau of Statistics [NBS], Maldives

Figure 2.6. A Typical Maldivian Resort.

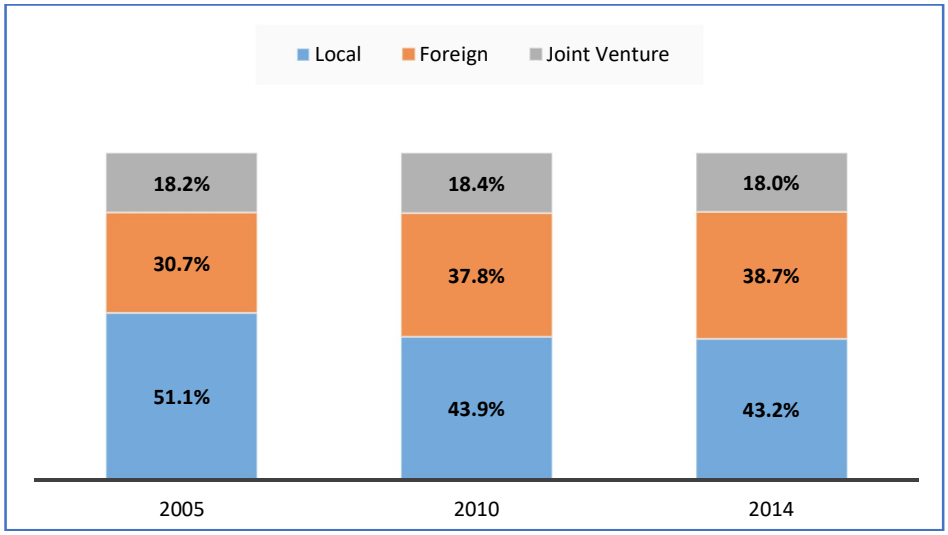
Figure 2.7: Accumulated Resorts and Hotels, 1984- 2012.



Note. Red and orange dots indicate resorts and picnic islands in operations while blue dots indicates the resorts under construction.

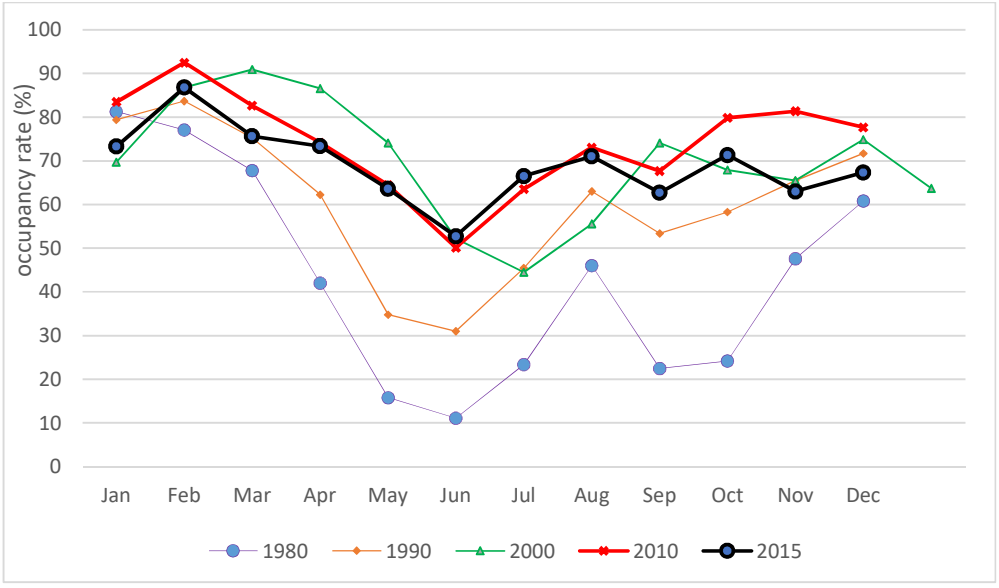
Source: Maldives National Bureau of Statistics

Figure 2.8. Ownership of Resort Operators in the Maldives, 2005-2014.



Source: Author's calculations using data from National Bureau of Statistics [NBS], Maldives

Figure 2.9.Monthly Occupancy Rate (%), 1980-2015.

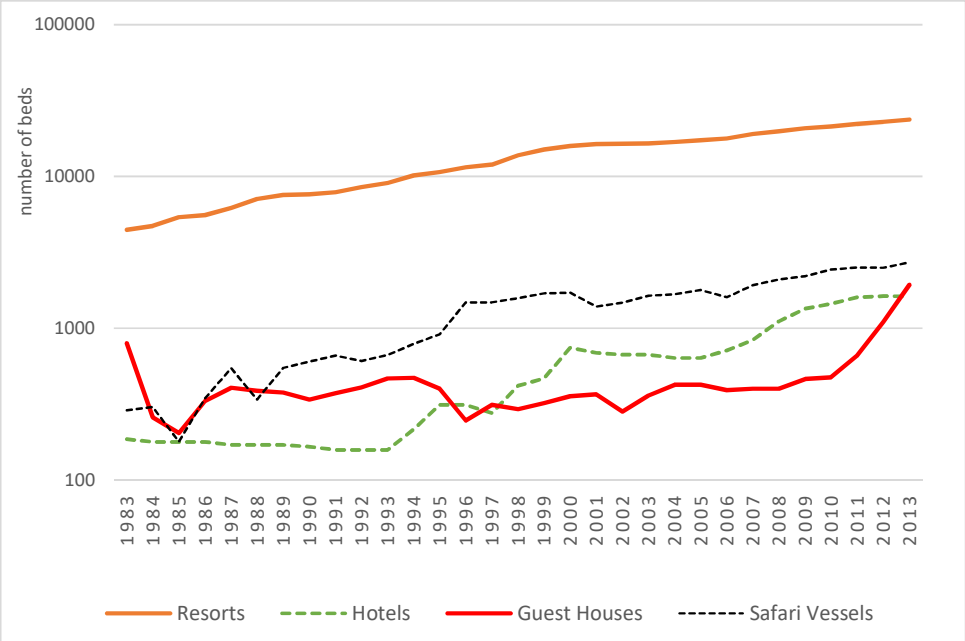


Source: Author's calculations using data from National Bureau of Statistics [NBS], Maldives

Figure 2.10.Guesthouse Island, Maafushi.

