

Understanding tourist behaviour in terms of activeness and
intra-destination movement patterns for managing
tourism experience

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To my amazing family

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Table of Contents

Introduction	9
Chapter One.....	19
The relation between push motivation and activity consumption at the destination within the framework of a destination card.....	19
1.1. Introduction	20
1.2. Literature review	21
1.3. Data and methodology.....	24
1.3.1. Data collection and sample.....	24
1.3.2. Methodology and hypotheses	28
1.4. Results and discussion	31
1.5. Implications	37
1.6. Conclusion.....	38
References	40
Chapter Two	44
Tourists intra-destination visits and transport mode: a bivariate probit model	44
2.1. Introduction	45
2.2. Tourist behavior in relation to intra-destination movement patterns and transport mode selection	46
2.2.1. Individual characteristics of tourists in relation to movement patterns	47
2.2.2. Mode of transport within destination.....	48
2.2.3. Intra-destination movement patterns and transport mode choice	48
2.3. Data and method.....	50
2.4. Results	55
2.5. Conclusion.....	59
2.5.1. Managerial Implications.....	61
2.5.2. Limitations and Further research.....	63
References	64
Chapter Three	68
Analysing intra-destination movements and activity participation of tourists through destination card consumption	68
3.1. Introduction	70
3.2. Factors Influencing Intra-destination Movement Patterns.....	72
3.3. Data and Method	74
3.4. Results	78
3.5. Discussion and Conclusions	82
References	88
Chapter Four.....	92
Tourist Flows and Spatial Behavior	92
4.1. Modeling Interdestination Tourist Movements	93
4.2. Modeling Intradestination Movements.....	96
4.3. Intervening Factors.....	100
4.3.1. Distance Decay and Market Access	101
4.3.2. Time and Financial Budgets.....	104
4.3.3. Trip and Personal Characteristics	105
4.4. Conclusion.....	105
References	107

Introduction

The dissertation is a collection of empirical and theoretical articles in the field of tourism behaviour. It is divided into four chapters and refers to four research articles; three of them are published in refereed journals and one of them is presented in an edited book.

The thesis focuses on the demand side of tourism, in particular on tourists' consumption of a destination and on the conceptualization of their decision process during visitation. Tourists are visiting destinations in different ways. Their behaviour is related to and motivated by several factors, and the analysis of these factors allows a better understanding of tourists' movements and activity participation. This information can be used for creating customized tourism products, such as itineraries or packages, which bring additional benefits to the tourists and the destination. In this context, destination cards are well-recognized, integrated products that facilitate tourists in their consumption by offering public transport usage and access to activities and attractions at the destination. This thesis investigates tourists' mobility and activity participation in the framework of destination card usage, and therefore, combines two fields of research: tourists' behaviour at the destination and integrated tourism product development.

Tourists' movement patterns can be defined by the spatial changes in the location of activity consumption. On the global level they are analysed between the origin and the destination regions, while on the local level from one activity to another (Leiper, 1979). Furthermore, on the local level inter- and intra-destination movements can be distinguished (Dejbakhsh, Arrowsmith & Jackson, 2011; Lau & McKercher, 2007), depending whether multi- or single destination is visited. The analysis of these movements has high importance for a destination, especially in transport planning and product development (Lew & McKercher, 2006); therefore it is crucial to examine their influencing factors.

According to Lau and McKercher (2007), these factors can be categorized as human, trip related and physical. Human factors are identified by the tourist himself. Socio-demographic variables such as origin or cultural background (Dejbakhsh et al., 2011; Flognfeldt, 1999; Smallwood, Beckley, & Moore, 2012), or even psychographic characteristics, the so-called "Venturesomeness" (Plog 1974, 2002; Debbage, 1991) can influence tourists in the intensity and spatial extent of their movements. Trip factors are specific to the travel under investigation, including the length of stay (Pearce, 1990;

Shoval & Raveh, 2004), special interest (Fennel, 1996), familiarity with the destination (McKercher, Shoval, Ng, & Birenboim, 2012) or travel party composition (Decrop, 2005). As Oppermann (1997) demonstrated, greater time budget leads to more extensive visit of the destination. The interests of domestic and international tourists are also different: while domestic tourists are often on a repeat visit, they are more inclined to participate in social activities, while international tourists are rather first and only time visitors, who are interested in the main attractions (Lau & McKercher, 2007). They also have less knowledge about the destination, and are, therefore, less willing to explore more remote areas. Furthermore, the time spent and the intensity of pursuing different activities at the destination are highly influenced by travelling in groups or with children (Thornton, Shaw, & Williams, 1997).

The physical influencing elements characterize the destination itself, such as configuration (Lew & McKercher, 2006), transport network (Becken & Schiff, 2011), accommodation (Shoval, McKercher, Ng, & Birenboim, 2011) and attraction nodes (Dredge, 1999). Tourists spend significant amount of time in the surroundings of the hotel and attraction visitation is more likely to cluster in tourism nodes. Indeed, the concept of distance decay is significant also at the destination level, hence the demand for activities varies inversely with the distance travelled or with greater budget of time, money, or effort required to reach a place (McKercher & Lew, 2003). Regarding the relation between transport and tourism behaviour at the destination, Prideaux (2000) found that it received lower attention in the literature in comparison to transport between the origin and the destination, even though the considerations of tourist flows and the identification of their influencing factors are important for urban transportation planning and itinerary modelling (Lew & McKercher, 2006).

In this context, transport mode choice plays an important role. Exploring a destination by car provides not only the highest flexibility in terms of itineraries and time schedules (Taplin & Qiu, 1997), but also increases the likelihood of multi-destination visits (Tideswell & Faulkner, 1999). Moreover, tourism in rural areas often relies on private car usage (Dickinson & Robbins, 2008), although it would be crucial to promote sustainable transport development in the surroundings of natural attractions. Le-Klähn and Hall (2014) reviewed the literature of public transport use at the destination and found that the motivation of mode choice differs in urban and rural territories. While in urban areas traffic avoidance can be the main reason for using collective transport, studies analysing rural context reported scenic rides, environmental concerns, social contacts and trip purposes to be influential. Nevertheless, non-utilization of public transport in both urban and rural

environments is mainly motivated by inconvenience, lack of information and difficulty of usage (Le-Klähn, Gerike, & Hall, 2014). Additionally, as Hough and Hassanien (2010) suggested, the investigation of the effects of activities on transport choice could be a scope of future research.

Consequently, the usage of public transport services affects the overall experience and destination satisfaction (Thompson & Schofield, 2007). Collaboration among several stakeholders at the destination is the key for a successful public transport management; however, as Le-Klähn and Hall (2014) identified, a research gap exists in the policies for motivating public transport use by tourists. Malhado and Rothfuss (2013) proposed packaging public transport with attraction for promoting sustainable mobility. In this context, integrated tourism products are good examples and provide extensive data for the investigation of tourists' movement patterns, activity consumption and transport network usage. Indeed, Lumsdon, Downward and Rhoden (2006) profiled the users of a multi-modal ticket, which aimed to encourage countryside visitation from urban territories. They suggested that the likelihood of transport modal shift is higher if an integrated offer is in place, motivated by the convenience of a prepaid option, value for money and environmental factors. However, in their research it remains unanswered whether tourists derive their utility from the usage of public transport or from the combination of it with tourism products. Similarly, destination cards are a good example of combining core attractions and public transport in order to assist tourists in the production of their experience (Pechlaner & Abfalter, 2005), especially in urban destinations (Russo & Van der Borg, 2002). Regional destination cards have more complex structures (Pechlaner & Zehrer, 2005), particularly when the region accommodates urban and rural areas and heterogeneous types of tourists consuming different services. Destination cards are commonly issued by destination management organizations in collaboration with tourism stakeholders at the destination (Martelloni, 2007). Although integration in tourism marketing and management is often discussed in the literature, destination cards have received relatively low attention, being used primarily to conduct aggregate supply side studies (Beritelli & Humm, 2005).

Furthermore, recognizing the importance of activity consumption, movement patterns and their influencing factors at the destination enables service providers to better cater for the needs of tourists and develop more tailor-made products for them. Destination cards are primarily created for promoting the destination and its products; however, they can serve also as a source of data for analysing tourism behaviour and deriving marketing implications. Moreover, in order to profile the users of destination cards, activity consumption and motivation of the holiday should be also investigated. Indeed, Lee, O'Leary, Lee and Morrison (2002) confirmed that awareness of the

tourists' motivation provides the base for a sound marketing strategy, as it is related to travel behaviour and activity pursuit at the destination. The distinction between pull and push motivations have been examined in several tourism contexts (Bieger & Laesser, 2002). Push motivation is the internal force, which represents the benefits sought by the tourists for going on a holiday or taking alternative activities, while pull motivation is related to the destination choice itself (Yoon & Uysal, 2005). Therefore, push is antecedent of pull factor in terms of logic and time, and although activity participation can be explained by a mix of push and pull factors, it seems to be more related to the former construct (Lee et al., 2002). The relation between motivation and activity pursuit has been widely examined in the literature; however, the intensity of the consumption has been rarely addressed (Dolnicar & Laesser, 2007), despite its importance for product development.

By summarizing the literature, the following gaps have been identified. (1) There is a lack of research analysing destination cards from the demand side perspective, in spite of their worldwide availability. In particular, a little attempt has been undertaken to profile tourists who are buying integrated tourism products; their motivations, requirements and the activities they participate in are under-researched. (2) The operationalization of activity consumption is present in the literature diversely; however, intensity of consumption, length of stay of tourists and typology of their activities are hardly evaluated in its measurement and there are no studies considering them all together. (3) Besides activities, transport usage is the core element of integrated tourism products, but whether tourists purchase these products mainly for the usage of public transport or for its combination with the tourism experience has not been addressed yet. (4) The evaluation of the activities undertaken at the destination and transport choice are directly linked to spatial consumption. In this context, the conceptualization of the decision process at intra-destination level needs further research. (5) Whether the spatial or the product structure of the destination plays a greater influence on behaviour has not been identified so far. (6) Tourists' choices related to spatial movements and transport mode have not been treated in model estimation as correlated decisions yet. Both the area visited and the mode of transport used are influenced by tourist and trip profiles; however, (7) the effects of motivation and (8) type of activities in this context have not been analyzed before. Especially, the involvement of motivation can be important in order to better understand the decision-making process of tourist's mobility.

This dissertation aims to contribute to the current literature by addressing these gaps. Statistical methods, such as regression (ordinary least square, ordered logit and bivariate probit), principal component, cluster and discriminant analyses are employed to model the relationship among the

constructs of travel behaviour. Data for the empirical applications has been collected in the Canton of Ticino in the South part of Switzerland.

The first two articles are based on a survey conducted with tourists visiting Ticino. In particular, the first article investigates the relation among motivation, activeness indicators and destination card requirements, where the last two variables are introduced for the first time in this study. Activity indicators measure the type and intensity of activity consumption normalized to the length of stay, while destination card requirements refer to the characteristics of these cards interest the tourists. In addition, this article attempts to identify the consumer profile of destination cards. According to the results of trip characteristics, a tourist is more likely to purchase a destination card, when he visits the destination for the first time and has a lower-middle range holiday budget. Regarding motivation, a 'Safe getaway' from home and 'Nature and relax' are most desired by the target of destination cards. Moreover, as the information on novelties was found to be the most valued card requirement, this aspect needs to be emphasized in marketing campaigns, for example, by accompanying the product with informative brochures and freely downloadable mobile applications. In line with the results on consumption patterns, cards should be based on cultural and natural activities. Furthermore, as the consumption of social activities is mainly practiced by domestic tourists on a repeated visit, the inclusion of those activities in destination cards could build up destination loyalty, and eventually encourage first timers for their multiple visits.

The second paper contributes to the current body of literature on tourist intra-destination movement patterns by analysing the influencing factors of both the spatial extent of the destination visited and the transport mode selected. Furthermore, a theoretical contribution is provided by recognizing the correlation between individual choices on movement patterns and mode of transport at the destination level, and appropriately estimating a bivariate probit model. The research concludes that the two variables under investigation are explained by a different combination of independent variables:, wherein the transport mode choice is influenced by demographics, whereas movement patterns are described by trip characteristics. This is further enhanced by the introduction of variables reflecting motivation and activity participation as explanatory factors of the two correlated choices. Finally, marginal effects are derived to quantify the impacts and draw policy implications providing useful information for destination marketing and policy planning, particularly on how to increase the extent of the area visited, the use of public transport and eventually also tourist length of stay and expenditure.

The thesis further examines behaviour tracked by the usage of destination cards. In the third article the dataset is derived from destination cards sold in Ticino; it reports the activity consumption and spatial movements of 1000 tourists. The article investigates the existence of spatial or product clustering in consumption and looks for the discriminating factors among the clusters. The results allow conceptualizing tourists' decision process at the destination, where spatial structure weights more than product structure. In fact, three out of the four groups emerged from the analysis demonstrate consumption within the same tourism node, while the largest group mainly purchase the card for the transport usage. The results identify three main discriminating variables among the clusters. First, the place of purchase of the card classifies the group, which suggests that tourists mainly visit attraction in the surroundings of their accommodation. Second, the degree of participation in different activities distinguishes among the cluster membership of tourists. Third, the number of active days within the usage of the card discriminates among the clusters, which is related to the different length of stay of the tourists.

Finally, the chapter on tourist flows and spatial behaviour provides an extensive review of the literature on movement patterns. Regarding research on inter-destination movements, the chapter summarizes and categorizes studies on itinerary types according to the transit and destination touring components of the trips taken. Then, the chapter gives a deeper concentration on the current research stream on intra-destination movement patterns. Indeed, intra-destination research emerged recently, due to technological developments. These studies require more precise data, often tracked by new devices and analysed by more sophisticated software. Several theories are discussed in detail, such as the intensity-specificity of touring, rhythm of mobility and sequence of visitation. Furthermore, the chapter reviews the intervening factors of spatial movement patterns. First, from the geographical outlook, distance decay and market access represent the main theoretical concepts influencing tourist's movements. Second, the limitations of temporal and financial budgets are examined from the different research views. Third, the effects of trip and personal characteristics on movement patterns are outlined. As a conclusion, the chapter opens new research opportunities by adding to, or re-examining existing tourism concepts from geographical and temporal perspectives.

In terms of implications, the thesis is beneficial for destination marketing organizations, regional transport authorities and tourism operators, as it proposes ideas for managing tourists' mobility and consumption within the destination. Especially in the area of marketing, several ideas are derived from the results, which can bring financial benefits to the destination and enhance the tourists' experience, hence, increase their satisfaction.

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Chapter One

The relation between push motivation and activity consumption at the destination within the framework of a destination card

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Abstract

This research analyses the influence of tourist' psychological motivation visiting a destination on their actual travel behaviour and the use of this information for bundling tourism attractions and services in a destination card. The relation between push motivation and activity consumption at the destination is recognized in the literature. The paper extends this evidence by introducing activeness indicators measured according to the amount and type of activity participation normalized to the length of stay. Regarding destination cards the paper investigates, through the use of ordered logistic regressions, four requirements (monetary, timesaving, informational and customization), defined as the benefits of a card tourists may find important. The model results show a significant relation between card requirements and both activeness and motivation, suggesting that destination cards need to be based on natural and cultural attractions, whereas entertainment, sport and social activities can be only additional benefits on discounted price. The data has been collected in the Ticino region, Switzerland. The sample refers to 586 face to face interviews with tourists visiting the area.

Keywords: Destination card, Push motivation, Trip behaviour, Activity participation

1.1. Introduction

Integration between destination marketing and management has been the focus point of a wide range of literature in tourism (Buhalis, 2000). Being on holiday, tourists are consuming a bundle of services, they perceive the destination as an integrated product. Therefore, implementing strategies to attract tourists cannot be realized by a single actor, but rather by means of common efforts of Destination Management Organizations (DMOs) and local operators. The importance of collaboration and the stakeholders' involvement in policy making is frequently mentioned in the literature (Palmer &Bejou, 1995; Bramwell &Sharman, 1999; Wang &Xiang, 2007; Wang, 2008; Haugland, Ness, Gronseth, &Aarstad, 2011). Different forms of tourism marketing alliances between the private and the public sectors are mutually beneficial for both; attracting more tourists can improve the financial results of private operators and can bring social enhancements to the public ones (Palmer &Bejou, 1995). Due to the variety of products involved in tourism and the differences in competences, implementing collaborations within a destination is a complex issue. The role of DMOs is to set strategic objectives for the operators at a destination and help to achieve their common goals (Buhalis, 2000). DMOs are increasingly involved in retailing function at a destination (Buhalis, 2000), however they usually do not promote individual products, but rather assist the interaction between the tourist and the suppliers. Destination cards are a good example of public–private initiatives in destination marketing and management, used as a marketing tool worldwide, at destinations of any size, with the aim of facilitating the visit of tourists in the production and consumption of their experience and therefore increase the usage of tourist services at a destination. In most cases, destination cards are dedicated to cities and include public transport and major attractions, while regional destination cards have more complex structures, especially when the region accommodates heterogeneous types of tourists, consuming different services. Destination cards are commonly issued by DMOs in collaboration with tourism stakeholders at the destination. Although integration in tourism marketing and management is often discussed in the literature, little research effort has so far been directed towards analysing their practical implication in terms of destination cards. The topic is investigated and described mainly in the German and Italian speaking context by Pechlaner and Zehrer (2005) and Martelloni (2007).

This paper, being a part of the research project aimed to design a new destination card for canton Ticino, Switzerland, proposes an exploratory study of the topic. In particular, the objective is to profile tourists who can be interested in purchasing a regional destination card by investigating their purpose of visit and the activities they are undertaking at the destination. In order to reach this aim,

multivariate statistical methods are proposed to analyse the destination cards in relation to motivation and activity consumption. Therefore, before looking at the effects on the card itself, the first topic to be tackled is the influence of psychological motivation of tourists to go on a specific holiday on their actual travel behaviour. A further aspect to be tackled is the understanding whether the tourist motivation, other than the socio-demographic profile, can help to define targeted services at the destination. Hence the relation between the motivation of taking a holiday and the involvement in holiday activities needs to be explored. The relation between push motivation and activities undertaken at the destination is recognized in the literature (Lee, O'Leary, Lee, & Morrison, 2002). This research aims to extend this evidence by introducing activeness indicators measured according to amount and frequency of participation, incorporating the length of stay. By analysing the level of activeness of tourists through their actual usage, we can better understand their engagement in activities available at the destination. Further on, knowing the intensity of usage of tourist activities during a holiday is very important to study destination cards. Hence the indicator of activeness is developed, tested with motivation components and used to reach the main objective of this research. Indeed, the main contribution to the tourism literature and practice is expected regarding the following aspects of destination cards: What are the most important requirements of regional destination cards? Which type of tourists value more important the different benefits derived from a destination card? What kind of attractions can be included in a destination card? Through exploratory factor analysis, ordinary least square and ordered logit regression techniques a survey dataset is analysed to answer these questions within the case of canton Ticino, Switzerland.

The paper is organized as follows. In Section 2 the literature concerning destination cards and the relation between motivation and activities is provided. Description of the data and method used are then outlined in Section 3, whereas results and the implications are proposed in Section 4. Finally, Section 5 presents the conclusions of the research.

