Determinants of tourist spending –
in cross-section studies and at Danish destinations

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Table of contents

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Abstract

This article started with a meta-analysis style review of the determinants of tourist spending according to more than 50 cross section studies published in academic journal articles during the period 1995-2009. The studies were grouped using factor analysis based on the determinants included or not included in each study. Following the structured review, a conceptual model of the determinants of tourist spending was proposed. In the empirical part of the study, which was based on a survey with more than 11000 respondents, the determinants of spending were analysed using multiple regression analyses. 18 determinants were tested in seven different models. All 18 determinants were significant in the spending per person per night model. The other six models were a subdivision of the core per person per night model into (2) transport, (3) accommodation and (4) other spending - and finally (5) per travel party per night, (6) per person per stay, and (7) per travel party per stay. The 18 tested variables were: Type of accommodation, length of stay, travel party size, destination, travel distance, origin market, purpose of travel, mode of transport, activities, age groups, packaging, income, purchase channel, information sources, gender, first time vs. repeat visitors, motives, and season.

Key words: Spending; tourism demand; determinants; multiple regression analysis; multidimensional scaling.

1. Introduction

The majority of tourism demand studies are longitudinal studies, whereas fewer are cross-section studies. Several meta-analysis studies have been undertaken within the tradition of longitudinal studies, whereas the same is not the case for cross-section studies. This article offers a meta-analysis style review of the determinants included in more than 50 cross-section tourism studies during the period 1995-2009. Based on the literature review, a conceptual model of the determinants of tourist spending is proposed. Aspects of the conceptual model are confronted with a large dataset from a national survey of incoming and domestic tourist in Denmark in the form of 18 specific hypotheses. Thus, this article offers both a meta-analysis of tourist spending articles and an empirical study of the determinants of tourist spending.

This paper attempts to answer the following questions:
What are the determinants of tourist spending according to cross-section studies published in tourism journals?
What are the determinants of tourist spending according to a survey of visitors to Denmark?
What implications – notably methodological - can be drawn from the findings?

The answer to the empirical question will be based on a survey of more than 11000 leisure and business visitors staying at commercial accommodations in Denmark during 2004. The survey was commissioned by VisitDenmark, earlier known as Danish Tourist Board

Tourist spending can be measured in at least four different ways: Per person per night, per person per stay, per travel party per night, or per travel party per stay (Kozak et al., 2008). Although per person per night is often in focus, the other measures may also be relevant. National statistical authorities typically report bednights by type of accommodation, destination and market (country of origin). Apart from a small percentage of bednights, which are with small accommodations not obliged to report their bednight numbers, number of bednights are generally know. This may be the reason for the traditional main focus on the determinants of spending per person per night. However, for example for transportation providers spending per person per stay may be more relevant than spending per person per night, for accommodation providers letting out apartments or cottages, spending per travel party per night may be relevant, and for destination marketing

organisations total spending per travel party per stay may be the most relevant spending measure. Furthermore, a breakdown of the total spending figure - for example total spending per person per night - in main components such as transportation, accommodation and other spending may be relevant. This paper shows how tourist spending can be described by several - actually seven - multiple regression equations.

2. Theoretical background

This section contains three parts: Firstly, a meta-analysis style review of the determinants included in cross-section based spending studies published in tourism and travel journals during the last 15 years, i.e. 1995-2009. Secondly, a conceptual model of the determinants of tourist spending is proposed. And thirdly, a series of hypotheses about what factors affect tourist spending are formulated.

2.1. A meta-analysis style review of 55 cross-section studies

Studies of tourism demand are generally of two main types: Time series studies or cross section studies. In the time series tradition three meta-analysis style studies give a good overview of the applied methodologies in time-series based tourism demand studies, namely Crouch (1994), Lim (1999, 1997a, 1997b), and Li, Song and Witt (2005). However, no similar structured overview study has been undertaken specifically within the cross-section tradition recently, although many cross-section studies comprise fine and comprehensive literature reviews and many references.

Below there is a meta-analysis style review of the factors which may be important as determinants of tourists' spending, with an emphasis on cross-section studies from 1995 or later, thereby supplementing earlier review articles.

Table 1 Number of references included in the literature overview by journal title and period of time

	Pre 1995	1995-1999	2000-2004	2005-2009	Total
Journal of Travel Research	4	3	4	3	14
Tourism Management	0	1	4	5	10
Tourism Economics	0	3	3	4	10
Other	0	5	6	10	21
Total	4	12	17	22	55

Of the 55 reviewed journal articles, 14 were from Journal of Travel Research, 10 from Tourism Management, 10 from Tourism Economics, and 21 from other journals. 51 of 55 articles were from 1995 or later.

In Table 2 the explanatory variables are split into socio-demographic and trip related characteristics, a distinction frequently used in cross-section studies (e.g. Roehl and Fesenmaier, 1995; Hsieh et al., 1996; Cannon and Ford, 2002).

Table 2 Meta-analysis of 55 cross-section studies: Trip related and socio-demographic factors influencing travel spending

Determinants of spending	Cragges & Schofield (2009)	Kim, Prideaux & Chon (2009)	Saayman & Saayman (2009)	Thrane & Farstad (online 2009)	Alegre & Pou (2008)	Dolnicar et al. (2008)	Fredman (2008)	Kozak, Gokovali, Bahar (2008)	Martinez-Garcia & Raya (2008)	Menezes, Moniz & Vieira (2008)	Nicolau (2008)	White & Stynes (2008)	Gokovali, Bahar, Kozak (2007)	Mehmetoglu (2007)	Alegre & Pou (2006)	Laesser & Crouch (2006)	Legohérel & Wong (2006)	Mottiar (2006)	Pouta et al. (2006)	Soteriades & Arvanititis (2006)	Wang et al. (2006)	Wilton & Nickerson (2006)	Diaz-Pérez (2005)	Kastenholz (2005)	Kim, Guo & Agrusa (2005)	Suh & McAvoy (2005)	Downward & Lumsdon ('04/3/0)	Jang et al. (2004)	Cannon & Ford (2002)	Chhabra, Sills & Rea (2002)	Seiler, Hsieh (2002)	Thrane (2002)	Woodside & Dubelaar (2002)	Lee (2001)	Leeworthy et al. (2001)	Sung et al. (2001)	Henthorne (2000)	Mok & Iverson (2000)	Peres & Sampol(2000)	Agarwal & Yochum (1999)	Zins (1999)	Dellaert et al. (1998)	Legohérel (1998)	Leones, Colby & Crandall (1998)	Asgary et al. (1997)	Hsieh, Lang & O'Leary (1997)	Baum&Mudambi '96/M&B '97	Fish & Waggle (1996)	Hsieh et. al. (1996 & 1993)	Sampol (1996)	Roehl & Fesenmaier (1995)	Taylor et al. (1993)	Spotts & Mahoney (1991)	Pizam & Reichel (1979)	Mak et al. (1977a)	Total
Reference number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	
Sociodemographics:	**6**	**5**	**5**	**2**	**3**	**5**	**4**	**6**	**6**	**4**	**4**	**0**	**6**	**2**	**3**	**1**	**5**	**2**	**2**	**2**	**5**	**0**	**2**	**2**	**5**	**1**	**3**	**4**	**4**	**2**	**5**	**4**	**0**	**3**	**5**	**8**	**3**	**5**	**4**	**4**	**1**	**2**	**3**	**5**	**6**	**5**	**4**	**5**	**5**	**3**	**4**	**2**	**2**	**5**	**4**	**198**
(Household) income, level		1		1			1	1	1		1		1	1			1	1	1		1				1		1	1	1	1	1	1		1	1	1		1			1	1	1	1	1	1	1		1	1	1		1	36
Education, education level	1	1	1					1	1	1			1				1						1	1				1		1					1			1						1								1	1	19
Profession / occupation	1	1			1		1	1	1				1		1							1		1			1								1		1	1				1				1			1					17
Number of earners / adults						1																																										1						2
Working full-time (1-0)																															1											1											2
No. of cars, value owned home																																								1						1							3
Spending on alternative goods						1																																															1
Age or age group	1	1	1	1	1			1	1		1		1	1	1		1		1	1	1			1	1		1	1		1	1	1		1	1	1	1	1	1	1			1	1	1	1	1	1	1	1		1	40
Children & old in household						1					1										1																										1		1						5
Gender	1	1				1	1		1	1							1	1			1				1		1	1			1	1		1		1	1	1						1	1	1			1					22
Marital status	1						1		1	1			1								1				1				1			1			1		1						1	1			1			1		1	18
Nationality, country of origin			1		1			1		1			1		1	1	1			1			1			1									1				1					1				1						16
Origin: Specific region (1-0)	1		1				1																												1	1	1						1										7
Origin: Type (urban, 1-0)											1																						1																			3
Race etc, religion, language			1																									1							1	1										1						1	7