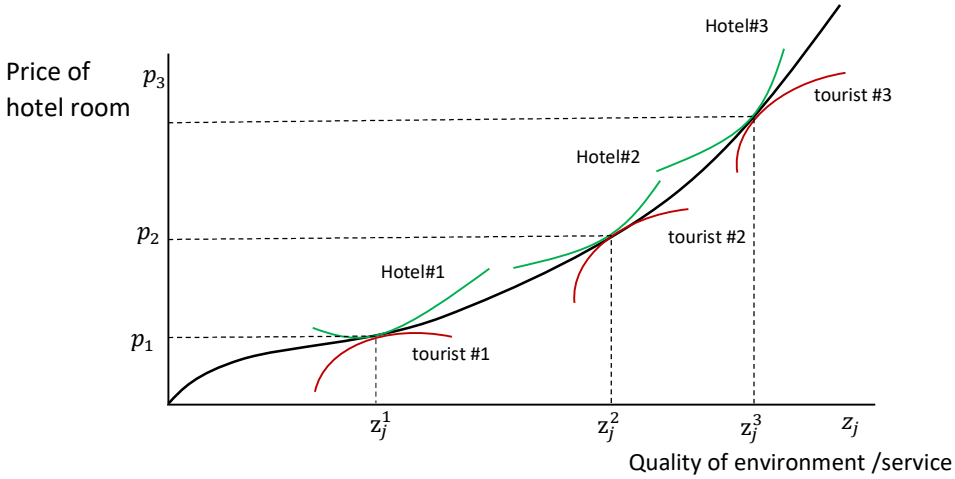
Figure 2.11: Maafushi Waste Collection Site.

Figure 2.12: Types of Accommodations and Bed Capacity, 1983-2013.



Source: Author's calculations based on data from National Bureau of Statistics [NBS], Maldives

Figure 4.1. Bid Functions, Offer functions and Hedonic Price Schedule.



Source: Greenstone and Gallagher (2008)

Figure 4.2. Welfare Effects of Quality.

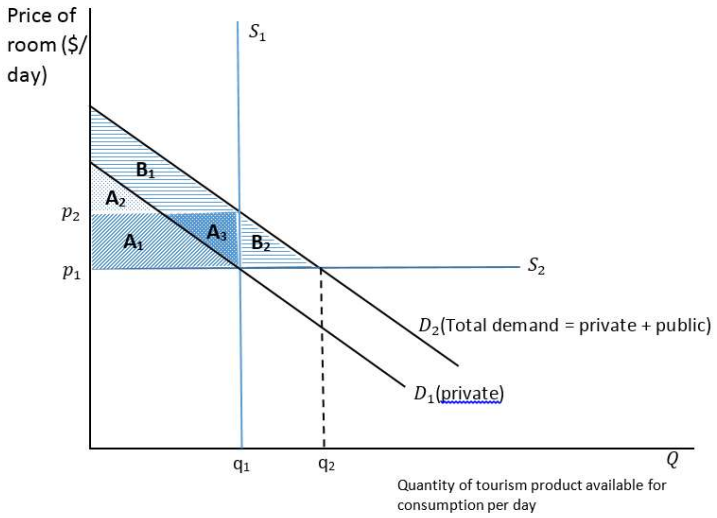


Figure 4.3. Frequency Plot of Room Price, Guesthouse and Resorts- July 2016.

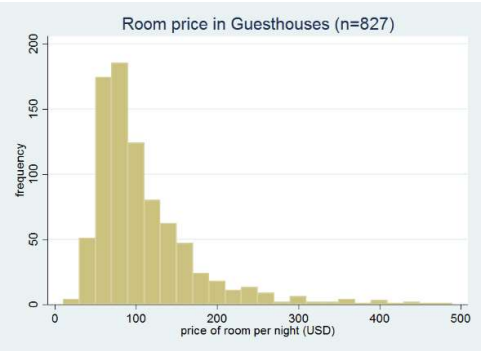
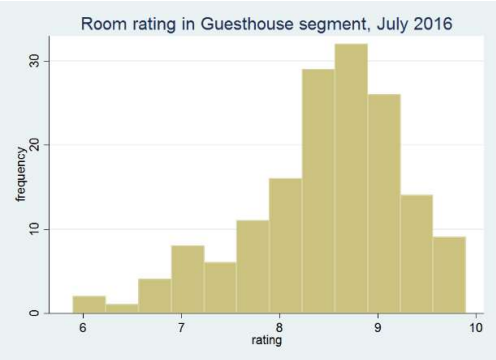


Figure 4.4 : Average Rating of Hotel Rooms in the Guesthouse segment and Resorts.



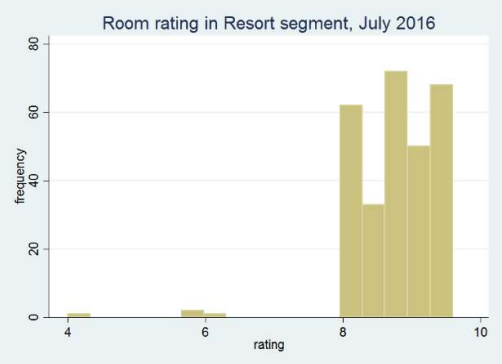
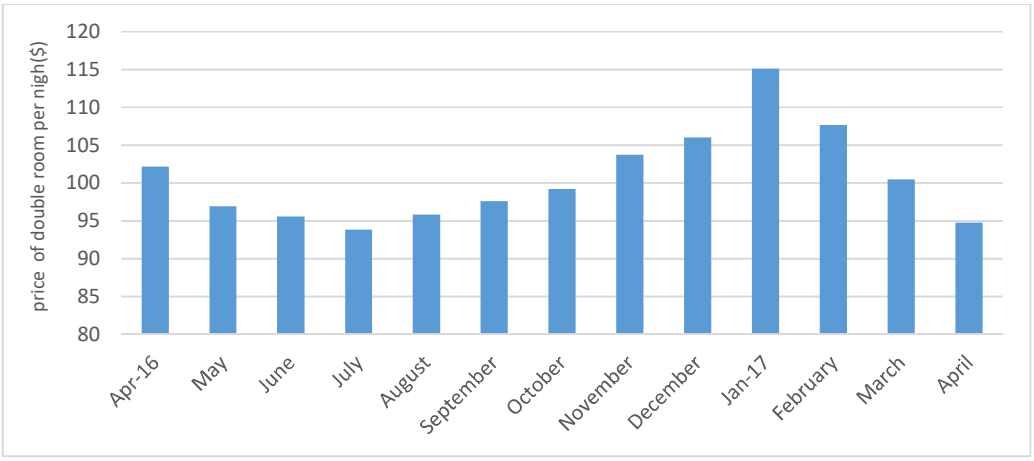


Figure 4.5.Average Monthly Guesthouse Room Price, April 2016 to April 2017.