1.2. Literature review

Pechlaner, Abfalter and Raich (2002) explain the phenomenon of destination cards through the resource based view, as the task of card managers is to combine the core competences in the area and to integrate the different branches into one offer. By analysing empirical and theoretical studies on destination cards by Pechlaner and Zehrer (2005), the following objectives of developing a destination card can be identified: (1) to add value to the experience of visitors, (2) to increase the

usage of tourism products and services in the region, (3) to valorise minor, less visited attractions, (4) to redistribute tourist flows, (5) to meliorate the organization of the tourism experience, (6) to improve the perception of the destination brand, (7) to promote the region; as a destination card is an integrated marketing product, it increases tourists' awareness of the attractions and activities in the region, (8) to monitor the tourist experience: the microchip used in smartcards can collect different tourist data, such as the way of moving around in the region, the services used and the expenditure. Additional objectives of a destination card might also include the possibility: (1) to increase the length of stay of tourists, as the higher awareness of activities and their presence in the cards, as well as cheaper card fees for longer stay can lead to extension of stay, (2) to increase tourist expenditure in the region, (3) to increase the use of public transport and therefore reduce the pollution from private transport use, as in most cases unlimited usage of public transport is included during the validity of destination cards, (4) to reach new segments of visitors through more targeted marketing. Examples of these cards are present worldwide with differences regarding the mode of usage, the type of offer, the validity and price. Pechlaner and Abfalter (2005) propose an empirical research on the design of destination cards with only cultural services. Beritelli and Humm (2005) asked the card providers of the destinations, analysing also the attractions and activities included in the cards. Russo and Van der Borg (2002) mention destination cards among best practices while testing "visitor-friendliness" in urban destinations for cultural tourism.

The review of the literature continues with studies on motivation and activity participation at the destination, as they are crucial for consideration in the case of a new destination card. Motivation has been often used for tourism marketing purposes and product development (Bansal & Eiselt, 2004; Zhang & Marcussen, 2007), in fact Lee et al. (2002) confirm that awareness of the tourists' motivation provides the base for a sound marketing strategy, as it is related to travel behaviour and activity pursuit at the destination. As destination cards are tools for engaging in activity consumption, not only the type of activities tourist would be interested in, but also their motivation for taking a trip should be also investigated. The distinction between pull and push motivations have been examined in several tourism contexts (Bieger & Laesser, 2002; Crompton, 1979; Dann, 1977; Pearce, 2005; Uysal & Jurowski, 1994). Push motivation is the internal force, which represents the benefits sought by the tourists for going on a holiday or taking alternative activities, while pull motivation is related to the destination choice itself. Therefore, push motivation is antecedent of pull factor in terms of logic and time, and although activity participation can be explained by a mix of push and pull factors, it seemed to be more motivated by the former construct (Lee et al., 2002). This relation between motivation (mostly push factors) and tourist activities

consumed at the destination has been examined by different measures in the literature. While motivation is mostly measured on a Likert scale ranging from not at all important to very important (Gitelson & Kerstetter, 1990; Yoon & Uysal, 2005), the measurement of activities is not as standard. In particular, Brey and Lehto (2007) are examining whether tourists are involved in the same activities in their everyday life as in the holiday. While they measure daily activities on a four-point Likert scale according to frequency, tourist activities are recorded with binary, yes or no possibilities. Zhang and Marcussen (2007) find that activities have effect on satisfaction; less active tourists are less satisfied with the destination. They measure level of participation in an activity according to a five-point scale with no-low-high interpretation. Lehto, O'Leary and Morrison (2004) find that prior visit to the same destination has a higher effect on activity participation than age. They measure activity breadth by adding up the number of factors in which any of the activities are practiced by the respondents. Repeaters become specialists in terms of activities; they participate in fewer activities but more profoundly. Another way to measure activities is to perform it in terms of involvement, as behavioural differences can be linked to the degree of engagement. From the 1980s activity involvement is widely researched through Consumer Involvement Profile (CIP) from a marketing study of Laurent and Kapferer (1985), Havitz and Dimanche (1979) and Gursoy and Gavcar (2003). Tang, Manthiou, Morrison, Shin and Chiang (2012) acknowledge that "activity" is often investigated through factor analyses and used for tourist segmentation in the literature. They explore activity preference on a five-point Likert scale stating importance and analysing them through a second-order factor model. Dolnicar and Laesser (2007) measure activities pursued during the trip in terms of intensity, by dividing the number of days when the activity is undertaken by the overall length of stay, suggesting that length of stay is a useful variable to be analysed in relation to activity consumption. Regarding the combination of different activities, Dellaert, Borgersand and Timmermans (1995) conduct a conjoint analysis of the evaluation of activity packages in an urban context. Lee et al.(2002) propose the development of motivation-activity typology. With ordinary least square regression techniques they examine the amount and type of activity participation in three thematic sets as dependent variables and two kinds of motivation factors as explanatory variables. They find the length of stay to be a significant predictor. Gitelson and Kerstetter (1990) investigate the relationship between socio-demographic variables, the benefits vacation travellers seek for and travel behaviour. They report that the social and relaxation dimensions receive more importance with the increase of the length of stay. Furthermore they find a significant relationship between the types of activity tourists are engaged in and benefits sought. A positive relation between cultural motivation and quantity of activity engagement is shown by

Gomez-Jacinto, Martin-Garcia and Bertiche-Haud'Huyze (1999) modelling the amount of tourist activity as a dependent variable.

1.3. Data and methodology

As derived from the literature review, analysing push motivation gives good insight for a new product development—in this case for a destination card. Destination cards are facilitating activity consumption within a given time validity of the card, therefore the intensity of activity consumption normalized to the length of stay needs to be investigated. Moreover, in the literature, push motivation is effecting the type of activity consumption, however this relation needs to be tested also using the activeness indicator proposed in this article. Hence, in order to address the objectives of the empirical research, three hypotheses are formulated and analysed in the following sections. First of all, the influence of push motivation on the indicator of activeness is tested, to check if the results are coinciding with existing literature also when using a new measure of activity consumption. Afterwards, in the second and third hypotheses the effects on tourists' requirements of a destination card are investigated, in relation to push motivation and to activeness, respectively. More detailed description of the hypotheses is presented after the description of the sample and variables used.

1.3.1. Data collection and sample

For assessing the aims of the study, a survey research has been conducted, as the investigation of motivation and travel behaviour is mainly assessed through survey analysis in the literature (Hsu, Cai, & Li, 2011). The data has been collected during the summer of 2010, in Ticino, Switzerland. Nine touristic locations within the regional territory have been chosen under the guidance of the Tourism Office of Ticino. In order to gather the data, three interviewers selected among bachelor students have been randomly assigned to the dates and locations of the data collection. The survey has been created in the three main languages of tourists visiting Ticino, German, Italian and English. After a pilot survey, 586 valid responses have been collected through the initial questionnaire.

The survey design is based on an extensive literature review conducted in the first phase of the project. The first part of the questionnaire contains variables on demographic profile, such as gender, age and nationality, and on trip characteristic variables, such as prior visit, length of stay,

accommodation, travel company, holiday budget excluding accommodation and previous experience with destination cards in terms of purchase. The sample is composed of 58% female and 42% male respondents (Table 1.1). Regarding the age of the respondents, the most represented age group lies between 41 and 50, followed by tourists from 21 to 30 years old. The larger share of respondents (61%) are domestic tourists (hence from Switzerland), while among the rest of the source markets, none of them reached more than 10% share. This result is in line with the official guest night statistics of the canton. Therefore, a dummy variable is applied for assessing origin, with domestic and international distinction. The majority of the tourists are repeaters (72%). Concerning accommodation, we can note that 66% of respondents have paid for the accommodation at the destination, while the rest either stayed with friends/family or own vacation house or made only a one-day excursion to the destination. The average budget only for activities at the destination is 293 CHF, whereas the average length of stay is 5.2 nights. Finally, 8% of the respondents reported previous purchase of destination cards.

Table 1.1 Sample descriptive statistics for variables under investigation

	Mean	Median	Std. dev.	Min	Max
<i>Demographics</i>					
Gender (Male)	0.42	-	0.49	0	1
Age group	3.36	4	1.42	1	7
<i>Trip characteristics</i>					
Domestic (Swiss)	0.61	-	0.48	0	1
Travel companion (with children)	0.37	-	0.48	0	1
Repeat visitor (repeaters)	0.72	-	0.45	0	1
Commercial Accommodation (commercial)	0.66	-	0.48	0	1
Holiday budget	292.67	200	279.37	10	2500
Number of nights	5.18	5	4.99	0	60
Previous purchase of a destination card	0.08	-	0.26	0	1

The second part of the survey refers to the operationalization of the three constructs, namely motivation, activity consumption and destination card requirements, which are measured through several questions. First, push motivation is measured through 17 statements, taken from the literature mainly by Yoon and Uysal (2005) and for adapting to the Swiss case by Bieger and Laesser (2002). The questions rely on categorical scale variables where respondents were asked to state their importance of a statement for going on holiday from one (not at all important) to four (very important). Second, the frequencies of 11 holiday activities available at the destination,

identified in collaboration with the Tourism office of Ticino are measured. In the questionnaire, tourists were stating for each listed activity whether they undertake it: never, once, few times or every day.

Table 1.2 Principal component analysis of push motivations

Push motivation factors	Factor loading	Explained variance
Factor 1: Safe getaway		16.813
Feeling safe and secure	.733	
Feeling at home away from home	.696	
Experiencing a simpler lifestyle	.681	
Being free to act how I feel	.623	
Rediscovering myself	.445	
Factor 2: Nature and relax		12.140
Experiencing landscape and nature	.718	
Getting rest and relaxation	.664	
Going to a sunny place	.527	
Factor 3: Novelty		10.453
Trying new food	.783	
Visiting historical places	.750	
Experiencing new/different lifestyles	.623	
Factor 4: Excitement		10.148
Finding thrills and excitement	.802	
Being physically active	.731	
Meeting new people	.442	
Factor 5: Togetherness and fun		7.422
Being entertained and having fun	.669	
Being together with partner/family/friends	.665	
Total Variance explained		56.976

Kaiser-Meyer-Olkin Measure of Sampling Adequacy .770. Bartlett's Test of Sphericity $p < .000$

Cronbach alpha for the overall scale 0.747. 1 - not at all important, 4 - very important

Following the descriptive analysis of the data, an exploratory factor analysis is carried out. Indeed, factor analysis has been widely used in the literature for analysing respondents' answers to motivation and activity participation statements (Sarigöllü & Huang, 2005). The method of principal component analysis is utilized with varimax rotation to extract the underlying dimensions of motivation and activity consumption. First of all, exploratory factor analysis is conducted on the

motivation variables, by extracting five factors, each containing at least two variables (Table 1.2), labelled as ‘Safe getaway’, ‘Nature and Relax’, ‘Novelty’, ‘Excitement’ and ‘Togetherness and fun’. The most variables (5) are loading on the ‘Safe getaway’ factor, explaining almost 17% of the variance. The only item removed from further analysis is ‘Visiting friends and relatives’ as it has a lower loading than 0.4, and is not displayed on any factors. The total variance explained by the five push motivation factors is 57%, many of them containing the same or very similar elements to those in the literature analysed (Yoon & Uysal, 2005), and the reliability test for internal consistency of the scale is 0.747.

The second principal component analysis is performed on the frequencies of activities consumed by the tourists. Table 1.3 shows the three factors extracted, the first one – including the most activities – is related to culture and nature, the second contains activities connected to sport and entertainment, while the third one is linked to social activities, such as going to lido, experience nightlife or events and festivals.

Table 1.3 Principal component analysis of activities

Activities	Factor loading	Explained variance
Factor 1: Culture-nature		20.227
Using cable cars	.768	
Visiting museums and/or historical buildings	.647	
Eating in typical restaurants	.624	
Natural and botanical parks	.594	
Boat trip on the lake	.550	
Factor 2: Entertainment-sport		15.493
Using wellness facilities	.724	
Sports and renting equipment	.674	
Entertainment parks	.633	
Factor 3: Social		14.985
Lido	.705	
Nightlife	.686	
Events and festivals	.551	
Total Variance explained		50.705

Kaiser-Meyer-Olkin Measure of Sampling Adequacy .717. Bartlett's Test of Sphericity $p < .000$

1 – activity never undertaken, 4 – activity every day undertaken

Thirdly, as for developing a new product it is crucial to define customer requirements (Callahan & Lasry, 2004), i.e., the necessary conditions customers want from a product, we aim to explore why tourists would buy a destination card and which attributes of it are the most important. Therefore from a previous benchmark analysis of existing regional destination cards and from the empirical study of Pechlaner and Abfalter (2005), four statements about destination cards have been selected for measuring what tourists require from this product. In particular, they are explored in terms of customization (It contains only those activities in which I am interested), monetary aspect (I can obtain good discounts with it), timesaving (I can save time) and information on novelties at the destination (I can get new ideas what to visit) stating importance on a four-point Likert scale. As Table 1.4 shows, the most relevant requirement of destination cards is the information on novelty at the destination, 55% of the tourists evaluated this very important. A similar, but slightly lower, relevance is recorded for receiving discounts on tourist activities. Interestingly, the other two requirements investigated, namely customization and timesaving, show a lower importance where the latter results to be the least important feature. This can be explained by the destination itself as Ticino is not characterized by long queues to access the attractions.

Table 1.4 Destination card requirements

	Mean	Median	St.dev	Min	Max
Customization	3.04	3.00	.892	1	4
Monetary aspect	3.35	3.00	.767	1	4
Timesaving	2.95	3.00	.978	1	4
Information on novelty	3.42	4.00	.772	1	4

1.3.2. Methodology and hypotheses

As introduced in Section 2, the measurement of activity at the destination is performed in different ways within the literature. In this context, our empirical application starts with defining a new indicator for measuring activity participation. In particular, the indicator of activeness $I(A)$ for respondent i is created as follows:

$$I(A)_i = \sum_j (A_{ji(\text{every day})} \times L_i + A_{ji(\text{few times})} \times (1 + L_i / 4) + A_{ji(\text{once})}) / L_i \quad (1)$$

where, L_i is the length of stay for respondent i defined in terms of number of days spent at the destination while variables A_{ji} (every day), A_{ji} (few times) and A_{ji} (once) take value one if the activity j is partaken by tourist i every day, a few times and once during his stay, respectively. For activities partaken a few times during the stay, the indicator assumes that the tourist practiced the activity in the quarter of the overall stay, 1 plus one in order to assure that it takes a higher value compared to an activity practiced only once. In line with the activity measures of Dolnicar and Laesser (2007), the indicator is then standardized by the length of stay in order to allow for comparison among respondents. This way of creating the indicator allows us to actually measure the average overall activeness of tourists, which indeed is an important aspect for bundling activities within a destination card. A further aspect to be considered in creating tailor-made destination cards regards the activeness registered for different types of activities. In this context, the overall activeness indicator can be divided into three activity-specific indicators which are calculated according to the factors identified in the principal component analysis of activities, presented in Table 1.3. Formally, the overall activeness indicator is a summation of the three types of indicators and is structured as follows:

$$I(A)_{i(overall)} = I(A)_{i(culture-nature)} + I(A)_{i(entertainment-sport)} + I(A)_{i(social)} \quad (2)$$

where the three activity-specific indicators are calculated according to the approach introduced in Eq. (1) and considering exclusively culture and nature activities ($I(A)_{i(culture-nature)}$), entertainment and sport activities ($I(A)_{i(entertainment-sport)}$) and social activities ($I(A)_{i(social)}$), respectively. In order to test and extend the recognized relation between push motivation and activities undertaken at the destination, the activeness indicators identified are investigated by proposing the following hypothesis:

H.1. *The activeness of tourists is influenced by their push motivation.*

This first hypothesis is tested by performing the following ordinary least square regression on the overall activeness indicator as well as on the three activity-specific activeness indicators:

$$I(A)_i = \alpha + \sum_m \beta_m \times Motivation_{m_i} + \sum_d \beta_d \times Demographics_{d_i} + \sum_t \beta_t \times Trip\ characteristics_{t_i} \quad (3)$$

where, the m motivation variables reflect the five factors identified by the principal component analysis of push motivations (reported in Table 1.2) and are calculated by weighting the importance stated by respondent i for motivation m to the associated factor loading, whereas demographics and

trip characteristics (presented in Table 1.1) are used as supporting variables. Consecutively, the application aims to investigate the four destination card requirements analysed in the questionnaire, namely customization, monetary aspect, timesaving and information on novelty. In particular, the different rating stated by respondents for the destination card requirements can be influenced by not only demographics and trip characteristics but also by push motivation. Indeed, as tourists are often segmented by motivation, the introduction of these variables could show us what segments evaluate certain statements as important and applying them for creating and marketing a destination card. Furthermore, this could indicate for which purpose of stay destination cards can be promoted. In this line, we propose the following hypothesis:

H.2. *A direct relation exists between push motivation of tourists and their requirements from a destination card.*

This second hypothesis is tested by performing the following ordered logistic regression on the importance rating stated for the four destination card requirements (CR):

$$CR_i = \alpha + \sum_m \beta_m \times Motivation_{m_i} + \sum_d \beta_d \times Demographics_{d_i} + \sum_t \beta_t \times Trip\ characteristics_{t_i} \quad (4)$$

where, the m motivation variables are as defined for Eq. (3) and demographics and trip characteristics (presented in Table 1.1) are used as supporting variables. Although motivation can be assumed to be an important driver for particular destination card requirements, the type of activeness of tourists within a day can also result to be important since destination cards are actually incentivizing higher level of activeness of tourists by mostly including unlimited usage of attractions at the destination. Therefore, a third hypothesis to be tested is the following:

H.3. *A direct relation exists between the type of activeness of tourists and their requirements from a destination card.*

Indeed, it is expected that the type and amount of activity consumed define what is more required from a card by a tourist. In order to test this hypothesis, the rating of the card requirements is explained by the activity-specific activeness indicators along with demographics and trip characteristics through the following ordered logistic regression:

$$CR_i = \alpha + \sum_a \beta_{I(A)_a} \times I(A)_{a_i} + \sum_d \beta_d \times Demographics_{d_i} + \sum_t \beta_t \times Trip\ characteristics_{t_i} \quad (5)$$

where, the activity-specific activeness indicators are explained in Eqs. (1) and (2). In this context, the model expressed in Eq. (5) does not integrate the model stated in Eq. (4) for hypothesis H.2, since the two sets of variables, namely motivation and activeness, are correlated to each other.

The use of logistic regression for the hypotheses H.2 and H.3 is caused by the fact that the dependent variables in the regression are measured on Likert scale, hence are ordinal. Using maximum likelihood, the models are predicting the probability for triggering the observed dependent variables (Winship & Mare, 1984). For the three sets of models identified in Eqs. (3)–(5), backward selection of the variables was applied in order to keep only significant parameters in the final estimation. In particular, the models in Eq. (3) are performed on the full sample of 586 respondents (with listwise deletion for missing values) while models in Eqs. (4) and (5) are performed on a subset of 583 respondents due to missing values of the dependent variables.

1.4. Results and discussion

Four ordinary least square regressions (Table 1.6) and eight ordered logistic regressions (Table 1.7) have been estimated in order to test the three hypotheses formulated, H.1, H.2 and H.3, respectively. The same supporting variables, in terms of demographics (gender and age) and trip characteristics (domestic holiday, repeated visits, staying at commercial accommodation, travelling with children, overnight stays and budget) have been introduced for investigation in every model in order to capture their influence adequately. An additional dummy variable capturing previous purchase of destination cards has been introduced in the estimation for testing hypotheses H.2 and H.3. The bottom part of the tables reports the model fit for each model under investigation. Using backward selection, only significant parameters are kept in the final model estimation.

The indicators measuring the level of activeness of tourists have been used as dependent variables of the ordinary least square regressions and as independent variables for a subset of the ordered logistic regressions. By definition (please refer to Eq. (1)), the overall activeness indicator can take values between zero and eleven since in our application we measure the participation in eleven activities. As the indicator is normalized to the length of stay, the maximum score in terms of overall activeness can occur if a tourist practices each activity every day during his holiday in the region. In the same line, the maximum score associated with the indicator for culture-nature activeness is five while for the indicators of entertainment-sport and social activeness is three

(please refer to Table 1.3 for the number of activities within each category). The descriptive statistics for the overall and three type of activeness are presented in Table 1.5.

