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***Analysing Airport Travellers' Expenditure, Satisfaction and  
Behavioural Intentions toward Airport Retail Services  
by Socio-demographics, Travel and Flight-Related Variables***

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## Summary

Over the last two decades, the tourism sector has been steadily growing, with the international arrivals rate following an upwards trend and reaching 6.8% in 2017 (WTTC, 2018). Tourism forecasts reveal that international arrivals are expected to reach 1.8 billion by 2030 (UNWTO, 2017). Tourism development is intrinsically linked with transportation, particularly with the airport system. In 2017, the total number of global air transit passengers increased by 7.9% (WTTC, 2018) and it is estimated to reach 22.2 billion by the year 2040.

From the 1990s onward, airports have been showing proof of new proactive and marketing-driven approaches, more and more representing leisure, retail and entertainment contexts (Jarack, 2001; Lin & Chen, 2013). This has occurred for several reasons. First, the commercialisation and privatisation within the industry have given airports the freedom to diversify their business in new areas and to develop their commercial policies (e.g. Hooper, 2002; Torres *et al.*, 2005). Second, the airline companies, especially low-cost carriers, have forced airports to practice cost-cutting and efficient measures to control the level of aeronautical fees (e.g. Castillo-Manzano, 2010). Third, the increased frequency of travelling has rendered airport travellers more sophisticated and experienced – much more demanding in their needs and wants. Fourth, there are several under-used airports around the world that need to find new ways of generating revenues (Francis, Humphreys and Ison, 2004).

As a result, airports have been transforming themselves from performing a simple function for public transportation to fulfilling complex and multiple purposes as entities that deliver a wide array of services (e.g. Lu, 2014), thus rendering their profitability more and more dependent on non-aeronautical and commercial revenue (Graham, 2014;

Rhoades Waguespack and Young,2000; Yokomi, Wheat and Mizutani, 2017). According to ACI (2015), non-aeronautical revenue represents over 40% of global profits in airports. Similarly, according to The Moodie Report (2014), non-aviation related revenues in 2010 accounted for \$35 billion, of which \$10 billion were generated by food and beverage services (hereafter F&B). According to ACI (2017), it has been estimated that the number of airport passengers in the world may reach 22.2 billion by the year 2040, thus determining a further potential increase in the consumption of F&B and retail services in airports. This explains why airport practitioners are more and more interested in planning and implementing marketing strategies aimed to stimulate shopping and increase airport travellers' expenditures (e.g. Han et al., 2012).

Despite this, very little research has been devoted so far to analysing passengers' shopping and expenditure behaviours at airports (e.g. Castillo-Manzano, 2010; Castillo-Manzano López-Valpuesta and Sánchez-Braza ., 2018; Torres et al., 2005), and even less has been conducted in the specific context of F&B services (e.g. Torres et al., 2005; Castillo-Manzano, López-Valpuesta and Sánchez-Braza, 2018). Furthermore, most of the existing studies have been carried out in a limited number of countries (e.g. Spain, Asian countries) while others have been somehow neglected. Among these, Italy is an example with a very limited number of studies devoted to analysing airport travellers' shopping behaviour at airports (e.g. Del Chiappa, Martin and Roman, 2016). Furthermore, even when these studies exist, they consider a relatively limited set of socio-demographic, travel-related and flight-related variables as being potential moderators of passengers' shopping and consumption behaviour, with a lack of empirical studies aimed at testing the influence that the check-in mode might exert on the decision to buy, the decision about how much to spend and finally the overall satisfaction with the different

features of the airport-based retailers' offer. That said, further research is needed to deepen our understanding about this topic considering different airports, geographical areas (Lin and Chen, 2013) and wider arrays of potential determinants of passengers' expenditure (Castillo-Manzano López-Valpuesta and Sánchez-Braza, 2018).

This PhD thesis aims to contribute to deepen the scientific debate around this research area by presenting and discussing the results of three empirically and theoretically rooted studies carried out on collected data from the Olbia-Costa Smeralda International Airport (Sardinia, Italy). This airport was chosen for several reasons. Firstly, it is one of the main gateways to one of the most famous luxury tourism destination worldwide, the Emerald Coast. Secondly, among the European airports with up to five million passengers, the Olbia-Costa Smeralda Airport received the 'ACI Europe highly commended' quality prize in 2017 and ranked second after the airport in Cork, Ireland. In 2017, the airport reached a total of 2,808,323 million of passengers, of which about 48% were internationals. Over the last few years, the airport has greatly expanded, especially in the boarding area, its commercial and F&B offer by providing airport travellers a wider array of stores as well as a larger range of F&B services, from bar and cafes to fast food, restaurants and pizzerias with differing degrees of sophistication and prices.

This PhD thesis adopts a three paper-based structure. The first paper is titled 'Analysing Determinants of Travellers' Expenditure Behaviour in Airports' and aims to deepen the scientific debate on the main determinants influencing the overall (i.e. F&B and on F&B related) airport travellers expenditure behaviour. Specifically, it applies the Hurdle-Double Model to a sample of 2,723 passengers flying from Olbia-Costa Smeralda Airport (Sardinia, Italy) to analyse whether socio-demographics (i.e. gender, age, level of education, income and place of residence), travel-related variable (i.e. type of

accommodation and travel party) and flight-related determinants (i.e. check-in mode, wait time) and the pre-intention to buy significantly influence passengers' shopping behaviours (i.e. to buy or not to buy and the amount of money to be spent); data was collected in the period May-October 2016. The second paper is titled 'Analysing Determinants of Travellers' Expenditure in Food and Beverage Services at Airports' and aims to deepen the scientific debate on the main determinants influencing the F&B-related expenditures of airport travellers while at airports. Specifically, applying a Hurdle-Double Model on a sample of 2,461 passengers at the Olbia-Costa Smeralda Airport (Sardinia, Italy), this study analyses whether socio-demographics, travel-related variables, flight-related variables and pre-intention to buy significantly influence passengers' expenditure behaviour for Food and Beverages. Findings reveal that the 'decision to buy' is significantly influenced just by socio-demographics (e.g. income) and flight-related variables (e.g. waiting time prior to embarking), while the level of expenditure is significantly influenced by socio-demographics (e.g. age), travel-related variables (e.g. type of accommodation) and pre-intention to buy; this data was collected from May to October 2015. The third paper is titled 'Profiling airport travellers based on their perceptions, satisfaction and behavioural intentions towards food and beverage services at airports'. This study applies a factor-cluster approach to profile a sample of 1,139 travellers of Olbia Airport based on their perceptions towards different service features of F&B-related retailers (e.g. 'atmospherics', 'staff quality', 'product quality', 'value for money'), their level of satisfaction and their intention to recommend others (both offline and online) to shop in the airport. Further, a series of chi-squared tests were run to ascertain whether significant differences do exist among those clusters based on socio-demographics of respondents (e.g. age, gender, marital status, level of education,

employment status, monthly household income, place of residence), travel-related (e.g. frequency of travelling, frequency of flying) and flight-related variables (e.g. check-in modality, arrival time at the airport before flight departure). This data was collected in from May to October 2015.

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# Chapter 1

## **Analysing Determinants of Travellers' Expenditure Behaviour in Airports**

### **Abstract**

This study aims to deepen the scientific debate on passengers' expenditure behaviour at airports. Specifically, it applies the Hurdle-Double Model to a sample of 2,723 passengers flying from Olbia-Costa Smeralda Airport (Sardinia, Italy) to analyse whether socio-demographics (i.e. gender, age, level of education, income and place of residence), travel-related variable (i.e. type of accommodation and travel party) and flight-related determinants (i.e. check-in mode, wait time) and the pre-intention to buy significantly influence passengers' shopping behaviours (i.e. to buy or not to buy and the amount of money to be spent). The findings reveal that the 'decision to buy' is significantly influenced just by travel-related (i.e. type of accommodation and travel party) and flight-related (i.e. wait time) variables. On the contrary, the level of expenditure is significantly influenced by socio-demographics (i.e. age and income), travel-related variables (i.e. type of accommodation and travel party), flight-related variables (i.e. type of check-in) and pre-intention to buy. The findings further suggest that airport managers must recognise nuances in the way travellers' spending behaviours change based on their socio-demographics, travel-related characteristics and flight-related characteristics. Limitations of the study are also discussed and suggestions for future research are given.

**Keywords:** *Airport management; expenditure behaviour; socio-demographics; travel-related variables; flight-related variables; Italy*

## 1.1 Introduction

During the last few years, airports have been subject to many changes that have significantly challenged traditional marketing and management practices in this sector (e.g. Graham, 2009; Tovar and Martín-Cejas, 2009). Nowadays, the profitability of airports depends largely on non-aviation related activities (Graham, 2009; Rhoades Waguespack and Young, 2000; Fasone, Kofler and Scuderi, 2016; Yokomi, Wheat and Mizutani, 2017), with airports more frequently representing leisure, retail and entertainment contexts (Appold and Kasarda, 2006; Lin and Chen, 2013). By the year 2040, it is estimated that the number of airport passengers worldwide may reach 22.2 billion, indicating a potentially large increase in the consumption of F&B (Food and Beverage) and retail services in airports (ACI, 2017).

In this scenario, researchers and practitioners need to gain a greater and deeper understanding about the main determinants of passengers' consumption and expenditure behaviours during their time at the airport (Crawford and Melewar, 2003; Doong, Wang and Law, 2012). This knowledge will provide useful information that may be used to dynamically tailor the retail assortment in airports to better reflect the characteristics of target consumers.

Despite this, so far very little research has examined expenditure behaviour of travellers in airports (e.g. Torres et al. 2005; Castillo-Manzano López-Valpuesta and Sánchez-Braza. 2018), with no published paper aimed at investigating the effect that one's check-in mode might have on his expenditure behaviour. That being said, further research is needed to deepen our understanding about this topic considering different airports and/or geographical area and/or a wider array of potential determinants of passengers' expenditures. Contributing to fill this gap, this paper estimates the influence that socio-

demographic characteristics (i.e. gender, age, level of education, income and place of residence), travel-related determinants (type of accommodation and travel party) and flight-related determinants (i.e. check-in mode, wait time) exert on a sample of 2,723 passengers interviewed at the Olbia Costa Smeralda Airport (northern Sardinia, Italy, just west of Rome and Naples). Furthermore, the study analyses whether significant differences exist in passengers' expenditure behaviour, based on the fact that they pre-planned or not to buy at the airport. For the purposes of the study, a double hurdle model is used. This model is a generalised Tobit model (Gragg, 1971) and it is the most suitable one when researchers deal with two separate, subsequent and independent decisions such as 'buying decision' and 'expenditure level'. The main assumption of the double-hurdle method is the independence between the two decisions and, therefore, it estimates two separate regression models. As a first step, a Probit model estimates the likelihood of making a purchase or not is estimated (i.e. the participation equation). As a second step, an ordinary linear squares (OLS) regression model estimates the amount of money that the consumer spends while at the airport (i.e. the quantity equation). The paper is organised as follows. In the following section, an updated literature review is provided. In the third section, the methodological framework is outlined. The fourth section provides empirical findings. The fifth section presents the robustness checks and the last section provides the discussion and the concluding remarks.

## **1.2 Literature Review**

Tourist expenditure may be considered a key variable used to segment the tourism market (Kozak, 2001) and a key determinant for the economic growth at both regional (e.g. Paci and Marrocu, 2014) and national (e.g. Figini and Vici, 2010) levels. Existing studies have been devoted to analysing determinants of economic tourism expenditure adopting both

a macro (aggregated) and micro (individual-based) perspective (Marroccu, Paci and Zara, 2015).

However, while substantial literature has been devoted to analysing tourism's economic impact at the macro level (i.e. destination and/or regional and/or country levels), limited research still beleaguers the aim to deepen our understanding about visitors' expenditure behaviours on a micro scale (e.g. museums, markets, etc.; Brida, Disegna and Osti, 2013; Wang and Davidson, 2010; Lim, 2006). Among the limited number of studies analysing travellers' expenditure behaviours by adopting a micro-level perspective, to the best of our knowledge few studies exist aimed at analysing passengers' expenditure behaviours at airport-related retail services (e.g. Castillo-Manzano, 2010; Castillo-Manzano, López-Valpueda and Sánchez-Braza 2018; Torres et al. 2005)

Determinants of tourism expenditure can be grouped into three main categories; namely, socio-economic and demographic (e.g. gender, level of education, income, etc.) travel-related characteristics (e.g. type of accommodation, travel party, length of stay, purpose of travelling, etc.) and psychographic characteristics (e.g. travel motivations) (Marroccu, Paci and Zara, 2015; Wang et al. 2006, Brida and Scuderi, 2013; Marcusen, 2011). Quite similarly, socio-demographics (age, gender, income, etc.), psychographics (e.g. Chung, 2015) and travel-related characteristics (purpose of travel, travel party, prior experience, etc.) have likewise been considered relevant determinant of consumers' passenger behaviours at airports (e.g. Geuens, Vantomme and Brengman, 2004; Castillo-Manzano, 2010; Lu, 2014; Del Chiappa, Martin and Roman, 2016), together with wait time (i.e. the time spent within the terminal building prior to departure, see for example: Lin and Chen 2013; Chung, Wu and Chiang, 2013) and the service-scape of the airport (e.g. Ali, Kim and Ryu, 2016; Entwistle, 2007; Moon, Yoon and Han, 2017; Van Oel and van den

Berkhof, 2013; Wattanacharoensil, Schuckert and Graham, 2016; Wattanacharoensil et al. 2017). Lu (2014) examined the influence of passengers' socio-demographic characteristics, trip characteristics and perceptions of airport shopping on their shopping intentions at airports. Geuens, Vantomme and Brengman (2004), reported men being more likely to be apathetic or mood shoppers, while women tend to shop more. Perng, Chow and Liao (2010) reported that younger respondents spend more in souvenir shops and cafés compared to older travellers. Torres, et al. (2005) reported that leisure tourists spend more than business travellers, while Castillo-Manzano (2010) highlighted that the likelihood of purchasing F&B increases by almost 7% when frequent flyers are considered. Other studies showed that the likelihood of buying and spending more increase as waiting time prior to boarding increases (Geuens, Vantomme and Brengman, 2004; Lin and Chen, 2013).

Existing marketing literature distinguishes buying behaviour into two main categories: planned and impulsive (e.g. Lu, 2014; Sharma and Nanda, 2014). Considering F&B retail services, previous studies show that over 60% of travellers plan to use shops or cafés and tend to arrive earlier at the airport to shop (Echevarne, 2008). However, when considering the overall airport-related retail offerings (F&B and non-F&B related), passengers' buying behaviours can be considered to be mostly impulsive (e.g. Crawford and Melewar, 2003; Graham, 2014; Omar and Kent, 2001; Volkova, 2009), even if differences remain based on passengers' characteristics, travel-related characteristics and service-scape-related characteristics of the airport (Omar, 2002). For example, leisure or charter passengers tend to be more prone to impulse buying and to the use of F&B facilities (Graham, 2014). Other studies found that the airport commercial environment is an important factor triggering impulse-buying behaviour (e.g. Omar, 2002; Lu, 2014).

Expenditure behaviour can be analysed by studying buying probability (e.g. Alegre and Pou, 2004) and/or the intensity/level of expenditure (e.g. Kozak, 2001). Econometric analysis (via different methods) is the most-used approach when analysing determinants of traveller's expenditures (e.g. Brida and Scuderi, 2013). Among studies analysing the level of expenditures, the most frequently used econometric method is the OLS (Jang et al. 2004; Kozak, 2001; Kozak, Gokovali and Bahar, 2008; Marcussen, 2011). Some research has used a censored or truncated model, such as a Tobit one (Zheng and Zhang, 2013; Alderighi, Nicolini and Piga, 2016) or double-hurdle ones (Disegna and Osti, 2016, Zhang, Zhang and Kuwano, 2012; Jang and Ham, 2006).