Trip characteristics	**7**	**10**	**6**	**5**	**19**	**3**	**8**	**10**	**9**	**5**	**5**	**4**	**14**	**3**	**9**	**7**	**8**	**2**	**6**	**5**	**7**	**7**	**4**	**6**	**4**	**3**	**6**	**5**	**4**	**4**	**5**	**6**	**6**	**5**	**5**	**4**	**4**	**6**	**12**	**4**	**8**	**8**	**6**	**5**	**1**	**4**	**4**	**2**	**12**	**13**	**5**	**9**	**7**	**0**	**10**	**346**
Duration of stay, nights		1	1	1	1		1	1	1	1		1	1	1		1	1	1	1	1	1	1		1	1		1	1	1		1		1		1	1	1	1	1	1		1	1	1		1	1	1	1	1		1	42
Party size (same household)	1	1	1	1	1			1				1		1	1	1				1			1	1			1	1	1		1	1		1	1	1		1	1	1			1	1	1		1	1		1	1		1	33
Children in the party									1								1	1									1	1	1		1			1							1	1		1			1							13
Travel companions	1	1																																																				2
Type of accommodation					1		1	1	1			1	1		1	1	1	1	1	1		1	1										1						1	1			1	1	1	1				1		1	1		1		1	25
Accommodation 'stars' (5-1)					1				1			1		1						1			1																								1	1							8
Level of hospitality/service													1																																								1
Terms of accommodation (no, 1/4, 1/2, full board)				1		1			1				1		1					1																				1																7
Type/purpose of trip	1	1		1					1	1						1	1					1				1				1			1		1		1								1			1	1	1		1	19
Transportation mode		1		1			1				1						1					1					1								1	1					1						1							11
Specific airline, spefic hotel					1																																																1
Number / frequency of visits	1		1		1	1		1				1		1							1			1	1								1						1	1								1					1	17
First time visits (vs. repeat)		1			1			1		1							1		1		1	1					1				1			1				1													1			13
Activities chosen	1	1					1					1		1		1			1			1				1	1					1	1						1		1		1	1				1		1	1		1	22
Benefits sought, motives	1	1	1		1	1	1				1			1	1						1			1							1	1						1								1	1		1				18
Destination attributes								1					1		1				1							1																							1					6
Sun and sand vs. city									1							1																															1						3
Organized tour, group tour	1						1									1											1																										4
Package tour, booking with tour operator, charter flight					1			1	1	1			1		1		1								1					1								1	1							1	1					1	15
Booking with travel agent					1						1																											1														4
Direct booking / Internet					1																																	1														2
No reservation					1																																	1														3
Booking/planning horison								1					1																1		1						1														1	7
Information search/usage						1							1											1																	1										1	1	1			7
Opinion of holiday -- & parts					1								1																										1													1			4
Prices (relative / opinions)					1				1		1				1																								1						1		1		1	1				1	10
Spending origin / destination					1																																															1			2
Spending elements, locally					1																																																		1
Local vendor behaviour																																				1																			1
International vs. domestic							1																	1																															2
Out-of-state vs. within state		1										1																	1			1		1																1	1			7
Distance origin to destination							1				1		1						1		1									1			1	1										1									1	10
Destination, country/locality				1	1																		1		1																	1								1					6
Intention to visit country X					1																																				1													2
Experience, familiarity								1					1																																										2
Single vs. more destinations																	1																																						1
Ascendancy - antecestors										1																				1																								2
Paid by credit card																												1																												1
Visit period: Season									1											1			1	1												1						1												1	7
Visit period: Weekend (1-0)																																1																						1
Year of visit, of several years																																				1																				1
Satisfaction / Intention to return		1																																		1																				2
Loyality card / free entry card			1																																																							1
Sociodemo+trip characterist.	**13**	**15**	**11**	**7**	**22**	**8**	**12**	**16**	**15**	**9**	**9**	**4**	**20**	**5**	**12**	**8**	**13**	**4**	**8**	**7**	**12**	**7**	**6**	**8**	**9**	**4**	**9**	**9**	**8**	**6**	**10**	**10**	**6**	**8**	**10**	**12**	**7**	**11**	**16**	**8**	**9**	**10**	**9**	**10**	**7**	**9**	**8**	**7**	**17**	**16**	**9**	**11**	**9**	**5**	**14**	**544**
Principal component, group	9	4	12	8	2	14	3	2	6	5	15	3	2	4	2	7	5	3	3	16	1	3	16	12	9	7	1	1	13	10	1	4	3	1	12	9	12	5	2	1	7	8	1	4	x	1	11	8	6	2	11	4	8	13	6	
Reference number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	

The numbers in the second last line in table 2 refers to factors in a principal component analysis, the loadings of which have been omitted here for space reasons. Writers in the same principal component (factor) tend to include the same explanatory variables in their analysis, and indeed sometimes are the same writers, more or less, who at times use the same underlying survey in several articles. - A number of recent cross-section studies with length of stay as the dependent variable were regarded as being parallel to spending studies and were therefore included in table 2: Martinez-Garcia & Raya (2008), Menezes et al. (2008), Gokovali, Bahar & Kozak (2007), and Alegre & Pou (2006). An early example includes Roehl and Fesenmaier (1995).

Table 2 shows that two socio-demographic characteristics are taken into account in over 50% of the studies: *Age* (73%) and *income* (65%). – Age is generally recoded into a number of age groups, cohorts, which makes sense, since the young and the old have lower income than those in the middle. – Income can be measured as household income or personal income, but normally the level of household income is measured either directly, or in income brackets.

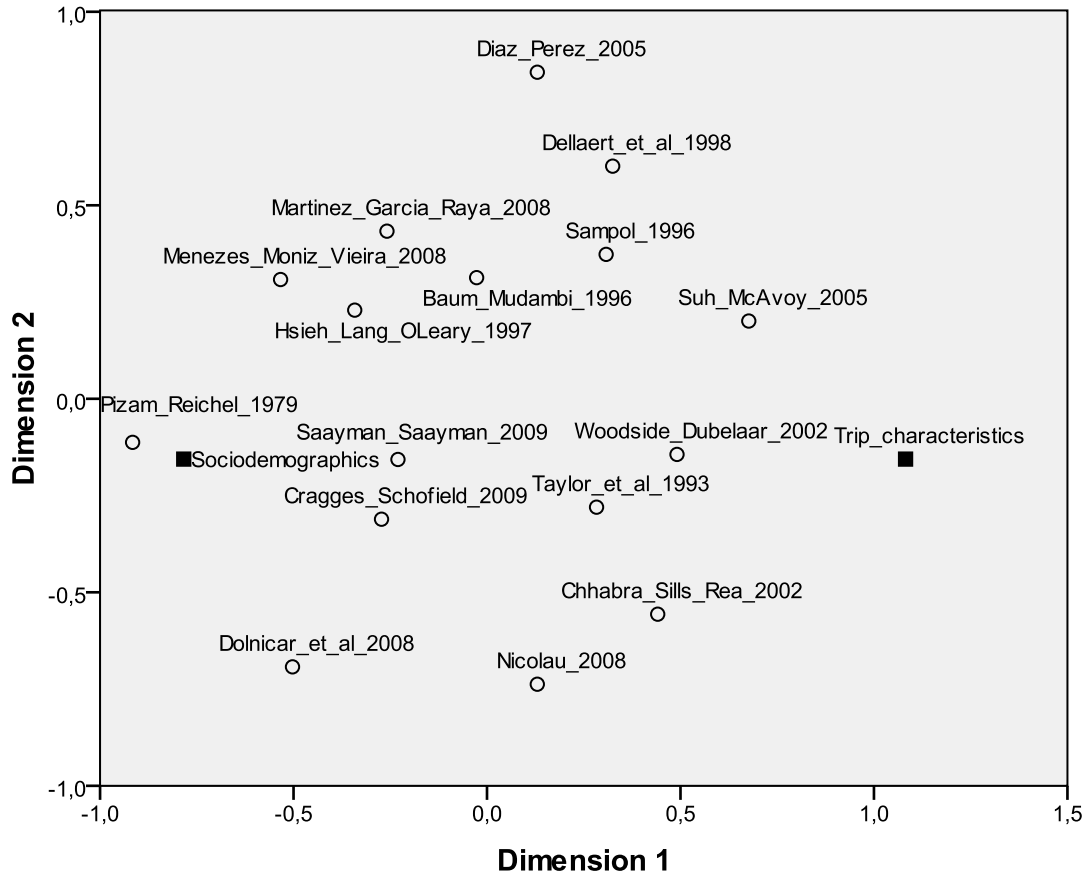
Among the trip related characteristics also two factors are taken into account in half of the studies or more: *Duration of stay* (76%), *party size* (60%). Normally duration of stay is measured in number of nights. In studies of day-trips length of stay may be measured in hours, though. Party size is related to the household size, but people may travel and make holiday together even if they are not part of the same household. This can be tackled by asking about the number of persons from the same household or simply by asking about how many people (adults and children) any spending figure is covering. In Denmark, only 1% of the households have more than 5 members.