Table 1.5 Sample descriptive statistics for activeness indicators

	Mean	Median	Std. dev.	Min	Max
Overall activeness	1.83	1.50	1.24	0	11
Culture-nature activeness	1.05	0.85	0.82	0	5
Entertainment-sport activeness	0.18	0.00	0.36	0	3
Social activeness	0.60	0.50	0.55	0	3

Notably, the maximum score registered in the sample coincides with the maximum value that the indicators can take as well as the minimum score registered in the sample captures tourists with no activity participation at the destination. On average, the overall activeness indicates that almost two activities per day are practiced. However, looking at the three types of activeness that compose the overall indicator, it is interesting to note a high concentration of participation in culture-nature activities which are, on average, undertaken every day. On the contrary, activities reflecting entertainment-sport are rarely practiced (as indicated by the median), on average once in five days, while the social activeness indicator shows a considerable consumption of these activities.

The first hypothesis (H.1) is tested using the overall activeness and the three different types of activeness indicators. The results are presented in Table 1.6, where the first column presents the results of the overall activeness indicator, whereas the second, third and forth columns refer to the type of indicators, correspondingly. The first part of the table reports the effect on the variables reflecting motivations, then followed by the relation with demographics and trip characteristics. Regarding the importance rated for motivations, the component ‘Excitement’ has a significant and positive impact on every activeness indicator investigated whereas motivations associated with ‘Novelty’ result being positive and significant in all the activeness indicators but the one referring to entertainment-sport. The component grouping the motivations reflecting on ‘Togetherness and fun’ is only significant for the social activeness indicator and coherently shows a positive sign, meaning that the more importance tourists give to these statements, the more social activities they consume daily. In line with the expectations, ‘Nature and relax’ component has a positive relation with the culture-nature activeness indicator while negative with entertainment-sport and social activeness indicators. The factor ‘Safe getaway’ is related positively to overall activeness as well as

to culture-nature and entertainment-sport activeness indicators, and negatively to the indicator reflecting the consumption of social activities.

Table 1.6 H.1 – OLS model results

	Overall activeness		Culture-nature activeness		Entertainment-sport activeness		Social activeness	
	Coeff.	(t-ratio)	Coeff.	(t-ratio)	Coeff.	(t-ratio)	Coeff.	(t-ratio)
Constant	0.255	(1.21)	-0.954	(-4.33) ^a	0.023	(0.28)	0.659	(3.50) ^a
<i>Motivations</i>								
Safe getaway	0.043	(2.09) ^b	0.033	(2.20) ^b	0.015	(2.12) ^b	-0.023	(-2.06) ^b
Nature and relax	-	-	0.154	(6.30) ^a	-0.026	(-2.19) ^b	-0.093	(-5.11) ^a
Novelty	0.123	(4.30) ^a	0.110	(5.88) ^a	-	-	0.026	(1.87) ^c
Excitement	0.158	(4.91) ^a	0.041	(1.88) ^c	0.048	(4.64) ^a	0.068	(4.34) ^a
Togetherness and fun	-	-	-	-	-	-	0.070	(2.72) ^a
<i>Demographics</i>								
Gender (Male)	-	-	-	-	-	-	-	-
Age	-	-	0.079	(3.71) ^a	-	-	-0.074	(-4.60) ^a
<i>Trip characteristics</i>								
Domestic	-	-	-	-	-	-	0.113	(2.38) ^b
Family	-	-	-	-	-	-	-0.085	(-1.91) ^c
Overnight stay	-0.045	(-4.45) ^a	-0.032	(-4.95) ^a	-0.007	(-2.36) ^b	-	-
Repeater	-	-	-0.108	(-1.69) ^c	-	-	0.126	(2.49) ^b
Comm. Acc.	-	-	-	-	-	-	-	-
Budget	0.005	(2.76) ^a	0.002	(1.91) ^c	0.001	(2.70) ^a	-	-
<i>Model fit</i>								
R ²	0.135		0.267		0.077		0.221	
Adj.R ²	0.127		0.257		0.069		0.209	

a=prob<1%; b=prob<5%; c=prob<10%; "-" = not significant

In terms of demographics, gender has no effect on the amount and type of activities consumed. Age has no influence on overall activeness; however, it distinguishes among the respondents with high consumption of cultural activities versus social activities. In particular, younger tourists consume more social activities, whereas with the increase of age more cultural and natural activities are practiced. As for trip characteristics, with the rise of length of stay, the activeness (measured on a daily basis) diminishes, except for tourists consuming social activities. The overall budget without including accommodation is significantly influencing every type of activeness per day, apart from social activeness. Regarding travel companion, those travelling with their family are consuming more social activities. Turning to the variables on destination familiarity, cultural activities are more

consumed by first time visitors while repeaters prefer social activities, as they are already familiar with the destination. Further on this point, interestingly, also domestic tourists are consuming significantly more social activities than international one. Whether tourist are paying to stay in a commercial accommodation or are staying in their own second home or with friends/relatives (without additional expenditure on accommodation) has no effect on the activity consumption according to the results. In general, most of the motivation components analysed show a significant relationship with the activeness indicators investigated resulting in a higher model fit for the culture-nature and social activeness indicators. Hence, the hypothesis H.1 is accepted, a relation exists between motivation components and activeness indicators especially for social and culture-nature activeness indicators.

In order to test the second (H.2) and the third (H.3) hypotheses, the destination card requirements are used as dependent variables. The results of the analysis, modelling separately the relationship among the four destination card requirements and both push motivation factors and activeness indicators, are shown in Table 1.7. In particular, for each destination card requirement two models are proposed in order to test either hypothesis H.2 or H.3, where the model for H.2 reports the relation with the motivation factors while the model for H.3 reports the relation with the activeness indicators. The same demographics and trip characteristics are used in the two models as supporting variables. At the bottom part of the table, each pair of models show the model fit which allows for a direct comparison of the model including motivation factors with the model including activeness indicators.

Regarding demographics and trip characteristics, from the two models proposed we find that the monetary aspect of destination cards (discounts) is more important for tourists with lower budget and for female tourists. Furthermore, both models estimated for the customization requirement suggest that domestic tourists are less in favour of having included in the card only those activities they are interested in. Interestingly, both models indicate that tourists visiting the destination for the first time give higher importance to timesaving aspect of the card. For both models, no effects are found on any requirement for the variables such as prior purchase of destination cards, length of stay and travel companion (with family). Other significant effects are registered for only one of the two models estimated suggesting a weaker interpretation of the associated results. In particular, younger age groups are more inclined to requirements such as customization, discounts and new ideas whereas tourists staying in commercial accommodation are less likely to find important such features of a destination card as customization and information on novelty.

Table 1.7 H.2 and H.3- Ordered logit model results

	Customization				Monetary aspect				Timesaving				Information on novelty			
	H.2		H.3		H.2		H.3		H.2		H.3		H.2		H.3	
	Coeff.	(t-ratio)	Coeff.	(t-ratio)	Coeff.	(t-ratio)	Coeff.	(t-ratio)	Coeff.	(t-ratio)	Coeff.	(t-ratio)	Coeff.	(t-ratio)	Coeff.	(t-ratio)
Constant	0.492	(0.87)	3.649	(11.70) ^a	1.193	(1.71) ^c	4.930	(12.58) ^a	1.135	(2.37) ^b	2.633	(8.22) ^a	-0.317	(-0.71)	4.300	(10.76) ^a
<i>Motivations</i>																
Safe getaway	-	-	-	-	-	-	-	-	0.074	(1.89) ^c	-	-	0.103	(2.50) ^b	-	-
Nature and relax	0.312	(4.95) ^a	-	-	0.397	(6.15) ^a	-	-	0.225	(3.39) ^a	-	-	0.479	(6.51) ^a	-	-
Novelty	-0.125	(-2.45) ^b	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excitement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Togeth-fun	0.308	(3.27) ^a	-	-	0.245	(2.52) ^b	-	-	-	-	-	-	-	-	-	-
<i>Activeness Indicators</i>																
Culture-nature	-	-	0.397	(3.60) ^a	-	-	0.414	(3.55) ^a	-	-	0.390	(3.83) ^a	-	-	0.743	(5.77) ^a
Ent.-sport	-	-	-0.737	(-3.03) ^a	-	-	-0.604	(-2.44) ^b	-	-	-0.390	(-3.83) ^a	-	-	-0.447	(-1.68) ^c
Social	-	-	-0.341	(-2.09) ^b	-	-	-0.498	(-3.02) ^a	-	-	-	-	-	-	-0.580	(-3.39) ^a
<i>Demographics</i>																
Gender (Male)	-	-	-	-	-0.306	(-1.82) ^c	-0.415	(-2.51) ^b	-	-	-	-	-	-	-0.375	(-2.22) ^b
Age	-	-	-0.125	(-2.06) ^b	-	-	-0.196	(-3.03) ^a	-	-	-	-	-	-	-0.110	(-1.67) ^c
<i>Trip characteristics</i>																
Domestic	-0.805	(-4.74) ^a	-0.646	(-3.81) ^a	-	-	-	-	-	-	-	-	-	-	-	-
Family	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Overnight stay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Repeater	-	-	-	-	-0.332	(-1.78) ^c	-	-	-0.485	(2.87) ^a	-0.381	(-2.26) ^b	-	-	-	-
Comm. Acc.	-	-	-0.365	(-2.14) ^b	-	-	-	-	-	-	-	-	-	-	-0.303	(-1.66) ^c
Budget	-	-	-	-	-0.001	(-2.28) ^b	-0.0004	(-1.95) ^c	-	-	-	-	-	-	-	-
Prev. purchase	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Threshold parameters for index</i>																
Mu(1)	1.368	(14.68) ^a	1.341	(14.68) ^a	1.439	(12.03) ^a	1.432	(12.39) ^a	1.519	(18.24) ^a	1.492	(18.18) ^a	1.229	(10.19) ^a	1.208	(10.34) ^a
Mu(2)	3.456	(29.58) ^a	3.377	(29.70) ^a	3.677	(26.19) ^a	3.577	(26.73) ^a	2.994	(30.38) ^a	2.941	(30.48) ^a	3.389	(23.10) ^a	3.293	(23.40) ^a
<i>Model fit</i>																
Restricted LL	-705.716		-705.716		-602.137		-602.137		-750.825		-750.825		-581.413		-581.413	
LL function	-671.617		-691.644		-566.552		-579.186		-734.137		-739.896		-539.884		-549.238	

a=prob<1%; b=prob<5%; c=prob<10%; "-" = not significant

Regarding motivation components explored in the hypothesis H.2, the more important the motivations belonging to 'Nature and relax' component are, the higher the probability to evaluate important all four destination card requirements. While 'Togetherness and fun' motivation factor shows a positive relation only with the statement related to customization and monetary aspect, the timesaving and the novelty requirements are registered to be important for tourists with 'Safe getaway' motivation component. 'Novelty seeking' is only significant with the option of customization reporting a negative relationship. For the component 'Excitement' no effect is found on any of the card requirements.

Looking at the activity-specific activeness indicators used in order to test the hypothesis H.3, tourists engaged in culture-nature related activities are giving significantly more importance to destination cards since all four requirements we have tested are likely to be evaluated important by tourist highly involved in culture-nature activities. On the contrary, tourists actively participating in entertainment, sport and social activities are likely to give lower importance to any of the destination card requirements since the associated coefficients are found to be negative (with the exception of social activeness indicator on saving time which is found to be not significant). Hence, the type of activity consumption clearly distinguishes tourists regarding their interest in destination cards.

As for the second and third hypotheses formulated in the method section, given the obtained model results we can partially accept the hypothesis H.2, considering that two (three) out of five motivation components are found to be significant with each (customization) requirement. Moreover, we can accept the hypothesis H.3, confirming that the three activeness indicators investigated are related to destination card requirements, even though, by comparing the model fit for the two models proposed within each destination card requirement, an interesting result can be observed. Indeed, for every pair of models we register a significantly higher log-likelihood function for the model that explains the card requirements by the motivation components (H.2) compared to the one that includes the activeness indicators (H.3). This outcome suggests the relevance of push motivation components in addressing tourists' attitude towards destination cards.

1.5. Implications

In general, the results obtained from the three sets of models can be addressed both to the academic literature and in terms of policy implications to DMOs. First, the outcomes are helpful to develop tailor-made tourist packages for different target groups. Tourists will gain more satisfactory experiences at the destination, if they can find activities according to their desires. Especially, push motivation can be used to build up marketing campaigns in order to attract tourist with higher activity involvement on a daily basis. Moreover, we can also draw implications from trip characteristics, in particular, the results regarding the consumption of social activities which showed clear distinction between domestic and international tourists and between first time and repeat visitors. We can acknowledge that especially domestic repeaters, who are most aware of the destination, are practicing intensively social activities. Therefore, first time visitors should encounter the availability of social activities at the destination in order to have higher possibilities to return as repeaters.

Regarding destination cards, the study allows to find the main characteristics of tourists who are most likely to become customers of this product as they value the different card requirements more important. Specifically, the tourist, who comes to the destination the first time, wishing to have a 'Safe getaway' from home, to enjoy nature and relaxation, is interested in novelties, consumes cultural and natural activities and has a lower-middle range holiday budget, can be an ideal target of a destination card campaign. Among the rest, this implies, most importantly, that cards need to be based on natural and cultural attractions, whereas entertainment, sport and social activities can be only additional benefits in a card, but they are not the attractions which can be used to market the card. Learning from the outcome of the first hypothesis (H1), the inclusion of social activities could eventually lead to building up destination loyalty, of course only in case of positive satisfaction of tourists. That is how destination cards could be a tool for first timers to visit the destination repeatedly.

Moreover, as the most valued card requirement is information on novelties at the destination, this aspect of cards needs to be emphasized in their promotion. In this line, when a destination card is sold, it has to be accompanied with brochures or freely downloadable mobile applications which contain descriptions of the attractions included in the card. This point brings up the issue that,

with the appearance of smart phones and other media devices, cards are also in the transformation to online applications. However, we should not forget about the limited availability of wireless points especially in regional areas, and the high roaming charges which are the drawbacks of entirely basing card services online. Moreover, although the users of smartphones can be found at any age, older generations are less likely to download applications. At this point online applications can be rather only supporting materials of destination cards.

1.6. Conclusion

This paper has presented an empirical study on travel behavior and destination cards. The potential theoretical contribution is twofold. First, the relation between the push motivation and activity participation constructs is further researched by introducing activeness indicators, which quantify the level of engagement in the different types of tourism activities. In fact the results stemming from the models indicate that the underlying dimension of motivation has a significant effect on the activeness of the tourist at the destination. Therefore, the activeness indicators proved to have similar results with motivation components as previous activity measures which were not normalized to the length of stay (Gitelson & Kerstetter, 1990; Gomez-Jacinto et al., 1999; Lee et al., 2002). These results helped to develop the second and main contribution; the literature on destination cards and possible product bundling at a destination is enriched through analysing motivation, activeness and destination card requirements of tourists in an empirical research. Indeed, activeness and motivation are crucial for developing new destination cards as both have impacts on the requirements of tourists, as it is further suggested by the analysis presented in this study. Interestingly, tourists value most essentially the information on novelty aspects of destination cards. In this line, results also show that only tourists with higher consumption of culture and nature activities consider destination card requirements being important. This outcome is confirmed by the existing offer of destination cards and the definition by Martelloni (2007), as they mainly include cultural activities.

The findings are helpful in terms of drawing policy implications for destination management organizations. Indeed, the results suggest that the creation of a destination card should be more and more based on behavioural studies in order to have tailor-made campaigns for specific

segments, which would lead to more efficient use of marketing resources. Economic benefits can be generated from the proper facilitation of tourists' experience, as tourists can get to know better the place, spend more of their time and income in the region. Moreover, if they are more satisfied with their stay, there is a higher possibility that they will wish to revisit the destination.

Further research in different regional destinations is suggested in order to support the finding that destination card requirements are only evaluated significantly important by tourists with high cultural-natural activity consumption. Regarding the methodology, additional investigation on the development of activeness indicators is suggested in order to support the measurement proposed or eventually to improve it. Moreover, as significant relationship is found among the constructs, further research could examine the hypotheses using structural equation modelling. By applying this method, the multiple and interrelated dependence could be estimated in one single analysis. Furthermore, research on developing tools and policies on how specific attractions can be selected for inclusion in a destination card would be interesting for destination management organizations. Finally, by analysing the data gathered from destination cards sold, a deeper understanding of the behaviour of cultural tourists could be derived.

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Chapter Two

Tourists intra-destination visits and transport mode: a bivariate probit model

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ABSTRACT

This paper proposes that movement patterns and transportation mode choices are linked, and then identifies the estimation of a bivariate probit model as an appropriate technique to investigate the two correlated choices. The two variables are described by a mixed combination of independent variables, wherein the transport mode choice can be explained by demographics, whereas movement patterns are influenced by trip characteristics. Moreover, the introduction of activity participation and motivation in the model allows for a better understanding of tourist behavior in relation to the two investigated variables. Finally, marginal effects are derived to quantify the impacts and draw policy implications in destination management and transport planning.

Keywords: *intra-destination visits; transportation mode; tourist behavior; bivariate probit*

2.1. Introduction

Tourist movement patterns have been widely investigated within the tourism literature (McKercher, Shoval, Ng, & Birenboim, 2012). Particular attention focused on modeling destination choice, as well as exploring the spatial dimension of tourists' mobility, within and/or between destinations. Further attention in the literature is oriented towards the determinants of intra-destination movement patterns, as well as on dispersion and multi-destination trips, as these three notions are deployed by tourists who aim to maximize their benefits by visiting more attractions during a trip. In this context, an important aspect that requires consideration relates to the transportation choice at the destination. In particular, the selection of transport mode can be considered as a consequence of the mobility decision-making process rather than a determinant of the intra-destination movement patterns. Indeed, tourists' decision regarding the extent of the area visited is inevitably linked with their choice of transportation. The identification of the determinants of these two aspects facilitates a better and wider understanding of tourist behavior.

This paper contributes to the current literature on tourist intra-destination movement patterns by analyzing the influencing factors of both the spatial extent of the visited destination and the selected transport mode. In this context, rather than the selection of a specific means of transport, a critical distinction lies between the broader categories of public and private modes, where the latter provides more flexibility in terms of time at disposal and itinerary choice. In particular, this study aims to investigate tourist profiles in relation to both visiting more than one region and transportation mode choices within a destination. For this objective, we rely on two dependent binary variables, where the first discriminates between one or more regions visited, whereas the second distinguishes between public and private modes of transportation. The two choices are assumed to be correlated; hence, the analysis is performed by estimating a bivariate probit model. In particular, the proposed model examines the relationship between the two binary variables, including a set of independent variables that express demographics and trip characteristics. As a further contribution to the literature, an additional model is then estimated with the inclusion of variables that measure motivation and activity participation. Under motivation, this research concentrates on the internal factors that drive tourists to undertake the holiday, whereas activity

participation looks at the consumption of different activities that are available in the area. The inclusion of these variables is expected to deliver a significantly better understanding of tourist behavior in terms of mobility at the destination.

