Managing Destination Competitiveness through Interaction Spatial Models: A Tourist Spatial Behaviour Approach

Consumer Behavior in Tourism Symposium 2011

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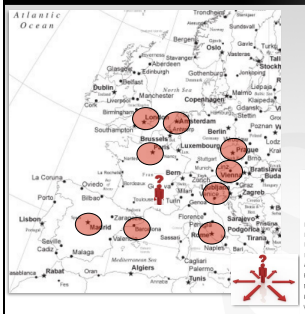

To explain tourist choices;
To implement tourist spatial behavior models

Euromonitor International's top city destinations ranking

'000 arrivals	2009 Rank	2009 Arrivals	% growth 2008/2009	2006 Rank	2006 Arrivals
London	1	14,059.0	-4.7	1	15,640
Paris	8	7,749.9	-6.9	3	9,700
Rome	12	5,543.0	-1.5	8	6,033
Barcelona	16	4,464.7	-5.3	10	4,695
Dublin	20	4,220.3	-7.0	11	4,469
Bucharest	21	4,098.8	24.1		
Amsterdam	23	3,871.0	-14.5	18	3,901
Prague	24	3,667.2	-9.1	20	3,702
Moscow	25	3,618.0	-12.0	21	3,695
Kiev	26	3,523.8	-4.8		
Vienna	28	3,361.8	-5.4	23	3,339
Madrid	30	3,211.5	-6.4	17	3,921
Berlin	36	2,795.4	0.2	34	2,309
Budapest	37	2,712.6	-5.4	36	2,043

Source: Euromonitor International's top city destinations ranking (2011)

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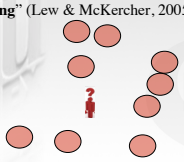
WHY ?

"Understanding the movement of tourists within a destination has practical applications for **destination management, product development and attraction marketing**" (Lew & McKercher, 2005)



Destination competitiveness: Destinations' ability to attract tourists

"What makes a tourism **destination truly competitive** is its capacity to enlarge tourism expenditure, **to increasingly attract visitors** at the same time as providing them with satisfying unforgettable experiences…"(Ritchie & Crouch, 2003)

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Destination competitiveness:

"The ability of a destination to deliver goods and services, that perform better than other destinations, on those aspects of the tourism experience considered to be important by tourists."

(Dwyer & Kim, 2005)

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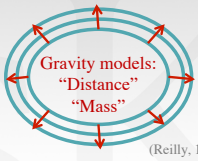
Gravity models can explain destinations' ability to attract tourists



(Reilly, 1931)

Tourist flows depend on:
Tourists' awareness of alternative destinations, their perceptions about them, and their perception of the extent to which the destination's product offerings will meet their needs. (Dwyer & Kim, 2005)

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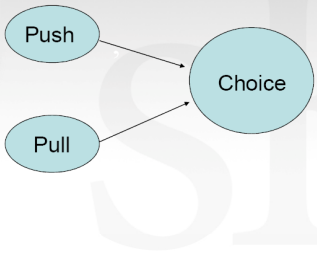
PUSH AND PULL FACTORS



Gravity models can explain destinations' ability to attract tourists

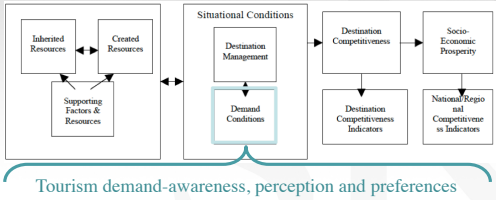
FACTORS THAT EXPLAIN DESTINATION ATTRACTIVENESS

(Ritchie & Crouch, 2003)

- •Destination policy, planning and development: Positioning, Branding
- •Destination management: Quality of service, Visitor Management, Marketing, Crisis Management, Human Resources Mgt
- • Core resources and attractors: Climate, Culture, History, Mix of activities, Events, Entertainment, Superstructures
- •Supporting factors and resources: Infrastructure, Accessibility, Facilitating Resources, Hospitality, Enterprises
- • Qualifying and amplifying determinants: Location, Safety, Image, Carrying capacity, Interdependencies

"The definitional system of competitiveness may be transformed into an explanatory model" (Mazanec, Wöber & Zins, 2007).