Source: Author's calculations based on booking.com prices

Figure 4.6. Average Price of Hotel Room in Islands vs Distance from Airport.

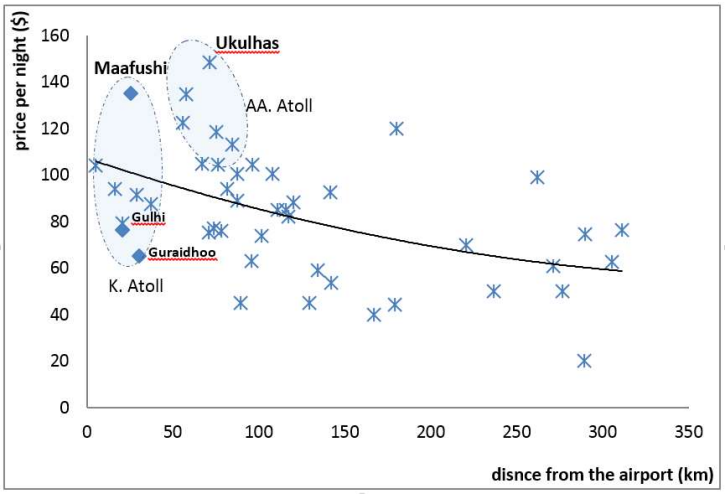


Figure 4.7. Average Price of Hotel Room, Maafushi Island.

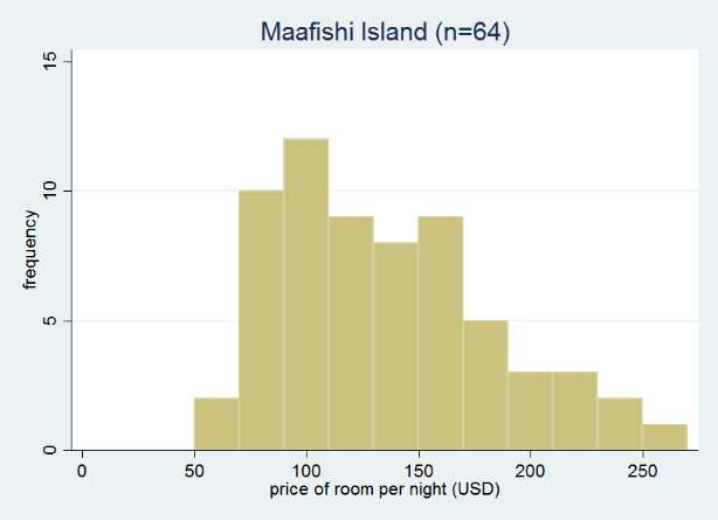
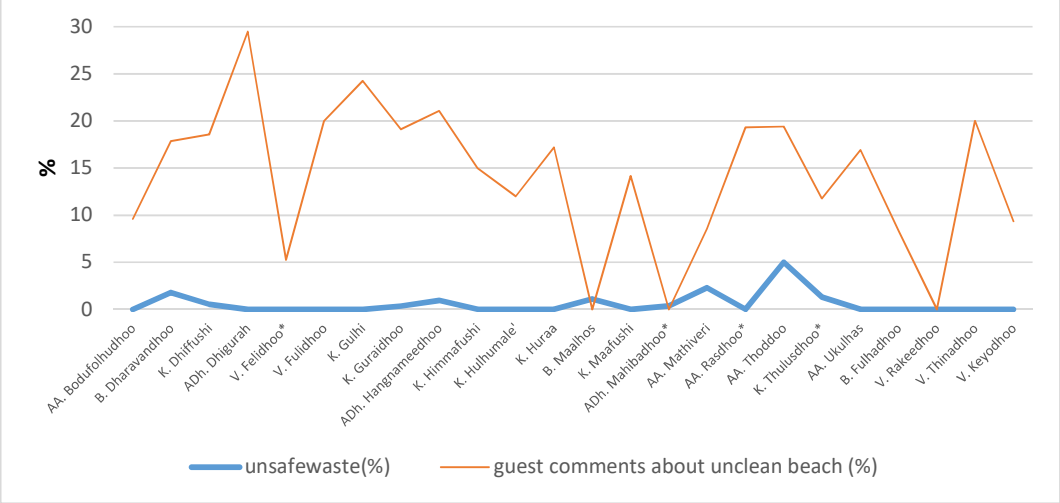


Figure 4.8. Percentage of Households using **unsafe**Waste Disposal Methods and Guests Commenting **negatively** about Beach Cleanliness.



Appendix 1: Survey

Table A1-4.1. List of People Interviewed.

I- Preliminary interviews, October 30 to November 8, 2015

Name	**Description/relevance**
Industry Experts	
Hussain Afeef	One of the first pioneers to introduce tourism to the Maldives in the early 1970s, the Vice Chairman of Maldives Association of Tourism sector (MATI) and the Chairman of Crown and Champa Resorts
Ahmed Naseer	Managing Director, WhiteShell Island Hotel & Spa. The first pioneer to start a guesthouse in Maafushi
Ahmed Nazeer	Secretary-General of Maldives Association of Tourism Industries (MATI)
Walter C. Kaufmann,	General Manager of Meeru Island Resort & Spa
Ahmed Hafeez	Managing Director, Lily Hotels Pvt. Ltd
Samih Ahmed	Food & Beverage Consultant and (former) General Manager of J Hotels & Resorts Pvt. Ltd.
Ahmed Samih	Co-Founder and CEO at Arena Beach Hotel, K. Maafushi
Abdulla Kamil	Director, Ark Travel Pvt. Ltd. (Safari Operator) and (former) Resident Manger of Fund Island Resort.
Haseeb	Resident Manager of Ocean Grand, K. Hulhumale'
Mohamed Fathuhy	Director of E-Marketing & Operations of Atoll Hideaway
Mohamed Thaufeeq	Sales and Marketing Manager of Crown & Champa Resorts
Ahmed Fazeel	Business Development Manager, Trans Maldivian Airways (TMA)
Hussain Haleem	Owner of Eureka Guest House. K. Hulhumale'
Policymakers	
Mohamed Asim	Ambassador at Large, (now) the Minister of Foreign Affairs, Maldives
Seena Zahir	(Former) Minister of Tourism
Ahmed Salih	Permanent Secretary of Ministry of Tourism and Civil Aviation
	Permanent Secretary and senior officials of Ministry of Finance and Treasury
Hussain Niyaz	Additional Secretary of Ministry of Foreign Affairs