2.2. Tourist behavior in relation to intra-destination movement patterns and transport mode selection

Movement patterns of tourists are spatial changes in the location of their activity consumption. In the literature, this phenomenon is analyzed on a global level, where tourists move from their origin region to destination regions, as well as between destination regions at a local level, that is, from one activity to another (Leiper, 1979). On a local level, a further distinction is made between macro and micro levels, likewise called inter- and intra-destination movement patterns (Dejbakhsh, Arrowsmith, & Jackson, 2011; Lau & McKercher, 2007; Xia & Arrowsmith, 2005). This division leads to the important consideration of result implications. In particular, applications for spatial-temporal movements at the micro level emphasize the real-time and space tracking of tourist itineraries to help local services and management, whereas examinations at the macro level usually aim at characterizing general movement patterns for tourism marketing initiatives or facility management (Xia & Arrowsmith, 2005). Moreover, Lew and McKercher (2006) suggest that analyzing intra-destination movements can affect transport planning, product development, and impact management. The decision between the different levels depends on the scope of the research, the size of the study area, and the type of data available for collection. In the context of intra-destination movements, Lew and McKercher (2006) define destination as a territory where tourism products and activities are accessible within a daytrip. Analyzing the factors that influence the movement patterns of tourists, Lau and McKercher (2007) group these factors into human (related to the tourist), physical (characterizing the destination such as destination configuration, transport network, and attractions), and trip factors (specific to the trip, such as type and duration). As this research focuses its analysis on the demand side, the literature on the individual characteristics of tourists (human and trip factors) are further investigated in the following section.

2.2.1. Individual characteristics of tourists in relation to movement patterns

Tourist movement patterns are motivated and concerned by the availability of attractions and activities at the destination (Burton, 1995). In particular, Xia et al. (2010) propose market segmentation based on the dominant movement patterns of tourists among attractions. In terms of trip characteristics, the relationship between the length of stay and number of places visited is proved to be positive (Oppermann, 1997; Pearce, 1990), where longer stay implies a broader visit of the destination. Moreover, tourist behavior in terms of intra-destination mobility likewise depends on tourist personality, as first introduced by Plog (1974) and later developed by Debbage (1991), Fennell (1996), and Plog (2002). In particular, Plog (1974) identifies two opposite personality typologies (also known as psychographics), namely, “allocentric” and “psychocentric”, that include tourists who are more and less inclined to explore, respectively. Plog (2002) further enriches the literature by identifying five categories of personality types and introducing the concept of Venturesomeness.

Debbage (1991) is applying Plog’s model in the context of a Bahamian Resort. Factors such as length of stay, vehicle rental, origin of tourist, and place of stay most effectively discriminate between the two types of spatial behavior in terms of only staying on the island or also discovering places off the island. Similarly, Fennell (1996) analyses the space-time budget in four regions of Shetland Islands. Respondents are a priori divided into special interest and general tourist activity-motivation groups. Tourists belonging to the special interest group move more extensively throughout the four regions than general tourists. Apart from trip characteristics and tourist behavior, also cultural background is found to be influential by Dejbakhsh et al. (2011) in their research on spatial behavioral patterns of international tourists travelling to Melbourne. For familiarity with the destination, Lau and McKercher (2007) and McKercher et al. (2012) note that, among the independent tourists visiting Hong Kong, first time tourists have narrower itineraries than repeaters. Nevertheless, Smallwood, Beckley, and Moore (2012) report in their research that international tourists are mainly first time visitors and visit more extensively the study area, while the domestic repeaters are primarily staying in the proximity of their accommodation. Repeaters go beyond the usual attraction locations due to their interest (Fennell, 1996), however, whether this results to more or less extensive visit of the territory than of the first-timers can be seen as destination specific and related to both the number and spatial distribution of attractions available and the regional characteristics. First-time tourists

mainly visit iconic attractions, whereas tourists on a repeated trip can develop a specific interest at the destination and their extent of visit depends on the locations of their interests.

2.2.2. Mode of transport within destination

The transportation mode selected by tourists during their visit has an influence on their movement patterns. Analyzing the link between tourism and transport in literature, Prideaux (2000) notices that, although long-haul transport in relation to tourism is well researched, the link at the destination level received lower attention, despite the vital role that transport planning and networks play in destination development. Car touring behavior provides the most flexibility in time and itinerary choice (Taplin & Qiu, 1997), thereby increasing the degree of multi-destination visitation (Tideswell & Faulkner, 1999). Dickinson and Robbins (2008) note that travelling by private car gives important contribution to tourism, particularly in rural areas, where attractions' visit often depends on private transportation mode. Furthermore, Hyde (2008), in investigating car travel for touring vacation, finds a positive correlation with age as well as a negative correlation with length of stay and the motivation of desired to be surprised. Hyde and Laesser (2009) distinguish among three types of holiday (stay-put, arranged, and freewheeling touring) with respect to motivation and transport mode choice at the destination, among others. Hough and Hassanien (2010), in their research on pre-purchased transport choice of Chinese and Australian tourists visiting Scotland, find significant differences among the two countries of origin, suggesting that origin can be an important influencing factor, beside other socio-demographic variables, such as education, language, and previous tourism experience. They propose for future research the investigation of the effects of activities and holiday expenditure on transport mode choice.

2.2.3. Intra-destination movement patterns and transport mode choice

The individual characteristics of tourists regarding movement patterns and transport mode choice have been also addressed in a more interrelated perspective. In particular, Lew and McKercher (2006) identify factors influencing intra-destination movement patterns of tourists in relation to urban transportation planning and model itinerary patterns. Becken and Schiff (2011) employ two-stage hurdle models to analyze the decision to use either car or air-travel in New Zealand

through the average distance travelled. Their findings determine that repeaters travel for shorter distances per night. In addition, tourist characteristic variables, such as length of stay, age, travel party relationship, and purpose of travel, have better explanatory power on mode choice and distance travelled.

Regarding dispersal, Wu and Carson (2008) consider dispersal as a multiple destination travel, when many parts of a destination are visited within the same trip and daily excursions are seen as an important part of it. They acknowledge that higher dispersal relates to higher mobility and private transport mode use. According to Koo, Wu, and Dwyer (2012), dispersal encapsulates the notion of visiting areas outside of the main gateways of a destination. Their article looks for determinants of the ratio and propensity of dispersal through a probit model. Dispersal is measured in terms of night stopovers as a binary variable, whether they occur within or outside the main destinations analyzed. Their findings reveal significant causal relation with transport mode choice and activity engagement, among others.

The current research starts from these findings and aims to further model the relation between movement patterns and transportation at the destination. However, rather than considering transport selection as an independent variable and an influential factor of movement patterns, transport selection is treated as a dependent variable and modeled together with movement patterns as correlated decisions. We assume that at the destination level, tourists jointly decide where they go (movements) and how they get around (transport choice), either in a sequential or simultaneous process. Furthermore, by summarizing the literature, both the area visited by tourists and the mode of transport used are expected to be influenced by tourist and trip profiles. Moreover, as confirmed by the literature, activity participation plays a role in determining movement patterns suggesting a potential effect also in the determination of the extent of the area visited and transport selection. Finally, as psychographics and special interests substantially influence movement patterns, the current research aims to further test the involvement of motivation variables in order to better understand the decision-making process for tourist's mobility.

2.3. Data and method

The data refers to a field survey conducted in the Canton of Ticino, Switzerland within a broader study aimed at investigating the activities undertaken at destination. Given that Ticino is a summer destination, the survey was conducted from June to August, 2010. In particular, tourists were approached in nine main touristic points located around the entire Canton, and requested to participate in the survey through face-to-face interviews. The survey locations were selected in accordance with the representative of the Tourism Office of Ticino, who also reviewed the entire survey in order to ensure the content validity. The dates and locations of the interviews were randomly assigned to three interviewers employed for the study to display further external validity. A pilot study was delivered with 45 tourists, confirming the application of the survey instrument. The percentages of tourists from different nationalities in the sample (both pilot and total) were in line with the cantonal overnight statistics. In total, 848 tourists were interviewed, resulting in 629 valid observations after removing the cases associated with combinations of public and private modes of transport, according to the main focus of the research. Among the aspects investigated within the survey, one was related to tourist mobility within the destination and another to the mode of transport while staying at the destination.

In particular, tourist mobility was captured by asking the tourists to list the places they visit in the Canton during their entire holiday. A map of the destination was provided to the respondents to increase the accuracy of the data obtained. The answers were then classified according to the four touristic regions of the destination. Canton of Ticino is a small geographical area (i.e., approximately 100 kilometers south-north distance), and thus, its locations are potentially accessible within the same day journey from any base point. Regarding the mode of transport, particularly important is the broad distinction between private and public transport considered in the following empirical application. Indeed, this investigation focuses on the individual characteristics of tourists rather than those associated with each means of transport (such as fare and travel time). In this context, the options available in the questionnaire cover all the possible means of transport available at the destination, including public and private modes (train, bus, car, rental car and motorbike). According to the literature on psychographic typologies related to movement patterns and the geographical context of the destination, the binary variables identifying tourist movement patterns and transportation mode have been created as follows:

$$y_{i,DEST} = y_{i1} = \begin{cases} 1, & \text{if tourist } i \text{ visits more than one region} \\ 0, & \text{if tourist } i \text{ visits only one region} \end{cases} \quad (1)$$

where the destination has four regions, and

$$y_{i,TRA} = y_{i2} = \begin{cases} 1, & \text{if tourist } i \text{ uses private transport} \\ 0, & \text{if tourist } i \text{ uses public transport} \end{cases} \quad (2)$$

where private transport refers to owned or rental cars and motorbikes (or any combination of the three), whereas public transport considers buses and trains (or any combination of the two).

The interdependency of the two choices, namely, decision to visit one or more regions and the choice of transportation mode, is investigated by estimating a bivariate probit model. In particular, in a discrete choice context, the analysis of correlated decisions is commonly addressed by extending the probit model to the estimation of more than one equation, leading to bivariate (i.e., two equations) or multivariate (i.e., three or more equations) probit models (see Greene (2003) for further details on both bivariate and multivariate probit models). Applications of bivariate (and multivariate) probit models can be found in several fields of research, including few studies in the tourism sector. In particular, Castillo-Manzano (2010) estimates a bivariate probit model to investigate the relationship between purchases at airport stores and consumption of food/beverages at airport catering facilities. Eugenio-Martin and Campos-Soria (2010) attempt to identify the relationship between the climate in the region of residence and destination choice in tourism demand. LaMondia and Bhat (2011) implement a multivariate binary probit model to understand the combination of leisure activities during holidays in the Northwest Territories of Canada.

In this context, the bivariate probit model involves the estimation of two equations, specified as follows:

$$\begin{aligned}
y_{i1}^* &= \boldsymbol{\beta}'_1 \mathbf{x}_{i1} + \varepsilon_{i1}, \quad y_{i1} = 1 \text{ if } y_{i1}^* > 0, \quad 0 \text{ otherwise,} \\
y_{i2}^* &= \boldsymbol{\beta}'_2 \mathbf{x}_{i2} + \varepsilon_{i2}, \quad y_{i2} = 1 \text{ if } y_{i2}^* > 0, \quad 0 \text{ otherwise,} \\
[\varepsilon_{i1}, \varepsilon_{i2}] &\sim N_2(0, 0, 1, 1, \rho), \quad -1 < \rho < 1
\end{aligned}
\tag{3}$$

where y_{i1} and y_{i2} are the binary variables representing individual observations and, in our case previously defined in Eqs.(1) and (2), $\boldsymbol{\beta}'_1$ and $\boldsymbol{\beta}'_2$ are the vectors of coefficients associated with the \mathbf{x}_{i1} and \mathbf{x}_{i2} sets of explanatory covariates, and ε_{i1} and ε_{i2} are the random parts (i.e., the unobserved parts) assumed to be jointly normally distributed with zero means, unit variances, and correlation ρ . Therefore, the identification of a correlation coefficient ρ significantly different from zero indicates the existence of a significant correlation between the two choices as the unobserved parts associated with y_{i1}^* and y_{i2}^* are not independent.

For the explanatory covariates, a set of variables included in the questionnaire was used to address questions on demographics and trip characteristics. Moreover, respondents were requested to evaluate 17 statements regarding their internal motivation of visiting the destination (push approach), following the literature mainly by Yoon and Uysal (2005), and for adapting to the Swiss case by Bieger and Laesser (2002). This study concentrates on the effect of internal motivation of tourists, as Lee et al. (2002) acknowledge that the so called push motivation of tourists influences the activity pursuit at the destination, whereas their pull motivation is related to destination choice. Given that intra-destination movements are related to activity pursuit, the extent of the area visited by tourists can be assumed to be influenced by their push motivation. The internal consistency of the items measuring motivation has been tested after both the pilot study and the collection of the data set (Cronbach's coefficients alpha 0.739 and 0.749, respectively). Finally, respondents were invited to state their participation in 11 activities (previously identified in collaboration with the Tourism office of Ticino) at the destination. Table 2.1 reports the descriptive statistics of the sample for the variables under investigation.

Table 2.1 Sample descriptive statistics for variables under investigation

	Frequency	Percent			
Destination visited (1 region)	274	43.6			
Destination visited (>1 region)	355	56.4			
Transportation mode (public)	293	46.6			
Transportation mode (private)	336	53.4			
<i>Demographics</i>					
Gender (Male)	382	39.3			
Gender (Female)	247	60.7			
Domestic	327	52.0			
International	302	48.0			
Age (under 20 years old)	55	8.7			
Age (21 to 30 years old)	144	22.9			
Age (31 to 40 years old)	108	17.2			
Age (41 to 50 years old)	162	25.8			
Age (51 to 60 years old)	115	18.3			
Age (61 to 70 years old)	33	5.2			
Age (older than 71 years old)	12	1.9			
<i>Trip characteristics</i>					
Repeat visitor	429	68.2			
First visitor	200	31.8			
Commercial Accommodation	407	64.7			
Non-commercial Accommodation	222	35.3			
	Mean	Median	Std. dev.	Min	Max
Holiday daily budget	60	47	81.5	0	1500
Number of nights	4.49	4	4.57	0	60
<i>Motivation</i>					
Being physically active	2.17	2	1.06	1	4
Rediscovering myself	1.94	2	0.99	1	4
Trying new food	2.50	3	1.03	1	4
Visiting historical places	2.68	3	1.06	1	4
Experiencing a simpler lifestyle	2.32	2	1.05	1	4
Feeling safe and secure	2.55	3	1.15	1	4
Experiencing landscape/nature	3.47	4	0.78	1	4
Meeting new people	2.27	2	1.06	1	4
Feeling at home	2.41	2	1.09	1	4
<i>Activity participation</i>					
Sports and renting equipment	1.18	1	0.54	1	4
Visiting museums and/or historical buildings	1.87	2	0.93	1	4
Boat trips	1.88	2	0.81	1	4

All the considered variables are categorical except for the number of nights and holiday budget. The upper part of Table 2.1 shows the descriptive statistics for the two binary variables identifying the intra-destination movement pattern and transportation mode. In particular, 56% of the sample interviewed visited more than one region, whereas 53% used private transport in their movements within the destination. Regarding demographics, response on age is subdivided into seven groups (from under 20 to over 71 years old), and two dummy variables represent the domestic tourists (52% of the sample) and male tourists (39% of the sample). In terms of trip characteristics, binary variables discriminate tourists staying at commercial accommodations (65% of the sample) and repeaters (68% of the sample). For budget and length of stay, the interviewed tourists reported a daily average budget of CHF 60 (approximately USD 62) allocated to activities at the destination (excluding accommodations) and median length of stay of four nights. Four-point scales have been applied to measure motivation statements (not at all important, rather unimportant, rather important, and very important) and activity participation during the entire stay (never, once, few times, and every day).

Among the motivation variables analyzed, the statement that received the least importance is “Rediscovering myself”, whereas “Experiencing landscape/nature” registered the highest importance. For activity participation, at least 50% of the sample joined boat trips or visited museums and/or historical buildings.

The estimation of the model expressed in Equation (3) with dependent variables indicated in Equations (1) and (2) can be derived from the following probabilities:

$$P(y_1, y_2 | x_1, x_2) = \Phi_2[q_{i1}\beta'_1x_{i1}, q_{i2}\beta'_2x_{i2}, q_{i1}q_{i2}\rho] \text{ where, } q_{im} = 2y_{im} - 1, m = 1, 2. \quad (4)$$

where Φ_2 denotes the bivariate standard normal cumulative distribution function, while the other parameters are as introduced in Equation (3). The coefficient estimation relies on the following log likelihood:

$$\log L = \sum_i \ln P(y_1, y_2 | x_1, x_2) \quad (5)$$

The model is estimated by using the full information maximum likelihood. Marginal effects are further derived (and reported in the Results section) from the following conditional mean:

$$E[y_1 | y_2 = 1, x_1, x_2] = \frac{P[y_1 = 1 | y_2 = 1, x_1, x_2, \rho]}{P[y_2 = 1 | x_1]} \quad (6)$$

where the elements y_1 , y_2 , x_1 , x_2 , and ρ are as defined in Eq. (3).

2.4. Results

Two bivariate probit models have been estimated for the choices of the number of regions to visit and transportation mode, respectively. In particular, the first model (M1) specifies the correlated choice in terms of demographics and trip characteristics. The second model (M2) further investigates the specification by introducing a set of variables that identify motivation and activity participation. In the model specification process, the full sets of demographics and trip characteristics are entered into the models to facilitate the comparison related to the main aspects reflecting demographic and trip characteristics, whereas backward selection is applied on variables associated with motivation and activity participation due to the amount of factors involved, ensuring the avoidance of estimation problems such as collinearity. The results of the two estimated models are presented in Table 2.2. Two columns are reported for each model, where the first one (DEST) indicates the parameters associated with the choice of visiting more than one region, whereas the second one (TRA) lists the coefficients associated with the choice of using private transport for intra-destination movements.

The correlation between the disturbances in the equations (ρ) is likewise reported for each model (see Equation (3) for details). The bottom part of the table indicates the statistics for the model fits. Along with the log-likelihood at convergence, we also report the log-likelihood ratio test that statistically tests if an unrestricted model is significantly better than a restricted one, considering the difference in the number of parameters estimated. In particular, the log-likelihood ratio test for model M1 is calculated against the restricted model that contains only the constant terms (M_{constant}), whereas the test for model M2 is calculated against model M1.

