Smart Hotels – The Case of Crete

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Introduction

- The hospitality industry has recently undergone a rapid transformation in its focus and operations.
- The advent of technological innovation could facilitate hoteliers in generating added value for their operations.
- The principal argument underlying this theorizing is that hotel managers and practitioners alike should **offer tailor made and customized service provisions/solutions to their customers**
  - This has introduced managers and practitioners into the concept of smart service provisions (and smart hotels)

Motivation

- The **aim** of the current research: **to evaluate individual guests' preferences for future and/or hypothetical "smart hotel" service provisions**, using the island of Crete (Greece) as a case study.
- Objectives:
  - By using a ***flexible preference elicitation methodology***, to evaluate individual preferences for future and/or hypothetical service provisions for smart hotels.
  - To translate the empirical results (beta coefficients for individual preferences) into monetary estimates reflecting individual guests' marginal willingness to pay estimates for these policy and product developments.
  - To translate empirical results (preferences and MWTP estimates into policy recommendations

Study Background

- Smart first introduced in an economic geography concept
  - **Intelligent city (introduced in the 1980s)**
  - **Facilitation of better working and living environment based on system interconnectivity**
- "Smart hotel" as a concept represents a new approach towards competitive advantage
  - **Customer Satisfaction**
  - **Customer Personalisation**
  - **Proactive management practices and decision making**
  - **Connectivity and interaction with built and natural environment**
- Smart hotel developed due to:
  - **Need for greater service personalisation and customisation**
  - **Cost pressures**
  - **Environmental pressures and concerns**
  - **Development of ICT and technology in general**
  - **Service differentiation and value added (increased levels of competition)**

Research Methods

- Survey delivered to **500 individuals** during the summer months of 2016
- Collected **4500 responses** (500 individuals * 9 obs./respondents)
- Tourists in Crete
- Staying in all types of accommodation
- Self administered method of collection (through a survey questionnaire)
- Questionnaire was split into two parts
  - ***Part A:*** **Socio-demographic info., travel patterns overall and in Crete, opinions about resources use**
  - ***Part B*****: Stated preferences discrete choice experiment**

Research Methodology

- The study employed a stated preferences discrete choice modelling approach

Stated Preferences Discrete Choice Modelling:

- Multi-attribute, multi-value nature of the environment or any other evaluated resource
- Use of random utility maximization theory and Lancaster' characteristics approach

$$U_{in} = \sum \beta X_{in} + \varepsilon_{in}$$

β (beta) represents vector of coefficients

***X** represents vector of product attributes*

ε (epsilon) represents a random term

The Discrete Choice Experiment

- CM experiment involved seven (7) product attributes, each comprising four (4) product ‘levels’.
  - *Three alternative product configurations (future state of the world)*
  - *One base product configuration (current state of the world)*
- The whole CM experiment was divided into three choice sets
- Each choice set had three alternatives including a “don’t know” option.
- Selection of product attributes was based on literature review, discussion with academics active in the field, semi-structured interviews with professionals operating in the hospitality sector and a pilot study *(n=50)*

Product Attributes Used in the CE

- Check in/out:
  - At the reception
  - Via touch screen app
  - Vis mobile app
  - Via eye scan technology
- Hotel room ambience:
  - control through traditional way
  - Control through TV
  - Control through mobile app
  - Voice activation control
- Energy Savings:
  - LED throughout the hotel
  - + all electrical equipment is A++
  - +smart windows technology
  - + bioclimatic architecture
- Hotel's Environmental Policy Certification:
  - Certified by a third Party (e.g., ISO)
  - No policies in place
  - Industry Based Certification
  - EU eco-label
- Hotel's Waste Management policy
  - Policies to Responsibly Manage Waste
  - No policies in place
  - Policies to re-use waste
  - Policies to recycle waste
- Hotel's water management:
  - No effective water management policy
  - No policies in place
  - Policies to reduce water waste
  - Policies to reuse water waste
- Price

An Example of a Choice Set

Imagine that for your future hotel stay, you are offered the following two options. Which option (A or B) would you choose?