II- Field Survey, 02 August 2016 – 27 September 2016

[redacted]	Guesthouse Name	Atoll and island
[redacted]	Simry Beachside Maldives	K. Hulhumale'
[redacted]	Eureka Athiri Inn	K. Hulhumale'
[redacted]	Hotel Elite Inn	K. Hulhumale'
[redacted]	Le Vieux Nice Inn	K. Hulhumale'
[redacted]	Rani Beach	K. Hulhumale'
[redacted]	Beach Grand and Spa	K. Hulhumale'
[redacted]	Golden Spiral	K. Hulhumale'
[redacted]	Crown Reef Maldives	K. Hulhumale'
[redacted]	Airport Comfort Inn Maldives	K. Hulhumale'
[redacted]	Sunny Suites	K. Hulhumale'
[redacted]	Coconut Tree Hulhuvilla Beach	K. Hulhumale'
[redacted]	Piculet Royal Beach	K. Hulhumale'
[redacted]	The White Harp Beach Hotel	K. Hulhumale'
[redacted]	Hotel Ocean Grand	K. Hulhumale'
[redacted]	Season Holidays	K. Hulhumale'
[redacted]	Planktons Beach	K. Hulhumale'
[redacted]	Vista Beach Retreat	K. Hulhumale'
[redacted]	TLM Retreat	K. Hulhumale'
[redacted]	City Grand	K. Hulhumale'
[redacted]	Beach Sunrise Inn	K. Hulhumale'
[redacted]	Hiyala Inn	K. Hulhumale'
[redacted]	Clear sky Inn	K. Hulhumale'
[redacted]	Ashaz Inn	K. Hulhumale'
[redacted]	Koamas Lodge	K. Hulhumale'
[redacted]	Dream Relax	K. Hulhumale'
[redacted]	Velaa Beach	K. Hulhumale'
[redacted]	Newtown Inn	K. Hulhumale'
[redacted]	Transit Inn	K. Hulhumale'
[redacted]	Pine Lodge	K. Hulhumale'
[redacted]	Royal Relax Beach	K. Hulhumale'
[redacted]	Deshadan	K. Hulhumale'
[redacted]	Sunset Royal	K. Hulhumale'
[redacted]	The Sand Gate Inn	K. Hulhumale'
[redacted]	Vilu Rest	K. Hulhumale'
[redacted]	Grace Beach Inn	K. Hulhumale'
[redacted]	Fern Boquete Inn	K. Hulhumale'
[redacted]	Noomoo	K. Hulhumale'
[redacted]	Loona Hotel	K. Hulhumale'
[redacted]	Airport Beach Hotel	K. Hulhumale'
[redacted]	h78	K. Hulhumale'
[redacted]	Rivethi Beach Hotel	K. Hulhumale'

[redacted]	Iberry Inn	K. Hulhumale'
[redacted]	Maldiva Inn	K. Hulhumale'
[redacted]	Dreams Arena	K. Hulhumale'
[redacted]	Lagoon View Maldives	AA. Bodufolhudhoo
[redacted]	Holiday Village Retreat	AA. Bodufolhudhoo
[redacted]	Castle Inn	AA. Bodufolhudhoo
[redacted]	Manta Inn	AA. Bodufolhudhoo
[redacted]	Riveli Retreat Mathiveri	AA. Mathiveri
[redacted]	Casa Mia @ Mathiveri	AA. Mathiveri
[redacted]	Bella Vista Inn	AA. Mathiveri
[redacted]	Mathiveri Lodge, Maldives	AA. Mathiveri
[redacted]	Mathiveri Stay	AA. Mathiveri
[redacted]	Mathiveri inn	AA. Mathiveri
[redacted]	Masaaree Boutique Hotel	K. Maafushi
[redacted]	Arena Lodge Maldives	K. Maafushi
[redacted]	Kaani Village & Spa	K. Maafushi
[redacted]	Arena Beach Hotel	K. Maafushi
[redacted]	Hiyaa Ilaa	B. Dharavandhoo
[redacted]	Aveyla Manta Village	B. Dharavandhoo
[redacted]	Hibaru Fishing Lodge	B. Dharavandhoo
[redacted]	LVIS blancura Hotel	B. Dharavandhoo
[redacted]	Hanifaru Transit Inn	B. Dharavandhoo
[redacted]	3 Hearts	B. Folhadhoo
[redacted]	Azoush Tourist Guesthouse	B. Folhadhoo
[redacted]	Dharavandhoo Stay	B. Dharavandhoo
[redacted]	Hiyaa Ilaa	B. Dharavandhoo
[redacted]	Dhonfulhafi Inn	B. Maalhos
[redacted]	Madi Finolhu Guest House	B. Maalhos
[redacted]	Canopy Cove	B. Maalhos
[redacted]	The Wave House	K. Thulusdhoo
[redacted]	Casadana	K. Thulusdhoo
[redacted]	Cokes Surf Shack	K. Thulusdhoo
[redacted]	Kahanbu Ocean View	K. Thulusdhoo
[redacted]	Beach Heaven Maldives	K. Huraa
[redacted]	Maldives Seashine	K. Huraa
[redacted]	Finihiyaa Inn Maldives	K. Huraa
[redacted]	Sunset Holidays	K. Huraa
[redacted]	Najaf Lakeview Guest House	K. Huraa
[redacted]	Jail Break Surf Inn	K. Himmafushi
[redacted]	Mango Surf House	K. Himmafushi
[redacted]	Hotel Ocean Grand	K. Hulhumale'
[redacted]	Just Surf Villa Maldives	K. Himmafushi
[redacted]	Kanbili GH	K. Himmafushi