A second layer of characteristics are included in between 20 and 50% of the studies. Among the socio-demographic characteristics these are: Gender (40%), education (35%), profession/occupation (31%), marital status (also 33%), and nationality/origin (29%). The three first characteristics are all related to income, and are used in some surveys as a proxy for income. To ask about gender (of the respondent) in surveys about holiday spending is fair, but perhaps it is slightly arbitrary if the man or the woman fills in the questionnaire in the case of families or couples living or travelling together. In the case of business travellers, who typically travelling alone, the gender question makes more direct sense. – In the area of trip related characteristics, many additional variables are included in the spending articles and related articles reviewed: Type of accommodation (45%), activities undertaken at the destination (40%), and purpose of travel (35%), motives (33%), and frequency of visits (31%). Whether the trip was bought as a package is an aspect included in 27% of the studies, first time vs. repeat visits 24% and children in the party also 24%,

transportation mode 20%. Irrespective of frequency of mentioning, additional socio-demographic or trip related factors are included in some studies.

In the review of cross-section studies in was found in a rotated factor analysis that the well over 50 journal articles could be assembled into 16 groups based on the explanatory variables included in their analysis. Taking one representative article from each of the 16 principal components - namely the one with the greatest weight - and running a multidimensional scaling analysis (MDS, PROXSCAL) gives an illustration of how the studies are positioned in relation to each other. From the outset the meaning of dimension 1 and dimension 2 is not given in a MDS analysis. However, either of the two scales may be reversed, if the analyst feels that would give a more meaningful illustration of the results. Also, all the points, or the axes, may be turned without changing the relative position of the object points in the common space. Since all the determinants in this study are either socio-demographic or trip characteristics, it was decided to include these aspects in the illustration. This has been done in such a way that the dot representing socio-demographics is to the left in the MDS diagram - since these are "background variables" - and the dot representing trip characteristics is to the right. The points were turned until these two points were exactly at the same level, i.e. with the same Y-coordinate. The sum of all X and Y coordinates is zero from the outset, and remains zero after any reversion of axes and additional turning of the points around origin. Also, key measures such as "stress", which the MDS algorithm minimizes, is unaffected by such manipulations of the position of the object points in the common space.

Figure 1 Positioning of 16 different writers in tourism spending research (MDS, PROXSCAL)



Note: Goodness of Fit statistics: Normalized Raw Stress: 0.0610. - Dispersion Accounted For (D.A.F.): 0.9390.

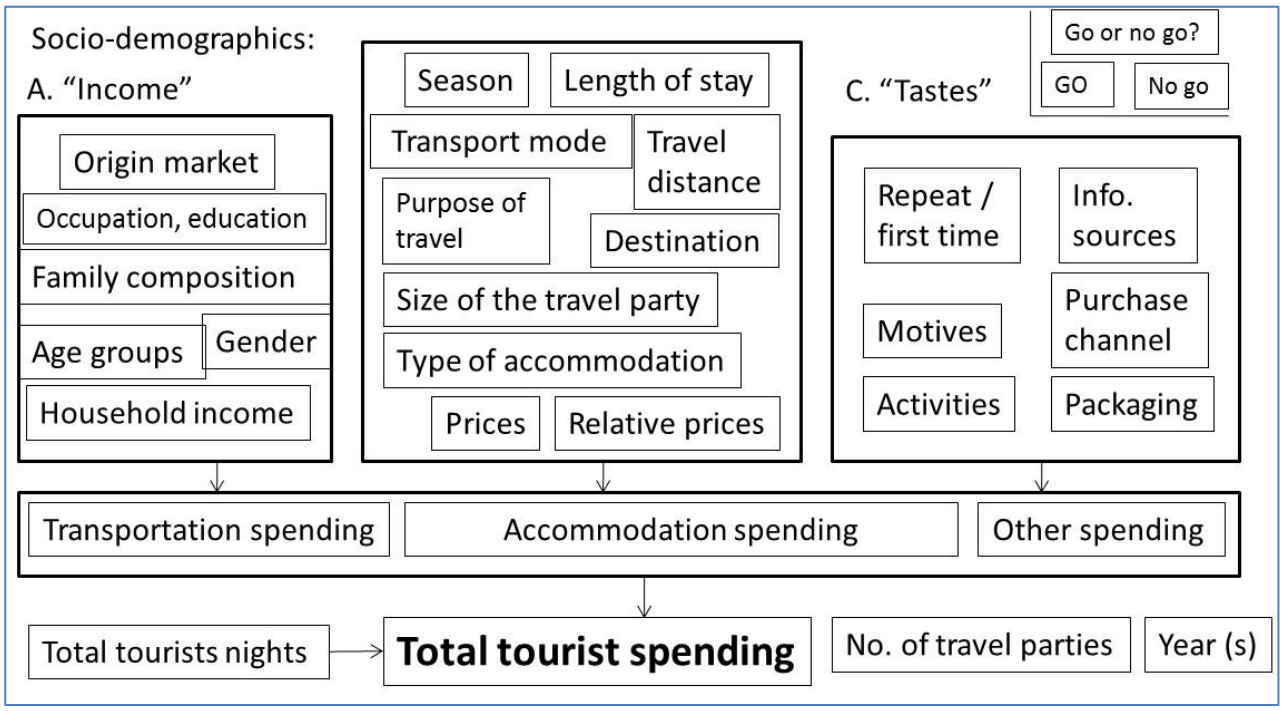
The 16 collective or individual authors are widely different in the sense that they are representatives of 16 groups of writers, extracted from PCA. Even so, the writers which are least different in terms of the explanatory variables they include in their studies are placed close to each other, but far away from the very dissimilar writers in terms of included determinants of tourism.

2.2. Conceptual model of factors affecting tourist spending

The model in figure 2 illustrates the factors which are thought to affect tourist spending. Firstly, the model accepts that tourism demand and tourist spending is a function of income, prices (tourism prices and relative prices) and tastes. Secondly, it splits the factors which explain travel spending into socio-demographic characteristics and trip related characteristics, and suggests that the former are largely related to “income”, and the latter related to (absolute and relative) “prices” and “tastes”.

This is in accordance with economic theory which suggests that quantity demanded of a good or service is a function of the relative price of the commodity, the consumer's income and the consumer's tastes (Farrell, 1953; Downward and Lumsdon, 2000). Thirdly, the model in figure 2 indicates that travel is a two-step decision, where the first step is whether to go or not, and the second decision is how much to spend. In the case of destination surveys, only those who actually travel have the opportunity to respond. Different types studies are needed to study budget decisions, step one (Dolnicar et al., 2007; Coenen & van Eekeren 2003). Fourthly, figure 2 shows that tourism spending can be split into three main components: Transportation, accommodation and other spending.