	Hotel A	Hotel B	
Check In / Out	Via mobile app	Via eye scan technology	
Hotel ***Room Ambience***	Control through tablet or tv	Control through mobile app	
Hotel's ***Energy Saving*** *Policies*	LED lighting + Bioclimatic architecture	LED lighting + all electrical equipment is A++	
Hotel's ***Environmental Certification*** *Standards*	Industry based certification	No policies in place	*Neither of the two*
Hotel's ***Waste Management*** *Policy*	Policies to Recycle waste produced by hotel	Policies to Reuse waste produced by hotel	
Hotel's Waste ***Water*** *Policy*	Policies to Reuse water waste at hotel	Policies to Reduce water waste at hotel	
Price	70 Euros pp per night	77 Euros pp per night	
	Option A ☐	**Option B** ☐	**Option C** ☐

Descriptive Results

Age	
Up to 25 years of age	21.4
26 to 45 years of age	*40.2*
46 to 65 years of age.	29.8
65+ years of age	8.7
Marital Status	
Single	24.8
Married	*46.4*
On a civil partnership	17.8
Other	11.0
Gender	
Male	48.2
Female	51.8
Working Status	
In full time employment	*64.2*
In part time employment	10.8
Student/Unemployed	13.2
Other	12.0

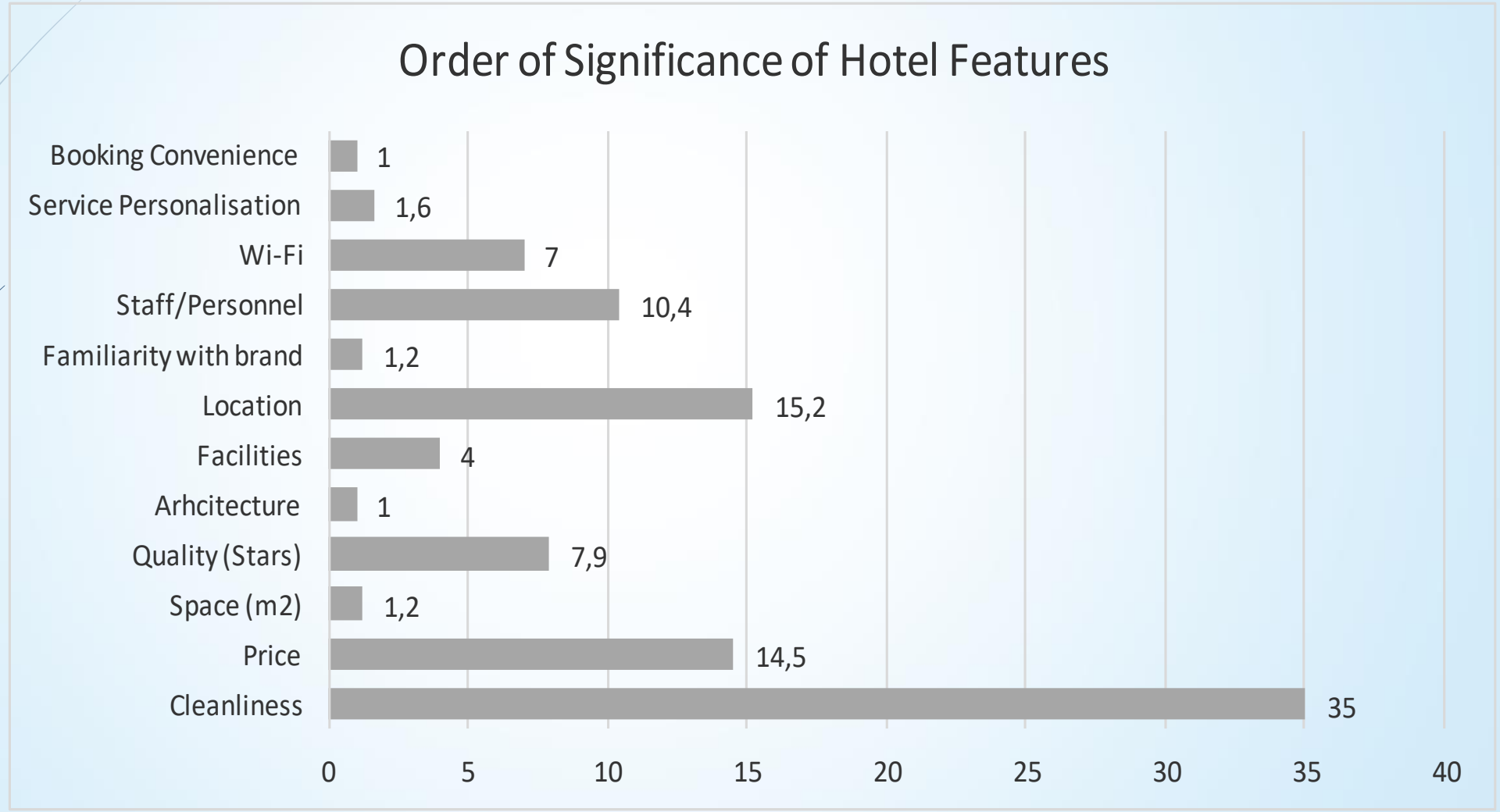
Travelling Party composition	
Travel alone	6.4
With partner (only)	*57.6*
With family and kids	19.2
With group of adults	17.4
Educational Background	
Still on education	11.2
Completed basic level of education	13.6
Vocational training	7.2
Bachelor's degree (BA/BSc	*33.2*
Post – graduate degree (MA/MSc)	*34.8*
Country of Origin	
UK	*40.2*
Germany	*24.8*
France	7.8
Netherlands	5.6
Other	21.4
Income Levels	
Up to 20.000	*27.0*
20.001 to 40.000	*26.6*
40.000 to 60.000	23.4
60.001 and over	23.0