The existing literature investigates expenditure behaviour in many settings such as events (e.g. Del Chiappa, Tinaz and Turco, 2014), attractions (Oppermann, 1996), souvenirs (e.g. Park, 2000), students trips (Tharane, 2015), Christmas Markets (Brida, Disegna and Osti, 2013), mountain tourism (e.g. Fredman, 2008), wine tourism (e.g. Telfer and Hansimoto, 2000), domestic (Turner and Reisinger, 2001) and international tourism (Laesser and Crouch, 2006). Despite this variety, very few studies have been applied to airports.

While some studies are devoted to analysing shopping behaviour in airport areas (e.g. Geuens, Vantomme and Brengman, 2004) very few are devoted to analysing expenditure behaviour by studying buying probability and/or the intensity or level of expenditure. To the best of our knowledge, there are only few exceptions. Specifically, Torres et al. (2005) investigated the relationship between the expenditure in the commercial area of a Spanish airport and the passenger waiting time also considering the travel purpose of travellers (i.e. business versus leisure travellers). Specifically, the authors reported leisure tourists spending more than business travellers and showed that a clear relationship exists

between shopping behaviour in commercial areas and their length of wait prior to boarding. According with previous studies, passenger spending on F&B services is higher when considering airports with a high proportion of low-cost carriers that do not offer free in-flight catering services (Graham, 2009) and when travellers fly long distance (Appold and Kasarda, 2006). Castillo-Manzano (2010) carried out a study on a sample of passengers at seven different regional airports in Spain and highlighted that expenditure behaviour was significantly influenced by country of origin, employment status, type of airline, connecting flight, group size, whether travelling with children, whether having been seen-off, mode of transport to reach the airport and wait time. More recently Castillo-Manzano, López-Valpuesta and Sánchez-Braza (2018) carried out a study using data collected in six regional airports and two main hubs in the Spanish airport system considering sixteen different factors that might affect passengers' purchase decisions and volume of purchases (e.g. their reason for travelling and the duration of their trip, type of route, type of airline, time spent in airport, travel party size, etc.), they highlighted that passengers' consumer behaviours in the specific context of airport-based F&B services in malls at hub airports change when compared to how passengers would have behaved at regional airports. Specifically, their study reported a higher likelihood of making a purchase and a higher level of expenditure at hub airports. Hence, for example, Castillo-Manzano (2010) reported a significant difference in expenditure behaviour based on country of origin and occupation, with national travellers and students spending less when compared to their counterparts.

That said, it could be argued that most the current knowledge related to expenditure behaviour at airports is largely site-specific (with studies carried out in a limited number of countries, mostly Spain). According to Castillo-Manzano López-Valpuesta and



Sánchez-Braza (2018) this circumstance calls for further research in other countries and airports to understand how expenditure behaviour differs or not with a change in geographic circumstances. Furthermore, to the best of our knowledge, no existing study has investigated whether significant differences in expenditure behaviour exists based on pre-intention to buy and check-in mode (traditional versus web check-in). As far as this latter variable is considered, existing studies tend to emphasise that airports have the convenience to incentivise the use of web check-in and self-service technology to bring down their operating costs, to optimise space and to speed-up the check-in process and the need for more airlines (e.g. Castillo-Manzano and López-Valpuesta, 2013). However, it could be argued that passengers managing their check-in online might tend to arrive at the airport (on average) later, compared to those in need to do traditional check-in procedures, thus resulting in a lower likelihood of buying and/or less expenditure. Despite the relevance that a deep understanding about the effect that check-in modality can have on actual passengers' expenditure behaviours, this research aspect remains unexplored in the current literature.

This study applies econometric analysis to a sample of passengers at the Olbia-Costa Smeralda International Airport investigate whether expenditure behaviour is significantly influenced by socio-demographics (i.e. gender, age, level of education, income and place of residence), travel-related characteristics (type of accommodation and travel party), flight experience-based determinants (i.e. type of check-in, wait time) and a pre-planned intention to buy.

## **1.3 Methodology**

### ***1.3.1 Study settings and data collection***

Relevant data were collected at the Olbia-Costa Smeralda International Airport. Among the European airports with up to five million passengers annually, the Olbia-Costa Smeralda Airport in 2017 received the ‘ACI Europe highly commended’ quality prize and ranked in second place after the Cork airport (Ireland). The airport is currently the main ‘gateway’ to Costa Smeralda (Emerald Coast), one of the best-known luxury tourism destinations in the world. In 2017, the airport reached 2,808,323 million passengers, of which around 48% were international travellers.

The questionnaire was divided into four sections. The first asked respondents to provide some socio-demographic and travel-related information. The second asked respondents to report whether they bought something while at the airport (before or after the security check), whether this buying was pre-planned or not and how much they spent in total for the different types of product/services offered by the airport retailers (e.g. books, food and beverages, handcrafts, etc.). The third asked respondents to report their expenditure at the destination during the stay. The last section asked interviewees to declare the main motivations for not buying at the airport.

The questionnaire was originally designed in Italian, but as different nationalities could appear in a sampling process with tourists, three different questionnaires were prepared by two professional translators (English, German and Italian). As previously done in other studies carried out in tourism-related settings (e.g. Seddighi, Nutall and Theocharous, 2001), a back-translation method was adopted to guarantee quality assurance. We pre-tested the questionnaire on thirty native-speaking tourists from the three different

language groups to assure the comprehensibility of the questions. No concerns emerged in these pilot tests. Hence, the three final questionnaires were considered as definitive.

Two trained interviewers directly supervised by one of the authors collected data for this study face-to-face at the airport. They intercepted 4,000 individuals while in the boarding area during May-October 2016. On average, in this period, the interviewers had access to the boarding area twice a week during specific time frames. This procedure was followed in accordance with the airport managers so as to not interfere with other marketing research and activities carried out directly by the airport staff (i.e. forty-eight days of data collection). Only individuals aged eighteen and over were asked to take part in the study. At the end of the data collection period, a convenience sample of 2,723 completed questionnaires was collected (response rate: 68.07%).

### ***1.3.2 Theoretical framework***

To empirically analyse expenditure determinants, the most commonly used econometric model is an OLS regression estimation (Jang et al. 2004; Kozak, 2001; Marcussen, 2011). In OLS models, expenditures used as a dependent variable are usually transformed into logarithms, in order to provide a direct interpretation in terms of elasticity. Very few authors make use of pure or standardised (i.e. share of expenditure between category of tourism expenditure) values. Few studies exist in the current literature using a Tobit model (Tobin, 1958). Even less are studies adopting censored models (e.g. double hurdle; Cragg, 1971): these models consider that expenditure values cannot be lower than zero, thus leading several individuals to report zero expenditure. Based on prior research (i.e. McFadden, 1974), other researchers (e.g. Alegre and Pou, 2004) have applied a binary discrete-choice random-utility model to analyse expenditure behaviour. This method has

been utilised to take into consideration the decision of spending or not and to analyse the probability of making purchases.

For the purposes of this study (i.e. analysing determinants of expenditure behaviour at airport), a theoretical framework is developed by adapting those provided by Brida and Scuderi (2013) and Wang et al. (2006).

To determine the model to be used, a preliminary OLS regression on the sample was run to test the most suitable set of variables to be considered as exogenous determinants of expenditure. When passengers declared having not made any purchases, the dependent variable assumed a zero value; when respondents reported to have spent some money, the dependent variable was considered to be the logarithm of the actual individual expenditure. Afterwards, the dependent variable was modelled as a dummy variable taking a value of 1 if the respondent had spent money at the airport, 0 otherwise. Hence, the Logit model allowed us to study the partial effects of determinants on purchasing probability. And the independent variables were chosen based both on previous studies in the literature (e.g. Guens, Vantomme and Brengman, 2010; Lin and Chen, 2013; Torres, 2005; Lu, 2014; Castillo-Manzano, 2010) and on the statistical significance of the regression test. Results of this preliminary OLS regression suggest that the following determinants can be used to develop the model: socio-demographics (e.g. gender, age, level of education, income and place of residence), travel-related variables (e.g. type of accommodation), flight-related variables (e.g. type of check-in, wait time) and the pre-intention to buy (see Table A.1 in the Appendix).

In order to better disentangle behaviours, this study assumes that a traveller's expenditure at the airport can be interpreted as being a result of two subsequent, independent

processes, namely: making a purchase or not (i.e. participation decision) and deciding on the amount of money to be spent (i.e. quantity decision).

Despite the characteristics of the dependent variable (i.e. travellers' expenditures) could lead one to choose a Tobit model, the independence between the two processes (i.e. participation decision and quantity decision) made use of Tobit model inappropriate. In fact, a Tobit model considers both processes using the same set of variables, with these variables having the same effect on both the participation and quantity equations.

To overcome this 'bias' a double-hurdle model was used. It is a generalised version of the Tobit model (Gragg, 1971) and is based on the idea that two distinct hurdles have to be considered. Specifically, based on this model, two separate regression models were estimated. As a first step (i.e. the selection stage-the first hurdle), the likelihood of making a purchase was estimated by the Probit model (i.e. the participation equation). As a second step (i.e. the last stage-the second hurdle), an OLS regression model was used to estimate the amount of money that the consumer spent while at the airport (i.e. the quantity equation). The outcome of this model is given by two different sets of independent coefficients, instead of a single set of coefficients that would have obtained by using the traditional Tobit model.

It has been assumed that the passenger's expenditure ( $ExpAir_k$ ) is determined by socio-demographics ( $S_k$ , i.e. gender, age, level of education, income and place of residence), travel-related ( $TR_k$ , i.e. type of accommodation), flight-related variables ( $FR_k$ , i.e. type of check-in, waiting time prior to embarking) and the pre-intention to buy ( $IB_k$ ) (see the quantity equation 1.1).

$$ExpAir_k = f(S_k, TR_k, FR_k, IB_k) \quad (1.1)$$

Accordingly, the overall model to be used in this study can be specified as follow:

$$E_k = \alpha x + \varepsilon_k \quad (1.2)$$

$$if \quad \min(\alpha x + \varepsilon_k, \beta y + \epsilon_k) > 0 \quad (1.3)$$

$$E_k = 0 \text{ otherwise}$$

Equation 1.2 describes the quantity equation (Equation 1.1 reframed following a linear regression approach), whereas Equation 1.3 represents the participation equation.  $x$  and  $y$  are the vectors respectively related to quantity and participation equations; both vectors include the same determinants, namely: socio-demographics ( $S_k$ ), travel-related variables ( $TR_k$ ), flight-related variables ( $FR_k$ ) and the pre-intention to buy ( $IB_k$ ). The error terms  $\varepsilon_k, \epsilon_k$  were independent and normally distributed.

## 1.4 Results

### 1.4.1 Descriptive analysis

Table 1.1 shows the socio-demographic characteristics of respondents and their average expenditures. Individuals with higher mean expenditures were middle-aged men, with a university degree and annual incomes greater than 35,000 euros, along with being international travellers.

Results show that 37.34% of respondents shopped at the airport (N=1,017), with 90% of them spending up to 60 euros; considering the overall sub-sample of shoppers, the average expenditure is 49.29 euros. Results highlight that passengers most frequently bought Sardinian food and wine (20.31%), while the product category reporting the highest average expenditure was clothing (87.18 euros).

*Table 1.1: Mean expenditure by socio-demographics*

Variables		Mean expenditure (euros)	%
Gender	Male	48.78	44.64%
	Female	49.70	55.36%
Age	18–24	35.78	11.21%
	25–34	42.90	17.40%
	35–44	48.44	20.85%
	45–54	59.31	24.29%
	55–64	53.10	14.95%
	>65	47.03	11.31%
Level of education	High school or below	43.74	51.67%
	University	55.48	38.10%
	Master/PhD	52.83	10.23%
Income	<15.000	39.18	14.47%
	15.001–25.000	45.40	25.61%
	25.001–35.000	46.13	24.60%
	35.001–50.000	49.99	17.71%
	> 50.000	68.74	17.61%
Place of residence	Sardinian	28.34	5.04%
	Italian	41.09	38.24%
	Foreigners	56.33	56.72%

According to Table 1.2, the lion’s share of respondents checked-in online (53,69%); passengers doing face-to-face check-in reported higher mean expenditures (52.37 euros) compared to their other counterparts (46.63 euros). 52.27% of travellers had checked-in at least one hour prior to embarking, but the highest mean expenditure occurred when the wait time prior to boarding ranged from 31 to 45 minutes, or up to one hour.

Interesting insights were offered from results related to the type of accommodation where respondents enjoyed their stay in Sardinia. Most individuals stayed in hotel accommodations (54.48%), while 11.77% of them stayed in a second home and 13.33% in a rented house or apartment. People staying at a hotel reported higher expenditure levels compared to their counterparts elsewhere; the lowest mean expenditure was

reported for travellers visiting friends and relatives. Furthermore, travellers travelling alone (18,65%) reported a lower expenditure than those travelling with companions.

*Table 1.2: Mean expenditure by flight experience and travel characteristics*

<b>Variables</b>		<b>Mean expenditure (euros)</b>	<b>%</b>
Type of check-in	Traditional	52.37	46.31%
	Online	46.63	53.69%
Wait time prior to embarking	< 30 minutes	36.31	9.17%
	31–45 minutes	57.99	10.65%
	46–60 minutes	56.24	27.91%
	>1h	45.98	52.27%
Type of accommodation	B&B	36.60	4.48%
	Agritourism	26.83	1.35%
	Camping	43.75	1.67%
	Second home	48.39	11.77%
	Rented house or apartment	47.02	13.33%
	Visiting friends or relatives	26.04	8.44%
	Hotel	57.55	54.48%
Travel Party	Other	47.07	4.48%
	Alone	37.92	18.65%
	Not alone	51.77	81.35%

Table 1.3 shows that 46.83 % travellers pre-planned their buying prior their arrival at the airport, thus showing that buying is mostly impulsive.

*Table 1.3: Mean expenditure by pre-intention to buy*

<b>Variables</b>	<b>Mean expenditure (euros)</b>	<b>%</b>	
Pre-intention to buy	Yes	56.9	46.83%
	No	41.5	53.17%

However, people pre-planning their buying were also reported as being those individuals with higher mean expenditures compared to those who bought impulsively once at the airport.



### ***1.4.2 Econometric analysis***

Results of the double-hurdle model are shown in Table 1.4. The coefficients in the ‘participation equation’ column (first hurdle) indicate how a given variable affects the likelihood (probability) of buying something at the airport, while coefficients in the ‘quantity equation’ column (second hurdle) show whether a certain variable influences the level of expenditure (once the decision to make purchase is made).

Findings show that the buying decision is significantly and positively influenced by travel party, wait time prior to embarking and type of accommodation (e.g. whether staying at a hotel). On the other one hand, the expenditure (i.e. quantity equation) is significantly and positively influenced by income, check-in modality, type of accommodation, travel party (i.e. whether travelling alone) and the pre-intention to buy. More specifically, the level of expenditure is higher when passengers with higher incomes are considered, when passengers use traditional check-in, when they stay at a hotel for their accommodation, whether travelling with companions (not alone) and if they were somehow pre-planning to purchase things prior their arrival at the airport.

On the other one hand, the expenditure was significantly and negatively influenced by age and type of accommodation (e.g. if visiting family and friends). In particular, results highlight that the level of expenditure tends to be lower when passengers are younger (< 35 years old) and enjoy staying with their family or friends (i.e. visiting friends and relatives-VFRs).