Figure 2 Determinants of tourist spending - Factors of possible importance



Source: Own development

Tourist spending at the micro level can be measured in at least four different ways: Per person per night, per travel party per night, per person per trip/stay, per travel party per trip/stay, cf. Kozak et al. (2008). Furthermore, as suggested in this article, each of these measuring levels can be split into three main component (transportation, accommodation, other spending) and a total. Therefore, there are up to 4*4=16 measures of tourist spending at the micro level. However, total spending per person per night has traditionally been considered central. This is perhaps because statistical

authorities report bednights, broken down in different ways such as by type of accommodation, destination and origin markets.

Table 3 Four by four = 16 ways of measuring tourist spending

Tourist spending:	Transport	Accommodation	Other	**Total**
Per person per night	A1	B1	C1	**D1**
Per party per night	A2	B2	C2	D2
Per person per stay	A3	B3	C3	D3
Per party per stay	**A4**	**B4**	**C4**	D4

Data may be collected by asking about A4, B4 and C4, which may be added to D4. For the journey of each travel party, D2 can be calculated by dividing D4 by number of nights for that travel group, and D3 three can be calculated by dividing D4 by number of persons in that travel party. However, the average of D4 divided by average travel party size does not equal D3, since such simplistic averages of averages would give incorrect result (Mak et al., 1977b). Row one (e.g. D1) is row four (e.g. D4) divided by both number of nights and size of the travel party, but only on a per respondent basis. In every row, D is the sum of A, B and C. When this is true for each respondent it is also true for the averages of respondents. Therefore, as shall be seen (indeed proven) later, regression coefficients for each of a given number of determinants of A1, B1 and C1 are equal to the regression coefficient for the same determinants of D1. In this study D1 is split into A1, B1 and C1. Also, in this study D1 is supplemented by the spending measures D2, D3 and D4. Thus, the seven dependent variables in this study are those in the top row and those in the right column of table 3.

3. The empirical study

This part contains three sections. Firstly, the hypotheses are stated, and the dataset which is going to be used to test them is described. Secondly, a series of seven multiple regression analysis are used to test the hypotheses. Thirdly, MDS is used to show proximities and distances between all the significant determinants and seven different dependent variables.

3.1. Hypotheses, methodology, descriptives and correlations

The hypotheses to be tested are the following:

H1: Type of accommodation affects tourist spending. - Prices vary between types of accommodation. Type of accommodation, along with standard, is thus a proxy of prices.
H2: The length of stay, i.e. the number of nights stayed, affects tourist spending.
H3: The size of the travel party, i.e. the number of people travelling together as a single group, affects tourist spending.
H4: Destination (within a country) affects tourist spending.
H5: Travel distance affects tourist spending.
H6: Origin market affects tourist spending.
H7: Purpose of travel affects tourist spending. – Business travellers are thought to spend more than leisure travellers.
H8: Mode of transport affects tourist spending. – Those travelling by airplane are thought to spend more than others.
H9: Activities undertaken during the holiday affects tourist spending. Some activities impact tourist spending upwards, others downwards.
H10: Age group affects tourist spending. Age group is related to income.
H11: Whether tourists buy package tours or not affects tourist spending.
H12: The level of household income affects tourist spending.
H13: Whether a travel agent is involved or not in connection with the booking of the trip affects tourist spending. – In general: Purchase channel affects tourist spending.
H14: Information sources affect tourist spending.
H15: Gender affects tourist spending.
H16: Whether visitors are first time or repeat visitors affects tourist spending.
H17: Travel motives affect tourist spending. Travel motives and activities are related.
H18: Season affects tourist spending.

The study at hand is a cross section study, which makes use of OLS multiple regression analysis (SPSS, 2007) as its main analytical tool, and with expenditure as the dependent variable, in seven different variants, but with emphasis on total spending per tourist per night. Multiple regression analysis is used to estimate the size of each of the determinants of seven different spending measures. Finally, multidimensional scaling, MDS, is used to graphically illustrate how the seven spending measures relate to their significant determinants and to each other.

The data source is a survey commissioned by VisitDenmark in 2004 with 11000 respondents, i.e. 8000 leisure tourists and 3000 business/mixed purpose tourists.

Accommodation type is in fact these five types: Hotels, holiday centres, youth hostels, holiday cottages and camping. These five types are coded by four dummy (0-1) variables with camping, the cheapest type of accommodation per person per night, as basis. Visits to friends and relatives are not included.

Markets are these five: Denmark, Germany, Sweden, Norway and other (distant) markets. Each is coded by a dummy variable, with Danes as the base. Only Swedes and Norwegians were significant when distance in km were included as well as one of the independent variables.

The number of nights ranged from a minimum of one to 200. Party size ranged from one to eight.

Denmark is currently divided into ten tourist destinations, for which bednights are reported to and by the statistical authorities. These are initially coded by ten dummy variables, leaving out the destination with lowest spending per person per night as the basis.

Household income level was measured on a scale from 1 to 5, and used directly in the analysis. The unknown income level of business travellers was set to 3. To allow for non-linearity in the income variable a dummy variable was defined and tested for the top income level, but this additional variable on top of the linear income variable was not significant.

Activities were originally measured on 1 to 5 scales. These scales were re-coded into dummy variables, where those answering 5 was coded as 1, others 0. This was done to ease interpretation, and did not affect the general results, but the original 1-5 scales could have been maintained. Even both 1-5 and 0-1 scales could have been included to check for non-linearity. This was actually tried during the rather extensive process of developing the set of determinants, but generally this extra layer is not necessary (i.e. not significant) for activities as variables.

Age was re-coded into age brackets: The young, the middle group aged 30-59, and those aged 60 or more. Each of the two latter groups were coded as dummy variable, with the young as basis.

Unlike many other tourism spending studies, no logarithmic transportations are used. Thus the analysis is strictly linear throughout, which makes the regression coefficients directly and easily interpretable in terms of monetary terms (EUR). Non-linearity in independent variables such as length of stay and size of travel party with respect to effect on spending measures (cf. Thrane & Farstad, 2009) is handled by including dummy variables. This means that 0-1 variables are used "on top of" or in addition to the mentioned continuous variables. As mentioned, non-linearity was checked in additional variables (income and activities).

Table 4 Basic descriptives and pairwise correlations (r) between 18 groups of determinants and seven spending measures among visitors using commercial accommodations in Denmark in 2004