Table 2.2 Model results

	Model M1				Model M2			
	<i>Index equation for</i>				<i>Index equation for</i>			
	<i>DEST</i>		<i>TRA</i>		<i>DEST</i>		<i>TRA</i>	
	<i>(>I region)</i>		<i>(private)</i>		<i>(>I region)</i>		<i>(private)</i>	
	Coeff.	(t-ratio)	Coeff.	(t-ratio)	Coeff.	(t-ratio)	Coeff.	(t-ratio)
Constant	-0.8415	(-2.96)	-0.8208	(-2.89)	0.0526	(0.13)	0.6192	(1.92)
Demographics								
Gender (Male)	0.1861	(1.76)	0.3048	(2.88)	0.0476	(0.41)	0.2089	(1.88)
Domestic	0.1210	(1.05)	-0.4153	(-3.62)	0.1252	(1.00)	-0.4161	(-3.45)
Age	0.0472	(1.31)	0.1016	(2.87)	0.0380	(0.97)	0.0915	(2.27)
Trip characteristics								
Repeat visitor	0.1413	(1.17)	0.2184	(1.79)	0.2730	(2.04)	0.2780	(2.13)
Commercial accommodation	0.4504	(4.16)	-0.0332	(-0.30)	0.4550	(3.79)	0.0064	(0.06)
Daily budget	-0.0002	(-0.65)	-0.0002	(-0.66)	-0.0001	(-0.37)	-0.0003	(-1.01)
Number of nights	-0.0005	(-0.14)	0.0025	(0.25)	-0.0003	(-0.10)	0.0072	(0.62)
Motivation								
Being physically active	-	-	-	-	-0.0810	(-1.54)	-0.1041	(-1.92)
Rediscovering myself	-	-	-	-	-0.1237	(-2.13)	-	-
Trying new food	-	-	-	-	0.1523	(2.70)	-	-
Visiting historical places	-	-	-	-	0.2737	(4.40)	-	-
Experiencing a simpler lifestyle	-	-	-	-	0.1193	(1.82)	-	-
Feeling safe and secure	-	-	-	-	-0.2873	(-4.77)	-0.1387	(-2.56)
Experiencing landscape/nature	-	-	-	-	-0.3206	(-3.96)	-	-
Meeting new people	-	-	-	-	-	-	-0.1298	(-2.25)
Feeling at home	-	-	-	-	-	-	-0.1017	(-1.72)
Activity participation								
Sport	-	-	-	-	-0.0012	(-2.43)	-	-
Visiting museums	-	-	-	-	0.0009	(1.64)	0.0018	(2.76)
Boat trips	-	-	-	-	-	-	-0.0005	(-1.68)
	Coeff.		(t-ratio)		Coeff.		(t-ratio)	
ρ	0.2676		(4.28)		0.1905		(2.75)	
Model Fits								
Observations	629				629			
Parameters	17				32			
Log-likelihood	-825.14				-752.76			
Log-likelihood ratio test	$(M_{\text{constant}}, M1)$ 63.51 (15;25)				$(M1, M2)$ 144.76 (15;25)			
Wald test ($H_0: \rho=0$)	$\chi^2(1,629) = 18.34; p < 0.05$				$\chi^2(1,629) = 7.57; p < 0.05$			

In addition, the table reports the Wald statistic for testing the hypothesis that the correlation equals zero [Wald test ($H_0: \rho=0$)], calculated as the ratio between the square of the correlation coefficient estimate and its variance (see, for example, Engle, 1984). In this context, we observe that the correlation is significantly different from zero and positive, indicating that the unobserved factors affecting movement patterns and transportation mode are positively

correlated. This result confirms that the two choices are linked and supports the appropriateness of the estimation of a bivariate model, as the estimation of two separate univariate models (for movement patterns and transportation mode choices, respectively) would lead to biased results.

Looking at the parameter estimates for demographics, we observe that they are not statistically significant in explaining the choice of visiting more than one destination. Only the dummy variable associated with gender appears to be slightly significant, although only in model M1. Nevertheless, the parameters associated with the same demographic variables entered in the equation for the transport mode choice are significantly different from zero in both M1 and M2 models. In particular, male tourists and older tourists are more likely to use private transport for trips within the destination independent from their movement patterns, whereas domestic tourists are more likely to use public transport during their stay. Turning to coefficients associated with trip characteristics, we observe that neither daily budget nor number of overnight stay is significantly related to the two choices under investigation. However, from both M1 and M2 models, we find that staying in commercial accommodations has a positive impact on the likelihood of visiting more than one region when compared with staying in secondary homes or with friends/relatives. As a further finding for model M2, we observe that being a repeater has a positive impact on both the number of regions visited and mode of transport used. In particular, we register that repeaters are more likely to use private transport and visit more than one region.

Focusing on the introduction of motivation and activity participation in the two equations, we observe that model M2 obtains an overall improvement in the goodness of fit confirmed by the log-likelihood ratio test (144.76), which results highly above the 95% threshold of the χ^2 distribution, with 15 degrees of freedom (25.00). The correlation between the disturbances in the equations decreases as the variables that reflect motivation and activity participation are inserted in the model, although the correlation is still significantly different from zero, as confirmed by the Wald test. Overall, seven and four motivations are found to be significantly different from zero for the DEST and TRA equations, respectively. In particular, motivations such as “Being physically active” (note that for the first equation, this motivation is significant only at an alpha level of 0.15) and “Feeling safe and secure” are present in both equations, showing a common negative impact. For activity participation, only two are significant in each equation, one of them (i.e., “Visiting museum”) being positively related with both dependent variables.

In order to better understand the impact and implications of motivation and activity participation included in model M2, total marginal effects are derived and reported in Table 2.3, along with the marginal effects for demographics and trip characteristics that appeared to be statistically significant in model M2. In particular, a one-point increase in the motivation “Being physically active” results in a decrease of 2.5% in the probability of visiting more than one region, and in a decrease of 2.9% in the decision of travelling by private transport. Similarly, a one-point increase in the importance of the statement “Feeling safe and secure” reduces the likelihood of visiting more than one region (using private transport) by 9.7% (3.3%). Other motivation variables with negative effects on the number of regions visited, namely, “Rediscovering myself” and “Experiencing landscape/nature”, decrease the probability of visiting more than one region by 4.4% and 11.4%, respectively, per one-point increase in the associated importance.

However, we register a significant and positive influence for statements such as “Trying new food”, “Visiting historical places” and “Experiencing a simpler lifestyle” with an associated increase in the probability of visiting more than one region by 5.4%, 9.7%, and 4.2%, respectively. For the impact of motivation variables on the transportation mode choice, we find that a significant and negative effect is further associated with “Meeting new people” and “Feeling at home”. In this context, we note that all four motivations found to be significant for the transportation mode express a negative impact, although their impact does not exceed four percentage points. A significant but considerably marginal impact has been registered for the activity participation. However, it is interesting to note the combined positive effects reported for the coefficient associated with the frequency of visiting museum; that is, the more tourists tend to visit museums, the more they are likely to visit more than one region and travel by private transport.

In examining the marginal effect for demographics on the transportation mode equation, the consistent negative impact associated with domestic tourists, who exhibited a 12% higher probability of using public transport than foreign tourists, makes an interesting observation. On the other hand, private transport has a higher probability of being selected by male tourists (6.4%) and by older tourists (2.8% per class considered in this study and mentioned in the data section). Finally, looking at the marginal effect for trip characteristics, we observe that being a repeat

visitor increases the probability of visiting more than one region and using private transport by 8.8% and 7.7%, respectively. Particularly interesting is that staying in commercial accommodations increases the probability of visiting more than one region by 16.2%.

Table 2.3 Total marginal effects

	<i>Total marginal effects for</i>	
	<i>DEST</i>	<i>TRA</i>
	<i>(>1 region)</i>	<i>(private)</i>
<i>Demographics</i>		
Gender (Male)	-	0.0645
Domestic	-	-0.1285
Age	-	0.0283
<i>Trip characteristics</i>		
Repeat visitor	0.0878	0.0769
Commercial accommodation	0.1619	-
<i>Motivation</i>		
Being physically active	-0.0253	-0.0295
Rediscovering myself	-0.0440	-
Trying new food	0.0542	-
Visiting historical places	0.0974	-
Experiencing a simpler lifestyle	0.0424	-
Feeling safe and secure	-0.0975	-0.0334
Experiencing landscape/nature	-0.1141	-
Meeting new people	-	-0.0401
Feeling at home	-	-0.0314
<i>Activity participation</i>		
Sport	-0.0004	-
Visiting museums	0.0003	0.0005
Boat trips	-	-0.0002

2.5. Conclusion

This paper has investigated the movement patterns and transport mode choices of tourists within a destination using bivariate probit models. The topic related to decision-making and behavior at the destination has been well researched and is a central issue in tourism literature. This study

attempts to contribute to this research stream from the economics and econometric perspectives by modeling the correlated choices of tourists visiting the destination. The analysis has been based on a field survey conducted among tourists visiting the Canton of Ticino, Switzerland in the summer of 2010. The proposed models attempt to examine the influencing factors of wider movement patterns and transport mode choice. In particular, two bivariate probit models have been estimated, where the first one explains the correlated choices, of visiting one or more regions within the destination and using private or public transport, by demographic and trip characteristic variables; whereas the second model extends the first one by further introducing motivation and activity participation as explanatory factors. Furthermore, marginal effects for the second model have been derived to provide a deep investigation of consumer behavior by quantifying the associated impacts in terms of probabilities, and to direct policy implications.

The results indicate a positive correlation between the unobserved factors affecting the choices of visiting more than one region and the selection of the private mode of transportation used at the destination. In particular, this result supports the assumption that movement patterns and transportation mode choices are linked, and identifies the bivariate probit model as an appropriate technique to investigate the two correlated choices. We determine different factors explaining either the likelihood of visiting more than one region or using private transport. In this context, the transport mode choice of tourists can be explained by demographic variables and by the familiarity of the destination, with the latter also showing a consistent effect with destination movement patterns. Indeed, while movement patterns are not influenced by demographic variables, trip characteristics play an important role in determining them, as indicated by the high positive impact observed for both repeated visits and use of commercial accommodations. This finding confirms that of Lew and McKercher (2006), who state that trip behavior variables are the most influential determinants of destination movement patterns. In line with previous literature, familiarity with the destination is determined to exert a significant effect on movement patterns, and could therefore predict the extent of the area visited. However, as previously discussed, whether the sign of the influence is positive or negative is destination specific. In the case of Ticino, the influence is found to be positive; repeater tourists are more likely to visit a larger extent of the destination. Furthermore, the finding on the use of commercial accommodations related to movement patterns presents further evidence on the influence of the

purpose of visit, as non-commercial use (i.e., staying with friends and relatives or in secondary homes) is typically related to visiting friends and relatives.

The introduction of activity participation, and especially motivation, consistently increases the goodness of model fit by adding significant explanatory power to the understanding of tourist behavior related to the spatial extent of the destination visited and to the transport mode selected. In this context, the results are related to the psychographic profiles of tourists. In particular, statements such as “Rediscovering myself,” “Feeling safe and secure,” and “Experiencing landscape/nature” induce a negative effect on visiting more than one region, which can be explained by psychocentric behavior. On the contrary, the positive effect associated with motivations such as “Visiting historical places” and “Trying new food” on visiting more regions can be explained by allocentric or curious behavior. Interestingly, the significant motivation variables for transport mode choice are all positively inclined toward the use of public transport, although they register relatively low marginal effects. For activity participation, we register low impacts on both intra-destination movement patterns and transport choice. This result can be explained by the fact that most of the activities examined in the survey are available in all four regions. Only the statement “Visiting museums and/or historical places” has a positive effect on the two dependent variables, suggesting that tourists interested in cultural attractions travel more extensively, reinforcing the results related to motivation and allocentric behavior.

2.5.1. Managerial Implications

In terms of policy implications, the results presented in this study provide useful information for destination marketing and policy planning. Our findings indicate that the main motivation of tourists in visiting more than one region is related to cultural novelty seeking, such as trying new food and visiting historical places. Therefore, promotional campaigns of destination marketing organizations should concentrate on attracting more tourists with cultural interests, who would most likely travel extensively throughout the destination. Furthermore, the length of stay and the expenditure of tourists could be eventually extended by increasing the number of cultural activities available at the destination. Moreover, cultural activities should be more advertised internationally to capture novelty-seeking tourists from outside Switzerland. Interestingly, sports-related tourism, determined by the motivation “Being physically active” and by the

activity “Sports and renting equipment” reduces the probability of visiting more than one region. Due to the topographic characteristics of the destination analyzed, most of the outdoor sports can be practiced in every region. Tourists who visit mainly for sports should be more informed about the availability of hiking trails, different water sports, and other possibilities throughout the whole destination. Thus, they could become curious to try and compare practicing their individual sport at different places. Furthermore, motivation variables in favor of public transport are related to safety and security, socialization, and being physically active. In this context, in order to further incentivize the use of public transport, the destination marketing organization and public transport managers could direct promotional campaigns accordingly, trying to emphasize these aspects.

Interesting implications can be further derived from the interrelated effect of repeated visit on the dependent variables as well as from the high marginal effects registered for domestic tourists who use public transport at the destination regardless the number of regions visited. This preference of domestic tourists can be explained by the existing subscriptions and offers for public transport in Switzerland, which are widely used among residents. This suggests that in order to increase the use of public transport, and at the same time reduce the traffic problem, the destination marketing organization and transport/city managers should, first, facilitate the connection between touristic attractions located in different regions of the destination; and second, design appealing public transport promotions. For example, the introduction of loyalty programs could potentially encourage repeaters to select public transport without affecting their high spatial mobility. Furthermore, the increased connectivity and specific public transport promotions combined with touristic activities would encourage domestic tourists to visit more than one region, and international tourists to use public transport during their visit. Finally, combining the previous implications, tailor-made routes for cultural tourists, packaged together with appealing public transport promotions, could lead to a reduction in car usage and increase the visitation of the destination. As an example, existing initiatives combine transport tickets with festival entries, which proved to be an effective solution in reducing traffic and parking problems during events. Similarly, destination cards supported by public transport could provide complex solutions to enhance destination and attraction visits.

2.5.2. Limitations and Further research

Further research in different destination contexts is suggested to support the findings highlighted in this study. This research is limited to one destination, and therefore, to specific variables measuring activity. Moreover, regarding the methodology of the data collection, additional GPS data could be integrated into similar analysis to obtain a more precise tracking of the movement patterns of tourists during the entire holiday. In addition, this would allow the investigation of the use of specific combination of public and private modes of transport related to the distance traveled. In the current research, only the decision between visiting one or more regions is analyzed, whereas by applying techniques allowing for multinomial variables, the extent of the area visited can be further investigated. Finally, we encourage future research to jointly analyze the spatial dimension and transportation mode used by estimating different hierarchical structures for a better understanding of tourist behavior at the destination. Specifically, the importance of motivation variables should not be neglected in future research investigating the influential factors of mobility decisions.

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Chapter Three

Analysing intra-destination movements and activity participation of tourists through destination card consumption

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ABSTRACT

This study investigates tourist behaviour in the Canton of Ticino Switzerland, a geographically dispersed destination, by analysing use patterns of a 'destination card' sold by the local destination management organization. Destination cards offer free or highly discounted entry into partner attractions and activities often coupled with free public transport access in the area. Within this context, the study sought to determine if evidence of concentrated behaviour existed, either spatially or by activity. Cluster analysis revealed four discrete market segments. Three of them showed a high degree of spatial concentration in their movements, augmented by some clearly defined activity preferences. The fourth showed no clear pattern, travelling widely throughout the Canton and sampling a range of activities. Hence, the combination of transport and attractions' entrance appeals to two different user groups, one looking to gain access to attractions and one seeking ease of transport. Discriminant analysis further supported the results with defining the determinant variables of the cluster membership and confirmed that the point of sales has an important role in identifying the consumption of activities and the extension of the area visited. Thus, to conceptualize the decision process in an intra-destination level, the spatial structure of the destination seems to play a greater influence on behaviour than its product structure. The paper illustrates how analysis of destination card data can assist destinations in better understanding their markets and discusses potential research opportunities that can generate real marketing benefits. A number of recommendations especially for destination managers and tourism operators are also identified to enhance the information gathered. Product

bundling, regional cooperation and strategic marketing opportunities at sales points are suggested in this context to further incentivize tourist mobility.

Keywords: Destination card, intra-destination movement patterns, activity consumption, segmentation, discriminant analysis, Ticino

3.1. Introduction

Understanding tourist movements within a destination has significant implications for product development and destination marketing (Lew & McKercher, 2006). In addition, the ability to segment tourists based on their dominant movement patterns can help forecast likely future movements (Xia et al., 2010, Xia, Zeephongsekul, & Packer, 2011), enabling Destination Management Organizations (DMOs) to better plan for and manage tourist flows. Historically, data for these types of studies have relied on either time-space diaries completed by tourists themselves, or the passive tracking of tourists by geographic positioning system (GPS) devices or smart phones (McKercher, Shoval, Ng, & Birenboim, 2012).

The use of so called “destination cards”, smartcards with an embedded chip sold by DMOs that offer admission to a series of attractions and/or activities within a destination, has received relatively less attention, being used primarily to conduct aggregate supply side studies (Beritelli & Humm, 2005). The use of these cards is common today as DMOs seek ways to stimulate participation at lesser attractions, distribute visitor flows, and in doing so, promote more extensive travel throughout the destination (Zoltan & Masiero, 2012). Cards can offer either discounted or free entry to attractions, and in addition, some also offer free transportation. They are valid for specific days or amounts of time once activated (European Cities Marketing, 2013). Their appeal rests in real cost savings for tourists who wish to visit multiple attractions, fast track entry to places and a convenient means of navigating the destination without having to rely on a car. Previous research suggests destination cards are most popular with first time visitors on modest holiday budgets (Zoltan & Masiero, 2012). Since each card has its own unique identity code and since tourists must swipe the card on entry at each participating attraction, it is possible to develop a large data set of places visited, daily sequence of visits and a sequence of visits during the entire stay in the destination.

This study analyses data generated by one such card to examine tourist movements in the Canton of Ticino in southern Switzerland, a geographically decentralized destination. In particular, the study seeks to determine if evidence of clustering occurs and if so, whether it is spatially- or activity-based among clearly defined market segments of the card buyer tourists and further if intervening factors affect segment membership. Discriminant analysis is then applied to describe the clusters and to enhance their interpretation for policy implications with special focus on

marketing purposes for DMOs. Therefore, the description of the clusters is supported by the assessment of the impact of determinants, such as purchase location, overall consumption and demographic variables.

The 2812 km² Canton of Ticino is characterized by its warm climate and alpine altitudinal gradient, ranging from 197m to 3402m above sea level (Conedera, Vassere, Neff, Meurer, & Krebs, 2007). Geographically, the Canton is divided by a small mountain range called the Monte Ceneri. From north of the pass - also called Sopraceneri - the area is represented by mountains, valleys and the Swiss-northern-side of Lake Maggiore, while the southern part - called Sottoceneri - comprises the Lake of Lugano and its surroundings. These parts are further split into two administrative regions, from North to South: *Bellinzona and Upper Ticino* (Bellinzona) and *Lake of Maggiore and Valleys* (Maggiore) in Sopraceneri, *Lake of Lugano* (Lugano) and Mendrisiotto in Sottoceneri. Due to its favourable climate and topographic characteristics, nature and landscape plays an important role in the tourist offer of Ticino. However, its product mix is somewhat limited, based primarily around hiking trails and funicular railways that reach alpine areas, sightseeing boat trips on nearby lakes, public swimming pools and lidos, and a limited number of small built attractions. In addition, the area has two UNESCO World heritage sites (the Castles of Bellinzona and the Monte San Giorgio).

Ticino was once a popular summer short break destination. However, it has experienced a decline in arrivals for the last 20 years. In the summer season of 2012, about 1.65 million person-nights were recorded in its 500 hotels. The mean length of stay is about 2.25 nights. The accommodation supply is concentrated in Maggiore (47% of hotel beds) and Lugano (34% of hotel beds). Indeed, 88% of Ticino's summer overnights in 2012 were generated in Maggiore (51%) and Lugano (37%), while Bellinzona (7%) and Mendrisiotto (5%) accounted for the rest (Maggi, Zoltan, Guglielmetti, & Tettamanti, 2013). The summer season, May to October, generates about three quarters of all tourist nights (Masiero, Sarman, Guglielmetti, & Zoltan, 2012), though the occupancy rates are only 55%. The region has recorded a 26% decline in total number of summer person-nights over the past 20 years, although, interestingly, the number of arrivals has fallen by only seven percent. In particular, the number of person-nights spent by the German market has declined by 63%.

The dual challenges for the local DMO, therefore, are to reverse the trend toward shorter stays, as well as enact actions to increase total arrivals. The destination card was launched in 2012 in response to this situation. The card is sold in three different price categories: children (aged 6 to 16); a discounted card for Swiss travel pass holders (domestic Swiss tourists) and a full priced card for international visitors. Cards are valid for 72 hours once activated. Purchasers can gain entry to 39 activities including funiculars, boat trips, museums, lidos and other attractions. In addition, they have free use of the Canton's public transport network. The card is for sale at hotels, tourist offices, train, and boat stations throughout the Canton.