Table 1.4: Double-hurdle model on the expenditure level in logarithm

Variables		Participation Equation	Standard error	Quantity Equation	Standard Error
Gender	Male	-0.01	0.27	-0.1	0.07
Age	Age <35	0.50	0.41	-0.17*	0.09
Education	Year of education	0.05	0.04	0.00	0.01
Income		-0.04	0.12	0.07**	0.03
Place of residence	Foreigners	0.13	0.29	0.12	0.08
Type of check-in	Traditional check-in	-0.23	0.27	0.15**	0.07
Type of accommodati on	Visiting Family and friends Hotel	0.24 1.07**	0.37 0.42	-0.26* 0.24***	0.14 0.08
Travel party	Not alone	0.51*	0.27	0.24***	0.1
Waiting time prior to embarkation		0.29*	0.15	0.06	0.05
Pre-intention to buy		0.23	0.28	0.30***	0.07
Constant		-0.26	0.75	2.38***	0.28

\*= p < 0.10, \*\* = p < 0.05, \*\*\* = p < 0.01

This outcome confirms prior studies showing that the expenditure at airports tend to increase when passengers have higher incomes (e.g. Castillo-Manzano, 2010) and to decrease when they are younger (e.g. Castillo-Manzano, 2010), but contradict others who did not find any significant influence of age on expenditure behaviour (e.g. Perng, Chow and Liao, 2010). Even my findings report that gender and education did not influence the decision of buying and the expenditure levels and confirm with those of existing studies (e.g. Castillo-Manzano, 2010). This study reveals that passengers travelling with companions (not alone) significantly influenced both the likelihood to make purchases

and the related amount of expenditure; this seems contradictory, at least partially, to existing studies. For example, Castillo-Manzano (2010) revealed that people travelling with children have a higher likelihood of purchasing but also that they tend to spend significantly less than people travelling without them. My results also revealed that the wait time prior to embarkation significantly influenced the decision to make a purchase - confirming prior studies, such as Lin and Chen, 2013 - but not the level of expenditure. Again, this evidence partially contradicts prior studies, which usually reported wait time having a significant influence on both the likelihood of making a purchase and the level of expenditure (e.g. Castillo-Manzano, 2010).

This study shows that passengers' residency did not significantly influence either the decision to buy or the level of expenditure, thus contradicting prior studies such as Castillo-Manzano (2010) and Castillo-Manzano, López-Valpuesta and Sánchez-Braza (2018). For example, Castillo-Manzano (2010) found domestic travellers (i.e. Spanish ones) had a higher likelihood of buying and a greater expenditure level. Beyond confirming and/or rejecting existing studies, my results added new knowledge to the current body of literature devoted to analyse passengers' expenditure behaviours by highlighting that the type of accommodation and the check-in modality are relevant variables to be considered when analysing passengers' shopping behaviours. Finally, My findings also showed that the passengers' 'pre-intention to buy' did not significantly influence the actual decision to make purchases while at airport. Despite this outcome, the variable was able to significantly influence the level of expenditure, thus confirming Lu (2014).

### 1.4.3 Robustness Check

The double-hurdle model is the most suitable one to use when researchers deal with two separate, subsequent and independent decisions such as ‘buying decision’ and ‘expenditure level’. In fact, the main assumption of the double-hurdle method (Cragg, 1971) is the independence between the two processes. To assure that my assumption about the independency between participation (1.3) and quantity (1.2) equations, a Heckman (1979) regression model was run. This model is based on the assumption that the quantity equation is distorted by the existence of an implied participation process, which is strictly correlated with the quantity equation. To overcome this issue, Heckman (1979) inserted an additional independent variable in the quantity equation called Mill’s ratio. The Mill’s ratio formalises the dependence between the two decisions processes. It is calculated as the ratio between the probability that an individual falls into the ‘participation category’ and the cumulative probability of an individual’s decision. If both the participation and quantity equations are dependent and subsequent decisions, the Mill’s ratio will be different from zero with an acceptable level of significance and the two equations need to be considered as being related (and vice versa). Hence, the Heckman model needs to be used to identify the determinants of both participation and quantity equations. On the contrary, when the Mill’s ratio is zero with an acceptable level of significance, the two equations need to be considered independently, and the double-hurdle model proposed by Cragg (1971) needs to be considered as the most suitable model to be used.

Regressors (i.e. the expenditure determinants considered in my analysis) and disturbance term in participation equation (1.3) determine whether an observation falls into the ‘participation category’

( $E > 0$ ) or not ( $E = 0$ ). In particular, in the first step of the econometric analysis (i.e. the one related to the decision ‘to buy or not to buy’) a latent variable is considered ( $B^*_i$ ) describing the net benefit from participation. This latent variable depends on a set of different variables (i.e. regressors) and a disturbance term: if the net benefit is greater than zero, the individual falls in the participation category.

Taking into consideration the censored nature of the sample, the dependent variable is given by the expenditure level reported by travellers ( $E_k$ ), the latent variable ( $B^*_i$ ) is the net benefit of making purchases while at the airport; hence, the expected value of expenditure [i.e.  $\xi(E_i)$ ] can be determined as follows:

$$\xi(E_k | B^*_k > 0) = \alpha x + \lambda(\alpha x) \quad (1.4)$$

where  $\lambda(\alpha x)$  is the Mill’s ratio and  $x$  is a vector related to socio-demographics ( $Sk$ ), travel-related variables ( $TR_k$ ), flight-related variables ( $FR_k$ ) and the pre-intention to buy ( $IB_k$ ). The Heckman model is estimated by running an OLS regression where the Mill’s ratio is considered to be an independent variable, as well as all the other determinants of travellers’ expenditures. Results are presented in Table 1.5.

Table 1.5: Heckman model

Variables		Coefficients	Standard Error
Gender	Male	-0.1	0.07
Age	Age < 35	-0.16*	0.09
Level of education	Year of education	0.01	0.01
Income		0.07**	0.03
Place of residence	Foreigners	0.13	0.08
Type of check-in	Traditional check-in	0.14**	0.08
	Visiting		
Type of accommodation	Family and friends	-0.25*	0.14
	Hotel	0.27***	0.10
Travel party	Not alone	0.24***	0.1
Wait time prior to embarking		0.06	0.05
Pre-intention to buy		0.30***	0.07
Mill's ratio		0.55	1.04
Constant		2.38***	0.28

\* =  $p < 0.10$ , \*\* =  $p < 0.05$ , \*\*\* =  $p < 0.01$

On the whole, the significance of Mill's ratio supports the decision to deal with two independent hurdles and strengthens the decision to treat traveller's expenditures in the airport with a double-hurdle model (Cragg, 1971).

## 1.5 Discussion and Conclusion

The aim of this study was to investigate socio-demographic, travel-related and flight-related determinants of travellers' expenditures at the airport in terms of both the decision 'to buy or not to buy' and 'how much to spend'. To achieve this aim, an empirical investigation on a convenience sample of 2,723 passengers interviewed at the Olbia-Costa Smeralda International Airport was presented and discussed in this study.

On the whole, findings reveal that 37.34% of individuals made purchases; out of these, 53.17% were impulsive in nature, thus confirming existing studies (Crawford and Melewar, 2003; Graham, 2014).

Furthermore, the results show that the determinants of 'decision to buy' and of 'how much to spend' are not the same. On the one hand, the 'decision to buy' resulted to be significantly influenced just by variables that are travel-related (i.e. type of accommodation and travel party) and flight-related (i.e. wait time to embarkation). On the other hand, the level of expenditure was significantly influenced by socio-demographics (i.e. age and income), travel-related variables (i.e. type of accommodation and travel party), flight-related variables (i.e. check-in modality) and by the pre-intention to buy. No significant differences were reported to exist based on gender, education and residency either for 'decision to buy' or 'how much to spend'.

These conclusions are significant for both researchers and airport managers. On the one hand, they provide further insights into the still quite underdeveloped scientific debate on determinants of airport shoppers' expenditure behaviour. In particular, the findings simultaneously confirm and disconfirm existing literature and provide contradictory evidence when compared with prior studies carried out in different contexts, thus suggesting that airport-based characteristics (e.g. service-scape, retail assortment, etc.)

and destination-based characteristics (e.g. type of visitors, etc.) need to be carefully considered when analysing a passenger's expenditure behaviour at the airport. Furthermore, this study adds new information to the current body of knowledge highlighting that the check-in modality exerts a significant influence on the level of expenditure, with passengers making their check-in in a traditional modality spending more than their counterparts who check-in online.

On the other hand, my findings suggest that airport managers and their retailers must recognise nuances in the way travellers' spending behaviours are based on their socio-demographics, travel-related characteristics and flight-related characteristics, so that they can effectively develop retail marketing strategies where the mix of retail format and related assortment is designed to better reflect the characteristics of their target consumers. Further, they suggest how airport and airline managers should focus their attention when deciding to incentivise their customers who pass through the experience of web check-in. In fact, favouring web check-in could contribute to reduce the queuing time both at the traditional check-in points and security (thus increasing the passengers' satisfaction and contributing to keep lower the number of employees that would be needed to manage whether all check-ins are managed in a traditional manner). Despite these advantages, my results suggest that favouring web check-in will decrease overall mean expenditures. That said, airport managers should make their decisions comparing costs and benefits of each alternative (for traditional versus web check-in) also considering the effect that the different check-in modalities exert in terms of passengers' expenditures.

Although this study helps to fill a gap in the existing knowledge in the literature and proposes some interesting implications for airport managers, limitations still remain. Firstly, it utilised a convenience sample; hence, findings cannot be generalised. Further,



my study is highly site-specific. Specifically, it introduced a concrete case study involving a specific airport in a specific tourism destination; the idiosyncratic characteristics of the airport and of tourist flows at the destination could affect airport shoppers' behaviours. Consequently, this study calls for future research aimed at further testing of the robustness of my results in other airport systems to confirm whether passenger's expenditure behaviours change based on geographical circumstances. Secondly, my study used on-site passengers as research subjects and employed a conventional survey method, namely an interview and questionnaire administered face-to-face, similar to previous studies. These methods might not have helped to capture the real expenditures of respondents and to identify the underlying causes of the differences, which could be embedded in the pre-trip decision-making and post-trip evaluation processes (Li et al. 2008). For example, it is evident that an increase in travel budget would increase a passenger's spending (Chang, Chen and Meyer, 2013). This moderating effect merits attention in future research, too. Future research would benefit from using a more sophisticated data collection method such as action-tracking technology (Della Lucia et al., 2011). Another interesting method could be projected and implemented in collaboration with airports with the aim of providing all the retailers with a payment system that allow to type and/or to scan the boarding card number so that all the expenses made by a single passenger might be automatically associated to the same boarding pass number. Then, passengers could be asked to fill a brief questionnaire aimed at asking them for their boarding card number and simplify obtaining their socio-demographics, plus travel- and flight-related information. Hence, the information from the survey could be merged with objective information about the passengers' expenditures. Finally, this study did not consider the moderating effects that service-scape and atmospherics, retail assortment and airport

layout could exert on their spending behaviours, aspects which merit attention in future studies.

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## 1.A Appendix

<i>Table A.1: –independent variables</i>	
<b>Independent Variables</b>	<b>Definition</b>
Gender	Dummy: 1=male, 0=female
Age	Dummy: 1= < 35 years old, 0=otherwise
Level of education	Discrete variable: from 5 to 22 considering the years of education corresponding to each level of Education declared by respondents (e.g. elementary school: 5 years, secondary school: 3 years, high school: 5)
Place of residence	Dummy: 1=foreigners, 0=non-foreigners
Income	Discrete variable from 1 (low) to 5 (high) for the travellers' income
Type of check-in	Dummy: 1= online check-in, 0= traditional check-in
Type of accommodation: “visiting family and friends”	Dummy: 1= if the respondents stayed as a guest from family or friends, 0=otherwise
Type of accommodation: “hotel”	Dummy: 1= if the respondents stayed in hotel, 0=otherwise
Travel party	Dummy: 1 if the respondents travelled with companions, 0=otherwise
Waiting time before to embark	Discrete variable from 1 (less than 30 minutes) to 4 (more than 60 minutes) for the waiting time between security check and embarking
Pre-intention to buy	Dummy: 1=if the decision to buy in airport was pre-planned, 0= otherwise

## **Chapter 2**

### **Analysing determinants of travellers' expenditures for food and beverage services at airports**

#### **Abstract**

By applying the Hurdle-Double model to 2,461 passengers at the Olbia-Costa Smeralda Airport (Sardinia, Italy), this study analyses whether sociodemographics, travel-related variables, flight-related variables and pre-intention to buy significantly influence passengers' expenditures for food and beverages. My findings reveal that the 'decision to buy' is significantly influenced by sociodemographics (i.e. income) and flight-related variables (i.e. waiting time prior to embarking), while expenditure levels are significantly influenced by age, travel-related variables (i.e. type of accommodation) and pre-intention to buy. Managerial implications are discussed and suggestions for further research are given.

**Keywords:** *airport management; food and beverage services; expenditure behaviour; socio-demographics; travel-related variables; flight-related variables.*

## 2.1 Introduction

Since the 1990s, airports have been transforming themselves from simply functioning as a public transportation locus to complex, multi-purpose entities that deliver a wide array of services (Lu, 2014). As a result, their profits increasingly depend on non-aeronautical and commercial revenue (Graham, 2014; Rhoades, Waguespack and Young, 2000; Yokomi, Wheat and Mizutami, 2017). This occurred for several reasons. First, commercialisation and privatisation within the industry have given airports the freedom to diversify their business into new areas and to develop commercial policies (Hooper, 2002; Torres et al., 2005). Second, airline companies, especially low-cost carriers, have forced airports to practice cost-cutting and efficiency-saving measures to control the level of aeronautical fees (Castillo-Manzano, 2010). Third, sophisticated and experienced ‘frequent-flyers’ have many demanding needs and wants. Fourth, several under-used airports around the world need new ways to generate revenues (Francis, Humphreys and Ison, 2004).

All these pressures, exerted by regulatory bodies, airlines and passenger demands, have encouraged airports to greatly focus on commercial facilities, to increase revenues and to please their customers (Graham, 2014). This explains why in recent years airport managements attempted to become more active in planning and implementing marketing strategies that increase airport travellers’ overall spending (Han et al., 2012)

According to ACI (2015), non-aeronautical revenue represented over 40% of airports’ global profits. In 2010, non-aviation-related revenues accounted for \$35 billion, of which \$10 billion was generated by food and beverage services (hereafter, F&B) (The Moodie Report, 2014). Consuming F&B is one of the most frequent non-aeronautical activities that passengers enjoy at airports (Castillo-Manzano and López-Valpuesta, 2013;

Echevarne, 2008). Lu (2014) reported that 40.7% of airport travellers buy food and beverages. By 2040, total annual airport passengers may reach 22.2 billion which likely will increase airports' F&B and retail services' revenues (ACI, 2017).

According to the existing literature, different types of passengers have different preferences and spending behaviours (Castillo-Manzano, 2010). Hence, it is pivotal for airports and their retailers to strengthen their knowledge about the main determinants of airport travellers' spending patterns (Crawford and Melewar, 2003; Doong, Wang and Law, 2012). This would provide useful information for planning and implementing tailored retailing strategies, based on the characteristics of airports' target consumers.

To date, very little research has analysed passengers' expenditure behaviour at airports (Castillo-Manzano, 2010; Castillo-Manzano et al., 2018; Torres et al., 2005), and even less has been conducted in the specific context of F&B services (Torres et al., 2005; Castillo-Manzano, López-Valpuesta and Sánchez-Braza, 2018). Furthermore, no published paper has investigated how check-in modes might influence passengers' expenditure behaviour. Further research is needed to deepen our understanding about this topic, consider different airports or geographical areas (Lin and Chen, 2013) and determine rationales behind passengers' expenditures (Castillo-Manzano, López-Valpuesta and Sánchez-Braza, 2018).

This study was conducted at Olbia-Costa Smeralda Airport (Italy) on a sample of 2,461 passengers. It aims to investigate the influence that sociodemographics (i.e. gender, age, income and nationality), travel-related variables (type of accommodation and frequency of travelling), flight-related determinants (check-in modes, waiting times prior to boarding) and pre-intention to buy on passengers' spending behaviour (decision to buy and amounts to be spent). To achieve this aim, a Double-Hurdle model was applied. A

generalisation of the Tobit model (Gragg, 1971), this model is the most suitable when dealing with two separate, subsequent and independent decisions, such as 'buying decisions' and 'expenditure levels,' as in this study.