Ref. to hypotheses	Depend./independ.	**Variables**	Minimum	Maximum	**Mean**	Std. Deviation	EUR_transp_ppp_night	EUR_accom_ppp_night	EUR_other_ppp_night	**EUR_ppp_night**	EUR_party_night	EUR_ppp_stay	EUR_party_stay	Rank by average r^2 (*)
	Y1	EUR_transp_ppp_night	,00	1865	**29,39**	63	1	,333**	-,046**	**,716****	,481**	,103**	,061**	III
	Y2	EUR_accom_ppp_night	,16	1019	**55,60**	52	,333**	1	,040**	**,695****	,365**	,068**	-,051**	IV
	Y3	EUR_other_ppp_night	,00	804	**32,14**	55	-,046**	,040**	1	**,497****	,493**	,284**	,254**	VII
	Y4	**EUR_ppp_night** (Y1+2+3)	3,35	1871	**117,13**	108	,716**	,695**	,497**	**1**	,703**	,236**	,139**	I
	Y5	EUR_party_night	3,36	3941	**203,26**	182	,481**	,365**	,493**	**,703****	1	,205**	,344**	II
	Y6	EUR_ppp_stay	4,02	83417	**564,17**	1287	,103**	,068**	,284**	**,236****	,205**	1	,845**	V
	Y7	EUR_party_stay	4,02	91206	**1119,24**	2096	,061**	-,051**	,254**	**,139****	,344**	,845**	1	VI
H1	X01	Hotels & holiday centers	0	1	**57%**	,49	,307**	,559**	,098**	**,497****	,366**	,021*	-,052**	1
-	X02	Cottages	0	1	**22%**	,41	-,213**	-,303**	-,060**	**-,300****	-,202**	,014	,091**	11
H2	X03	Nights	1	200	**7,22**	12,45	-,145**	-,227**	-,030**	**-,209****	-,154**	,455**	,471**	6
-	X04	Night_1	0	1	**12%**	,33	,317**	,316**	-,013	**,329****	,161**	-,102**	-,149**	8
-	X05	Nights_2	0	1	**18%**	,38	,085**	,162**	,042**	**,149****	,093**	-,094**	-,142**	16
-	X06	Nights_3	0	1	**12%**	,33	,016	,085**	,041**	**,071****	,061**	-,043**	-,074**	25
H3	X07	Party_size	1	8	**2,22**	1,32	-,244**	-,457**	-,073**	**-,398****	,158**	-,079**	,189**	4
-	X08	1_person	0	1	**37%**	,48	,273**	,543**	-,004	**,418****	-,111**	,059**	-,165**	3
H4	X09	Copenhagen	0	1	**22%**	,42	,210**	,402**	,156**	**,394****	,266**	,048**	-,014	5
H5	X10	Distance, km	232	17658	**989**	2151	,118**	,182**	,089**	**,201****	,146**	,123**	,081**	14
H6	X11	Norwegians	0	1	**9%**	,28	,003	-,023*	,137**	**,060****	,135**	,042**	,066**	22
-	X12	Swedes	0	1	**8%**	,28	,034**	,004	,068**	**,056****	,111**	-,030**	-,021*	26
H7	X13	Business_or_mix	0	1	**28%**	,45	,310**	,614**	-,162**	**,394****	,032**	,030**	-,108**	2
H8	X14	Flying	0	1	**17%**	,37	,196**	,373**	,084**	**,335****	,201**	,107**	,040**	9
H9	X15	Shopping_always	0	1	**8%**	,27	,010	-,059**	,205**	**,081****	,153**	,050**	,076**	17
-	X16	Restaurants_always	0	1	**13%**	,34	,091**	,030**	,250**	**,194****	,317**	,019*	,033**	12
-	X17	Golf_always	0	1	**2%**	,15	-,030**	-,039**	,081**	**,005**	,025**	,021*	,031**	29
-	X18	Relax_always	0	1	**40%**	,49	-,222**	-,402**	-,022*	**-,333****	-,138**	-,010	,070**	10
-	X19	Walks_always	0	1	**16%**	,37	-,121**	-,205**	,016	**-,161****	-,080**	,020*	,046**	15
-	X20	Cooking_always	0	1	**25%**	,43	-,226**	-,389**	-,124**	**-,381****	-,264**	-,023*	,040**	7
H10	X21	Age_15_29	0	1	**10%**	,31	-,018	-,028**	,001	**-,023***	-,081**	-,013	-,058**	28
H11	X22	Package tour	0	1	**17%**	,37	,203**	,147**	,027**	**,202****	,245**	,006	-,006	13
H12	X23	Income level, household	1	5	**3,18**	,72	-,023*	-,034**	,146**	**,044****	,180**	,024*	,091**	20
H13	X24	Recom. travel agency	0	1	**4%**	,21	,066**	-,041**	,082**	**,060****	,124**	,013	,035**	24
H14	X25	Destination info. online	0	1	**15%**	,36	-,077**	-,146**	,096**	**-,066****	,092**	,001	,066**	21
H15	X26	Gender: Male_resp	0	1	**61%**	,49	,055**	,068**	-,019*	**,055****	,011	,025**	,010	27
H16	X27	Repeat visitors	0	1	**79%**	,40	-,060**	-,151**	-,032**	**-,123****	-,085**	-,059**	-,031**	19
H17	X28	Art/cultural-history	0	1	**17%**	,38	-,045**	-,132**	,109**	**-,035****	,051**	,031**	,073**	23
H18	X29	Season_6_9	0	1	**66%**	,47	-,107**	-,141**	-,002	**-,131****	-,011	,043**	,106**	18
		Valid N	11077	11077	11077	11077	11077	11077	11077	11077	11077	11077	11077	

Note: In the ranking by average r^2 in the far right column spending in EUR per person per night has counted double.

3.2. Multiple regression analysis results and testing of the hypotheses

The seven different dependent variables in table 4 are: Transportation spending per person per night, accommodation spending per person per night, other spending per person per night, total spending per person per night, spending per night per travel party, spending per person per stay and spending per travel party per stay (all in EUR).

VIF, the Variance Inflation Factor, has been kept under surveillance when developing the fixed set of independent variables. VIF is thus well under 3 (and tolerance correspondingly over 0.3) for all independent variables, which means that multicollinearity is not a problem with the above set of independent variables. In the final specification of the set of dependent variables, it was necessary to group hotels and holiday centres into one variable. This was done in order to avoid problems with multicollinearity, since otherwise that became a problem as the number of determinants gradually increased to reach the final set. Also the minor and relatively low cost accommodation type youth hostels had to be part of the basis along with camping, since otherwise VIF for "hotels and holiday centres" was affected, and would rise above 3. Children in the travel party could not be included as one of the determinants without causing problems with multicollinearity, since that variable in different variants was too closely correlated with number of persons in the travel party. Thus, most travel parties of three or more comprise at least one child.

Table 5 Regression results: 18 (groups of) determinants for seven spending measures among holiday and business tourists staying at commercial accommodations in Denmark in 2004

	Dependent variables	transp_ppp_night	accom_ppp_night	other_ppp_night	**ppp_night (total)**	party_night	ppp_stay	party_stay	transp_ppp_night	accom_ppp_night	other_ppp_night	**ppp_night (total)**	party_night	ppp_stay	party_stay
	Determinants	B: EUR	B: EUR	B: EUR	**B: EUR**	B: EUR	B: EUR	B: EUR	t	t	t	**t**	t	t	t
	(Constant)	8,34	13,58	17,79	**39,71**	-14,70	-148,81	-891,67	2,14	5,60	5,06	**6,98**	-1,43	-1,90	-7,14
H1	Hotels_cent	7,53	30,58	7,65	**45,75**	86,95	224,08	434,95	4,66	30,48	5,26	**19,44**	20,46	6,91	8,42
	Cottages	2,19	16,88	5,16	**24,22**	35,24	116,18	340,83	1,30	16,09	3,39	**9,85**	7,94	3,43	6,32
H2	Nights	-0,09	-0,18	0,05	**-0,23**	-0,23	49,05	77,89	-1,97	-6,41	1,15	**-3,37**	-1,87	53,09	52,92
-->	Night_1	46,50	20,84	-0,17	**67,17**	88,53	-325,53	-521,60	24,14	17,41	-0,10	**23,92**	17,46	-8,42	-8,47
	Nights_2	9,70	9,33	3,24	**22,27**	34,65	-215,21	-452,67	5,94	9,20	2,21	**9,36**	8,07	-6,57	-8,68
	Nights_3	3,65	8,27	0,12	**12,04**	19,93	-144,60	-349,34	2,02	7,37	0,08	**4,58**	4,20	-3,99	-6,05
H3	Party_size	-2,36	-3,77	-5,22	**-11,35**	33,82	-59,44	253,96	-4,03	-10,33	-9,88	**-13,27**	21,90	-5,05	13,54
	P1: 1 person only	2,88	14,90	6,98	**24,77**	-61,10	166,74	-80,16	1,58	13,18	4,26	**9,34**	-12,76	4,56	-1,38
H4	Copenhagen	4,36	12,23	15,04	**31,63**	60,12	85,44	198,63	2,60	11,75	9,97	**12,95**	13,64	2,54	3,71
H5	Distance_1000_km	1,32	0,24	0,81	**2,38**	4,02	29,74	35,31	4,33	1,29	2,97	**5,36**	5,01	4,86	3,62
H6	Norwegians	-0,58	-2,20	17,59	**14,81**	31,16	140,87	229,61	-0,29	-1,79	9,85	**5,13**	5,98	3,54	3,62
	Swedes	1,32	-0,60	7,24	**7,95**	17,87	5,27	-63,72	0,66	-0,49	4,04	**2,74**	3,41	0,13	-1,00
H7	Bus_mix	20,73	35,23	-35,39	**20,57**	28,09	25,68	143,00	10,85	29,67	-20,56	**7,38**	5,59	0,67	2,34
H8	Flying	11,59	11,98	1,80	**25,36**	36,87	140,47	196,31	5,59	9,30	0,96	**8,40**	6,76	3,38	2,96
H9	Q39_Shopping_alwa	5,32	2,01	25,89	**33,21**	54,36	134,09	284,45	2,53	1,54	13,70	**10,86**	9,85	3,18	4,24
	Q39_Restaurants_al	9,47	3,70	15,53	**28,69**	78,79	77,90	124,53	5,04	3,16	9,17	**10,47**	15,92	2,06	2,07
	Q39_Golf_always	-2,19	0,38	16,73	**14,91**	22,64	129,07	300,59	-0,61	0,17	5,16	**2,84**	2,39	1,78	2,61
	Q39_Relax_always	-1,50	1,31	-5,31	**-5,50**	-11,36	0,20	-18,31	-1,09	1,53	-4,28	**-2,74**	-3,13	0,01	-0,42
	Q39_Walks_always	-2,58	-2,89	-3,06	**-8,52**	-8,10	2,25	-19,90	-1,65	-2,97	-2,17	**-3,73**	-1,97	0,07	-0,40
	Q39_Cooking_alway	1,06	-1,78	-9,33	**-10,05**	-41,49	-160,94	-393,92	0,67	-1,83	-6,59	**-4,39**	-10,03	-5,10	-7,83
H10	Age_15_29	-9,40	-15,23	0,74	**-23,89**	-16,83	-51,69	-81,58	-5,25	-13,69	0,46	**-9,15**	-3,57	-1,44	-1,42
H11	Package_tour	20,28	3,19	-11,03	**12,44**	51,31	83,58	179,88	12,65	3,20	-7,64	**5,32**	12,16	2,60	3,51
H12	Income_level	-1,67	1,25	6,37	**5,95**	9,21	65,23	131,43	-2,13	2,56	8,98	**5,19**	4,45	4,13	5,22
H13	Q36_TA involved	16,65	-3,19	2,57	**16,04**	21,66	45,04	113,24	6,11	-1,88	1,05	**4,04**	3,02	0,82	1,30
H14	Q36_Online info.	-0,96	3,98	5,61	**8,63**	20,32	47,72	93,19	-0,61	4,05	3,94	**3,74**	4,88	1,50	1,84
H15	Male_resp: Gender	4,71	0,26	0,60	**5,57**	8,20	36,86	48,56	4,31	0,38	0,61	**3,49**	2,85	1,68	1,39
H16	Repeat visitor	3,84	0,61	2,44	**6,88**	11,38	38,26	98,32	2,55	0,65	1,80	**3,14**	2,88	1,27	2,05
H17	Q37_art_culture	3,89	0,87	1,29	**6,05**	4,18	18,83	112,43	2,58	0,93	0,95	**2,75**	1,05	0,62	2,33
H18	Season_6_9	-3,05	1,12	-1,52	**-3,45**	1,01	22,71	134,10	-2,63	1,55	-1,45	**-2,04**	0,33	0,98	3,62
	Adjust. R^2(n=11077)	0,23	0,57	0,17	**0,45**	0,36	0,26	0,29	0,23	0,57	0,17	**0,45**	0,36	0,26	0,29