[redacted]	Raalhu Lodge	K. Himmafushi
[redacted]	Dhiffushi White Sand Beach	K. Dhiffushi
[redacted]	Happy Life Maldives Lodge	K. Dhiffushi
[redacted]	Tropic Tree Hotel Maldives	K. Gulhi
[redacted]	Air Dhiffushi	K. Dhiffushi
[redacted]	Silver Shade Guest House	K. Gulhi
[redacted]	Sunshine Lodge	K. Guraidhoo
[redacted]	Ithaa Beach Maldives	K. Guraidhoo
[redacted]	Rip Tide Vacation Inn,	K. Guraidhoo
[redacted]	Guraidhoo Palm Inn	K. Guraidhoo
	IslandWay Etos	K. Guraidhoo
[redacted]	Palm Garden	AA. Thoddoo
[redacted]	Holiday Cottage	AA. Thoddoo
[redacted]	New Breeze Thoddoo Inn	AA. Rasdhoo
[redacted]	Amazing View Guest House	AA. Thoddoo
[redacted]	Thoddoo beach view	AA. Thoddoo
[redacted]	Rasdhoo Island Inn	AA. Rasdhoo
[redacted]	Rasdhoo Atoll Residance	AA. Rasdhoo
[redacted]	Ras Beach Inn	AA. Rasdhoo
[redacted]	Rasdhoo Dive Lodge	AA. Rasdhoo
[redacted]	Crystalline Hotels	AA. Rasdhoo
[redacted]	Gunbaru Inn	AA. Ukulhas
[redacted]	Ukulhas Inn	AA. Ukulhas
[redacted]	Liberty Guest House	Adh. Mahibadhoo
[redacted]	Noovilu Suites Maldives	Adh. Mahibadhoo
[redacted]	K Villa Maldives	Adh. Mahibadhoo
[redacted]	Goby Lodge Guest House	Adh. Hangnaameedhoo
[redacted]	Local Island Inn	Adh. Hangnaameedhoo
[redacted]	Kalaafaanu Retreat	Adh. Hangnaameedhoo
	Asia Inn Villa Retreat	Adh. Hangnaameedhoo
	Velana Beach Maldives	K. Maafushi
[redacted]	Triton Beach Hotel & Spa	K. Maafushi
[redacted]	Crystal Sands	K. Maafushi
[redacted]	WhiteShell Beach Inn	K. Maafushi
[redacted]	Huzey View	V. Rakeedhoo
[redacted]	La Perla Guest House	V. Fulidhoo
[redacted]	Sancia Lodge	V. Fulidhoo
	Luau beach inn	V. Fulidhoo
[redacted]	White Maakanaa Lodge	V.Keyodhoo
[redacted]	Jupiter Sunrise Lodge	V.Keyodhoo
[redacted]	Masfalhi View Inn	V. Felidhoo
[redacted]	Vaali Beach Lodge Maldives	V. Felidhoo
[redacted]	Rainika Beach	V. Thinadhoo

[redacted]	Plumeria Boutique GH	V. Thinadhoo
[redacted]	Hudhu Raakani Lodge	V. Thinadhoo
[redacted]	Dhivehi Experience	Adh. Dhigurah
[redacted]	Boutique Beach	Adh. Dhigurah
[redacted]	LVIS blancura Hotel	B. Dharavandhoo
[redacted]	Salt Beach Hotel	K. Maafushi
[redacted]	Shadow Palm	K. Maafushi
[redacted]	Stingray Beach Inn	K. Maafushi
[redacted]	Holiday Lodge Maldives	K. Maafushi
[redacted]	Lily Rest Maldives	K. Maafushi
[redacted]	Sun Tan Beach Hotel	K. Maafushi
[redacted]	Island Cottage	K. Maafushi
[redacted]	Dream Lagoon	K. Maafushi
[redacted]	Isle Beach Inn	K. Maafushi
[redacted]	Ci-Ritorno View	K. Maafushi
[redacted]	WhiteShell Island Hotel	K. Maafushi
[redacted]	Maafushi View	K. Maafushi
[redacted]	Seven Corals	K. Maafushi

Table A1-4.2. Guesthouse Manager's Survey Questions.

Introduction

This survey is an essential part of Ibrahim Zuhuree's Ph.D. research at the National Graduate Institute for Policy Studies (GRIPS), Japan. His research topic is factors related to tourist flow and hotel prices, in small island developing states (SIDS) such as the Maldives. The objective of the study is to identify characteristics that affect the attractiveness of the guesthouses so that managers can use this information for efficient operation and pricing strategy.

THE SURVEY WILL TAKE 30 MINUTES TO 45 MINUTES. WE THANK YOU IN ADVANCE FOR YOUR COOPERATION

This research project is supported by the GRIPS Global Governance Program Research Fund, and the data will not be used for any other purpose. The results of the study will be shared with the guesthouses that participate in this study.

For follow-up, clarification, and arrangement of interview appointments, please contact Ibrahim Zuhuree at +9792143, +81809526 2077 and izuhuree@gmail.comphd14403@grips.ac.jp

About the survey instrument

The structure for this survey is borrowed from the World Bank Service Module. [55] The instrument for the study is adopted from the World Bank (2013); "the Case of Caribbean Tourism"(Poon,1990); "the Caribbean Regional Sustainable Tourism Development Programme" (Caribbean Tourism Organisation, 2007); and "Tourism destination competitiveness"(Enright & Newton, 2004). The survey is modified for context and relevance to my research questions and the Guesthouses in the Maldives.

[55] http://www.enterprisesurveys.org/~/media/GIAWB/EnterpriseSurveys/Documents/Methodology/ES_Services_Questionnaire.pdf

IMPROVING ATTRACTIVENESS OF THE GUESTHOUSES IN THE MALDIVES

Note: Information about island is obtained from council office/website, and when possible through interviews with the municipal councilors, school principal or local islanders.