## **2.2 Literature Review**

In the existing literature, two main perspectives have been adopted to analyse the main determinants of economic expenditure in the tourism and hospitality industry: either macro-based (aggregated) and micro-based (individual) (Marroccu, Paci and Zara, 2015). These two perspectives also predominantly characterise the body of knowledge devoted to investigating factors that influence airports' commercial revenues (Castillo-Manzano López-Valpuesta and Sánchez-Braza , 2018).

The aggregate studies show, for example, that non-aviation related revenues are significantly influenced by the specific type of airport (i.e. hub airport versus regional airport) (Castillo-Manzano, López-Valpuesta and Sánchez-Braza, 2018), the commercial area space, the number of domestic and international passengers, the proportion of business travellers, the number of flights and the type of airline company predominantly dominating the airport business (i.e. low-cost versus traditional carriers) (Appold and Kasarda, 2006; Fuerst, Gross and Klose, 2011; Volkova and Müller, 2012). Other studies found that shopping behaviour also is significantly influenced by commercial variety, marketing strategies adopted by airport retailers and airports' commercial environments (Castillo-Manzano López-Valpuesta and Sánchez-Braza, 2018; Wattanacharoensil et al., 2017).

Other individual studies show that expenditure behaviour at airports is influenced by several sociodemographic factors (e.g. age and nationality), number of travellers, travel frequency and flight-related variables (e.g. waiting time prior to embarking) (Castillo-

Manzano, 2010; Geuens, Vantomme, and Brengman, 2004; Lin and Chen, 2013). However, existing studies generally do not emphasise F&B or offer contradictory results. When sociodemographic variables are considered, Geuens, Vantomme, and Brengman , (2004) found that men are more likely to be apathetic or mood shoppers, while women tend to shop more often at airports. Other studies showed that younger airport travellers (less than age 26) spend more in souvenir shops and cafés compared to older travellers (Perng, Chow and Liao, 2010). Other studies (e.g. Castillo-Manzano, 2010) reported that age, employment status and education did not influence expenditure behaviour at airports. According to Graham, 2014, nationality also significantly influences airport spending behaviour. For example, Castillo-Manzano (2010) found that domestic passengers spend less than international passengers.

When travel-related characteristics are considered, leisure travellers, compared to business travellers, are more likely to make purchases at airports, given the former's greater sense of excitement would feel when travelling by air (Bork, 2006). This supports the general idea that leisure travellers spend more at airports than business travellers (Torres et al., 2005). As one possible explanation, business travellers generally travel with fewer companions (Torres et al., 2005). At the same time, business travellers who sometimes spend more than other types of travellers may have a higher spending budget, largely covered by their employers (Graham, 2014). According to Castillo-Manzano (2010), while passengers travelling with children are more likely to make purchases at airports, their average expenditures are lower than those of other travellers. According to Graham (2014), this customer group usually makes small, quick and inexpensive purchases to keep their children entertained. Long-haul leisure passengers tend to spend more than their short-haul counterparts, because they tend to arrive at the airports earlier,

giving them more time to shop (Lin and Chen, 2013) and to make purchases (Castillo-Manzano, 2010; Graham, 2014). In fact, additional spare time at airports leads to greater spending, often in the form of F&B (Torres et al., 2005). Similarly, expenditures are higher when passengers have to wait longer before boarding (Geuens, Vantomme and Brengman, 2004; Lin and Chen, 2013).

Regarding flight-related variables, Castillo-Manzano (2010) opined that purchasing F&B increases for individuals who fly frequently and do not have a connecting flight. Because low-cost flights often lack free in-flight refreshments, their passengers frequently purchase F&B (Graham, 2014; Gillen and Lall, 2004). However, Castillo-Manzano (2010) found higher mean expenditures for individuals flying with traditional (standard-cost) airline companies. Based on the current literature, efficient check-in procedures can lower airport waiting times (Graham, 2014), which tend to reduce airport purchases. What remains unclear is whether the check-in mode (traditional versus online) has a direct, significant impact on the likelihood to spend and the related level of expenditure. This question is specifically explored in this study.

According to Lu (2014), personal characteristics and travel-related variables, together with the shopping experience, moderate air travellers' impulsive and pre-planned buying behaviour. What remains unclear is whether a pre-intention to buy significantly affects the level of expenditure. This question also is specifically explored in this study.

Somewhat contradictory findings that exist in the current literature, coupled with a lack of empirical evidence about the influence of check-in modes and pre-intentions to buy, call for further empirical studies of airport systems. This would deepen the perspective of existing findings and investigate the impact of previously unexplored variables (specifically, check-in mode and pre-intention to buy) on airport travellers' spending

behaviour. This study, conducted at Olbia-Costa Smeralda Airport, (Italy) fills this research gap.

## **2.3 Methodology**

### ***2.3.1 Theoretical Framework***

Expenditure behaviour can be analysed by studying buying probabilities (Alegre and Pou, 2004) and expenditure levels (Kozak, 2001). Econometric analysis is the most widely used approach when assessing travellers' expenditures (Brida, Disegna and Osti, 2013). The ordinary linear square (OLS) regression estimator (Kozak, 2001; Marcussen, 2011) is the most used econometric model to analyse expenditures. In OLS models, expenditures as a dependent variable, usually are transformed into logarithms, to provide a direct interpretation in terms of elasticity. Very few authors make use of pure or standardised values (here, the share of expenditures for categories of tourists' expenditures). Few existing studies use the Tobit model (Tobin, 1958; Zheng and Zhang, 2013; Alderighi, Nicolini and Piga, 2016). Even fewer adopt censored models, such as the Double-Hurdle (Disegna and Osti, 2016; Jang and Ham, 2006). These models assume that expenditures cannot be lower than zero, meaning that several individuals report a zero value of expenditures. Based on prior research (McFadden, 1974), other researchers (e.g. Alegre and Pou, 2004) applied a binary, discrete choice, random, utility model to analyse expenditure behaviour.

In this study, which analyses determinants of expenditure behaviour at airports, the theoretical framework is adapted from that of Brida and Scuderi (2013) and Wang et al. (2006).

To fine tune the model, a preliminary OLS regression on the sample was run to test for the most suitable set of variables to be considered as exogenous determinants of



expenditure. For passengers not making any purchases, the dependent variable was assumed to be zero. When respondents reported spending some money, the dependent variable was the logarithm of this actual expenditure. Afterwards, the dependent variable was modelled as a dummy variable, taking the value 1 if the respondent spent some money at the airport and 0 otherwise. Hence, the logit model allowed us to study the partial effects of determinants on purchasing probability. Independent variables were chosen based on previous research (Castillo-Manzano, 2010; Guens, Vantomme and Brengman, 2004; Lin and Chen, 2013; Lu, 2014; Torres et al., 2005) and on the regression test's statistical significance. Results of this preliminary OLS regression suggest that the following determinants can be used to develop the model: sociodemographic characteristics (i.e. gender, age, income and nationality), travel-related determinants (type of accommodation and frequency of flying through Olbia Airport), flight-related determinants (check-in mode, waiting time to boarding) and pre-intention to buy (see Table 2.1).

To better understand subjects' behaviour, this study assumes that airport travellers' spending resulted from two subsequent, independent processes, namely: 'to buy or not to buy' (a participation decision) and how much money to spend (a quantity decision).

Although the dependent variable's characteristics (i.e. travellers' expenditures) might lead one to choose the Tobit model, the independence between a participation decision and a quantity decision made the Tobit model inappropriate. The Tobit model uses the same set of variables, whose effects are the same for both participation and quantity equations.

To overcome this 'bias', a Double-Hurdle model was adopted (STATA version 13). The Double-Hurdle model, a generalisation of the Tobit model (Gragg, 1971), is based on the idea that two distinct hurdles have to be considered. Specifically, it estimates two

separate regression models. In the first hurdle (the selection stage), purchase intention is estimated by using a Probit model (a participation equation). In the second hurdle (the last stage), an OLS regression model is used to estimate the amount of money that a consumer spends at the airport (a quantity equation). This model's outcome is given by two different sets of independent coefficients instead of a single set, which would have been obtained using the traditional Tobit model.

*Table 2.1 Independent Variables*

Independent Variables	Definition
Male	Dummy=1 if respondents were male
Young Adults	Dummy=1 if respondents were younger than 35 years old
Foreigners	Dummy=1 if respondents were foreigners
Low-Income	Dummy=1 if respondents declared an annual income lesser than 30,000 euros
Waiting time to embarking	Dummy=1 if respondents did checks within 45 minutes before boarding
Traditional check in	Dummy=1 if respondents managed a traditional check in
First-time travellers at Olbia Airport	Dummy = 1 if the respondents had never been in Sardinia before the interview
Hotel accommodation	Dummy = 1 if the respondents stayed in a hotel
Pre-intention to buy	Dummy = 1 if the decision to buy F&B in airport was pre-planned

This study assumes that a passenger's F&B expenditures at airports ( $ExpAir_k$ ) is determined by sociodemographics ( $S_k$ : gender, age, income and nationality), travel-related variables ( $TR_k$ : type of accommodation and frequency of air travel), flight-related determinants ( $FR_k$ : check-in mode and waiting time prior to embarking) and pre-intention to buy ( $IB_k$ ) (see quantity Equation 2.1).

$$\text{ExpAir}_k = f(S_k, TR_k, FR_k, IB_k) \quad (2.1)$$

Then, the overall model to be used in this study can be specified as follows:

$$E_k = \alpha x + \varepsilon_k \quad (2.2)$$

$$\text{if } \min(\alpha x + \varepsilon_k, \beta y + \epsilon_k) > 0 \quad (2.3)$$

$$E_k = 0 \text{ otherwise}$$

Equation 2.2 describes the quantity equation (Equation 1 reframed following a linear regression approach), Equation 3.3 represents the participation equation and  $x$  and  $y$  are vectors, respectively related to the quantity and participation equations. Both vectors incorporate the same determinants, namely: sociodemographics ( $S_k$ ), travel-related variables ( $TR_k$ ), flight-related variables ( $FR_k$ ) and pre-intention to buy ( $IB_k$ ). The error terms  $\varepsilon_k$  and  $\epsilon_k$  are independent and normally distributed.

### ***2.3.2 Study Settings and Data Collection***

This study's data were collected at the Olbia-Costa Smeralda International Airport (Sardinia, Italy). For European airports with up to five million annual passengers, the Olbia-Costa Smeralda Airport in 2017 received the 'ACI Europe Highly Commended' quality prize, ranking second after the airport in Cork (Ireland). In 2017, the airport reached saw a total of 2.8 million passengers, of which about 48% were international. The airport has grown over the past few years, especially in its boarding area, its commercial space and its F&B offerings, which provide airport travellers with a wider array of stores and a wider variety of services, including bars, and cafés, fast food, restaurants and pizzerias, with different degrees of sophistication and prices.

The questionnaire was divided into three sections. The first asked respondents to provide sociodemographic, travel-related and flight-related information. The second asked respondents to report whether they bought F&B-related items at the airport, whether these were pre-planned and what they cost. The third asked respondents their level of agreement with a list of items specifically related to different F&B-related service features, their overall satisfaction with F&B offerings and their intention to recommend the airport's F&B services to others.

The questionnaire was originally written in Italian, but because different nationalities could appear in the sample, three different questionnaires were prepared, by two professional translators (in English, Italian and German). As in previous tourism-related studies, (Seddighi, Nutall and Theocharous., 2001), a back-translation method was adopted to guarantee quality assurance. We pretested the questionnaire with 30 airport travellers from the three different nationalities to assure that the questions were comprehensible. No concerns emerged. Hence, the three final questionnaires were considered definitive. Four trained interviewers collected the data face-to-face with 4,500 individuals in the airport's boarding area, from May to October, 2015.

As directed by airport managers, to not interfere with other marketing research and activities carried out directly by the airport staff, interviewers had access to the boarding area only during specific timeframes during the week. Only individuals aged 18 and over took part in the study. In the end, a sample of 2,461 completed questionnaires was collected (response rate: 54.68%).

## 2.4 Results

### 2.4.1 Descriptive Analysis

From the overall sample (N=2,461), only 24.06% of respondents bought food or beverages while at the airport (N=592). This was a lower percentage compared to other studies (e.g. Lu, 2014).

To avoid an excess of information related to the sample's descriptive statistics (buyers versus non-buyers), and since we focus on factors affecting the level of expenditures, this study's econometric analysis (Table 4) provides details about sociodemographics (Table 2.2), travel and flight-related variables and pre-intention to buy (Table 2.3), only for F&B shoppers.

Table 2.2 shows that F&B shoppers were mostly women (55.59%), young (18-34 years old: 48.55%) or middle-aged, (35-54 years old: 38.54%), international passengers (53.69%) or families or individuals with income less than €30,000 (54.07%). The mean expenditure was higher for males (€20.23), airport travellers older than 65 (€29.63), European (non-Italian) passengers (€21.10) and individuals with medium-high income. The highest mean expenditure level was reported for individuals annually earning €35,000-40,000 (€31.85) or €70,000-80,000 (€33.86). Hence, my findings seem to contradict some prior studies, which reported that women (Geuens, Vantomme and Brengman, 2004) and younger airport travellers (Perng, Chow and Liao, 2010) spend less, while confirming others (e.g. Castillo-Manzano, 2010), which indicated that domestic airport passengers spend less than international counterparts.

Table 2.3 shows that most purchases were impulsive (62.89%). This supports previous studies (e.g. Omar & Kent, 2001; Volkova, 2009) and contradicts others (e.g. Echevarne,

2008). Mean expenditures were higher for individuals who had planned earlier to buy F&B at the airport (€23.55), compared to those buying impulsively (€16.82).

*Table 2.2 Mean Expenditures by Sociodemographic Characteristics*

Variables		Mean Expenditure (€)	%
Gender	Male	20.23	44.41
	Female	18.02	55.59
Age	18-24	15.72	19.35
	25-34	19.70	29.20
	35-44	16.28	21.22
	45-54	22.80	17.32
	55-64	17.36	8.32
	>65	29.63	4.58
	Income	< 10.000	25.96
10.000-14		23.20	6.94
15.000-19		13.69	10.77
20.000-24		20.18	8.13
25.000-29		17.32	8.85
30.000-34		11.54	8.85
35.000-39		31.85	6.22
40.000-44		20.18	5.98
45.000-49		12.37	3.59
50.000-59		16.52	5.50
60.000-69		21.37	4.55
70.000-79		33.86	1.67
80.000-89		16.50	2.87
90.000-99	19.42	2.87	
> 100.000	5.49	4.49	
Nationality	EU (non-Italian)	21.10	50.94
	Extra EU	16.19	2.74
	Italian	16.96	46.31

*Table 2.3 Mean Expenditure by Travel and Flight-Related Variables and Pre-Intention to Buy*

Variables		Mean Expenditure €	%
Type of Accommodation	B&B	16.03	7.48
	Agritourism	19.34	3.15
	Other	27.88	3.35
	Second Home	18.29	8.86
	Rental Home	16.38	18.50
	Guest	16.18	10.63
	Hotel	20.68	48.03
Check-in mode	Traditional	18.15	58.29
	Online	19.78	41.71
Waiting time prior to embarking	< 30 minutes	22.14	10.90
	31-45 minutes	18.31	15.16
	46-60 minutes	18.73	21.47
	61-90 minutes	20.08	29.13
	91-120 minutes	15.33	11.93
	> 120 minutes	19.14	11.41
First-time travellers at Olbia	Yes	20.99	38.18
Airport	Not	17.73	61.82
Pre-intention to buy	Yes	23.55	37.11
	Not	16.82	62.89

When the overall sample of F&B shoppers is considered, the mean expenditure is €19, underscoring a higher level of expenditures compared to other existing studies (e.g. Torres et al., 2005). Hence, when compared to other airports, Costa-Smeralda seems to be characterised by a lower likelihood of buying and consuming F&B services but a higher level of spending. One explanation is that Olbia's airport travellers fly mostly short-haul trips and need connecting flights to reach their destinations. This could make them postpone F&B purchases until they reach their final destination. This supposition further supports recent studies that indicate lower F&B spending at regional and

peripheral airports, compared to hub airports (Castillo-Manzano, López-Valpuesta, and Sánchez-Braza, 2018).