Note: All seven models are based on 11077 cases. The maximum VIF-value is 2.8, i.e. well under 3 for all independent variables. Likewise, tolerance is over 0.3 throughout. The number of t-values for independent variables is 29*7=203, of which 148 or 73% are significant (>= +/- 1.96). Non-significant t-values are shaded in grey.

All 18 stated alternative-hypotheses were confirmed (i.e. non-stated null-hypotheses of "no effect" could be rejected), when using the core measure of spending per person per night as the dependent variable. This is clear from the t-values listed under the heading spending per person per night in the middle column in the right part of table 5. In the right part of table 5 all non-significant t-values (of under +/- 1.96) are shaded in grey, while the rest are significant.

Seven of 18 determinants were significant in all of the seven models. These seven determinants were, cf. table 5: 1. Type of accommodation (hotels and holiday centres vs. other types of accommodation). 2. Length of stay (one of four variables in this group). 3. Party size. 4. Destination (Copenhagen vs. the rest of Denmark). 5. Activities (specifically going to restaurants all the time). 6. Packaged tours. 7. Income level (see below discussion under H12, though).

Overall, 73% of the 29*7=203 t-values are significant at the 95% level (t>=1.96). The simple average numeric t-value was 6.02 for all seven models, and as high as 6.21 for the four models to the right in table 5. In the same four models Kozak et al. (2008) reported 35*4=140 t-value, of which 45 or 32% were significant at the 95% level. Whether lower proportion of significant t-values is a general characteristic of models with logarithmic transformations or it is due to a smaller sample in Kozak et al. (2008) than in this study or a third reason is not clear.

In the central model "spending per person per night" the two most significant variables were whether a person travel alone or not, and whether or not hotels/centres are used as accommodation. This was also the case for the model "spending per travel party per stay", although the order was reversed. In the models "spending per travel party per night" and "spending per person per stay" the clearly most significant determinant was length of stay (number of nights). In the model "transport spending per person per night" neither distance, nor mode of transport ranked in the top three determinants in terms of t-value. The most significant determinant in this model was whether or not the transport costs could be spread out on more than one night of stay or not. In the model "accommodation spending per person per night" the two most significant determinants according to the t-values were type of accommodation (hotels/centres or not, and business travel or not). Finally, in the model "other spending per person per night" the most significant determinant was purpose of travel. Business travellers (here including those travelling with mixed business/leisure purposes) spent much less on other things than accommodation and transport than holiday-makers, as shown in a high negative t-value. This is also reflected in a high negative coefficient in EUR in the left part of table 5 under "other spending" for business travellers compared to other travellers.

H1, type of accommodation: Table 5 shows that type of accommodation is a highly significant determinant of tourist spending. The variable "hotels" is significant in all seven spending measures.

H2, length of stay: One of the variables representing length of stay is significant in all seven models, while the rest are significant in five or six models.
H3, travel party size is significant in all seven models.
H4, destination: Table 5 shows that destination – specifically the variable Copenhagen vs. the rest of Denmark – is significant in all seven models.
H5, travel distance was found to be significant in six out of seven models, cf. table 5. Furthermore, the simple correlation coefficients between distance and each of the seven dependent variables were all significant and all positive.
H6, market: Origin market was found to be significant in up to five out of seven models, cf. table 5.
H7, purpose of travel was significant in six out of seven models. Business travellers spend significantly more on transportation and accommodation than leisure travellers, but spend significantly less on other things, on a per person per night basis.
H8, mode of transport: Air-travel tends to lead to higher spending, and significantly so in five out of seven multiple regression models, cf. table 5. The pairwise correlations were significant and positive in all seven models, cf. table 4.
H9, activities: Table 5shows that always eating at restaurants leads to significantly higher spending in all seven models.
H10: The young (who actually travel) spend less than others on transportation and accommodation, but they spend more on other things. – Those, who do not travel, are not in the survey.
H11: Package tours were significant in all seven models, although spending on other things than transport and accommodation (the typical package) was significantly lower than for others.
H12: Income had a significant impact on spending in all seven models, although in the negative direction for transportation costs. The latter negative result should be disregarded, since income was actually not known for business travellers and therefore set at 3 at the 1-5 scale as earlier mentioned, while average income for leisure travellers was 3.18. Business travellers actually spend more than leisure travellers on transportation, but their unknown income was set too low. Thus the unwarranted negative sign is explained. Average income for business travellers could have been set at the average for gender and age group to avoid the mentioned unwarranted sign for the effects of income on transportation costs. Thus, average income was 3.21 in average for female business travellers in the broad age group 30-59 and 3.25 for male business travellers in that age group.

H13: Involvement of a travel agent leads to a higher spending on a per person per night basis because of a higher spending on transportation, all other things being equal, since nobody works for free.
H14, information sources: The use of the Internet as a source of information was found to lead to significantly higher spending on accommodation and on other things, while the impact on transportation spending was not significant.
H15, gender: Male respondents reported higher spending on transport and in total per person per night and per travel party per night.
H16, first-time vs. repeat visitors: When all other things (or: when 17 other specific factors) are kept equal, table 5 shows that the repeat visitors tend to spend more than first-time visitors, although the result is only significant in four of seven models. This is the opposite of the result shown by the pairwise correlation coefficients shown in table 4, which were significantly negative in all seven models for the variable repeat visitors. In support of the result in table 5, another study (Kosak et al., 2008) reported a significant positive relation between number of visits and spending, which supports the finding here, that repeat visitors spend more rather than less, ceteris paribus.
H17, travel motives: Those interested in culture and art spend significantly more than others on transportation and in total per person per night, even after controlling for other things like distance. Thus, they tend to come from further afield than others, but that has been taken into account.
H18, travel season: The effects of seasonal fluctuations on tourist spending are somewhat complex. With long stays and large travel party sizes during the peak holiday season around mid-summer, spending per travel party per stay is high. However, transportation spending on a per person per night basis is relatively low, both because of the reasons already mentioned and because of a relatively low proportion of business travellers who tend to travel relatively far to get to Denmark.