Descriptive Results

Engagement with efficient use of resources – current trip:

- Majority of respondents (***56%***) **turn off air-condition** whilst not in room
- Current **policy of re-using towels is quite popular** (45% of respondents engage ‘always’). Similarly, 42% of respondents ‘always’ re-use linens
- However, the proportion of those who ***use electronic devices*** within the *is very low* (only 26% of respondents)
- What tourists consider the most significant resource efficient practice is turning off the ***air-condition*** (32%) and ***buying locally*** (21%). They consider the *use of public transport* (3.8%) and the *re-use of bed linens* (4.2%) the ***least important*** ones.

Importance of Hotel Features



Econometric Results

- As expected **price has a negative** (and statistically significant) **effect** on prefences
- Interestingly, respondents expressed **negative preferences** (disutility) with respect to all alternative **check in/out** policy initiatives as compared to the current state of the world
- On the other hand, respondents expressed **strong and positive preferences** for **all energy saving technologies** (as compared to the base/current state of the world)
- Same applies with hotels' **water management policies**, with respondents **valuing quite positively** alternative water management policy initiatives
- Interestingly, respondents even **valued positively the absence of water management policies**, **if the current state is considered to be ineffective**. Overall, they were **very supportive of reducing and reusing water waste policies**
- On the other hand, respondents **did not appreciate the absence of certification standards** and **waste management policies**

Marginal Willingness to Pay Estimates

- Efforts to introduce **greater engagement of customers** into the delivery process are all going to **affect negatively consumers' willingness to pay** (touch screen apps: -0.97€, mobile apps: -1.32€, eye scan tech.: -2.78€
- On the other hand, **water management policy** initiatives and **energy saving** practices at the hotel are all **contributing positively** on visitors' WTP
- The introduction of policies to **reduce and reuse water** at hotel contribute by **2.94€ and 2.58€ respectively**. Interestingly, **taking no action** as far as water management is concerned **is preferred** (contributing by 0.73€) as compared to initiating ineffective water management policies.
- For energy saving practices, it appears that **technologies that harness' the natural environment** (smart windows and bib-climatic architecture) **contribute quite positively** onto MWTP (**1.42€ and 1.77€ respectively**). More conventional approaches to energy saving (replacing all equipment with more efficient ones) contributes about 1€ to visitors' MWTP estimates.

Thank You for Your Time