Regarding check-in mode, my findings reveal that the 58,29% of respondents who bought food and beverages have experience with web check-ins and reported slightly higher mean expenditures (€19.78) compared with those who did not check in using the internet (€18.15). Excluding respondents who stayed in 'other' types of accommodation (a residual and marginal category), 48.03% of interviewees stayed at hotels (48.03%). Airport travellers staying at hotels reported the highest mean expenditure (€20.68), while the lowest corresponded to B&Bs (€16.03). As a possible explanation, hotel guests might have higher available economic budgets for their holidays. This explanation is supported by previous studies, which reported higher spending levels by tourists residing at a hotel (e.g. Marrocu, Paci and Zara, 2015), compared to other types of accommodation.

Most respondents reported waiting 61-90 minutes before embarking (29.13%). Previous studies indicated that people with longer wait times spent the most on F&B (e.g. Castillo-Manzano, 2010). Surprisingly, my findings reported the highest mean expenditure for individuals checking in at the last minute (30 minutes or less in advance: 10.90% of respondents). Based on the so-called 'travel stress curve,' passenger stress decreases significantly as soon as they enter a boarding area (Scholvinck, 2000). Hence, based on the so-called opponent-process theory of emotion (Perng, Chow, and Liao, 2010), once travellers have their boarding passes, their tension is relieved, and a feeling of excitement emerges that stimulates their spending behaviour (Thomas, 1997). This circumstance, coupled with the fact that 41.71% of respondents checked in over the internet and therefore did not have to arrive early at the airport, could explain these results. Individuals utilising a web check in reported higher mean expenditures (€19.78) compared to others



(€18.15). Finally, individuals with prior experience flying to Sardinia through Olbia-Costa Smeralda Airport (38.18% of all F&B shoppers) reported higher mean expenditures (€20.99) when compared to counterparts (€17.73).

#### **2.4.2 *Econometric Analysis***

To further deepen the investigation, an econometric analysis was performed to analyse which of the considered variables significantly influenced expenditures. Table 2.4 shows the results of the Double-Hurdle model. The coefficients in the 'participation equation' column (the first hurdle) indicate how a given variable affects the likelihood (probability) of buying something at the airport, while coefficients in the 'quantity equation' column (the second hurdle) show whether a certain variable influences expenditure levels after the decision to make a purchase.

My findings show that the buying decision (the participation equation) is significantly and positively influenced only by certain socio-demographics (i.e. income) and flight-related variables (i.e. waiting time prior to embarking). Airport travellers with an income up to 30,000 euros who waited up to 45 minutes prior to embarking were more likely to make purchases.

Expenditure levels (the quantity equation) are significantly influenced just by certain socio-demographics (i.e. age), travel-related variables (i.e. type of accommodation) and pre-intention to buy. Specifically, expenditures were lower for young adults and higher for respondents who stayed in a hotel and intended to make F&B purchases before arriving at the airport.

*Table 2.4 The Double-Hurdle Model*

Variables	Participation	Standard	Quantity	Standard
	Equation	Error	Equation	Error
Male	-0.03	0.07	0.07	0.08
Young	0.24	0.07	-0.17*	0.09
Foreigners	0.24	0.08	0.35	0.1
Low-income	0.15*	0.08	0.24	0.09
Traditional check in	0.01	0.07	-0.12	0.09
Waiting time prior to Embarking	0.17**	0.09	0.15	0.1
Hotel	0.11	0.08	0.18**	0.09
First-time travellers at Olbia Airport	-0.26	0.08	-0.05	0.1
Pre-intention to buy	3.1	0.27	0.9**	0.41
Constant	-1.1**	0.1	1.58**	0.45

\*  $p < 0.10$ , \*\*  $p < 0.05$ ,

Expenditure levels (the quantity equation) are significantly influenced just by certain socio-demographics (i.e. age), travel-related variables (i.e. type of accommodation) and pre-intention to buy. Specifically, expenditures were lower for young adults and higher for respondents who stayed in a hotel and intended to make F&B purchases before arriving at the airport.

### **2.4.3 Robustness Check**

To assure that the assumption about the independence between participation and quantity equations is valid, a Heckman (1979) regression model was run. The model is based on the assumption that the quantity equation is distorted by the existence of an implied participation process, which is strictly correlated with the quantity equation. To overcome this issue, Heckman (1979) inserted an additional independent variable in the quantity equation, called Mill's ratio, which formalises the dependence between the two decision

processes. It is calculated as the ratio between the probability that an individual falls in the 'participation category' and the cumulative probability of an individual's decision. If the participation and quantity equations are dependent and subsequent decisions, the Mill's ratio is different from zero, with an acceptable level of significance, and the two equations are related (and vice-versa). Hence, Heckman's model needs to be used to identify the determinants of both the participation and the quantity equations. However, when the Mill's ratio is zero, with an acceptable level of significance, the two equations need to be considered independent and the Double-Hurdle model proposed by Cragg (1971) becomes the most suitable one.

Regressors (the expenditure determinants considered in the analysis) and the disturbance term in the participation equation (2.3) determine whether an observation falls into the 'participation category' ( $E > 0$ ) or not ( $E = 0$ ). In particular, during the first step of the econometric analysis (the one related to the decision to buy or not to buy), a latent variable ( $B^*t$ ) is considered that describes the net benefit of the participation. This latent variable depends on a set of different variables (the regressors) and a disturbance term: if the net benefit is greater than zero, the individual falls into the participation category.

Taking into consideration the sample's censored nature, the dependent variable is given by the expenditure level reported by travellers ( $E_k$ ). The latent variable ( $B^*t$ ) is the net benefit of making purchases while at the airport. Therefore, the expected value of expenditures [i.e.:  $\xi(E_t)$ ] can be determined as follows:

$$\xi(E_k | B^*_k > 0) = \alpha x + \lambda \Phi(\alpha x) \quad (2.4)$$

where  $\lambda(\alpha x)$  is the Mill's ratio and  $x$  is a vector related to sociodemographics ( $S_k$ ), travel-related variables ( $TR_k$ ), flight-related variables ( $FR_k$ ) and the pre-intention to buy ( $IB_k$ ). The Heckman model is estimated by running an OLS where the Mill's ratio is an independent variable, as are all the other determinants of travellers' expenditures. The results are presented in Table 2.5.

*Table 2.5 The Heckman Model*

Variables	Coefficients	Standard Error
Male	0.08	0.08
Young	-0.28 ***	0.1
Foreigners	0.21*	0.11
Low-Income	0.17*	0.09
Traditional check in	-0.09	0.08
Waiting time prior to embarking	0.05	0.1
Hotel	0.11	0.09
First-time travellers at Olbia Airport	0.07	0.12
Pre-intention to buy	-0.34	0.72
Mill's ratio	-0.52	0.53
Cons	2.96 ***	0.81

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01

Overall, the not significance of Mill's ratio supports the decision to deal with two independent hurdles and strengthens the decision to treat traveller's expenditures in the airport with the Double-Hurdle Model (Cragg, 1971).

## 2.5 Conclusion

This study aimed to investigate the sociodemographic, travel-related and flight-related determinants of travellers' expenditures at airports, in terms of the decision 'to buy or not to buy' and 'how much to spend.'

From overall sample, just 24.06% of airport travellers made purchases, mostly impulsively (62,89%), generating a net expenditure of €19. Furthermore, the findings revealed that the 'decision to buy' is significantly influenced solely by sociodemographics (income) and flight-related variables (i.e. waiting time prior to embarking), while the level of expenditures is significantly influenced by age, a travel-related variable (type of accommodation) and pre-intention to buy.

From a theoretical point of view, this study deepens the scientific debate around spending behaviour in F&B-related airport retailers by comparing its conclusions those of previous studies. For example, when compared to some existing studies (e.g. Lu, 2014), my results note, in some instances, a lower likelihood to make F&B purchases. However, in other instances, this study also reports higher actual spending compared to other studies (e.g. Torres et al., 2005). Furthermore, the fact that most F&B purchases were impulsive (Omar & Kent, 2001; Volkova, 2009) confirms some prior studies while contradicting others (e.g. Echevarne, 2008). My study also confirms previous research that suggested that women do not, in fact, spend more at airports (e.g. Castillo-Manzano, 2010). Compared to earlier studies (e.g. Castillo-Manzano, 2010; Castillo-Manzano and López-Valpuesta), my findings also show that the likelihood of buying F&B at airports is significantly influenced by passengers' resources. Low-income respondents spend more because F&B shopping at airports largely solves instantaneous, physiological needs with small convenience purchases. The significant influence of waiting time prior to embarkation

confirms existing studies (e.g. Lin & Chen, 2013). However, the fact that this variable does not significantly affect expenditure levels contradicts other studies (e.g. Castillo-Manzano, 2010). The conclusion that younger travellers spend less confirms the results of prior studies, which report that young adults tend to congregate in bars and cafés (e.g. Perng Chow, and Liao, 2010). However, it also contradicts other studies that did not factor in spending behaviour at airports (e.g. Castillo-Manzano, 2010). This study also suggests that reported nationality does not significantly influence spending behaviour, which contradicts some prior studies (e.g. Castillo-Manzano, 2010; Graham, 2014). Finally, My findings conclude that both staying at a hotel and having pre-planned F&B purchases raise expenditures. While this confirms many prior destination-based studies (e.g. Marrocu, Paci and Zara, 2015), these variables do not influence the likelihood to buy. While check-in mode did not affect buying behaviour, it is interesting to note that individuals using web check-ins spent more than customers using other check-in methods.

To sum up, my findings do not confirm all of those in the existing literature, providing instead contradictory evidence to prior studies carried out in different contexts. This study proposes that airport spending is largely impulsive and that airport-based characteristics (e.g. size, location, peripheral versus regional/hub airport and other criteria), sociodemographics and destination-based characteristics (e.g. types of visitors) need to be carefully considered.

From a managerial point of view, my findings suggest that airport managers and retailers need to develop marketing strategies that stimulate customers' natural inclinations to make impulsive purchases. For example, since most passengers are repeat purchasers, a fidelity card programme could be set up to incentive 'frequent airport travellers' to make purchases at airports rather than somewhere else (such as at destination

F&B retailers, in-flight, or at other connecting airports). Similarly, to increase the number of actual shoppers, airport managers could provide on-time passengers at Olbia Airport with bonuses and discounts for instantaneous purchases.

My results also suggest that airport managers should recognise nuances in the way that travellers' spending behaviour is based on their sociodemographics, travel- and flight-related characteristics and pre-intention to buy. For example, the fact that young adults spend less than older passengers could incentivise airport managers and their F&B retailers to widen the assortment of F&B items and lower their cost. Also, because travellers staying at hotels spend more on F&B (and at destinations in general) than those residing in other types of accommodations (Marrocu, Paci and Zara, 2015), airport managers, policy makers and destination marketers could co-market activities that attract the highest possible number of travellers interested in booking a hotel.

Although the study showed no significant differences in spending behaviour based on check-in mode, the fact that mean F&B expenditures are higher for passengers using a web check-in suggests that airports should incentivise the highest number of individuals to use this check-in mode. This also might reduce queuing time and operating costs, limit crowding in terminals and increase passengers' overall satisfaction. However, this suggestion may not be valid for non-F&B-related retail services. How the check-in mode might affect spending behaviour, in addition to related managerial implications, should be investigated in future studies.

While this study helps fill a gap in the existing knowledge base and proposes some implications for airport managers, limitations still remain. First, it is highly site-specific and is based on a non-probability, convenience, sampling technique. Hence, its findings are not generalisable. In the future, a more careful research design and cross-airport

comparison studies could help verify the robustness of the findings. Second, this study focused on actual expenditures reported by travellers and did not directly consider the moderating effect that passengers' economic budgets could exert on their spending behaviour. This aspect would merit investigation in future studies. Finally, it would be useful to consider a wider variety of travel-related elements (e.g. travel party components and group size) and flight-related variables (e.g. type of airline company and frequency of flying), as well how airport retailers affect customers' expenditures (Lin and Chen, 2013).

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## Chapter 3

### **Profiling airport travellers on the basis of their perceptions, satisfaction and behavioral intentions towards food and beverage services**

#### **Abstract**

In the last few decades, airports have more often represented leisure and retail contexts designed to please airport users with an array of different value propositions among which food and beverage services are surely the most relevant. This has given rise to a situation in which the profitability of airports largely depends on non-aviation-related activities. However, limited number of studies have analysed passengers' perceptions, satisfaction and behavioural intentions towards airport-related food and beverage services. This study applies a factor-cluster analysis on a sample of 1,139 airport travellers to profile them on the basis of their perceptions towards different service attributes, their related satisfaction and behavioural intentions. Further, a series of chi-squared tests was conducted to investigate whether significant differences exist among clusters on the basis of the socio-demographics of respondents and travel- and flight-related variables. The findings reveal that three clusters exist (i.e. 'enthusiastics', 'neutrals' and 'price sensitives') and that significant differences exist among them based on age, education level, employment status, frequency of travelling and flying and check-in modality. Contributions to the theory, managerial implications and limitations to the study are discussed, and suggestions for further research are made.

**Keywords:** *Socio-demographics, travel-related variables, flight-related variables, food and beverage services, airport, factor-cluster analysis.*

### **3.1 Introduction**

In the last two decades, the size of the tourism sector has been steadily increasing and the international arrivals rate has displayed an upward tendency, reaching a value of 6.8% in 2017 (WTTC, 2018). Tourism forecasts reveal that international arrivals are expected to reach 1.8 billion by 2030 (UNWTO, 2017). Tourism development is intrinsically linked with transportation, the airport system in particular. In 2017, the number of airport passengers worldwide increased by 7.9% (WTTC, 2018) and by the year 2040 it is estimated that the figure will reach 22.2 billion, from which one may determine a potential increase in airport food and beverage (F&B) consumption along with that of retail services (ACI, 2017).

In the last few decades, airports have proven new proactive and marketing-driven approaches, with airports more often representing leisure, retail, and entertainment contexts (Jarack, 2001; Lin and Chen, 2013) pleasing the needs of different market segments (i.e. passengers and air transportation employees, tourists, residents, etc.) with an array of different value propositions among which F&B services are surely the most relevant (e.g. Doganis, 1992; Jarack, 2001). This metamorphosis has given rise to a situation in where profitability of airports depends largely on non-aviation related activities (e.g. Graham, 2009; Fasone, Kofler and Scuderi, 2016; Yokomi, Wheat and Mizutani, 2017). Hence, it has become pivotal for both academicians and practitioners to deepen their understanding about passengers' needs, their shopping behaviours and their satisfaction towards the different features of F&B airport-based retail services (Halpern and Graham, 2003). Despite the fact that current tourism-related literature concurs that shopping is one of the most pervasive leisure activities that tourists enjoy while on their holidays (e.g. Correia and Kozack, 2016). Nevertheless, limited research has been

conducted that analyses tourist behaviour with respect to retailing services (e.g. Choi, Law and Heo, 2018; Sirakaya-Turk, Ekinici and Martin, 2015); even less has been carried out that aims at examining passengers' behaviours towards airport-based F&B retailers (Del Chiappa, Martin and Roman, 2016). Furthermore, academic research applying cluster analysis in order to profile consumers based on their level of satisfaction with different attributes of the F&B services in airports is still – surprisingly - limited (Geuens, Vantomme and Brengman, 2004; Martinelli, 2012; Del Chiappa, Gimenez and Zapata-Aguirre, 2017), especially when considering their socio-demographic (e.g. age, gender, level of education, etc.) and travel-related characteristics (e.g. prior experience, length of stay, etc.). Hence, more studies on airports and on passenger consumer and expenditure behaviour at airports are needed (Moon, Yoon and Han, 2017).