3.2. Factors Influencing Intra-destination Movement Patterns

An increasing volume of research has begun to be published examining intra-destination movement patterns of tourists. This research identifies a number of factors that influence both the intensity and spatial dispersion of movements. Tideswell and Faulkner (1999) for example, suggest transport mode plays a key role, with those who use public transport normally travelling less extensively throughout the destination than those using private modes of transport. Others have discussed the role of prior visitation history and, hence familiarity with the destination plays, where first time visitors tend to explore a destination more widely and ensure they visit the area's primary attractions, while repeaters tend to be more selective and spatially focused in their activities (Smallwood, Beckley, & Moore, 2012; Lau & McKercher, 2007; McKercher et al., 2012). Flognfeldt (1999) suggests further differences in movement patterns exist between domestic and international tourists. Domestic tourists are often on a repeat visit and are more interested in nature related and social activities, while international tourists often are first, and only time visitors, who seek main attractions. They also have less knowledge about the destination, and are therefore, less willing to explore more remote areas. The presence or absence of children is also a critical factor, influencing time allocation, the propensity to visit certain attractions and pursuit of different activities (Decrop, 2005; Thornton, Shaw, & Williams, 1997).

Shoval and Raveh (2004) highlighted the importance of travel time budgets. Tourists on limited time budgets cannot visit all attractions throughout the entire destination, and so, must prioritize their preferred movements. They found that people on the most limited time budgets typically set firm plans prior to arrival and rarely changed them, while longer stay tourists showed a higher degree of flexibility in their activities.

The spatial configuration of the destination will also influence behaviour patterns (Lew & McKercher, 2006). Both Hunt and Crompton (2008) and McKercher and Lau (2007) write about compatibility of attractions, while Pearce (1999) and Dredge (1999) describe the impact of clustering of tourism nodes on behaviour. Nodes are distinguished by the dominating tourism focus, and the degree of cohesiveness and consistency within them contributes to the overall ambience of the destination. Weidenfeld, Butler, and Williams (2010) applied spatial and thematic clustering of tourism movements between attractions and discovered product similarity and spatial clustering increase the likelihood of visiting nodes.

Recently, as well, hotel location has been shown to exert a substantive effect on travel patterns, influencing the likelihood of visiting certain tourist nodes, time of day when places are likely to be visited and sequence of visitation (Shoval, McKercher, Ng, & Birenboim, 2011). In fact, distance decay is relevant also at the micro level, as tourists spend significant amount of the time in close vicinity of their hotel. Access point and consequently hotel location play a crucial role in tourist's consumption, therefore it must be considered in studies investigating tourist behaviour at the destination.

It is also self-evident that motives affect movements. Fennel (1996), for example, divided tourists into special interest and general activity-motivation groups and again found those with specialist interests ventured more widely through the destination area in pursuit of these interests. They were also significantly more likely to visit lower order attractions. Masiero and Zoltan (2013) found that people who travel for cultural novelty seeking reasons are more likely to move widely through a destination, while those who travel to experience landscape/nature or to be physically active show more restricted, but more intense movement patterns. Importantly, it may be possible to infer motives by analysing behaviour in a holistic manner. Finsterwalder and Laesser (2013) defined experiential consumption spheres in which tourists co-create their experience through encounters with service providers based on the activities they consume, and derived visitation segments accordingly. To conclude, recognizing the importance of tourists' activity consumption and movement patterns at the destination enables service providers to better cater for the needs of the tourists and develop more tailor-made products for them.

In this context, local DMO's often combine the core assets of the destination, integrate them into one offer, and sell it as a destination card (Pechlaner, Abfalter, & Raich, 2002). Russo and Van der Borg (2002) found destination cards among the best practises, especially at urban destinations. Besides their importance as a marketing tool, destination cards can be a good source of data for analysing tourism behaviour and deriving marketing implications at the destination as it is aimed in this study.

3.3. Data and Method

Data for this study were retrieved from visitation records gathered from the Ticino destination card. Overall, 5114 destination cards were purchased in Ticino during the entire summer period. The sample for this exploratory study is limited to the first 1000 cards printed, irrespective of when they were sold. The data were cleaned to exclude cards that were purchased but not used, those that were distributed gratis or purchased outside Ticino, leaving a valid data set of 986 cases.

Table 3.1 provides an overview of the sample. It details what fee category of card (and thus type or origin of user), the type of organization that sold the card, the region in which cards were bought and an overview of the total number of activities used per card. The vast majority of cards were sold to adults, with only about one in six sold to children. International tourists bought slightly over half of all cards, while domestic Swiss visitors purchased about one in three. In this sample, 46% of cards were sold in hotels, 25% at local train stations, 22% on boats and the remaining 8% at the regional tourist offices.

Interestingly, while Maggiore is the more highly developed sub-region (47% of hotel beds and 51% of overnights), the Lugano region accounted for almost three times the number of sales (629 vs. 234). This anomaly can be attributed to one of two factors. First, Lugano is generally regarded as the gateway city to the Canton. Some people, no doubt, purchased the card here in transit to other parts of the Canton. In addition, Maggiore tends to appeal more to the repeat visitors, and as Zoltan and Masiero (2012) note, repeaters tend to purchase these cards less frequently. Cards were purchased mostly in larger urban centres, where the main tourist offices, train stations, boat docks and most hotels can be found. These cities are Bellinzona, Locarno,

Lugano and Mendrisio. The Lugano train station was the single highest purchase point (17.7%), while 25.8% of all sales were generated by the hotels in the Lugano region.

Table 3.1 Descriptive statistics of the sample

	Frequency	Percent			
Fee category					
International	503	51.0			
Domestic	324	32.9			
Youth	159	16.1			
Purchase type					
Hotel	450	45.6			
Train station	249	25.3			
Boat station	212	21.5			
Tourist office	75	7.6			
Regions	Frequency of cards sold	Percentage of cards sold	Activity distribution within the card	Activity consumption with the card	
Bellinzona	27	2.7	8	4	
Maggiore	234	23.7	13	10	
Lugano	629	63.8	11	9	
Mendrisotto	96	9.7	7	2	
Total	986	100	39	25	
	Mean	Median	St. deviation	Minimum	Maximum
N of activities	3.67	4	1.74	1	9
N of boat trips	1.15	1	.78	0	3
N of funiculars	1.78	2	1.24	0	6
N of museums	.06	0	.28	0	2
N of attractions	.67	1	.79	0	4
N of active days	2.25	2	.77	1	4
N of regions	1.67	2	.69	1	4
N of regions + purchase	1.84	2	.69	1	4

Usage patterns tend to mirror overall visitation patterns. Cards were used for a median of two days and a mean of 2.25 days, which coincidentally matches the mean length of stay. Tourists visited a median of two sub regions of the Canton during their visit and participated in a median of four activities, or about two per day. Funicular rides and boat trips were the most popular

activities, followed by visiting attractions. Museums were least popular. Use patterns also highlight one of the challenges facing the DMO in trying to encourage people to move from the more popular areas and core tourist communities to more remote parts of the Canton. The majority of activities included in the card are located in the northern part of the Canton, yet three quarters of tickets were sold in the south. Consumption patterns also tend to be concentrated in the two most developed areas of Maggiore and Lugano, resulting in fewer than half of the activities located in Bellinzona and Mendrisiotto being visited. It is important to note that the north part of Bellinzona region is more remote and mountainous, appealing mostly to hikers looking for a more strenuous activity (Boller, Hunziker, Conedera, Elsasser, & Krebs, 2010).

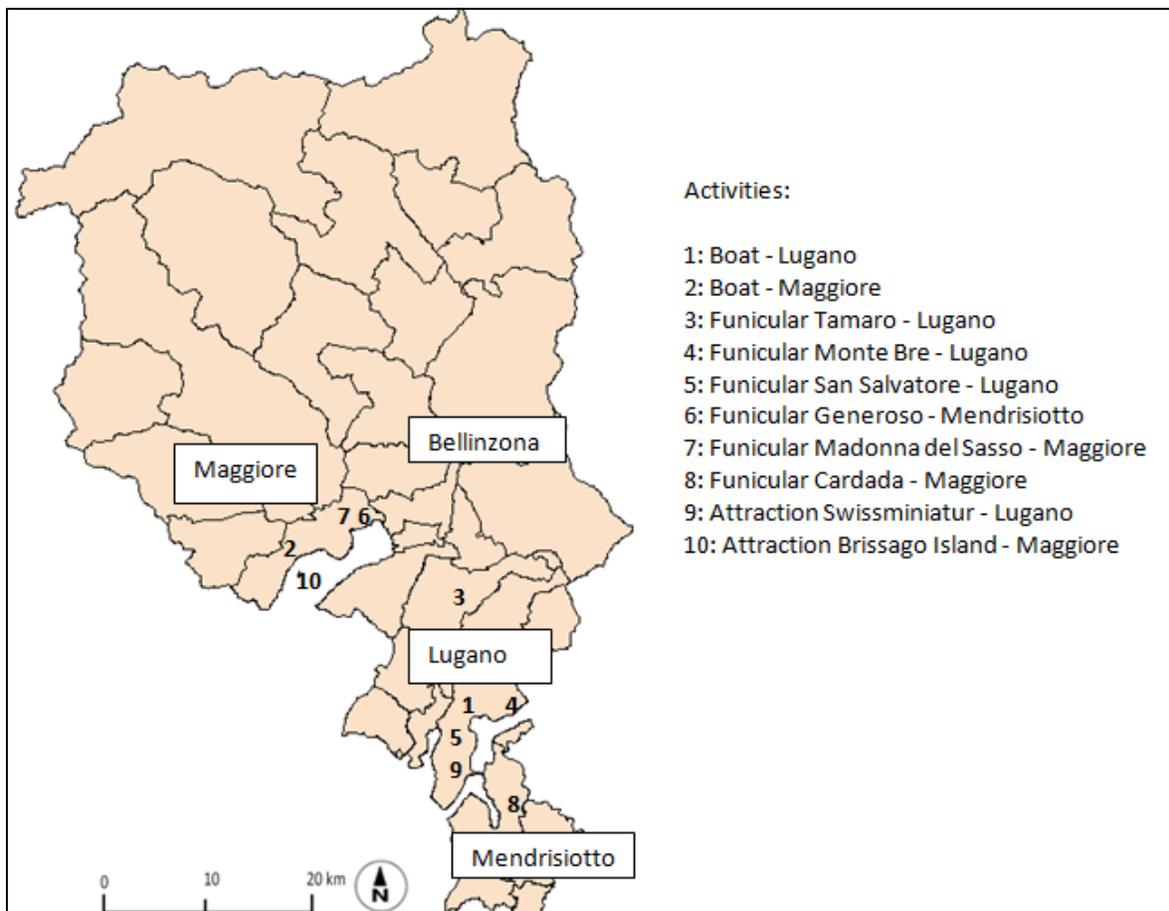


Figure 3.1 The analysed activities and attractions in Ticino

Source: Canton Ticino edited by the authors

Using SPSS software Version 20, a two-step method was adopted to segment consumers based on their behaviour patterns. To begin, cluster analysis based on activities pursued was carried out to divide tourists into homogenous groups. The study adopted *a posteriori*, data-driven segmentation approach. In order to ensure sufficient cell size for every cluster, activities or attractions visited by fewer than 10% of cardholders were excluded from the cluster analysis. Even though the card allows free access to 39 attractions, only 25 places were visited by the sample population, and, among them, only 11 attracted at least 10% of total users. These 11 activities were retained for the cluster analysis included three boat trips, six funiculars and two attractions, and Figure 3.1 shows their geographical distribution. (Note, a number of cluster analyses were conducted based on different participation rates. The test using a minimum 10% participation rate yielded the most robust solution). Hierarchical clustering was applied; each case started out as a single cluster on its own and was agglomerated one by one to other cases based on their similarity. The average linkage method and Euclidean distance measures were selected on the binary variables in line with Dolnicar and Leisch (2003). Regarding the stopping solution for the cluster formation, the rate of change in heterogeneity by the agglomeration coefficient was calculated.

In the second step, multiple discriminant analysis was employed on the clusters using simultaneous estimation to predict the cluster membership as functions of a set of variables and to assess the discriminating power of the predictors. The number of functions generated is calculated as the number of clusters minus one. The significance of each function is assessed by a chi-square value, and the proportion of the total variance unexplained is presented by the Wilks' lambda, while the contribution of the function in explaining variability is shown by the eigen value. The analysis reveals the correlation of each variable with each function presented in terms of loadings in the structure matrix. Generally, the cut-off value of $|0.4|$ is applied in identifying the more important variables (Hair, Black, Babin, & Anderson, 2010). The analysis allows the researcher to compare the average score profiles for the clusters by testing the equality of group means. In particular, while the F-statistic of Anova examines the significance of the variables, the Wilks' lambda assesses the discriminating power, where the most distinguishing variables are associated with the lowest value. The variables tested in the analysis are the sample characteristics described in Table 3.1. This set included predictor variables related to card sales, such as fee category, purchase type and place of purchase, while the remaining variables were

derived from the cumulated consumption patterns of 25 activities practiced with the card (number of activities undertaken; number of boat trips taken; number of funiculars ridden; number of museums visited; number of attractions visited; number of active days using the card, number of regions within Ticino visited for activity consumption with the card; number of regions within Ticino plus place of purchase if different).

By analysing this data set, a clear picture of card-buying tourists can be obtained. In order to generalize the results to the tourists visiting Ticino, some limitations must be recognized. In particular, the data set documents visits to partner attractions and activities that joined the destination card promotion. However, no information is available on participation rates in other activities and attractions which are not included in the card. As such, the study can document use patterns at the most popular attractions but cannot comment on the overall behavioural patterns of participants. In addition, the card offers only very limited demographic and trip data. Demographic data are confined to the number of adults and children purchasing the card, and the broad origin of adult tourists (domestic vs. international). Trip data are confined to place of purchase and duration of use of the card, once activated. No further demographic or trip profile information is available. Even with these limitations, though, the data can still be used to achieve the purposes of this study.

3.4. Results

Cluster analysis revealed four discrete groups of tourists based on their activity patterns, as summarized in Table 3.2. Activities joined in by more than half the members of each cluster are highlighted in bold for ease of interpretation. Members of Clusters 1 (Lugano Experience) and 2 (Maggiore Experience) and to a lesser extent Cluster 3 (Lugano/Mendrisiotto Nature) demonstrated high levels of spatial concentration, with strong preferences for specific activities within their use zones. For example, members of the first two clusters restricted their movements largely to one region, while movements of members of Cluster 3 were confined to the two most southerly regions. Members of Cluster 3 showed a strong preference for experiencing outdoor activities by typically taking two boat trips and riding two different funiculars. Members of Cluster 1 and 2 typically participated in three activities during their stay. It is notable that all members of the Lugano Experience cluster took a boat tour and visited a small built attraction. More than half repeated the same boat tour, while most also rode the local funicular to alpine

areas. Likewise, most members of the Maggiore Experience Cluster participated in a boat tour, visited a built attraction and took multiple funicular trips. Cluster 4, the ‘Access Group’ accounted for nearly 40% of the sample. They represented an anomalous group for members demonstrated neither spatial nor activity concentration. Instead, they moved widely throughout the entire Canton and sampled a range of attractions and activities, hence earning the label ‘Access Group’.

Table 3.2 Cluster analysis

Activity type	Region	Note	Clusters (cases)				Total (986)
			Lugano Experience (142)	Maggiore Experience (189)	Lugano/Mend. Nature (281)	Access Group (374)	
Boat	Lugano		1.00	.28	.98	.36	.61
Boat	Lugano	Second time	.56	.00	.63	.00	.26
Boat	Maggiore		.10	.98	.12	.11	.28
Funicular	Lugano	Tamaro	.06	.04	.19	.17	.13
Funicular	Lugano	Monte Bre	.32	.06	.30	.28	.25
Funicular	Lugano	San Salvat	.73	.12	.52	.34	.41
Funicular	Mendrisiotto	Generoso	.42	.19	.72	.10	.34
Funicular	Maggiore	Mad. Sasso	.10	.67	.07	.26	.26
Funicular	Maggiore	Cardada	.05	.73	.05	.20	.23
Attraction	Lugano	Swissminiat.	1.00	.20	.06	.22	.28
Attraction	Maggiore	Brissagoisla.	.05	.83	.05	.06	.20

As Table 3.3 shows, behaviour based cluster analysis also reveals deeper differences between and among cohorts. In particular, members of Clusters 1 and 2 (Lugano Experience and Maggiore Experience) share a number of features in common, while members of Clusters 3 (Lugano/Mendrisiotto Nature) and 4 (Access group) differ significantly. Members of Cluster 1 and 2, for example are the most active users of the destination card, participate in the largest number of activities on average and also showed a preference to visit built attractions. Together with members of Cluster 3, they tend to purchase the destination card in the region where their activities are concentrated, and use their card for the full three-day validity period. Some differences were noted in participation rates in other activities, with the Lugano Experience group more likely to take a boat tour and the Maggiore Experience group more likely to ride a

funicular. The Lugano Experience group also showed the highest propensity to purchase cards in tourist information centres, and were least likely to buy them in hotels. By contrast the Maggiore Experience group were most likely to buy their tickets in their hotel and least likely to purchase from information centres. Importantly, the Lugano Experience group is comprised of far more children than the Maggiore Experience group, possibly a reflection of the differences in visitor patterns noted earlier between these two communities.

The Lugano/Mendrisiotto Nature cohort (Cluster 3) showed the highest consumption level of activities related to experiencing nature, but its members were less likely than of the Clusters 1 and 2 to visit built attractions. While members of this group visited the largest number of regions and use the card for the longest period of time, on average, they participated in fewer activities than either the Lugano or Maggiore Clusters. This group preferred to free up time for natural attractions by avoiding built ones. The mountain areas which could be reached by the funiculars offer several tracking and hiking opportunities which are more time consuming than the visit of built attractions. They tended to purchase their cards in the major access point of Lugano prior to venturing to the southern region, suggesting transport provisions also a key selling point. Most sales for this group occurred in the hotels and boat stations. International tourists are representing the half of this group, while the shares of domestic and young tourists are 35% and 15%, respectively.

Members of the Access Group (Cluster 4) demonstrated rather unusual behaviour characteristics. They participated in the fewest number of activities (on average 1.5 to 2.0 fewer activities than members of other clusters) and used the card for the least amount of time (0.65 to 0.80 fewer days than other groups). They also showed the largest discrepancy between the two variables 'number of regions visited' and 'number of regions visited + location where purchased.' More than one-third of cards were sold at train stations. These findings suggest members of this cohort purchased the cards as much for its transport benefits as for the opportunity to participate in activities. This pattern is further supported by the descriptive statistics for this cluster, for which a low standard deviation is observed on the critical variables of tourists. This indicates the existence of a high level of homogeneity within the cluster.