- Integrated Model of Destination Competitiveness: (Dwyer & Kim, 2005, p. 4)



Tourism demand-awareness, perception and preferences

- Destination Competitiveness depends on the match between tourist preferences and perceived destination product offerings

The relevance of tourist perceptions

(Murphy, Pritchard, & Smith, 2000)

"Travelers' perceptions"

- perceptions of climate, culture, history, location,
- perceptions of the mix of activities, events, entertainment,
- perceptions of relative price levels,
- perceptions of safety/security,
- perceptions of destination image,
- views about comfort levels and the aesthetic appeal of different types of tourism resources…

The gap between basic discrete Choice Models and the complexity behavior (Walker, 2001)

Explanatory variables → Preferences (Utilities) → **Assumption:** Consumers use all relevant available information and select the brand that maximizes their utility → Choice (Revealed Preferences)

Black-box

Explanatory variables

How do the different destination characteristics affect tourists' choices?

And what about the characteristics of other destinations?

Choice (Revealed Preferences)

Background

Tourists´ destination choices

- **Brand choice models**
- Preference and choice mapping models
- Conjoint analysis
- **Multi-attribute choice models**

- Determination of market structure
- Demand forecasting
- Product positioning
- Buyer segmentation
- Prediction of consumer choice

(DeSarbo et al., 1993; Eliashberg & Manrai, 1992; Green & Krieger, 1989; etc.)

Brand choice models | **Multi-attribute choice models**

Summary of mathematical models of choice behaviour (Manrai, 1995)

Single-stage models based on the principle of

Utility maximization

Brand-based processing models

1. Generalized Logit Models (GLM) (Dalal and Klein, 1988)
2. Generalized Multinomial Probit (MNP) model (Currim 1982)
3. Generalized Extreme Value (GEV) model and Nested MNL Model (McFadden, 1981)
4. Extensions of Multinomial Logit (MNL) model (McFadden, 1976)
   – Gaudry and Dagenais (1979) (DOGIT)
   – Meyer and Engle (1982) and others
5. Multiplicative Competitive Interaction (MCI) models (Cooper and Nakanishi, 1988)

Sequential attribute-based elimination

Attribute-based processing models

1. Elimination-By-Aspects (EBA) model (Tversky, 1972)
2. EBA-like Models
   – Elimination-By-Dimensions (EBD) (Gensch and Ghose, 1992)
   – Elimination-By-Cutoffs (EBC) (Rotondo, 1986)
   – PRETREE (Tversky and Sattah, 1979)
3. Others
   – A review of several non-spatial tree models (DeSarbo et al., 1993)
   – Maximum-Likelihood-Hierarch (MLH) Model (Gensch and Svestka, 1984)

Two-stage models
Combine the Two Principles

Stage 1: Attribute-based processing

1. Consideration-By-Aspects (CBA) hybrid model (Andrews and Manrai, 1994)
2. Dynamic heuristic model (Siddarth et al., 1993)
3. Cost–benefit models (Andrews and Srinivasan, 1995; Roberts and Lattin 1991; and others)
4. Promotion screening model (Fader and McAlister, 1990)
5. MLH and LOGIT combined (Gensch, 1987)

A.K. Manrai / European Journal of Operational Research 82 (1995) 1–17

Our objectives:

- To apply Multiplicative Competitive Interaction Models to:
  - determine destination competitiveness (destinations are defined as those belonging to tourists' consideration sets)
  - determine the relevance of each destination attribute for different tourist segments
- To propose Managerial implications:
  - Product Differentiation
  - Market Segmentation
  - Resulting destination positioning