This study was therefore carried out to widen the scientific debate devoted to investigating passengers' consumption behaviours pertaining to F&B services in airport areas (Crawford and Melewar, 2003; Doong, Wang and Law, 2012). Thus, my findings contribute to deepen the scientific debate about this somewhat under-investigated research area and provide useful information to airport managers attempting to increase the effectiveness of their retail marketing strategies aimed at fulfilling travellers' expectations (Shamma and Hassan, 2013).

The Olbia-Costa Smeralda International Airport, located in the northern part of Sardinia (due west of Rome and Naples), was selected as the research site to collect data. This airport is considered the main gateway to the Emerald Coast, one of Italy's most well-known and well-established luxury tourism destinations. Specifically, the study applies a factor-cluster approach to profile a sample of 1,139 travellers of Olbia airport on the basis of their perceptions towards different service features of F&B-related retailers (i.e.



‘atmospherics’, ‘staff quality’, ‘product quality’ and ‘value for money’), their satisfaction levels and their intention to recommend that others shop at the airport (both offline and online). Further, a series of chi-squared tests were conducted to ascertain whether significant differences actually exist between clusters according to the socio-demographics of respondents (i.e. age, gender, marital status, level of education, employment status, monthly household income and place of residence), travel-related characteristics (i.e. frequency of travel, frequency of flying) and flight-related variables (i.e. check-in modality, arrival time at the airport before departure).

### **3.2 Literature review**

According to Popovic, Kraal and Kirk (2010), overall airport experience can be defined as the wide array of activities and interactions that passengers have at the airport; these activities and interactions can be classified into two main categories: those needed to board the flight (the so-called necessary activities) and those that are discretionary in nature, such as shopping and dining.

Based on the utilitarian versus hedonic value dichotomy (Holbrook and Hirschman, 1982), a cornerstone of the retailing literature that needs to be considered when investigating any type of shopping behaviour is the distinction between hedonic and utilitarian motivations (e.g. Babin, Darden and Griffin, 1994; Sweeney and Soutar, 2001), and tourist shopping (i.e. the activity in which tourists participate while on holidays) is no exception (Gallarza, Fayos Gardó and Calderón García, 2017). In fact, tourist shopping can be surely considered a holistic experience in which utilitarian, hedonic, social and emotional aspects simultaneously exist, providing tourists with a unique and entertaining local experience (e.g. Murphy et al., 2011). However, this experience has been less

investigated in the context of airports despite the relevant role that non-aviation-related revenues have in terms of airport profitability (e.g. Torres et al, 2005), with airports nowadays more frequently featuring leisure, experiential and retail contexts (e.g. Crawford and Melewar, 2003; Rowley and Slack, 1999; Wattanacharoensil, Schuckert, and Graham, 2016; Wattanacharoensil et al., 2017).

According to Wattanacharoensil et al. (2017), airports are able to significantly influence travellers' experiences for several reasons. First, airports are a relevant tourism-related service encounter for people travelling to tourist destinations, with airport-based F&B retailers symbolising and promoting the local identity and authenticity (e.g. Appold and Kasarda, 2006). Second, a good variety of food choices is considered the strongest predictor of overall passenger satisfaction (Bogicevic et al., 2013) and of the intention to revisit airport lounges (Han et al., 2012). According to Bogicevic et al. (2013), dining and shopping options are key dissatisfying factors in one's airport experience, meaning that poorly executed options cause dissatisfaction and complaints. However, they do not result in any compliments when performed well (e.g. Johnston, 1995). Third, airports are perceived by travellers as the first and last impression of a destination for visitors, the interpretative location of destination slogan and image and integral part of their travelling experience (Wattanacharoensil et al., 2017).

In this scenario, commercial and retail outlets are more often cornerstones of the overall airport experience and crucial elements for any airport manager attempting to stimulate the hedonic experience and excitement of travellers (Ballantine, Jack and Parsons, 2010), to mitigate their travel-related stress and to generate a feeling of passengers' delight (Rowley and Slack, 1999). Chung (2015), for example, used a structural equation model to investigate the extent to which utilitarian and hedonic values are exerted on airport

shopping behaviour (i.e. satisfaction and intention to recommend to others), and they found that the hedonic shopping values exert a stronger effect, suggesting that airport shopping involves more multisensory decisions than cognitive decisions. However, the hedonic and aesthetic aspect of the airport experience impresses air travellers only after fundamental experiences (i.e. functional experience and service personnel) reach a satisfactory level (Wattanacharoensil et al., 2017).

Studies on marketing concur that measuring customer satisfaction and behavioural intentions is certainly a fundamental criterion for companies in any sector, and hospitality and tourism are no exceptions (e.g. Pizam and Ellis, 1999; Torres, 2014). Airport travellers' satisfaction and behavioural intentions can be influenced by socio-demographic variables (e.g. age and gender), travel-related characteristics (e.g. purpose and frequency of travel, travel party size), flight-related variables (e.g. frequency of flying, wait time prior to embarkation), the airport and retailers' atmospherics, service quality and value for money (Castillo-Manzano, 2010; Chen, Batchuluun and Batnasan, 2015; Chung, 2015; Del Chiappa, Martin and Román, 2016; Del Chiappa, Giménez and Zapata-Aguirre, 2017; Entwistle, 2007; Geuens, Vantomme and Brengman, 2004; Han, Yu and Kim, 2018; Lin and Chen, 2013; Moon, Yoon and Han, 2016; Namin, 2017; Newman and Lloyd Jones, 1999; Omar and Kent, 2001; Perng, Chow and Liao, 2010; Sacerdote, 2009).

The factors affecting customer satisfaction and behavioural intentions in the specific context of the F&B sector are not simply related to the intrinsic characteristics of the food provided (e.g. quality, taste and variety) (e.g. Namin, 2017). Conversely, other relevant factors include aesthetics (e.g. interior design and layout and external appearance) and service encounters (i.e. the interaction between customer and service staff and

responsiveness and empathy.) (e.g. Cao and Kim, 2015; Lin and Mattila, 2010). Furthermore, customer satisfaction and behavioural intentions with F&B services are influenced by socio-demographics of consumers (e.g. Lee, Cho and Ahn, 2012; Kim and Geistfeld, 2003). For example, Lee, Cho and Ahn (2012) reported that older consumers tend to be more satisfied and less concerned with price and taste as compared to younger consumers while women are more interested in staff responsiveness and service delivery compared to their male counterparts. In their study conducted in airport restaurants, Heung, Wong and Qu (2002) considered three perception factors ('employee attributes', 'reliability' and 'physical features') and showed that employee attributes were the most significant aspects shaping the overall satisfaction of airport travellers as well as their behavioural intentions.

Quite recently, the academic literature has started to investigate consumer preferences and satisfaction towards F&B retailers in airports. Martinelli (2012) reported socio-demographics exerting a moderating effect on satisfaction. In her study, compared to men, women appeared to value retail services located closer to the boarding area and were more sensitive to prices (when travelling for leisure reasons) and food quality (when travelling for business reasons). In their study, applying a fuzzy approach, Del Chiappa, Martin and Román (2016) reported that age was another moderating factor in airport travellers' satisfaction towards F&B retailers; specifically, the authors reported older travellers as being less satisfied than their younger counterparts. Del Chiappa, Giménez and Zapata-Aguirre (2017) applied a multiple correspondence analysis, a hierarchical cluster analysis and a classification and regression tree to profile air travellers on the basis of their socio-demographic features (i.e. age, gender, education level, occupation, nationality), travel-related variable (i.e. frequency of travel) and level of satisfaction against a list of 13 F&B-

related items. According to these results, the authors concluded that airport travellers can be discriminated solely on the basis of age and occupation.

Nowadays, airports face fierce competition and their profitability is largely determined by non-aviation related activities, with F&B-related revenues exerting a key role. As suggested by consumer behaviour literature (e.g. Cronin and Taylor, 1992), any attempts to assess and improve airport travellers' satisfaction and behavioural intentions towards F&B services in airports becomes pivotal (Cronin and Taylor, 1992). Hence, according to a relatively recent call for future research as well (Graham, 2008), it is certainly relevant to profile travellers based on their level of satisfaction (e.g. Lee, Lee and Wicks, 2004) towards F&B services (as a whole or through an attributes-based view), possibly increasing the number of socio-demographic characteristics and travel- and flight-related variables used in the statistical analysis. Doing so would certainly contribute to broadening the scientific debate pertaining to the topic of F&B consumption in airports and could provide airport managers and retailers with useful information to be applied to effectively target their consumer segments. Despite this potential benefit, the existing literature aimed at examining the aforementioned area is limited and further research is needed in order to consider a wider number of F&B-related service features and to investigate whether other socio-demographic characteristics and travel- and flight-related variables may be considered-in order to be able to significantly moderate airport travellers' satisfaction and their behavioural intentions towards F&B services. This study was carried out by presenting and discussing the results of a factor-cluster analysis conducted on a sample of 1,139 travellers who used F&B services at the Olbia-Costa Smeralda International Airport.

### 3.3 Method

For purposes of this study, data collection was conducted at the airport, located Olbia, the gateway to the *Costa Smeralda* (emerald coast), one of the most important and popular luxury destinations on the Mediterranean Sea. In 2017, the airport reached 2,808,323 million passengers, of whom around 48% were international ones.

The survey instrument was developed on the basis of existing studies and included two main sections. The first section asked participants to provide information about their socio-demographic profiles (e.g. age and gender), their travel-related habits (frequency of travel, purpose of travel, etc.) and flight-related habits (e.g. check-in modality and waiting time at the airport prior to flight departure). In the second section, respondents were asked to assess their level of agreement with 27 items specifically selected to measure atmospherics, staff quality, product quality, value for money, satisfaction and intention to recommend to others (both online and offline). Specifically, the list of items used to measure aesthetics (12 items) was framed on the basis of the existing literature (e.g. Turley and Milliman, 2000) and redefined or adapted by consulting a group of airport managers and retailers, thus allowing a the theory-in-use approach (Zaltman, LeMasters and Heffring, 1982). Staff quality and product quality were measured by items sourced from Lo and Qu (2015) and adapted to suit the context of airport retailers (seven items for service quality and two for product quality). Value for money was measured using three items sourced from Sweeney and Soutar (2001). Satisfaction (one item) and intention to recommend to others (two items) were sourced and adapted from Jones and Reynolds (2006) and Zeithaml, Bitner and Demler (1996). Satisfaction was measured by a single item as it often happens in the existing literature related to different fields and research settings in which retail is included (Ballantine, 2005; Zhou, 2004). A 5-point

Likert scale was used to indicate respondents' answers (1 = I strongly disagree, 5 = I strongly agree).

The questionnaire was originally designed in Italian, but as different nationalities could appear in a sampling process with tourists, three questionnaires were prepared by two professional translators (English, German and Italian). A back-translation method was adopted to guarantee quality assurance (e.g. Seddighi, Nutall and Theocharous, 2001). A pilot test with 20 travellers from the abovementioned three nationalities was conducted to assure the comprehensibility of the questions. No concerns emerged in these pilot tests. Hence, the three final questionnaires were considered definitive.

Two trained interviewers directly supervised by one of the authors collected data for this study face-to-face at the airport. They intercepted 2,500 individuals in the boarding area from May to October 2015. On an average, the interviewers had access to the boarding area twice a week during specific time frames; this was done in accordance with the airport management exigencies so as to not interfere with other marketing research and activities directly conducted by the airport staff. Only individuals aged 18 years and above who had tried F&B services at the airport were asked to participate in the study. At the end of the data collection, a convenience sample of 1,139 complete questionnaires was collected (response rate: 45.56%).

### **3.4 Results**

Respondents were mostly middle-aged (35–44 years old: 21.0%; 45–54 years old: 19.9%) females (63.2%), married or cohabiting (55.4%), with a university degree (41.0%), employed (42.2%) and with an annual household income under 15,000 € (24.2%) or over 50,000 € (23.0%). Respondents were mostly international travellers (52.1%), travelling

up to four times per year (61.0%), mostly for leisure purposes (91.8%), flying up to four times a year (68.5%). Interviewees mostly arrived at the airport 1.5–2 hours before the flight's departure (43.9%).

Overall, the respondents were reported to be satisfied with airport-based F&B services ( $M = 3.71$ ). Airport travellers were particularly satisfied with store aesthetics and scored high on items such as 'The stores have good standards of cleanliness' ( $M = 4.03$ ), 'The lighting is appropriate and pleasant' ( $M = 3.96$ ), 'The shop windows look good' ( $M = 3.91$ ), 'The aesthetic and architectural aspect of shops is pleasant and appealing' ( $M = 3.87$ ), 'The stores have a good layout' ( $M = 3.87$ ) and 'The decoration inside the stores is pleasant and appealing' ( $M = 3.86$ ). Respondents were satisfied with staff quality and scored high on items such as 'In general, the staff has an aesthetic and smart appearance and dress' ( $M = 4.06$ ); 'In general, the staff were courteous, polite and respectful' ( $M = 3.98$ ) and 'The staff shows competence (knowledgeable and experienced)' ( $M = 3.93$ ). Relatively high satisfaction levels were reported also for product quality, with respondents scoring high on items such as 'The quality of food and beverage is appropriate' ( $M = 3.65$ ) and 'The variety of the offer for food and beverage is appropriate' ( $M = 3.63$ ). Overall, a neutral position was reported to exist in terms of value for money, with airport travellers scoring relatively low on items such as 'Prices of food and beverage of this airport are competitive with other airports' ( $M = 3.23$ ), 'The products have a good quality/price ratio' ( $M = 3.22$ ) and 'Prices are reasonable' ( $M = 3.02$ ). Finally, respondents were reported to be slightly prone to spread a positive word-of-mouth (WOM) advertising, with traditional WOM being more likely to occur than electronic WOM (traditional WOM:  $M = 3.32$ ; eWOM:  $M = 3.12$ ).



For this study, we adopted a factor-cluster approach (Hair et al., 2010). Hence, an explorative factor analysis (principal component analysis and varimax rotation) was used to reveal underlying factors in the dataset. Five factors were extracted explaining 71.20% of total variance (Table 3.1). The Kaiser-Myer-Olkin index (0.954) and the Bartlett's test of sphericity (chi-square = 14,959.24;  $p$ -value <0.0001) both confirm that the results appropriately explain the data. Cronbach's alpha was then calculated to test the reliability of the extracted factors; all values are 0.86 or higher, suggesting that the factors are reliable (Table 3.1).

The first factor is labelled 'atmospherics' (47.85% of total variance) and results strongly correlated with items related to retail layout, architectural characteristics, decoration, cleanliness, sounds, lighting, etc.