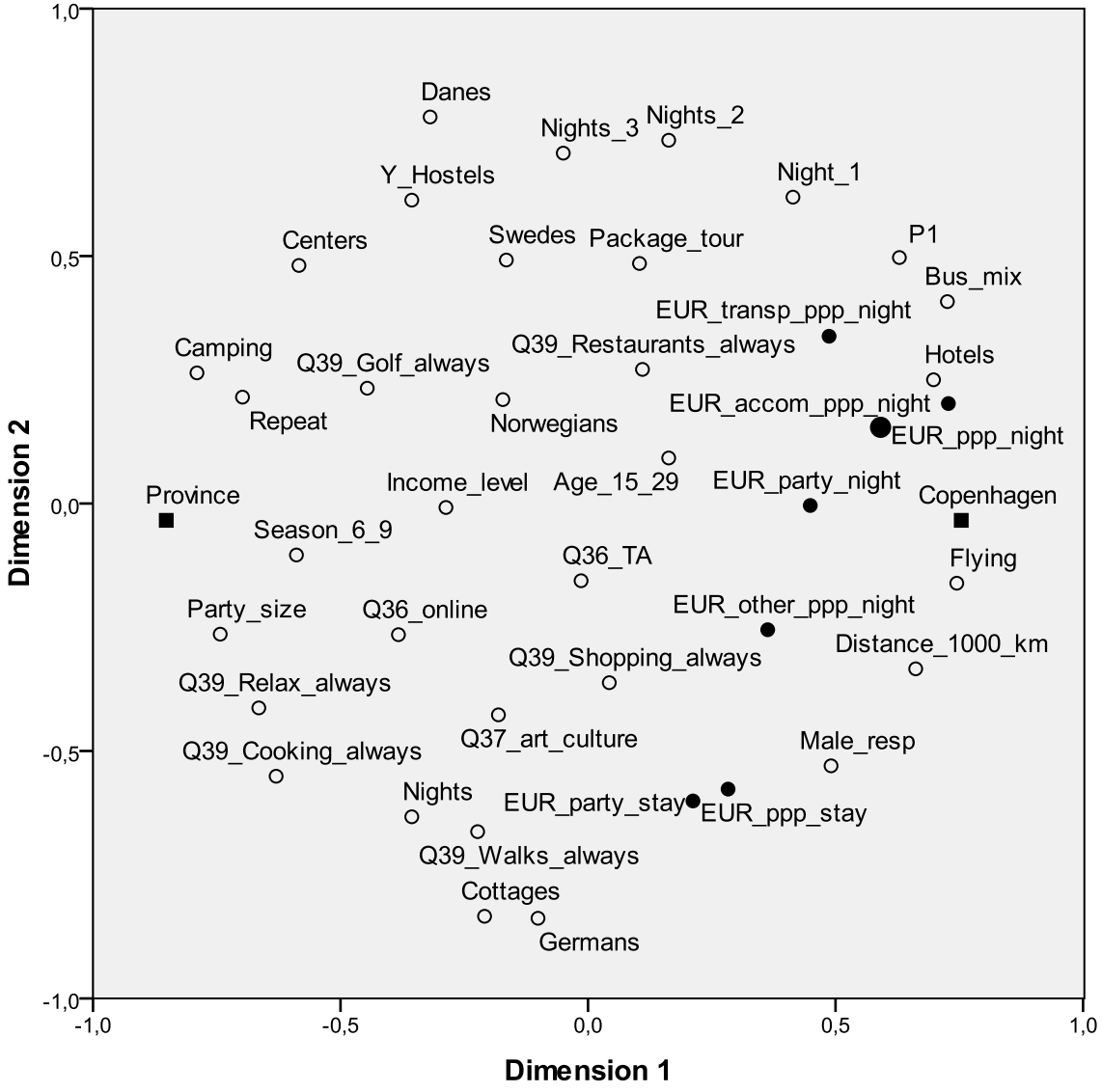
The 18 groups of explanatory factors could explain a total of 45% of the variation in total spending per person per night. The full set of independent variables were included to test all the hypotheses, but a small number of independent variables could explain almost as much of the total variation. But by including as many as 18 groups of determinants in the analysis their separate as well as their combined effects on spending could be accessed. R^2 could have been increased considerably simply be excluding outlayers such as spending value over 3 or 6 SD's from the mean, but this would affect the results. For example, many of the highest spenders are business travellers, and if a number of these high spenders are excluded, the regression coefficient for business travellers would

become misleading. A solution could be to allow a greater span of SD's from the mean for business travellers (e.g. 6 or 10 SD's) than for leisure travellers (where a lower number of SD's from the common mean such as 3 could be allowed). In this way approximately the same percentage of business and leisure travellers could be excluded as outlayers. - If those stating zero spending in transport are excluded, when R^2 for transport of course increases, but in such a situation many of the respondents would be eliminated from the analysis. The inclusion of zero as one of the possible values in the dependent variable is not a problem in linear regression.

3.3. Proximities between the significant determinants of spending

In the MDS diagram in figure 3 the horizontal axis is Copenhagen vs. province (i.e. the rest of Denmark), with Copenhagen deliberately placed to the east, province directly opposite, with the same Y-coordinate as Copenhagen. Furthermore, the German source market is placed in the bottom of the diagram, to the south. Danes, the Danish home market, is then automatically placed to the north, all of which is in accordance with reality.

Figure 3 Proximities between significant determinants and seven different measures of tourist spending. An illustration of the results – using multidimensional scaling (MDS, PROXSCAL)



Note: Goodness of Fit statistics: Normalized Raw Stress: 0.1032. - Dispersion Accounted For (D.A.F.): 0.8968. The diagram contains 42 object points, and is thus based on 0.5(42(42-1) = 861 distances (Green & Tull, 1978 p. 466).

Figure 3 shows that total spending per person per night is closely related with accommodation spending, transportation spending and spending per party per night. High spending per person per night is closely related with hotels, business travel, travelling alone (P1), staying in Copenhagen and flying. In the province, on the other hand, camping during the summer season in relatively large travel parties with low spending per person per night is popular. Germans prefer to stay in holiday

cottages, have long stays, and therefore also spend relatively much per stay. At youth hostels and in holiday centres there are relatively many Danes. Cooking is an activity which is rather closely related with holiday cottages and the province in general, and is adversely related with high spending per person per night.

In table 6 the results from table 5 are summarised under the headings rank 1 and |t| 1. |t| is here the simple average of the numeric t-values across four of the measuring models (spending per person per night, per party per night, per person per stay, and per travel party per stay). It is based on the VisitDenmark 2004 survey with 11000 leisure and business travellers. The 18 hypotheses are ranked in declining order of average numeric t-values.

Next, in table 6 the results from this survey are compared with a summary of the results of two other large surveys under the headings rank 2 and |t| 2: A VisitDenmark survey from 2008 with 8000 incoming and domestic leisure visitors, and a Statistics Denmark survey from 2007 with 6500 outgoing and domestic business and leisure travellers). Purpose of travel was only included in the analysis of the latter survey, but in that survey purpose of travel came in as the most significant of the 18 determinants across four models. On the other hand, type of accommodation and size of the travel party came in lower in the 2007 and 2008 surveys than in the 2004-survey. This is due to the fact that "rank 2" is based on a greater variety of accommodation types (under H1) and a greater number of dummy-variables for size of the travel party as well as travel party composition (under H3). Any further comparison between the surveys is beyond the scope and space limits of this paper.

Finally, in table 6 it is summarized which percentage of the reviewed journal article studies included and tested each of the same 18 determinants. Below table 6 those determinants which were also frequently mentioned in literature, but which were not tested empirically in this article, are mentioned.