Interaction Competitive Models

(Cooper & Nakanishi, 1974, 1988)

$$P_{ij} = \frac{\left[X_{i,j=1,k=1}^{\beta_1} \cdot X_{i,j=1,k=2}^{\beta_2} \cdot \ldots \cdot X_{i,j=1,k=q}^{\beta_q} \xi_{ij}\right]}{\left[X_{i,j=1,k=1}^{\beta_1} \cdot X_{i,j=1,k=2}^{\beta_2} \cdot \ldots \cdot X_{i,j=1,k=q}^{\beta_q} \xi_{ij}\right] \cdot \left[X_{i,j=2,k=1}^{\beta_1} \cdot X_{i,j=2,k=2}^{\beta_2} \cdot \ldots \cdot X_{i,j=2,k=q}^{\beta_q} \xi_{ij}\right] \cdot \ldots \cdot \left[X_{i,j=m,k=1}^{\beta_1} \cdot X_{i,j=m,k=2}^{\beta_2} \cdot \ldots \cdot X_{i,j=m,k=q}^{\beta_q} \xi_{ij}\right]}$$

P_{IJ}: Probability that a tourist located in region i would travel to destination j

X_{IJK}: K-nth variable explaining the attractiveness of the destination j for tourists located in area i

β_K: elasticity parameter: tourists´ (located in area i) sensitiveness toward the k-nth variable that defines destination j.

ξ_{ij}: is the "specification error term"

Fitting the model (I)

1) Lineal specification
2) Estimators
3) Software

$$P_{ij} = \frac{\left(\prod_{k=1}^{q} X_{ijk}^{\beta_k}\right)\xi_{ij}}{\left[\sum_{i=1}^{m}\left(\prod_{k=1}^{q} X_{ijk}^{\beta_k}\right)\xi_{ij}\right]}$$

$$\log\left(\frac{P_{ij}}{\overline{P}_{ij}}\right) = \sum_{k=1}^{q} \beta_k \log\left(\frac{X_{ijk}}{\overline{X}_{ij}}\right) + \log\left(\frac{\xi_{ij}}{\overline{\xi}_{ij}}\right)$$

Geometric means

Matrix containing tourists evaluations about different destination attributes for a considered set of tourism destinations

$$Y_{ij} = \sum_{k=1}^{q} \beta_k Z_{ijk} + \varepsilon_{ij}$$

Fitting the model (II)

$$Y_{ij} = \sum_{k=1}^{q} \beta_k Z_{ijk} + \varepsilon_{ij}$$

1) Lineal specification
2) Estimators (Nakanishi & Cooper, 1974)
3) Software: EViews

Under the assumption of no sampling error, the OLS estimator, $\hat{\beta}_0$, is the BLUE* of β

*(When Breusch Pagan test does not detect hints on heteroscedasticity) (Kubis & Hartmann, 2007)

Our Proposal (I):

1. In order to correctly analyze the effect that destination attributes have over tourists choices, push factors need to be controlled.

   Consequently, before applying MCI models we suggest conducting Market Segmentation through Latent Cluster Analysis* (Magidson & Vermunt, 2000; 2001), which will allow us to fix (control) push motive variables to get homogeneous segments: (Travel party, Repeat visitation, etc…).

(estimated with Latent GOLD 4.5. program)

Our Proposal (II):

2. To apply MCI models to analyze destination competitiveness:

   To meet parsimony principle when fitting the model, we suggest analyzing the effect of destination attributes in three stages:

   - First stage: To determine the weights of each attribute for the main competitiveness determinants (tourists and experts opinions, as well as previous studies findings about groups of attributes which constitute the main determinants of destination competitiveness: core resources, supporting factors, etc.). Then, to calculate competitiveness indices for each determinant that summarize tourists' evaluations of destination attributes.

Our Proposal (III):

- Second stage: Fit the MCI using the indices as explanatory variables. Identifying the competitiveness determinants which have the strongest effect over tourists' choices.
- Third stage: Specify and fit different MCIs for each group of attribute (explanatory variables). Identifying the attributes which have the strongest effect over tourists' choices.

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Conclusions:

Destination management through MCI:

Multiplicative Competitive Interaction Models

allow to evaluate

DESTINATION RELATIVE COMPETITIVENESS

- The destination with the highest probability to be chosen by tourists will be the most competitive.
- For each destination the relevance of their attributes will be known (through estimates of tourists´ elasticities towards destination attributes)

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