Table 3.3 Means comparison test and discriminant analysis of determinant variables

	Lugano experience	Maggiore Experience	Lugano/ Mend Nature	Access Group	F statistics	Wilks' Lambda	Structure matrix - Functions		
							1	2	3
N of activities	4.59	4.60	4.01	2.59	110.001 ^a	-	-	-	-
N of funicular	1.75	1.93	2.01	1.53	9.739 ^a	.971	.110	.069	-.157*
N of boat trips	1.66	1.27	1.73	.47	335.904 ^a	.494	.779*	.382	-.140
N of museums	.01	.13	.07	.05	5.682 ^a	.983	-.019	.067	-.203*
N of attractions	1.18	1.28	.19	.55	131.878 ^a	.713	-.155	.632*	.336
N of active days	2.51	2.44	2.61	1.80	93.843 ^a	.777	.385*	.262	-.179
N of regions	1.63	1.80	1.93	1.41	37.726 ^a	.897	.227	.111	-.302*
N of regions + purchase	1.70	1.88	1.96	1.78	6.121 ^a	.982	.059	-.012	-.205*
Place of purchase									
Bellinzona	.01	.01	.02	.05	3.570 ^b	-	-	-	-
Maggiore	.03	.70	.01	.25	169.699 ^a	.659	-.376	.512	-.536*
Lugano	.86	.23	.93	.55	131.256 ^a	.714	.416*	-.357	.348
Mendrisiotto	.11	.06	.04	.15	8.524 ^a	.975	-.104	-.061	.150*
Purchase type									
Hotel	.26	.52	.50	.46	9.498 ^a	-	-	-	-
Train	.22	.25	.13	.36	15.581 ^a	.955	-.171*	-.037	.099
Boat	.25	.21	.32	.13	12.757 ^a	.962	.157*	.026	-.082
Tourist office	.28	.02	.05	.05	35.181 ^a	.903	.088	.073	.537*
Fee category									
International	.48	.56	.49	.51	.897	-	-	-	-
Domestic	.32	.42	.36	.26	5.452 ^a	.984	.046	.106	-.117*
Young	.20	.02	.15	.23	15.822 ^a	.954	-.034	-.187	.236*
Summary statistics									
Function	Eigenvalue	Variance	Canonical Correlation	Wilks' Lambda	Chi-square	Degrees of freedom	Significance		
1	1.480	56.3	.772	.167	1744.635	45	.000		
2	.830	31.6	.673	.415	858.746	28	.000		
3	.318	12.1	.491	.759	269.273	13	.000		

Notes: a: prob<1%, b:prob<5%, *: Largest absolute correlation between each variable and any discriminant function,

In bold: The more distinguishing variables applying the cut-off value of |0.4|

Multiple discriminant analysis was used to determine the discriminating power of the profiling variables among the cohorts. The four clusters are used as target variables, with the characterizing variables shown in Table 3.1 as predictors. Using the four groups for the analysis generated three functions, where each represents a variant of the discriminant variables to allow allocating the cases in the clusters. In the preliminary analysis, a variable has failed the tolerance test, as heterogeneity was recognized between the variables of number of activities in general and the number of attractions pursued by the tourists. After observing the pooled within-groups matrix, the 'number of activities' was removed due its higher inter-correlation with the other variables. Moreover, in order to avoid multicollinearity, one dummy variable had to be removed from each group of categorical variables, such as fee categories, place of purchase and purchase type. Table 3.3 summarizes the statistics of the functions and reveals the detailed results of the discriminant analysis for each determinant. The functions generated are all significant, as it is assessed by the Wilks' lambda. Function 1 explains 63.4% of variance and determines the number of boat trips, Lugano as a place of purchase and the number of active days (slightly below the threshold) as the main distinguishing variables among the clusters, as its shown in bold in the structure matrix. Function 2, by explaining 30.1% of variance, highlights the importance of the number of attractions consumed in clustering the consumption. Finally, function 3 accounts for the 6.4% of total variance, reveals that variables related to the purchase of the card (Maggiore region and tourist office) were discriminating among the clusters. Similarly, the Wilks' lambda, demonstrated for each predictor, shows that in general the most discriminating variables are the number of boat trips, number of attractions, number of active days and two dominant places of purchase; Maggiore and Lugano. Overall, 77.2% of the sample is correctly classified, which is a satisfactory result. However, it is important to note that the correct prediction of the sample is not the main aim of the multiple discriminant analysis in this research, instead is to examine the role of determinants.

3.5. Discussion and Conclusions

This study analysed consumption patterns of a destination card to evaluate whether evidence of spatial or product clustering existing among a group of tourists visiting the Canton of Ticino in southern Switzerland. The results were somewhat unexpected, for there was only limited evidence of activity-based segmentation. Instead, movement patterns were defined largely on a spatial dimension. Members of two clusters, the Lugano Experience and the Maggiore

Experience Clusters (1 and 2) were defined primarily based on movements concentrated heavily within either of the two most developed regions of the Canton. A third group, the Lugano/Mendrisiotto Nature Cluster (cluster 3) was also defined by spatial concentration (comprising of the two most southerly regions) plus an element of activity clustering (a clear preference for both boat trips and funiculars). Little or no evidence of primary cluster formation by activity participation was apparent, with the possible exception of Cluster 4, the Access group. But here, transport seemed to be the defining feature of this group for the use of the card provided ease of access throughout the Canton. Thus, to conceptualize the decision process in an intra-destination level, the spatial structure of the destination seems to play a greater influence on behaviour than its product structure.

However, according to Zillinger (2007) the location of tourist sites relative to other attractions, and the location of the tourists' accommodation need to be considered. Furthermore, the same area can accommodate different tourism experiences. In line with the literature, the discriminant analysis confirms that the region of sales has an important role in identifying the consumption of activities and the extension of the area visited. It can be noted that tourists mainly consume where they purchase if the access point is one of the two main tourist regions (Maggiore, Lugano), otherwise they consume mainly in the nearest tourist region. Further, the type of place where the card was purchased also related to cluster membership, especially among tourists purchasing the card in a tourist office.

The dominance of spatial clustering and the importance of sales points offer insights as to why no visits were recorded for certain activities found in the northern part of the Canton. Access points are located mainly in the south, and from there, it takes more than an hour travel time to reach activities at the north end of the Canton. In accordance with the principles of market access, people are rationale consumers who will choose nearby products if they can satisfy their needs. Demand declines with the number of intervening opportunities offering similar experiences, as a function of deteriorating reward for a higher time risk. Simply stated, the experiences available in the northern end of the Canton were not perceived to provide a tangibly superior experience to warrant the almost three hours round trip. Instead, people could reduce their travel time by visiting nearby attractions, and thus free up time to do other things.

Moreover, attractions have a very significant discriminant power among the clusters. They are almost absent in some experience clusters, whereas being core elements of others. In particular, the number of boat tours taken had the most discriminative power among the segments. Boat tours are among the most popular activities in Canton Ticino. Multiple opportunities are available in the Lugano region, while only one such tour is available in Maggiore. Cluster 4 shows the lowest interest in boat trips, like in any other activities, whereas the members of Cluster 3 took the most rides. Finally, the number of active days is a very important discriminating variable among the clusters. This can be interpreted as tourists with longer length of stay show a significantly different movement pattern and activity consumption than the others. Especially the members of cluster 3, with more nature related experience, score highest in number of active days.

The findings of each cluster have a number of implications for destination management organisations. The study determined that even a relatively small destination region with a limited product mix attracts a heterogeneous tourist population. Interestingly, an existing product bundle called 'Discover Lugano' already caters to the first cluster group but no similar offer is designed that can cater for other groups, and especially for those who concentrate their activities in Maggiore. In addition, scope for further collaboration between and among regions exists. Interestingly, while the destination exists in a single Canton, to a large extent it seems to be treated as four discrete destination areas, with little overlap. Yet, tourists do not know or necessarily care about these artificial distinctions. In particular, the two southern regions of the Sottoceneri could create tailor-made products for Cluster 3, whose members concentrated their movements there.

The findings also call into question the ability of destination management organizations to encourage visitors to disperse more widely through destinations. Edwards, Dickson, Griffin, and Hayllar (2010) discuss how the type of information gathered in this study can be used to inform planning decisions and redirect visitor flows to both avoid overcrowding and disperse benefits of tourism more widely through destinations. McKercher and Ho (2006), though, suggest the ability to shift demand from more popular to less popular attractions is challenging for many other places either lack the innate appeal of more popular attractions or the time and effort required to visit them does not match the marginally added benefit of shifting. This study revealed the

extend of under-utilization of most of the activities that partnered with the destination card. Purchasing the card does not necessarily stimulate region-wide movement, with the possible exception of members of Cluster 4. Instead, the purchase location is closely associated with use concentration, as the vast majority of members of Cluster 1, 2 and 3 used the card in situ. The card alone, therefore, does not provide enough of an incentive to pull people away from the touristic core to the more remote regions of the Canton, even though they house world heritage sites. Other actions are required to motivate people to travel further afield.

Insights can also be gained into the appeal of bundled products such as the destination card, and which types of attractions and activities are most likely to benefit by joining. It is also worth noting that while the card provided access to 39 activities and attractions, few people took full advantage of the opportunities. Instead, they tended to limit their use to between three and four activities per visit, usually in the most highly developed areas. Indeed, only about one in four of the activities or places included in the card attracted 10% of purchasers, with fully 14 of the sites generating no visitation from the card. This type of card seemed to be most effective for boat and rail operators, as well as some built attractions located in urban areas. However, it does not seem to work well for museums and heritage sites. This finding suggests product compatibility must play a critical role in the decision making process for attractions' operators who may want to participate in such a programme. For some, it will definitely generate more business, while the benefits to others will be limited.

Importantly, the card can be promoted more heavily as an appealing product for consumers. At the beginning of the paper, the authors pointed out that these cards were most popular with first time visitors on a modest budget and less popular with repeaters. The card seem to be more popular with adults and less popular with families, and likely more popular for those who lack their own mode of transport. A total of 5114 cards were sold during the summer of 2012, while total arrivals recorded were 731,564. This figure represents a less than one percent market share. Clearly, not everyone is interested in such a card. But, also clearly, many would be, yet the value adding benefit of the card does not appear to be appreciated fully. The inclusion of free transport represents an important value-adding benefit that creates a new market for this type of product and in doing so, can broaden its market base. The combination of both transport and attractions' entrance appeals to two different user groups, one looking to gain access to attractions and one

that want ease of transport. The activities groups (Clusters 1 to 3) represent about 60% of users, while the transport group (Cluster 4) represents approximately 40% of the market. Indeed, while the card may not generate visits to attractions in more remote regions, it does appear to generate visitation to these areas, and in doing so may benefit other businesses.

The sales points of the cards seem to play a strategic role in the formation of the touristic experiences, yet this opportunity seems to be under-developed here. Collateral materials could be provided to promote different regions and different attractions, with information about accessibility among the regions being promoted further to incentivize tourist mobility. The cards can give the opportunity of turning tourists into repeaters as by having more information of the different regions they can be triggered to come back and see those places as well. This could also help to lengthen the average overnight stay. The card is valid for 72 hours, which means many people can use it for large parts of four days (for example if they purchase it in the afternoon of day 1 and finish using it in early afternoon of day 4.) Ideally, the large number of activities included in the card may induce people to stay longer. At present, though, this situation is not evident here, as the usage rates of the card mimic the mean length of stay. However, the information gained on the availability of activities could serve as promotion for the next visit of tourists. For example, tourists belonging to one cluster during this holiday could decide to return and follow different movement pattern and activity consumption with the card and consequently belong to another cluster.

Finally, this study highlights how these types of cards can provide a valuable, though limited, set of information that can benefit DMOs. Tourist movements, activity preferences and spatial concentration can be gleaned from the raw data set. These data could be supplemented easily though, by the inclusion of a few additional questions asked at the point of purchase relating to the origin of the visitor, travel party composition, psychographic and travel pattern profiles. The inclusion of such information provides a much more robust database that can be used to gain important additional insights into the market, enabling identification of more specific target markets, better understanding of behaviour, desire and satisfaction. Keeping records such name of the hotel in relation to consumption would help the marketing initiative of service providers in the regions.

This study demonstrated that destination cards can provide valuable consumer behavior information for destinations. It also indicates that spatial clustering is more prevalent in this type of destination area than product clustering. The study was able to discuss potential research opportunities that can generate real marketing benefits. In doing so it suggests that destination cards can be a valuable source of market intelligence for DMOs.

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Chapter Four

Tourist Flows and Spatial Behavior

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ABSTRACT

Tourism involves the movement of people through time and space, either between their home and destinations, or within destination areas. Understanding tourist movements and the factors influencing the time/space relationships that tourists have with destinations has profound implications for policy, infrastructure, transport, and product development, as well as the management of tourism's impacts (Edwards & Griffin, 2013). Early research focused on interdestination travel patterns and relied largely on paper-based data-collection tools such as surveys, trip diaries, and small-scale maps. The emphasis has shifted recently to studies of tourist movements within destination areas, aided by passive, electronic data-collection tools, such as Global Positioning System (GPS) tracking devices, cell phones, and personal digital assistant (or PDA) instruments. Technology now permits more sophisticated analysis including network analysis, time budget allocation, and market segmentation based on different observed behavioral patterns.

This chapter examines tourism flows and spatial behavior. It begins with a review of pioneering research conducted in the 1990s that examined interdestination movements. An overview of intradestination movements follows before concluding with a discussion of moderating factors that can affect spatial behavior.

4.1. Modeling Interdestination Tourist Movements

The study of movements between the tourist's home and destination or between destination areas dominated research conducted in the 1990s. This research established the field of study and identified dominant themes that are still prevalent today. The following section reviews briefly key works that laid the foundation for this study area.

Mings and McHugh (1992) identified four types of touring routes taken by domestic American tourists who visited Yellowstone National Park. Three involved automobile travel exclusively, while the fourth involved a combination of air and automobile transport. Respondents who displayed a "direct route" itinerary took the most direct path to and from Yellowstone National Park and followed exactly the same route in both directions. The "partial orbit" itinerary consisted of taking the most direct route to a large destination area, such as the Rocky Mountains, then embarking on a touring loop in the area. The return trip follows the original outward bound transit route. These types of itineraries are typified by a significant transit journey followed by an extensive tour visiting the key attractions and staying in different destinations in an area some distance from home. By contrast, the "full orbit" tour itinerary involves visiting a number of destinations with no overlap in the tour route. The "fly-drive" itinerary is similar to the partial orbit itinerary except that the transit leg is made by air.

Lue, Crompton and Fessenmaier (1993) focused their research on multi destination trips, but also recognized the existence of single destination, direct-route trips. Four types of itineraries were described. Tourists make a number of short stops on their way to or from the main destination in the "en-route" model. The "base camp" model represents a further elaboration of the single destination model. Conceptually, it resembles a hub and spoke. Tourists base themselves in one main destination and then venture out from that destination in a series of short, day tours to nearby attractions and destinations. In the "regional tour", tourists travel to a destination region, but rather than basing themselves in one locale, they stop overnight in a number of places in a sequential pattern before returning home. The "trip-changing" pattern involves a multi-foci, touring trip visiting a number of destinations without overlapping any leg of the trip.

Oppermann (1995), focusing on international travel, identified seven possible itinerary types. In addition to the five previously mentioned by Mings and McHugh (1992) and Lue et al. (1993), he added two other itineraries that are relevant to long-haul air travel. The “open jaw loop” model applies to tourists who enter a country through one gateway and leave through another. In between, they embark on a linear tour connecting the two gateways. For example, a European visiting the United States may arrive in New York, travel overland to San Francisco and then return home from there. The “multiple destination areas loop” itinerary model is the most complex, for it recognizes some tourists will visit many countries and tour extensively through these different destinations. The person may engage in different travel patterns at any given stop. Thus, it may be possible for someone on an extended trip to participate in any or all of the “single destination stopover”, “base camp tours”, “full tours” or “open jaw” itineraries.

Finally, Flognfeldt (1999) identified four modes of recreation and vacation travel. The “resort trip” (direct travel, single destination), “base holiday” and “round trip” are similar to other itinerary models discussed previously. In addition, he identifies “recreational day trips” from the individual's home community as a fourth travel type. While technically not a tourism trip because no overnight stay is involved, day trips must certainly be considered when examining the full of range of touring options.

These studies identified 26 different itinerary types, but closer inspection reveals the distinction between them is rather forced and arbitrary. Mode of transport, distance and domestic versus international travel delineate different models, when the overall patterns described are largely similar. Indeed, as Figure 4.1 illustrates, the 26 models proposed can be classified into four broad themes. The simplest itinerary type involves a single destination, there-and-back trip that may or may not include side trips. A second type involves a transit leg to the destination area, followed by a circle tour, stopping overnight at different places. A third type involves a circle tour with or without multiple access and egress points. Lastly, hub and spoke itineraries may be evident where tourists base themselves in a destination area and take side trips to other destinations.

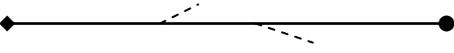
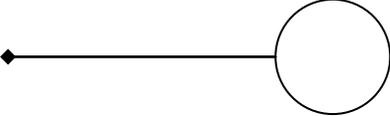
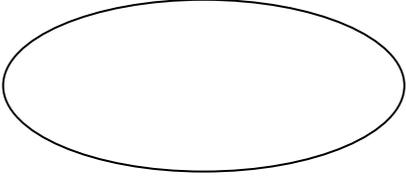
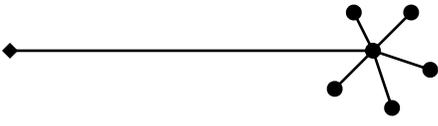
Itinerary types	References
 <p data-bbox="240 426 808 457">Single destination, with or without side trips</p>	<p data-bbox="883 264 1149 296">Lue et al. (1993) x 2</p> <p data-bbox="883 317 1279 348">Mings and McHugh (1992) x 1</p> <p data-bbox="883 369 1179 401">Oppermann (1995) x 2</p> <p data-bbox="883 422 1159 453">Flognfeldt (1999) x 1</p> <p data-bbox="883 474 1289 506">Lew and McKercher (2002) x 1</p>
 <p data-bbox="256 751 792 846">Transit leg and circle tour at a destination (transport modes may vary)</p>	<p data-bbox="883 594 1192 625">Mings and McHugh x 2</p> <p data-bbox="883 646 1052 678">Lue et al. x 1</p> <p data-bbox="883 699 1081 730">Oppermann x 1</p> <p data-bbox="883 751 1198 783">Lew and McKercher x 2</p>
 <p data-bbox="191 1087 857 1287">Circle tour with or without multiple access, egress points; different itinerary styles possible at different destination areas (transport mode may vary)</p>	<p data-bbox="883 930 1192 961">Mings and McHugh x 1</p> <p data-bbox="883 982 1052 1014">Lue et al. x 1</p> <p data-bbox="883 1035 1081 1066">Oppermann x 3</p> <p data-bbox="883 1087 1062 1119">Flognfeldt x 1</p> <p data-bbox="883 1140 1198 1171">Lew and McKercher x 2</p>
 <p data-bbox="240 1528 808 1623">Hub and Spoke Style (From home community or destination area)</p>	<p data-bbox="883 1371 1052 1402">Lue et al. x 1</p> <p data-bbox="883 1423 1081 1455">Oppermann x 1</p> <p data-bbox="883 1476 1062 1507">Flognfeldt x 2</p> <p data-bbox="883 1528 1198 1560">Lew and McKercher x 1</p>

Figure 4.1 Itinerary Types.

This research illustrates that tourist movement patterns involve both a transit and a destination touring component. The different types are shown in Figure 4.2. The various tour

combinations identified result from different mixing and matching of transit and touring elements. An outbound and inbound transit leg following the same route is implied in the single-destination, base camp, stopover/en-route, and the regional tour/partial orbit or destination area loop models. Multiple transit legs are needed for the various loop tours identified. In rare instances, tourists may embark on a single transit leg and then have an extended return tour home.

4.2. Modeling Intradestination Movements

The examination of intradestination movements is much younger area of study, due to three factors that did not affect interdestination studies. The first issue relates to fineness of data. Unlike interdestination studies where the destination represents the unit of analysis, intradestination studies require a level of precision in the order of meters or tens of meters. This first issue leads directly to the second issue, that of the reliability of the tourist as researcher. Fineness of detail depends on how meticulous tourists are in reporting their movements, which, experience shows, is rarely finer than the level of attraction node (McKercher & Lau, 2008). The emergence of passive electronic tracking devices have resolved both issues as precise movements can be tracked without any need for tourists to record their activities.