A. CONTROL INFORMATION [TO BE COMPLETED BEFORE INTERVIEW]

Survey ID				

A.0 Guesthouse Information						
Name(s)	Island(s)	Distance from Beach (m)	Standard Rooms	Deluxe Rooms	Suite	Other

A.1 Owner Information	
Name	
Gender	
Country	
Telephone	
Email	

A.2 Island Information	
population	
Highest level of education	
Procedure/policy for waste management exists	
Hours fresh/desalination water available	
Hours electricity provided	
Medical	Doctors ……. Nurse …….
Distance (km) from the international airport	
Distance (km) from the nearest hospital	
length/area (km) of the beach	
Crime rate	2014 …….. 2015 ……..
What is the (approximate) size of the lagoon	
Number of resorts within 5km distance	
Picnic islands within 5km distance	

Date					Interview				
Owner/manag									

Face-to-face interview begins:

INSTRUCTIONS TO ENUMERATOR: Ask following questions and use the response to enter data in the appropriate section in 'Quicktapsurvey', when necessary please show relevant information card.

Note: Keys are for 'Quicktapsurvey', questions with options were separately available as show cards.

Questions	KEYS	OPTIONS
B. 2a. What is your AGE? (SHOW CARD M1)	1	18-25
	2	26-34
	3	35-49
	4	50-64
	5	65+
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
B. 1c. What is your position in the operation of the guesthouse	1	Majority (share) owner
	2	(share) owner
	3	Manager
	4	Other*
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
B. 2b. Who introduced or what inspired you to start the guesthouse business	1	Experience in tourism sector
	2	Relative
	3	Friend(s)
	4	Guesthouse owner
	5	Resort Owner
	6	Government
	7	Other*
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
B. 2c. What was your main mode of income before starting the guesthouse	1	SME's
	2	Constructions
	3	Import/Export business
	4	Safari/Souvenir business
	5	Trave Agency/Resort supply
	6	Government employee
	7	Private Sector employee
	8	Odiveriyeh
	9	Other*

	10	Resort employee
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
B. 2d. What was the approximate percentage of your main mode of income, before starting the guesthouse business	1	1-25%
	2	26-50%
	3	51-75%
	4	76-89%
	5	90+
	6	Don't know
	7	Other*
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
B. 2e. How many business partners do you have?	1	1
	2	2
	3	3
	4	4
	5	Other*
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
B. 2f. To finance the initial investment, what percentage of funds came from: your own investment your relative(s) Bank loans(s) Other money lenders	1	0%
	2	1-9%
	3	10-24%
	4	25-49%
	5	50-74%
	6	75-99%
	7	100%
	8	Don't know
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
B.3 How many years have you WORKED in the following sectors? (SHOW CARD M2) Resort Hotel/guesthouse Safari vessel Resort Supply Ministry of Tourism Souvenir Business	1	0 years
	2	1 to 2 years
	3	3 to 5 years
	4	6 to 10 years
	5	more than 10 years
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
B.4 If you have worked in a RESORT, what are their names and number of years you have worked?		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
B.5 Please RANK all the method(s) being used to market this guesthouse from the following list (most frequently used first)? (SHOW CARD M3)	1	Online Travel Agencies (e.g. booking.com)
	2	Own website
	3	Travel agency/tour operators

	4	Participation in tourism fairs
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
C.1 What is your highest level of FORMAL EDUCATION? (SHOW CARD M4) – in Maldives in a Foreign Country	1	Primary
	2	Secondary
	3	Certificate
	4	Diploma
	5	Degree and above
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
C.2 How many months have you received TOURISM related TRAINING at tourism firm/school/university? (SHOW CARD M5) - in Maldives in a Foreign Country	1	0 month
	2	1 to 2 months
	3	3 to 5 months
	4	6 to 12 months
	5	more than 12 months
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
C.3. How did you FINANCE your tourism related education/training (SHOW CARD M6) in the Maldives? in a FOREIGN country?	1	Self-funded/family
	2	Gov. Loan
	3	Gov. Scholarship
	4	Private Scholarship
	5	Foreign Scholarship
	6	Other*
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
C.4 How many DAYS have you taken 'on the job training' in the past 12 months?		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
D.1a. How many managers/directors level employees work in this guesthouse? (SHOW CARD M7) For FULL-TIME PART-TIME		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
D.1c. How many Supervisory/Technical (accountants, chefs, dhoni captains etc.) level employees work in this guesthouse? (SHOW CARD M7) for FULL-TIME PART-TIME		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
D.1e. How many Clerical/Operative (front office, airport rep, housekeeping, tour guide etc.) level employees work in this guesthouse? (SHOW CARD M7) for FULL-TIME PART-TIME		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond

D.1h. How many Laborers (messengers, cleaners etc.) level employees work in this guesthouse? (SHOW CARD M7) fro FULL-TIME PART-TIME		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
D.2 What are your preferred years of EXPERIENCE (especially in resorts) for employees? (SHOW CARD M8) – Managerial/Directors Supervisory/Technical Clerical/Operative Laborers	1	No experience needed
	2	1-2 years
	3	3-6 years
	4	6-10 years
	5	more than 10 years
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
D.3 In order to IMPROVE operations of the guesthouse, how often do you have MEETINGS with the: (SHOW CARD M9) – Owner Managers/Directors Supervisory/Technical staff Clerical/Operative Laborers	1	Always
	2	Very frequently
	3	Frequently
	4	Rarely
	5	Not at all
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
D.4 Please indicate average days spent on IN-HOUSE training in the past 2 years. (SHOW CARD M10) – Managers/Directors Supervisory/Technical staff Clerical/Operative Laborers	1	No in-house training
	2	1 to 7 days
	3	8 to 14 days
	4	15 to 29 days
	5	more than 30 days
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
D.4 Please indicate average days spent on IN-HOUSE training in the past 2 years. (SHOW CARD M10) -	1	No in-house training
	2	1 to 7 days
	3	8 to 14 days
	4	15 to 29 days
	5	more than 30 days
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
D.5 How do you or your staff LEARN about NEW products and services that are relevant to tourism? (SHOW CARD M11) – Through training (formal, on the job) From online (e.g. Youtube) Attending tourism fairs	1	Always
	2	Very frequently
	3	Frequently
	4	Rarely
	5	Not at all
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
D.6 How much you AGREE or DISAGREE with each of the statement below as a description of how you feel about tourism sector ? (SHOW CARD M12) – Work does not pay very well The work is easy Working is exciting	1	Strongly Agree
	2	Agree
	3	Don't know
	4	Disagree
	5	Strongly Disagree