Table 6. Ranking of 18 spending determinants (1) in this survey by t-values (2) in similar Danish surveys by t-values and (3) in literature by frequency of testing

Hypotheses	Rank 1	|t| 1	Rank 2	|t| 2	Rank 3	(%) 3
H2 Length of stay	1	13,81	3	13,15	1	76%
H1 Type of accommodation	2	10,35	8	6,76	5	45%
H3 Size of the travel party	3	10,22	9	6,33	4	60%
H4 Destination	4	8,21	4	9,79	17	11%
H11 Packaging	5	5,90	6	7,13	11	27%
H8 Mode of transport	6	5,37	7	6,90	13	20%
H12 Household income	7	4,75	5	8,01	3	65%
H5 Travel distance	8	4,71	2	20,21	14	18%
H9 Activities	9	4,50	15	3,11	6	40%
H7 Purpose of travel	10	4,00	1	26,50	8	35%
H10 Age groups	11	3,90	12	4,44	2	73%
H6 Origin market	12	3,19	11	4,75	10	29%
H14 Information sources	13	2,99	16	2,71	15	13%
H15 Gender	14	2,35	18	<1,96	7	40%
H16 First-time vs. repeat visitors	15	2,33	17	2,71	12	24%
H13 Channel: Agent involved	16	2,29	13	4,02	18	7%
H18 Season	17	1,74	10	5,57	16	13%
H17 Motives	18	1,69	14	3,35	9	33%

Note: Other determinants tested frequently in literature - under "rank 3": Education 35%, marital status 33%, profession 31%, frequency of visits 31%, children in the party 24%, prices 18%, accommodation standard 15%.

Rank 1 and associated average numeric t-values are based on table 5 (11000 respondents) across four models. Rank 2 is based on two additional Danish surveys, with 8000 and 6500 respondents, respectively, across four models. The four spending models are: Per person per night, per travel party per night, per person per stay, and per travel party per stay.

A way to draw lessons from table 6 could be to try to identify the seemingly under-researched determinants, namely those which rank higher empirically (as indicated by rank 1 and rank 2) than in literature (rank 3). Seemingly under-researched determinants are thus: Destination, packaging, mode of transport, travel distance and purchase channel. With respect to purchase channel, further research into facets of the effects of internet distribution could be fruitful.

In terms of average numeric t-values across four spending models, it can be calculated from Kozak et al. (2008), that the top 10 out of 23 sets of determinants were the following: Size of travel party, occupation, length of stay, packaging, income, type of service (meals etc), nationality, standard of nightlife/entertainment, value for money, number of past visits. Education ranked lower. Occupation is thus a better proxy for income than education, if income level is unknown.

4. Implications and conclusions

One of the great strengths of multiple regression analysis is its ability to keep "all other things equal", albeit only those other things which are included in the analysis. At times, results from simple regression or pairwise correlations on one hand and one or more multiple regression analyses on the other show opposite results. It can be useful to apply both techniques, and then try to gain an understanding of reasons behind the different results, and being aware if conclusions are based on one or the other. Testing the hypotheses all at the same time (using multiple regression analyses, as in table 5) or testing the dependent variables one by one (using simple regression analysis or correlation analysis, as in table 4) gives somewhat different results. Ten out of 18 groups of variables were significant in all seven models according to table 4, but only seven out of 18 were significant in table 5. The three additional invariably significant determinants in table 4 were: Distance, purpose of travel, and motives (specifically the motive art and culture). In the case of repeat vs. first time visitors, the two different ways of testing the hypotheses gave opposite results, which could lead to a suggestion of further research into this determinant of spending, ceteris paribus, i.e. keeping "everything else constant". Another study supported the finding here that repeat visitors spend more, when controlling for other things.

Many cross section studies and largely all time series studies make use of logarithmic transformations. This study has shown that in a cross-section study it is possible to reach meaningful results from strictly linear models. With no logarithmic transformations the regression coefficients can be expressed directly in currencies such as EUR, which facilitates interpretation. However, some spending determinants are not linear with respect to their effects on tourist spending. The way that issue is handled in this study is to include dummy-variables on top of or in addition to continuous variables such as length of stay and size of travel party.

Although a higher explanatory power (R^2) can be achieved by excluding outlayers, care should be taken in keeping the effects of such eliminations under surveillance. If for example one group, such as business travellers, tend to spend much more than leisure travellers, it is not appropriate to put them in the same group, and then exclude some of the highest spenders by applying the same definition of outlayers to both groups. Instead different definitions of outlayers should be applied to the two groups, so that approximately the same percentage of respondents is excluded from both

groups, or all respondents should be kept in the analysis. The latter solution was opted for in this study.

When total spending is the sum of transport + accommodation + other spending for every case in a dataset (and the same cases are entered in each analysis), then this follows: The sum of the regression coefficients for the three spending components is exactly equal to the regression coefficient for total spending (per person per night or one of the other spending measures). This notion was proved by table 5, where coefficients for the three spending elements transportation, accommodation and other spending adds up exactly to the total spending coefficient for each and every variable including the constant (allow for rounding). Breaking down tourist spending in several sub-components, and then analysing the effects of a set of determinants on each elements separately - as well as in total - facilitates a deeper understanding of tourist spending. This would therefore be recommendable. Furthermore, in addition to the mentioned breakdown of spending in its main components, different measures of total spending may be relevant for different groups of actors. Therefore the researcher can provide extra utility for the users by supplying several sets of regression coefficients, for example by person per night, per travel party per night, per person per stay and per travel party per stay.

In this study, two widely different applications of MDS were utilized. In the first application MDS followed a factor analysis, and in the second it followed a series of seven multiple regression analyses. In the first application, factor analysis was used to group and condense over 50 object points (variables, writers) into relatively few object points. MDS showed how widely different writers can be positioned in relation to each other based on the specific socio-demographic and trip characteristics they included as spending determinants. In the second application, MDS provided a graphical illustration of the proximities between 42 object points, i.e. 7 dependent and 35 explanatory variables. The latter related to the 18 hypotheses, all of which were confirmed in the spending per person per night model, and many were confirmed in several of the six other spending models. MDS is thus a handy and useful way of illustrating relations between significant determinants identified in regression analyses. Also MDS can be used in conjunction with factor analysis or as a follow on to series of pairwise correlations.

MDS goes some way towards illustrating relations between multiple variables based on proximities. Another technique, Structural Equation Modelling, SEM (Seiler et al. 2002; Nusair & Hua, 2009), is capable of handling relations within and between sets of multiple dependent variables (for example different spending measures) and multiple explanatory variables. SEM may be an additional fruitful technique for further studies into tourism and travel spending patterns, thus potentially taking the diagrams and tables presented in this paper a step further. SEM is actually used 3-4 times as much in major tourism journal articles than MDS (at least 54 for SEM since 1995 vs. at least 15 for MDS since 1983). So the idea of using SEM is not novel. However, in an MDS diagram the object points are automatically placed in the right or optimal position in relation to each other, whereas in SEM the causal relations between the variables first need to be established and confirmed. MDS appeared in tourism journals before SEM. But since the incumbent ALSCAL procedure was introduced, an improved MDS algorithm is now available in the form of PROXSCAL. The more recent procedure produces more satisfying representations of the object points than ALSCAL in cases with many object points. ALSCAL tends to place the object points in a circle leaving the centre empty as the number of object points increases while PROXSCAL tends to utilize the whole common space fully. The number of mentioning of PROXSCAL in travel and tourism journal articles so far is very limited. This article has offered two widely different applications of the mentioned variant of MDS, and there are many more opportunities for applying MDS in tourism research. The interpretation of MDS-diagrams is straightforward, although there can be a need to supplement MDS by for example t-tests, if it is necessary to check whether or not the graphical and visual distance between two given object points is significant or not. Also in MDS there can be a need to reverse either of the axes and to turn the position of the object points a little further around origin to give more meaning to the axes. In addition to the MDS applications, this article has also offered a novel application of factor analysis, with its grouping of writers according to their tested determinants. Also, this article establishes a case for linear multiple regression, with its additive and directly interpretable regression coefficients, albeit with extra dummy variables in cases of proven non-linearity between explanatory and dependent variables. Finally, 18 or the spending determinants cited in literature have been put to the test in an empirical study. Many of the tested determinants were significant in a variety of measuring models with different depending variables and it was shown how the different determinants ranked across several measuring models.

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