A lack of theoretical framework represented the third limiting factor. While interdestination movement studies can inform intradestination research, the spatial organization of destinations adds a layer of complexity that limits their utility. Traditional urban transport models are also of limited value for they are predicated on the assumption that the majority of people have perfect knowledge of the road system and will take the shortest or otherwise most-efficient route possible: something that cannot be assumed for tourists who may be unaware of their destination's geography, but who want to explore it widely (Lew & McKercher, 2006).

A framework to analyze tourist movements based on the geomorphology of the destination, the spatial location of attractions and accommodation nodes, transport routes, mode and accessibility, tourist time budgets, tourist motivation, and destination knowledge sought to address this issue (Lew & McKercher, 2006). The model suggests movements are influenced by both a territorial

(Figure 4.3) and path (Figure 4.4) dimension. Territoriality relates to the distance traveled from the accommodation locus.

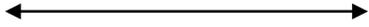
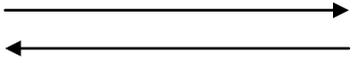
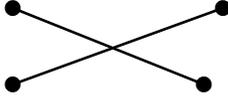
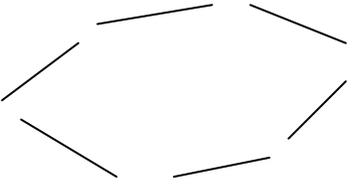
Transit Component	Destination Touring Component
 <p data-bbox="337 464 586 491">Return by same route</p>	 <p data-bbox="927 457 1143 485">Single destination</p>
 <p data-bbox="203 663 721 690">One way (either to or from destination area)</p>	 <p data-bbox="943 663 1127 690">Hub and spoke</p>
 <p data-bbox="407 1016 516 1043">Multiple</p>	 <p data-bbox="850 1016 1219 1043">Multiple overnight destinations</p>

Figure 4.2 Different Transit and Destination Touring Component of Itineraries

The path dimension builds on inter-destination studies and suggests tourists could exhibit one of seven types of movement patterns from a simple point-to-point pattern to a complex, rather random pattern. Empirical testing of this framework supported the validity of a territoriality dimension, but questioned the linearity dimension (McKercher & Lau, 2008). Instead, intensity and to a lesser degree specificity appear to influence spatial patterns more than linearity. Intensity relates to the number of stops made during the day and specificity refers to whether tourists tend to confine their movements to a specific node or wander widely throughout the destination.

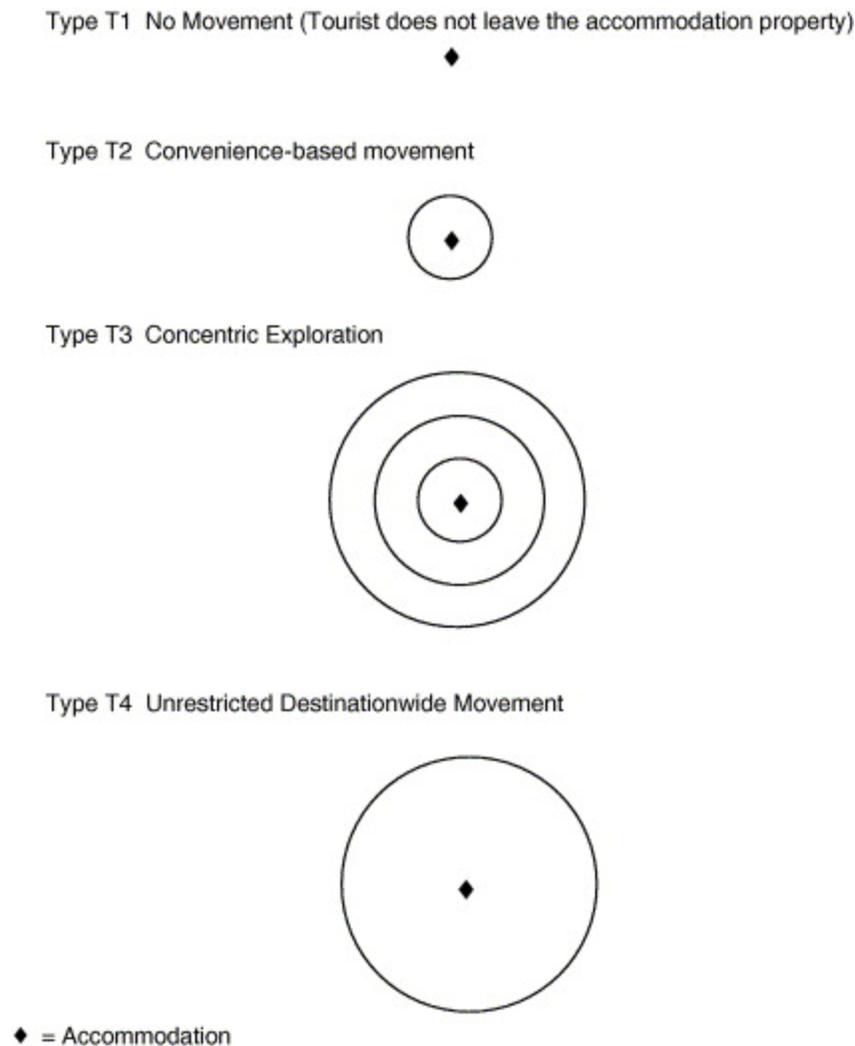


Figure 4.3 Territoriality of Intra-destination Movements. Source: Lew and McKercher (2006).

Studies using network analysis support this latter finding by showing the strength of the relationship between individual attractions, attraction nodes, and paths followed. These studies reveal that while movements of individual tourists may be stochastic, there is an underlying order to them. Orellana et al. (2012), for example, noted that while many places are visited often they are hardly visited in the same order. Zheng et al. (2011) and Li et al. (2011), analyzing GPS-tagged photos, were able to identify sets of attraction nodes and the broad paths linking them. Leung et al. (2012), using a similar method, identified the cornerstone or icon attractions that formed the foundation for these networks, while Xia et al. (2011) demonstrated that this type of analysis can predict the probability of visiting other attractions within a network. In doing so,

Edwards and Griffin (2013) have used network analysis to identify self-guided touring routes of varying durations to help visitors maximize limited time budgets and increase expenditure. Both Edwards and Griffin (2013) and Xia et al. (2011) illustrate how this knowledge can be used to develop appropriate management strategies to minimize or mitigate congestion.

Interestingly, Zillinger (2007) raised the idea of being able to identify a rhythm that is noticeable in tourist mobility over time and space. Rhythmic movements are defined by a combination of mobility and stationariness. She found that mobility and stationariness alternate in a rhythmic and occurring way but within each day of the journey and over the entire holiday. Travel rhythms are highly individual, influenced by the tourist's own interests, past visitation history, and the spatial organization of that destination.

Intradesination studies also highlight the hitherto unrecognized impact that the stage of visit and hotel location have on movements. Movements are heavily restricted during arrival and departure days, whereas they are more unfettered during middle days of a visit (McKercher & Lau, 2008; Shoval et al., 2011). The tourist's effective unrestricted timed budget is, in reality, shortened by 2 days, limiting how widely they can explore the destination area. For example, a 3-day, 2-night stay produces only one full day where tourists can be expected to travel widely. This finding also explains why tourists on limited time budgets often preplan their itinerary prior to the visit and are reluctant to change once in the destination (Shoval & Raveh, 2004). In a similar manner, hotel location has been discovered to exert a pronounced effect on movements, influencing when certain places are likely to be visited during the day, sequence of visitation, and probability of visiting lower-order attractions (Shoval et al., 2011).

Type P1 Point-to-Point Patterns

P1a Single Point-to-Point



P1b Repetitive Point-to-Point



P1c Touring Point-to-Point



Type P2 Circular Patterns

P2a Circular Loop



P2b Stem and Petal

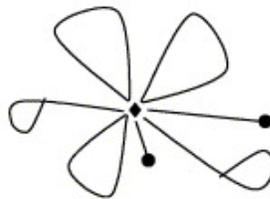


Type P3 Complex Patterns

P3a Random Exploratory



P3b Radiating Hub



◆ = Accommodation
● = Attraction Site or Stop

Figure 4.4 Linearity of intradestination movements. Source: Lew and McKercher (2006).

4.3. Intervening Factors

A series of intervening factors can affect tourist movements. This last section discusses the impact that distance decay and its cousin market access, and time, trip, and personal characteristics, have on movements.

4.3.1. Distance Decay and Market Access

Tobler (1970) identified distance decay as the First Law of Geography, noting that “everything is related to everything else, but near things are more related than distant things.” Distance decay states that demand for activities varies inversely with the distance traveled or with increased time, money, or effort required to reach a place. The associated concept of market access builds on this idea, but argues that the number of intervening opportunities offering similar experiences affects the rate of decay (Pearce, 1989). Thus, while in aggregate tourist flows will decline with distance, the pattern will vary depending on the product type. For example, residents of the subtropical city of Brisbane, Australia, have the choice of literally dozens of beaches within a 150 km radius of the city, but must travel more than 2000 km to access Australia’s nearest downhill ski resort, Falls Creek. As a result, a beach located 100 km away may be deemed to have poor market access, while a ski resort located 2000 km away might enjoy strong market access. Distance decay has been studied empirically in various tourism settings since the late 1970s (Greer & Wall, 1979) and found to be broadly applicable. Much less research has been conducted on market access (McKercher, 1998b), representing a significant gap in the literature.

Three broad types of decay curves have been identified (McKercher & Lew, 2003). The standard curve shows how demand peaks at some distance close to the tourists’ home and then declines exponentially. The shape of the curve recognizes that tourists must travel a certain distance before they feel sufficiently removed from their home environment to make the journey worthwhile (Greer & Wall, 1979). Alternately, demand can plateau for some distance before declining, as a result of a finite number of destination options and accommodation supply along a linear touring route (McKercher, 1998a). Here, market access influences the shape of the curve. The third type has a secondary peak some distance away from the source market, in recognition of the fact that some distant destinations may have such great market appeal that their pulling power supersedes the normal frictional effect of distance.

A global study evaluating 41 source markets and 146 destinations confirmed the ubiquity of the impact of distance on demand (McKercher et al., 2006) (Figure 4.5). This study concluded that 80% of all international travel occurs to destinations located within 1000 km of a source

market's borders. Global tourism demand declines sharply thereafter, with mean demand per destination declining by two-thirds with every additional 1000 km traveled. Moreover, decay curve patterns from 39 of the 41 source markets adhered to the one of the three distance decay models.

The origin of the decay curve for island economies was shifted, but otherwise one of the three patterns was observed. Japan and Australia represented the only exceptions, where multiple decay curves were noted. Outbound tourism from Japan displayed two distinct short-haul and long-haul distance decay patterns, while three distinct peaks were noted among Australians, coinciding with travel to the South Pacific (peaking in New Zealand), Southeast Asia (peaking in Singapore), and Europe. Interestingly, a similar decay pattern has also been observed within destinations (Shoval et al., 2011), where tourists are likely to spend up to 40% of their total daily time budget within close proximity of the hotels. Remote attractions are unlikely to be visited, unless they have attained the status of icon sites that help brand the destination.

Market access has been found to influence the type of visitor attracted to different destinations (McKercher, 1998b). Areas with strong market access do not necessarily attract more visitors or more visitor nights, but they do attract short-break vacationers, through travelers, and international tourists seeking a short escape from gateway cities. Destinations with poor market access tend to attract repeat visitors and those who stay for long periods. Families traveling with children seek places with strong market access for short-break vacations. On the other hand, families who have more time to travel seek destinations with poor market access. Couples with no children choose to vacation at destinations with modest market access, bypassing the most proximate destinations.

Two other relationships between distance and tourist flows are worthy of discussion. First, an effective tourism exclusion zone (ETEZ) has been observed in much outbound travel (McKercher and Lew, 2003). The ETEZ represents a geographic zone where little or no tourism activity occurs that is relevant to the market under consideration. The size and proximity of the zone to the market can distort the rate of demand decay. An ETEZ close to the source market essentially shifts the demand curve outward. A similar zone a moderate distance from the source market accentuates the demand peak leading up to its inner edge, and can produce a secondary

demand peak beyond its outer edge. This pattern exists for both inter- and intradestination travel. More importantly, the zone represents a psychological threshold that distinguishes long- from short-haul travel. Trips taken prior to encountering the ETEZ are typically short-break, short-duration, single-destination trips. Those that occur beyond its outer edge tend to be longer-duration, multiple-destination, touring-oriented trips.

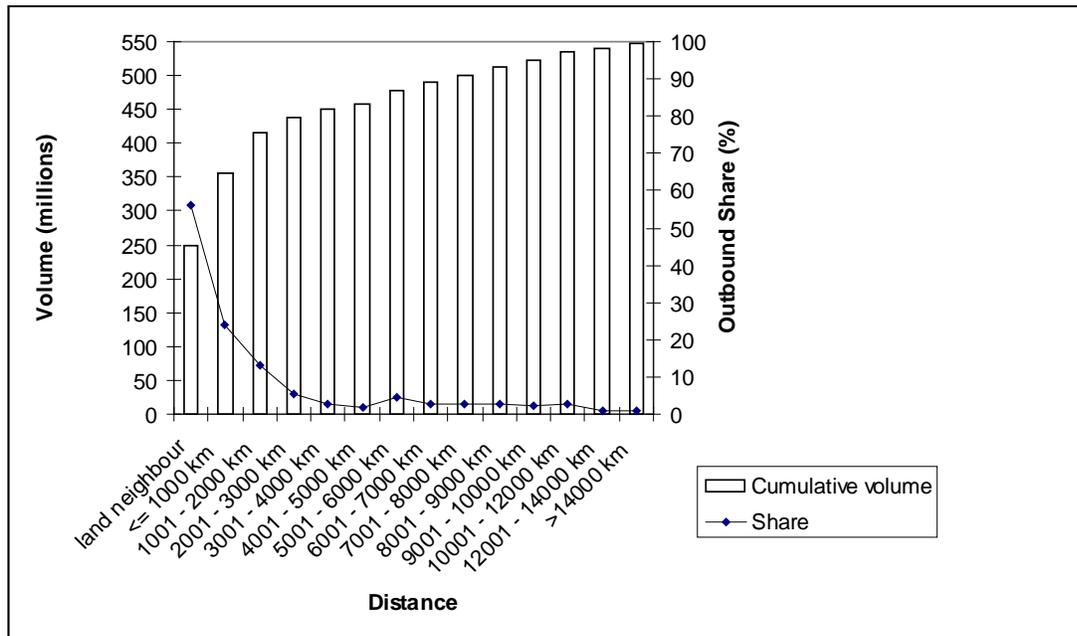


Figure 4.5 Cumulative volume of arrivals. Source: McKercher et al. (2006).

Second, distance exerts a significant filtering effect on the type of person willing or able to travel, which in turn affects behavior and consumption patterns within destinations. Essentially, anyone who can travel short distances, but the extra time, cost, effort, and willingness to enter culturally dissimilar environments tends to act as a “filter” that effectively excludes certain segments (McKercher, 2008, 2009). As a result, short-haul visitors tend to be younger, have lower levels of education, lower incomes, and have less travel experience. Families, young couples, and groups of friends are more common. They travel for escape, fun, and relaxation and seek activities that satisfy those needs. Conversely, the long-haul tourist tends to be older, more affluent, and more experienced. They are unlikely to be traveling with children. They are likely to be traveling for aspirational and self-development reasons and will choose activities that reflect those goals.

4.3.2. Time and Financial Budgets

Time is one of the few absolutes tourists face when they travel. Vacation times are usually fixed, with little opportunity to extend holidays. However, tourists do have control over how they choose to spend their time budgets, and this depends on whether they value time as a scarce resource to be rationed or as commodity that can be spent in many places. It is for this reason that McKean et al. (1995) argue that time rationing may be the most important factor in the travel-cost equation. Those who adopt a resource valuation see travel time as something that cannot be saved, stored, or accumulated for future use. They tend to view transit time as a cost, where time spent traveling must be traded-off for a shorter stay at a destination (Truong and Henscher, 1985). They can be considered as outcome-oriented individuals who seek to maximize time spent at the end point by minimizing transit times. An alternative school of thought argues that the transit component has a positive commodity value in itself (Chaves et al., 1989; Walsh et al., 1990). These people can be described as process-oriented tourists, where the journey can be as important as the goal. Touring, sightseeing, and making multiple stops are important to them. People with limited time budgets tend to adopt a more resource-oriented approach to travel and want to get to the destination or attraction as quickly as possible. Those with larger time budgets tend to adopt more of a commodity-oriented approach and will engage in touring, sightseeing, and exploration.

Money also plays a role, but it is more subtle; it can effectively “buy” time or distance, enabling people willing to spend more to travel further or do more things within a finite time frame. For example, a self-drive tourist can likely travel 300 km or less in 4 hours, limiting the choice of destination. Yet, a flying time of 4 hours enables the tourist to travel 3000 km or more. Conversely, someone wishing to drive 3000 km may have to invest 5–6 days for each transit leg, meaning only those people with large time budgets can afford to do so. Money can thus buy time, in the sense that it can shorten transit times or, for the same amount of time, it can buy distance, opening up a much wider array of destination opportunities for the tourist.

4.3.3. Trip and Personal Characteristics

Length of stay influences both multideestination travel and the number of activities tourists can pursue within a destination area (Oppermann, 1997). Substantial differences have also been noted in the movements of first-time and repeat visitors (Fakeye & Crompton, 1991), with a recent study using Geographic Information System (GIS) analysis revealing differences in the amount of time spent at attractions, the times of day when attractions were likely to be visited, and in overall daily movement patterns, where first-time visitors are more likely to make one long extended trip from the hotel, while repeaters tend to make a number of short forays, returning to the hotel intermittently during the day (McKercher et al., 2012). The role of the place visited as a main or stopover destination also affects behavior (McKercher, 2001), due in part to the length of stay and also in part to the psychological investment made in the destination. Furthermore, trip purpose may also have an effect on the spatial distribution of tourists (Fennel, 1996). Pleasure travelers are far more likely to explore a destination than business travelers. People visiting friends and relatives tend to do less, while spending more time with family. When they travel, they may go to areas not predominantly identified as tourism nodes. Special-interest tourists will tend to confine their actions to activities that relate to the specialized reason for visiting, while the generalist sightseeing tourist will tend to travel more widely with no clearly evident pattern (Zakrisson & Zillinger, 2012).

Finally, in terms of travel party composition, Thornton et al. (1997) for example noted significant differences both participation rates in certain activities and allocations of daily time budgets between families and only-adult groups. Flognfeldt (1999) and others note the role of cultural distance as a factor influencing attraction selection, whereas Smallwood et al. (2012) have observed substantial differences between domestic and international tourists.

4.4. Conclusion

An intricate relationship exists between time, space, and tourism movements. Over the years a variety of models have been developed to portray the movement of tourists from their homes to destination areas or between destination areas. These models recognize that tourism movement involves two components: a destination component and a transit component, which may or may not be integrated into the destination component. Movement of tourists is, in turn, moderated by

a number of factors, including the frictional effect of distance on demand, the number of intervening opportunities available, tourists' total time budget and how they choose to spend that time, and trip variables.

The discipline of geography has played a central role in the evolution of tourism as a field of study. The desire to understand the spatial interactions of tourists with a destination and the movement of tourists between destinations has played a critical role in developing the phenomenon of tourism. The geography of tourism seems to have become relatively less important over the last 20 years, however, as other disciplines have discovered tourism. Yet, an appreciation of spatial relationships forms one of the foundations of tourism by which any study, regardless of discipline, is based. Many exciting research opportunities exist to build on the existing knowledge base or to re-examine other tourism concepts from a temporal/spatial perspective.

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