Working in tourism is servant like There are limited career prospects There is no other industry than tourism	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
	-800	did not respond
E.1 Does this guesthouse have QUALITY certification(s) recognized? (SHOW CARD M13) – Nationally Internationally Online Travelling Agency (e.g. Travel Adviser)	1	Yes
	2	No
	3	In Progress
	4	Don't know
	5	Not relevant
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
E.2 How frequently this guesthouse OUT-SOURCE the following tasks?; (SHOW CARD M14) – Food and Beverage Cleaning Laundry Airport transfer Excursions/Recreation Activities Diving	1	Always
	2	Very frequently
	3	Frequently
	4	Rarely
	5	Not at all
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
E.3 Please indicate the names of resorts (and year) you have agreements for tourists excursions trips		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
E.4a. During the last TWO years, has this establishment introduced at least one NEW or significantly IMPROVED products from the following list: (SHOW CARD M15) – Hotel management software (e.g. HR management) Marketing method (e.g. last minute deals) Accommodation choice (e.g. new room type) F & B item (e.g. restaurants) Recreation Activities (e.g. excursions)	1	Yes
	2	No
	3	Still in Progress
	4	Don't know
	5	Not relevant
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
E.4b. Is your new Product or Service also:	1	new for the island
	2	guesthouse market in the country
	3	tourism sector in the Maldives
	4	Other*
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond

E.5 To what degree are the following an OBSTACLE to the current operations of this establishment in the island? (SHOW CARD M16) – Utility (Electricity, water, Sewerage) - Telecommunication - Waste management - Crime, theft and disorder - Medical Services - Practice of competitors	1	NO OBSTACLE
	2	MINOR OBSTACLE
	3	MODERATE OBSTACLE
	4	MAJOR OBSTACLE
	5	VERY SEVERE OBSTACLE
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
	-800	did not respond
E.6 What would you say about the QUALITY of the following services in the Maldives that are relevant for tourism? (SHOW CARD M17) - Airport facilities and infrastructure - Sea transport facilities and infrastructure - Training facilities at Private Colleges - Government Ministries - Local Council	1	ADEQUATE
	2	SOMEWHAT ADEQUATE
	3	NEITHER ADEQUATE OR INADEQUATE
	4	SOMEWHAT INADEQUATE
	5	INADEQUATE
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
E.7 What would you say about the RELATIONSHIP or CONTRIBUTION of the following institutions and groups that are relevant for tourism? (SHOW CARD M18) - MATI - Guesthouse Association(s) - Local Businesses - Local Community	1	ADEQUATE
	2	SOMEWHAT ADEQUATE
	3	NEITHER ADEQUATE OR INADEQUATE
	4	SOMEWHAT INADEQUATE
	5	INADEQUATE
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
E.8 Please rate how frequently tourist's COMPLAIN about the following: (SHOW CARD M19) - Untidy beach - Crowded beach - Untidy lagoon - Attitude of local people - Attitude of the staff - Quality of food	1	Always
	2	Very frequently
	3	Frequently
	4	Rarely
	5	Not at all
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
E.9 Suppose 'hotel rating' by the guests goes down (e.g. in booking.com). Will you lower the price of the room rate to attract more tourists?	1	YES
	2	NO
	3	DON'T KNOW
	4	Other*
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
F.1a In your opinion, which factors are RELEVANT for tourist arrivals in the Maldives? (SHOW CARD M20) - Tourist Income - Connectivity (e.g. Direct flight) - Price competitiveness - Quality of Services - Political stability - Transport Infrastructure - Crime rate - Community attitudes towards tourists	1	Most relevant
	2	somewhat relevant
	3	neither relevant or irrelevant
	4	somewhat irrelevant
	5	irrelevant
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
F.1b In your opinion, which factors are RELEVANT for tourist arrivals in the Maldives? (SHOW CARD M20) - Hotel facilities (room type, pool, etc.) - Recreation Activities	1	Most relevant
	2	somewhat relevant
	3	neither relevant or irrelevant
	4	somewhat irrelevant

- Clean Beach and Quality of Sea and Reef - High economic benefit (more income, more jobs, more profit, etc.) - Better protection of environment (waste management, cleaned beaches, protection of marine resources etc.) - Better Education/learn new ideas/new technology	5	irrelevant
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
F.2a To what extent do you AGREE or DISAGREE that the following positive effects will occur due to increased tourist arrivals in Maldives? (SHOW CARD M21) - More Recreation Activities - Clean Beach and Quality of Sea and Reef - Overcrowding in areas of tourism activity	1	Strongly Agree
	2	Agree
	3	Don't know
	4	Disagree
	5	Strongly Disagree
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
	-99	Non of the options
	-800	did not respond
F.2b To what extent do you AGREE or DISAGREE that the following NEGATIVE effects will occur due to increased tourist arrivals in Maldives? (SHOW CARD M21) - Increased crime - Increased drug use - loss of cultural values - loss of religious and moral values - More noise/community disturbance	1	Strongly Agree
	2	Agree
	3	Don't know
	4	Disagree
	5	Strongly Disagree
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
F.3 Over fiscal year 2015, please indicate the total tourist arrivals to your guesthouse:If you cannot get total amount try for a range		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
F.4 Over fiscal year 2015, please indicate the occupancy rate: If you cannot get total amount try for a range		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
F.5 Over fiscal year 2015, please indicate the TGST your guesthouse paid to the government: If you cannot get total amount try for a range		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond
Can I please have your email address, so that I can communicate the results of my research?		
	-100	Not Available/relevant
	-99	Non of the options
	-800	did not respond

State any other concerns related to tourism or tourists that have not been addressed by this questionnaire? ***Answers recorded and analyzed***

Thank You

Appendix 2: Beach Cleanliness Index (bcindex)

The objective of the beach cleanliness Index (**bcindex)** is to develop a gudeline that can be used to measure the cleanliness of the beach area in the guesthouse islands of the Maldives. Using City of Miami Beach Public Area Cleanliness Index as a guide (City of Miami, n.d.), the beach cleanliness index is based on a 6 point scale that rates three factors that directly affect the cleanliness of the beach and three policy level factors. [56] The Table A2-4.1 at the end of this appendix contains the cleanliness index rating received by each of the islands visited and explanation rubric.