*Table 3.1 – Factor analysis*

		Loadings	Eigenvalue	% variance explained	% variance cumulated	Cronbach's Alpha
<b>Factor 1: Atmospherics</b>			<b>12.920</b>	<b>47.85</b>	<b>47.852</b>	<b>0.935</b>
A1	The shop windows look good	0.654				
A2	The lighting is appropriate and pleasant	0.682				
A3	The stores have a good layout (arrangement of space)	0.707				
A4	The background music is pleasant	0.53				

A5	The temperature is pleasant	0.706
A6	The stores have good standards of cleanliness	0.724
A7	The scents that you breathe are pleasant	0.731
A8	The noise is tolerable	0.691
A9	The signs (to identify areas of products, etc.) are understandable	0.664
A10	The aesthetic and architectural features of shops are pleasant and appealing	0.71
A11	The shops are made so as to effectively manage the movement of people	0.676
A12	The decorations inside the stores (colours, furniture, etc.) is pleasant and appealing	0.705

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**Factor 2: Staff quality** **2.159**    **7.99**    **55.84**    **0.952**

A13	The staff responds to customer demand accurately and reliably	0.793
A14	The staff responds to customer inquiries in a timely manner	0.832

A15	The staff is present, available and can be easily contacted	0.803				
A16	In general, the staff was courteous, polite and respectful	0.825				
A17	The staff is able to communicate in a clear and understandable manner in a foreign language	0.798				
A18	In general, the staff has an aesthetic and smart appearance and dress	0.743				
A19	The staff shows competence (knowledgeable and experienced)	0.766				
<b>Factor 3: Value for money</b>			<b>1.973</b>	<b>7.31</b>	<b>63.15</b>	<b>0.884</b>
A20	Prices are reasonable	0.866				
A21	Prices of food & beverage of this airport are competitive with other airports	0.839				
A22	The products have a good quality/price ratio	0.843				
<b>Factor 4: Product quality</b>			<b>1.109</b>	<b>4.11</b>	<b>67.26</b>	<b>0.866</b>
A23	The variety of offer for food & beverage is appropriate	0.79				

A24 The quality of food and beverage is appropriate 0.759

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**Factor 5: Satisfaction and intention to recommend** 1.064 3.94 71.2 0.864

A25 Overall, I am satisfied with the food and beverage services at this airport 0.406

A26 I will speak well of the services of Food and beverage of this airport to family and friends offline 0.814

A27 I will speak well of the food and beverage services in this airport to family and friends on social media (Facebook, Twitter, Tripadvisor, etc.) 0.873

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*Goodness of fit: Chi-square = 14959.24 d.f. = 351 Sig = 0.000 – KMO = 0.954*

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‘Staff quality’ (7.99% of total variance) includes items measuring perceived staff quality (e.g. accuracy and reliability, responsiveness, courtesy, language skills, etc.). ‘Value for money’ (7.30% of total variance) is related to items devoted to measure airport travellers’ perception in terms of the quality/price ratio and price appropriateness, also when compared to F&B services in other airports. ‘Products quality’ (4.11% of total variance) includes two items measuring perceived quality and the variety of F&B offerings. The fifth and last factor is ‘Satisfaction and intention to recommend’ (3.94% of total variance)

and includes items measuring satisfaction and intention to recommend (both offline and online).

The scores of the five principal components were entered into a cluster analysis. Following Hair, et al. (2010), a double step method was used. A hierarchical cluster (Ward method–Manhattan distances) was performed and three groups emerged. Then, a non-hierarchical method (*k*-means) was applied to factor scores defining three different groups of airport travellers, namely ‘Enthusiastics’ ‘Neutrals’ and ‘Price sensitives’.

Table 3.2 shows the socio-demographic features, travel-related and flight-related characteristics of each cluster. The ‘Enthusiastics’ were the biggest cluster (N = 627), including mostly middle-aged females (55.6%) belonging to the 35–44 (21.2%) or 45–54 (23.2%) age brackets, married or cohabiting (56.5%), with a high school diploma or better (42.2%), being employed (43.8%), with an annual household income over € 50,000 (25.7%).

*Table 3.2 – Socio-demographics and travel- and flight-related characteristics of clusters*

	<b>Neutrals</b>	<b>Enthusiastics</b>	<b>Price sensitives</b>	<b>Total</b>
	%	%	%	%
<b>Gender</b>				
Male	38.0	44.4	42.9	42.3
Female	62.0	55.6	57.1	57.7
<b>Age</b>				
18–24	16.5	13.6	21.0	16.2
25–34	30.1	24.8	23.9	26.0

35–44	22.6	21.2	28.9	21.0
44–54	15.0	23.2	18.5	19.9
55–64	12.0	11.4	9.1	11.0
≥65	3.8	5.8	8.6	5.9
<b>Marital status</b>				
Single	24.0	23.1	19.7	22.5
Engaged	19.5	15.4	19.3	17.4
Married/cohabiting	51.7	56.5	57.4	55.4
Widow	1.1	1.8	1.6	1.6
Divorced	3.7	3.2	2.0	3.1
<b>Level of education</b>				
Primary school	1.5	0.9	1.2	1.2
Secondary school	4.2	4.8	8.7	5.6
High school	28.1	42.2	38.5	37.6
University degree	47.3	39.8	36.8	41.0
Master's degree	13.5	8.9	13.6	11.2
Other	5.4	3.4	1.2	3.4
<b>Employment status</b>				
Employee	43.5	43.8	37.7	42.2
Retired	3.8	5.9	9.4	6.2
Housewife	4.2	5.3	6.1	5.2
Manager/executive	8.3	10.7	5.3	8.8
Occasional worker	1.9	1.0	1.6	1.4
Student	15.2	10.3	16.7	13.1

Freelancer	17.0	13.7	11.8	14.1
Unemployed	0.4	1.6	2.0	1.4
Other	5.7	7.7	9.4	7.6
<b>Annual Household income (€)</b>				
<15,000	19.1	24.9	29.1	24.2
15,000–24,999	22.4	16.9	17.7	18.6
25,000–34,999	19.7	19.2	16.3	18.7
35,000–49,999	15.8	13.3	20.6	15.5
>50,000	23.0	25.7	16.3	23.0
<b>Yearly frequency of travelling</b>				
1–4	54.3	63.6	63.0	61.0
5–10	32.1	24.2	21.8	25.7
>10	13.6	12.2	15.2	13.3
<b>Yearly frequency of flying</b>				
1–4	62.8	70.6	70.0	68.5
5–10	25.6	21.3	17.3	21.4
>10	11.6	8.1	12.7	10.1
<b>Purpose of travelling</b>				
Leisure	94.4	93.8	93.1	93.8
Business	5.6	6.2	6.9	6.2
<b>How long before the flight departure did you arrive at the airport?</b>				
30–45 minutes	3.8	3.0	3.3	3.3
45–60 minutes	24.6	26.9	20.2	24.7
1–1.49 hours	7.2	7.2	8.3	7.5

1.5–2 hours	42.4	41.6	50.4	43.9
more than 2 hours	22.0	21.3	17.8	20.6
<b>Check-in modality</b>				
Traditional (face-to-face)	66.2	50.1	58.0	56.2
Online	33.8	49.9	42.0	43.8
<b>Place of residence</b>				
Sardinia	11.6	8.0	11.9	9.9
Italy	37.6	38.2	38.1	38.0
Foreign countries	50.8	53.8	50.0	52.1

‘Enthusiastics’ are mostly international airport travellers (53.8%), travelling (63.6%) and flying (70.65%) up to four times per year mostly for leisure purposes (92.8%). They were reported arriving at the airport 1.5–2 hours before their flight’s departure (41.6%) and handling their check-in face-to-face (50.1%).

‘Neutrals’ (N = 267) includes mostly young females (62.0%) belonging to the 18–24 (16.5%) or 25–34 (30.1%) age brackets, married or cohabiting (51.7%), with a university degree (47.3%), being employees (43.5%), reporting annual household income falling in the €15,000–24,999 span (22.4%) or being higher than €50,000 (23.0%). They are mostly international visitors (50.8%), travelling up to four times (54.3%) or five to ten times per year (32.1%), mostly for leisure purposes (94.4%). Neutrals are reported flying up to four times per year (62.8%) and arriving at the airport 1.5–2 hours before the flight departure (42.4%); they mostly check in face-to-face (66.2%).

‘Price sensitives’ was the smallest segment (N = 245) and included mostly middle-aged females (57.1%) belonging to the 35–44 (28.9%) or 45–54 (18.5%) age groups, married



or cohabiting (57.4%), with a high school diploma (38.5%) or a university degree (36.8%), working as employees (37.7%), with an annual household lower than € 15,000 (29.1%). Individuals belonging to this cluster are national (50.0%) and international airport travellers (50.0%), travelling up to four times per year (63.0%) mostly for leisure reasons (93.1%). They were reported to fly up to four times a year (70.0%), arriving at the airport 1.5–2 hours before their flight’s departure (50.4%) and checking-in face-to-face (58.0%).

Table 3.3 describes each cluster based on airport travellers’ perceptions towards F&B retailers’ atmospherics, staff quality, service quality and value for money.

*Table 3.3 – Cluster analysis*

	<b>CL1</b> <b>Neutrals –</b> <b>N = 267</b>	<b>CL2</b> <b>Enthusiastics</b> <b>N = 627</b>	<b>CL3:</b> <b>Price</b> <b>sensitives</b> <b>N = 245</b>	<b>Total</b> <b>– N =</b> <b>1139</b>
	Mean	Mean	Mean	Mean
REGR factor score 1 for analysis 1	–0.304908	0.1555948	–0.0659082	
REGR factor score 2 for analysis 1	–1.139306	0.238793	0.6304958	
REGR factor score 3 for analysis 1	–0.0747936	0.122779	–0.2327043	
REGR factor score 4 for analysis 1	–0.378158	0.2131835	–0.1334607	
REGR factor score 5 for analysis 1	0.0746205	0.463464	–1.2674105	
A1 The shop windows look good	3.4	4.2	3.88	3.91
A2 The lighting is appropriate and pleasant	3.4	4.24	4	3.96
A3 The stores have a good layout (arrangement of space)	3.32	4.17	3.85	3.87

A4	The background music is pleasant	3.16	3.84	3.34	3.54
A5	The temperature is pleasant	3.44	4.13	3.83	3.88
A6	The stores have good standards of cleanliness	3.56	4.27	4.04	4.03
A7	The scents that you breathe are pleasant	3.46	4.12	3.79	3.86
A8	The noise is tolerable	3.4	3.97	3.55	3.72
A9	The signs (to identify areas of products, etc.) are understandably	3.2	4.1	3.61	3.74
A10	The aesthetic and architectural aspect of shops is pleasant and appealing	3.33	4.21	3.77	3.87
A11	The shops are made so as to effectively manage the movement of people	3.26	4.08	3.63	3.76
A12	The decoration inside the stores (colours, furniture, etc.) is pleasant and appealing	3.31	4.18	3.82	3.86
A13	The staff responds to customer demand with accuracy and reliability	2.94	4.22	4.1	3.85
A14	The staff responds to customer inquiries in a timely manner	2.93	4.26	4.13	3.88
A15	The staff is present, available and can be easily contacted	2.97	4.23	4.18	3.89
A16	In general, the staff was courteous, polite and respectful	3.05	4.33	4.27	3.98
A17	The staff was able to communicate in a clear and understandable manner in a foreign language	3	4.24	4.09	3.87

A18	In general, the staff has an aesthetic and smart appearance and dress	3.24	4.39	4.26	4.06
A19	The staff showed competence (knowledgeable and experienced)	3.05	4.32	4.1	3.93
A20	Prices are reasonable	2.7	3.38	2.61	3.02
A21	Prices of food & beverage of this airport are competitive with other airports	2.93	3.6	2.83	3.23
A22	The products have a good quality/price ratio	2.86	3.55	2.95	3.22
A23	The selection of food & beverage is appropriate	3.01	4.06	3.41	3.63
A24	The quality of food and beverage is appropriate	3.06	4.04	3.5	3.65
A25	Overall, I am satisfied with the food and beverage services at this airport	3	4.24	3.43	3.71
A26	I will speak well of the services of food and beverage of this airport to family and friends offline	2.86	4.26	2.01	3.32
A27	I will speak well of the services of food and beverage of this airport to family and friends on social media (Facebook, Twitter, Tripadvisor, etc.)	2.76	4.11	1.61	3.12

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‘Enthusiastics’ score high in term of atmospherics (e.g. ‘The stores have good standard of cleanliness’: M = 4.27-‘The lighting is appropriate and pleasant’: M = 4.24-‘The shop windows look good’: M = 4.20-‘The aesthetic and architectural aspects of shops are pleasant and appealing’: M = 4.21), staff quality (e.g. ‘The staff has an aesthetic and smart

appearance and dress':  $M = 4.39$ - 'The staff was courteous, polite and respectful':  $M = 4.33$  - 'The staff shows competence':  $M = 4.32$ ), and product quality (e.g. 'The variety of offer for food and beverage is appropriate':  $M = 4.06$ - 'The quality of food and beverage is appropriate':  $M = 4.04$ ). However, they seem to express some concerns in term of value for money and score just slightly positively towards items such as: 'Prices are reasonable':  $M = 3.38$  - 'The products have a good quality/price ration':  $M = 3.55$  - 'Prices of food and beverage of this airport are competitive with other airports':  $M = 3.60$ ). However, overall, they show a high level of satisfaction ( $M = 4.24$ ) and intention to recommend to others (offline:  $M = 4.26$ , online:  $M = 4.11$ ).

'Neutrals' seem to show a neutral position towards the most part of the items (all the mean values are  $\approx 3$ ). However, they appear to be quite concerned in term of value for money, thus scoring lower than three with items such as 'The product has a good quality/price ratio' ( $M = 2.86$ ) and 'Prices are reasonable' ( $M = 2.70$ ). Overall, they are neither satisfied or satisfied ('Overall I am satisfied with the food and beverage services at this airport':  $M = 3.00$ ) and do not appear actually willing to recommend F&B services at the airport to others, neither offline ( $M = 2.86$ ) or online ( $M = 2.76$ ).

Even if at a lower level compared to 'enthusiastics', 'price sensitives' have positive view towards atmospherics, staff quality and product quality (all the mean value are  $\approx 4$  or slightly higher for atmospherics and staff quality and are  $\approx 3$  or slightly higher for product quality). However, when compared to both 'enthusiastic' and 'neutrals', they reported the strongest concerns in term of value for money of F&B offer at the airport. In fact, 'price sensitives' score low or really low with items such as: 'The products have a good quality/price ratio' ( $M = 2.95$ ), 'Prices of Food and Beverage of this airport are competitive with other airports' ( $M = 2.83$ ) and 'Prices are reasonable' ( $M = 2.61$ ).

Overall, they reported a slightly positive level of satisfaction ( $M = 3.43$ ), but surprisingly they scored the lowest mean value in terms of intention to recommend to others (offline:  $M = 2.01$ , online: 1.61) when compared to individuals in the other two clusters.

Finally, a series of chi-square tests ( $\chi^2$ ) were conducted to ascertain whether significant differences existed among the clusters based on socio-demographic and travel- and flight-related variables (Table 3.4).

*Table 3.4 – Chi-square tests*

	<b>Chi-square</b>	<b>Sig.*</b>
Gender	2.955	0.228
Age	21.189	<b>0.020*</b>
Marital status	6.254	0.619
Level of education	30.328	<b>0.001**</b>
Employment status	29.855	<b>0.019*</b>
Monthly household income	13.230	0.104
Number of trips per year	9.844	<b>0.043*</b>
Number of flights per year	9.700	<b>0.046*</b>
Purpose of travel	0.385	0.825
How long before the flight did you arrive at the airport?	7.891	0.444
Check-in modality	18.450	<b>0.000**</b>
Place of residence	4.141	0.387

\*Significant at the 0.05 level - \*\*Significant at the 0.01 level (significant values in bold)

The results revealed that significant differences exist between the segments in terms of age ( $\chi^2 = 21.189$ ,  $p = 0.020$ ), education levels ( $\chi^2 = 30.328$ ,  $p = 0.001$ ), employment status

( $\chi^2 = 29.855, p = 0.019$ ), yearly frequency of travelling ( $\chi^2 = 9.844, p = 0.043$ ), yearly frequency of flying ( $\chi^2 = 9.700, p = 0.046$ ) and check-in modality ( $\chi^2 = 18.450, p = 0.000$ ). No significant differences were reported to exist in terms of gender ( $\chi^2 = 2.995, p = 0.228$ ), marital status ( $\chi^2 = 6.254, p = 0.619$ ), monthly household income ( $\chi^2 = 13.230, p = 0.104$ ), purposes of travelling ( $\chi^2 = 0.385, p = 0.825$ ), arrival time at the airport before their flight's departure ( $\chi^2 = 7.891, p = 0.444$ ) and place of residence ( $\chi^2 = 4.141, p = 0.387$ ).

Overall, results confirm some prior studies while rejecting others, as well as adding some completely new and fresh knowledge to further deepen the scientific debate devoted to analysing airport travellers' usage behaviours of F&B services.