Before proceeding further, I would like to make the following observations regarding the analysis.

i. Given the limited time I spend in each island, I focus only on Bikini Beach. However, it should be noted that public beach will also have a significant impact on tourist view of the cleanliness.

ii. City of Miami Beach Public Area Cleanliness Rubric give detailed information that decides the score,"*litter density is occurring more than 25% of the block segment, then add 2 points from the rating scale*"(City of Miami, n.d., p. 5). However, I have simplified the rubric to use as a general guideline based on my observations in the field (e.g. *litter/gabageis seen, but Most of the beach area has a clean appearance*). This is because time did not permit me to measure the amount of litter more rigorously. Nevertheless, a more robust measurement like those used in City of Miami case may be used for future research purpose.

[56] Miami Beach, Official website of the Miami Beach, accessed 15 May 2016. http://web.miamibeachfl.gov/WorkArea/DownloadAsset.aspx?id=77951

iii. Similar weights are given for all indicators,However, this may not be the case, and impact of different indicators may vary considerably. Nevertheless, through this index, I hope to provide some suggestive evidence of implications of the waste management practices on the natural environment.

Table A2-4.1: Beach Cleanliness Index (bcindex) – Score

	bikini beach			Common Beach Area			**Policy**			**Cleanliness beach index**
island visited	Liter/Trash	harmfull litter	Organic Materials	Liter/Trash	harmfull litter	Organic Materials	Litter / Garbage Cans	Fecal Matter/Sewer	Waste Disposal Site (WDS)	
AA. Bodufolhudhoo	6	6	5				5	6	5	33
AA. Mathiveri	6	6	6				6	6	5	35
AA. Rasdhoo*	6	6	6				5	6	5	34
AA. Thoddoo	5	6	4				5	4	5	29
AA. Ukulhas	6	6	6				6	6	6	36
ADh. Dhigurah	5	6	5				4	6	5	31
ADh. Hangnameedhoo	6	6	5				4	4	5	30
ADh. Mahibadhoo*	4	6	5				4	6	5	30
B. Dharavandhoo	5	6	4				4	5	5	29
B. Fulhadhoo	5	6	4				5	6	4	30
B. Maalhos	6	6	5				6	6	6	35
K. Dhiffushi	4	6	5				4	6	5	30
K. Gulhi	4	4	4				5	5	4	26
K. Guraidhoo	5	4	4				5	5	4	27
K. Himmafushi	5	5	4				4	6	5	29
K. Hulhumale'	4	4	5				5	4	6	28
K. Huraa	5	5	4				5	5	4	28
K. Maafushi	5	6	5				5	5	4	30
K. Thulusdhoo*	4	5	4				5	4	4	26
V. Felidhoo*	4	6	4				5	6	4	29
V. Fulidhoo	5	6	4				5	5	5	30
V. Keyodhoo	4	6	4				5	6	6	31
V. Rakeedhoo	5	6	4				5	6	4	30
V. Thinadhoo	1	1	1				1	1	3	8

Table A2-4.2: Beach Cleanliness Index (bcindex) – Guide

Index	**Litter in Bikini Beach**			**Policy (Island -level)**		
	Litter / Trash	**harmful litter (e.g. open can, broken glass, large metal objects)**	**Organic Materials**	**Litter / Garbage Cans**	**Fecal Matter/Sewer**	**Waste Disposal Site (WDS)**
6- very clean	No litter, trash or garbage on the entire beach.	No harmful litter	Isolated instances of small organic material, e.g., palm leaves or seaweed no large organic material such as tree limbs or palm fronds on the ground.	Can easily observable and is in good working order/condition	Fecal matter is not visible sewerage is not connected to the sea	Wall/fences separate dedicated WDS waste is segregated and disposed properly
5- Clean	Isolated pieces of litter, trash or garbage on the entire beach	No harmful litter	Isolated pieces of organic material No large organic material on the ground.	Can easily observable and in good working order but there are isolated piece of trash outside of the can	Past residue of fecal matter. sewerage is not connected to the sea	Wall/fences separate dedicated WDS waste is segregated but no procedure to dispose of except burning
4- Somewhat Clean	litter, trash or garbage is observable but is not constantly drawn to it Most of the beach area has a clean appearance	One instance of harmful litter	about 10% of the beach area is covered with organic materials or Between 1 and 3 pieces of the major organic materials	Can observable but is full of trash, which can be seen from the eye level.	One instance of fecal matter observed on the beach area. or One sewerage pipe is connected to the sea	Dedicated WDS but no wall/fences waste is segregated but no procedure to disposenon-burning item

			are found			
3- Somewhat Dirty	The beach area is neglected or not cleanup regularly and trash is obvious and the eyeis constantly drawn to it.	1-2 instance of harmful litter.	Organic materials are clearlyobservable, and about 30-50% of the beach area is covered with organic materials or Between 4 and 10 pieces of large organic materials are found	Can observable but full there is evidence that there is improper use of garbage by the residents (e.g. broken, harmful waste thrown) or Can has some damage but is usable	More than two instances of fecal matter are observed on the beach area. or More than two sewerage pipe is connected to the sea	Dedicated WDS but no wall/fences and the site has over capacity of waste waste is NOT segregated and no procedure to dispose of thenon-burning item
2- Dirty	Consistent accumulation of trash on the beach Or multiple piles of trash consisting of plastic bottles or large cardboard or other materials	More than three instances of harmful litter	About than 50% of the beach area is covered with organic materials or More than 10 pieces of large organic materialsis on the ground.	Can is full and there is trash all over or is an improper use of garbage by the residents or Can has some damage but is usable	Three instances of fecal matter are observed on the beach area. Or Three sewerage pipe is connected to the sea	Dedicated WDS but no wall/fences and the site has over capacity of waste, bad smell at least 100 m distance waste is NOT segregated and no procedure to dispose of thenon-burning item
1- very Dirty	Large accumulation of trash on the beach including	Harmful litter is frequently observable	More than 90% of the beach area is covered with	No can	more than four instances of fecal matter are observed	Dedicated WDS but no wall/fences and the site has over the

	plastic bottles, domestic waste and fish remains Conditions may be hazardous.		organic materials including large pieces		on the beach area. Or more than four sewerage pipe is connected to the sea	capacity of waste, bad smell at least 300 m distance waste is NOT segregated and no procedure to dispose of thenon-burning item. Waste from the site directly leaking to the sea