For example, the fact that airport travellers' views towards different F&B service features and their satisfaction levels were reported to be the lowest for 'neutrals' which is the segment with the highest number of women (62.0%), which seems to confirm that women tend to have higher expectations than men (e.g. Lee, Cho and Ahn, 2012; Oh, Parks and Demicco, 2002). However, the fact that chi-square tests show that no significant differences exist between clusters in terms of gender seems to contradict prior studies (e.g. Martinelli, 2012), although they confirm others showing similar evidence (e.g. Del Chiappa, Giménez and Zapata-Aguirre, 2017). My findings also confirm prior studies reporting women being particularly sensitive to prices and food quality (Martinelli, 2012) and atmospherics (Borges, Babin and Spielmann, 2013). In fact, the lowest scores in the items used to measure 'atmospherics', 'value for money' and 'product quality' were reported to exist for individuals belonging to 'neutrals' and 'price sensitives'-the two segments with the highest number of women. Furthermore, my study reporting employment status being able to significantly differentiate clusters confirms that of Del Chiappa Giménez and Zapata-Aguirre, (2017). Significant differences between segments

were also found in terms of age, thus confirming the results of Del Chiappa, Martin and Román (2016) and Del Chiappa, Giménez and Zapata-Aguirre (2017). However, it needs to be mentioned that both these studies reported older travellers to be less satisfied with F&B services at airports. On the contrary, in this study, the lesser satisfied segments ('neutrals' and 'price sensitive') were mostly composed by young travellers aged 18–34 years (neutrals: 46.6%, price sensitive: 44.9%) when compared to 'enthusiastics' (38.4), thus confirming Cao and Kim's (2015) study carried out in non-airport-based restaurants. This evidence could be explained by the observation that most individuals belonging to 'enthusiastics' are reported to travel and fly with a lower annual frequency (travelling, 1–4 times: 63.6%, flying, 1–4 times: 70.6%) compared to 'neutrals' (travelling, 1–4 times: 54.3%, flying, 1–4 times: 62.8%) and 'price sensitives' (travelling, 1–4 times: 63.0%, flying, 1–4 times: 70.0%). In other words, because of their overall lower frequency of travelling and flying, 'enthusiastic' folks could be less critical in judging F&B services (e.g. Ha and Jang 2010; Severt, Tesone and Murmann, 2006; Tax, Brown and Chandrashekar, 1998).

Quite interestingly, this study also found differences between clusters with regard to the way in which airport passengers were reported to undertake their check-in modalities (i.e. face-to-face versus online), an aspect that has never been previously investigated in any studies on F&B consumption and expenditure behaviour at airports. Specifically, my results show that airport-views towards different F&B service features and their overall satisfaction were lower for 'neutrals' and 'price sensitives,'-the two segments including mostly individuals checking-in face-to-face. This evidence could be explained by arguing that individuals checking-in face-to-face tend to arrive earlier at airports when compared to the time taken by their counterparts who do not queue at the check-in desk. Hence,

‘neutrals’ and ‘price sensitives’ would have the possibility to experience extended and prolonged service encounters. This, in turn, would offer them (i.e. ‘neutrals’ and ‘price sensitives’) the possibility of increasing their opportunities to interact with and be influenced by the different F&B service features, thus resulting in more critical and experienced consumers.

### **3.5 Conclusion**

Although non-aeronautical revenues worldwide, particularly those related to F&B services, have experienced remarkable growth, research aimed at analysing airport travellers’ perceptions towards the different aspects of F&B and their satisfaction and behavioural intentions is still in its early stages (e.g. Del Chiappa, Martin and Román 2016; Del Chiappa, Giménez and Zapata-Aguirre, 2017, Martinelli, 2012). Further, to the best of our knowledge, there has been just one study (Del Chiappa, Giménez and Zapata-Aguirre, 2017) aimed at profiling travellers’ perceptions and satisfaction pertaining to airport-related F&B services. However, the number of F&B service features considered in this case was limited, as was the number of socio-demographic features and travel-related variables that were investigated as factors being potentially able to discriminate between different clusters. No attention was paid to flight-related variables (e.g. check-in modality and arrival time at the airport before the flight departure). Therefore, this study broadens the scientific debate surrounding the topic, thus answering recent calls for further research aimed at deepening our understanding about airport travellers’ consumption behaviours (e.g. Graham, 2008), enlarging the number of socio-demographic features in particular, along with travel- and flight-related variables considered as being potential moderating factors of F&B consumption behaviours at airports.



Overall, the findings reveal that airport travellers have a positive view towards F&B services in term of atmospherics, staff quality and product quality, while some concerns exist in terms of perceived value for their money. On the whole, the overall satisfaction regarding F&B offerings is slightly positive, while respondents do not appear to be particularly willing to recommend airport F&B to others overall, especially online.

However, cluster analysis applied to the scores of the four factors identified through the exploratory factor analysis ('atmospherics,' 'staff quality,' 'products quality,' 'value for money' and 'satisfaction and behavioural intentions') showed that airport travellers perceptions, satisfaction and behavioural intentions are not homogenous. Specifically, three clusters were identified: 'enthusiastics,' 'price sensitives' and 'neutrals,' with 'enthusiastics' being the biggest segment. According to research on restaurant experience (e.g. Hurst, 1970; Pugh, 2001), this study highlights that cleanliness and comfort, staff responsiveness and courtesy and speed of service (Pratten, 2004) need to be considered as key attributes in shaping airport satisfaction with F&B services (Bogicevic et al., 2013; Del Chiappa, Giménez and Zapata-Aguirre, 2017). The results confirmed that in airport-related F&B services, significant differences between the clusters were reported on the basis of certain socio-demographic features (i.e. age, level of education, employment status), travel-related aspects (i.e. yearly frequency of travel) and flight-related variables (yearly frequency of flying and check-in modality). However, no significant differences were found in terms of gender, marital status, monthly household income, place of residence, purpose of travelling and arrival time at the airport before flight departure.

For example, 'neutrals' and 'price sensitives' were reported to be more likely women and youngsters, with higher frequency of travelling and flying, particularly sensitive to prices, food quality and atmospherics and having lower scores in terms of overall satisfaction

and behavioural intentions, thus supporting prior studies (e.g. Borges, Babin and Spielmann, 2013; Cao and Kim, 2015; Lee, Cho and Ahn, 2012; Martinelli, 2012). My results reveal no significant differences in terms of gender, contradicting some prior studies (e.g. Martinelli, 2012), while confirming others (e.g. Del Chiappa, Giménez and Zapata-Aguirre, 2017), indicating that future studies in different airports and geographical circumstances are needed to be carried out in an attempt to further confirm the robustness of the insights offered in existing literature devoted to analysing airport travellers' behaviours towards F&B services at airports. Furthermore, my findings contribute completely new knowledge to the extant literature, revealing that significant differences exist between clusters in terms of check-in modality, with airport travellers checking-in face-to-face having less positive views towards F&B services at airports and being less satisfied compared to their counterparts checking-in online.

These conclusions are significant for both researchers and hospitality managers. On the one hand, they provide further insights into the scientific debate on passengers' consumption behaviours pertaining to F&B services in airport areas, widening the number of both F&B-related service features and socio-demographic and travel- and flight-related variables that can be considered as potential moderating factors of airport travellers' perceptions, satisfaction and behavioural intentions. Furthermore, the fact that my findings confirmed some prior studies while rejecting others adds to the body of knowledge by highlighting the evidently inconsistent relationship between airport travellers' views, satisfaction and behavioural intentions and their socio-demographic features, along with travel- and flight-related variables. Finally, to the best of my knowledge, this study is the first study showing that the check-in modality (i.e. face-to-

face versus online) is a moderating factor that needs to be considered when studying passengers' consumption behaviours with respect to airport-based F&B services.

On the other hand, these findings provide airport managers and airport-based retail managers with information that may be used to effectively manage their offerings and service design. First, they suggest that effort should be made to recognise nuances in the way airport travellers consume products and services, thus assessing F&B services on the basis of their socio-demographic features, plus travel- and flight-related characteristics, so that overall retail services may be designed to better reflect the characteristics of their target consumers. Thus, for example, airport managers and airport-based retail managers should invest in continuous improvement of their offerings (in terms of atmospherics, staff quality and product quality) to meet the expectations of women and experienced travellers and/or to push the price/quality ratio higher when dealing with younger folk. Doing so would, in turn, contribute to capturing the travellers' preferences and expectations, making them more satisfied, and more prone to talk positively about the F&B offerings at the airport (Moon, Yoon and Han, 2017). In this direction, it would be also certainly useful to consider the findings from this study as useful in initiating a tracking process aimed at assessing the extent to which marketing and promotion activities actually contribute to enhancing airport travellers' satisfaction with F&B services. Furthermore, the fact that some segments (i.e. 'enthusiastics,' and, particularly, 'price sensitives') were reported not to be particularly prone to spread e-WOM about F&B services, despite being satisfied with the F&B offerings, suggests that airport and retail managers should proactively incentivise their customers to post a comment or review online. In doing so, airport managers and retailers could use modern reputation management systems that first ask their customers to assess their satisfaction towards

their experience with F&B services at airports and then ask just those customers providing assessments falling in a positive range to post a comment and review. Finally, my results suggest that airport and airline managers should keep their attention focused when deciding to incentivise their customers who check-in online. In fact, on the one hand, incentivising passengers to check-in online can certainly contribute to reduce queuing time both at traditional check-in points and when going through security, thereby increasing passengers' satisfaction and contributing to reducing the number of employees needed to manage traditional check-ins. However, my results suggest that airport travellers who check-in online are usually less positive in their views, satisfaction and intention to recommend the airport-based F&B services to others. That said, airport managers and airline managers should decide to incentivise web check-in after comparing the costs and benefits of both alternatives (traditional and web-based check-in), carefully considering the effect that the different check-in modalities exert.

In spite of the theoretical and managerial contributions, this study is not free of limitations. First, the study used a sample which is highly site-specific (i.e. data was collected at one and not multiple airports) and not representative of the overall population under investigation (i.e. airport travellers at the Olbia-Costa Smeralda Airport). These circumstances render my findings hardly generalisable. In the future, it would be useful to repeat the study at other airports and geographical circumstances to further confirm the robustness of my results. Second, although this study considered a wider number of variables that could moderate airport travellers' perceptions, satisfaction and behavioural intentions towards F&B services, other variables remained unexplored (e.g. travel party size, personality traits, emotions exuded and prior experience in using F&B services at the airport selected as research setting); these variables can be taken into account in future

research. Furthermore, my study did not investigate passengers' consumption behaviour towards different types of F&B services that currently exist at the airport (e.g. bars, fast food joints, restaurants and pizzerias). This outcome occurred despite the fact that previous restaurant-related studies show that consumer perception, values and satisfaction differ based on the type of restaurant experienced (e.g. Ha and Jang, 2013). Hence, future studies could consider the possibility of investigating passengers' perceptions, satisfaction and behavioural intentions towards different types of F&B retailers at the airport. The third limitation is conveyed by the fact that it is difficult to confirm all retailers' features in detail. This fact, in turn, makes it difficult to explain the reason why certain airport travellers were reported to express the given levels of satisfaction or dissatisfaction. Therefore, future studies can consider the possibility of conducting a qualitative study (or a mixed-method study-perhaps an explanatory mixed-method approach) to gain a more comprehensive understanding and explanation about what exactly was satisfying and unsatisfying for airport travellers and what they would have liked to have experienced in order to have been more satisfied. For example, rather than simply knowing that certain passengers were dissatisfied with certain service features (e.g. the retail layout, the interior design and the staff dress code and appearance.) it would be more useful to know how they would have liked to see those service features (e.g. how the retail layout should have been or the interior design and how the staff might manage their remarks and body language to be perceived as politer). This amelioration will allow us to be more effective in contributing to a further development in the current body of knowledge devoted to analysing travellers' shopping behaviours in airports; in addition, it will provide even more pragmatic and detailed suggestions to airport managers and retailers wanting to increase the satisfaction level in their target markets.

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## **Conclusion**

Over the last few years, several studies rooted in retail marketing, marketing, tourism and airport management have started to devote their attention to the analysis of shopping and expenditure behaviour at airports. However, the existing research around this research area can be considered still limited, with the most recent studies calling for further research aimed to deepen our understanding about this topic considering different airports and/or geographical area (Lin and Chen, 2013) and/or a wider array of potential determinants of passengers' expenditure (Castillo-Manzano, López-Valpuesta, and Sánchez-Braza, 2018).

This PhD thesis aims to contribute to deepen the scientific debate around this somewhat research area presenting and discussing the results of three empirical and theoretical rooted, studies carried out collecting data from the Olbia-Costa Smeralda International Airport (Sardinia Italy).

The first papers were devoted to analyse the main determinants of shopping behaviour (socio-demographics, travel-related variables and flight-related variables), with shopping behaviour being interpreted as two independent decisions ('the decision to buy' and 'the decision about the amount of money to be spent') and being analysed both for overall expenditure at the airport (paper 1) and for F&B related expenditure (paper 2). For both the papers the same econometric approach (i.e. Double Hurdle Model) was applied to the data (paper 1: n=2,723–paper 2: n=2,461). Findings of the first study revealed that the 'decision to buy' is significantly influenced just by travel-related (i.e. type of accommodation and travel party) and flight-related (i.e. wait time) variables. On the contrary, the level of expenditure is significantly influenced by socio-demographics (i.e.

age and income), travel-related variables (i.e. type of accommodation and travel party), flight-related variables (i.e. type of check-in) and pre-intention to buy. The findings further suggest that airport managers must recognise nuances in the way travellers' spending behaviours change based on their socio-demographics, travel-related characteristics and flight-related characteristics. Findings of the second paper revealed that the 'decision to buy' is significantly influenced just by socio-demographics (i.e. income) and flight-related variables (i.e. waiting time prior to embarking), while the level of expenditure is significantly influenced by socio-demographics (i.e. age), travel-related variables (i.e. type of accommodation) and pre-intention to buy. From a theoretical point of view, both the studies to deepen the scientific debate around spending behaviour in F&B-related retailers in airports by building upon and contrasting conclusions offered by previous studies and adding fresh and new knowledge about the potential moderator effect that check-in mode can exert over shopping behaviour. The last paper applied a factor-cluster analysis on a sample of 1,139 airport travellers to profile them on the basis of their perceptions towards different service features of F&B-related retailers (i.e. 'atmospherics', 'staff quality', 'product quality' and 'value for money'), their satisfaction levels and their intention to recommend that others shop at the airport (both offline and online). Further, a series of chi-squared tests were conducted to ascertain whether significant differences actually exist between clusters according to the socio-demographics of respondents, travel-related characteristics and flight-related variables. Findings of this study showed that airport travellers' perceptions, satisfaction and behavioural intentions are not homogenous. Specifically, three clusters were identified: 'enthusiastics', 'price sensitives' and 'neutrals', with 'enthusiastics' being the biggest segment. The results confirmed that in airport-related F&B services, significant

differences between the clusters were reported on the basis of certain socio-demographic features (i.e. age, level of education, employment status), travel-related aspects (i.e. yearly frequency of travel) and flight-related variables (yearly frequency of flying and check-in modality). However, no significant differences were found in terms of gender, marital status, monthly household income, place of residence, purpose of travelling and arrival time at the airport before flight departure.

### **Managerial implication**

From a managerial point of view, several managerial implications can be framed and provided to airport managers and their retailer's partner. First, findings suggest that airport managers and their retailers must develop retail marketing strategies designed to increase their ability to exploit and/or to stimulate the natural inclination that passengers have in making impulsive purchases. For example, a fidelity card programme for 'frequent airport travellers' to make their purchases while being at the airport rather than to anticipate/postpone them somewhere else. Similarly, with the aim of increasing the number of actual shoppers, airport managers could provide passengers at the time of their arrival to Olbia Airport with bonus and discounts to be used to make instant buying and/or buying at the time of their departure back home. More broadly, my results also suggest that airport managers should recognise nuances in the way the travellers spending behaviour is based on their socio-demographics, travel-related characteristics, flight-related characteristics and pre-intention to buy, so that they can effectively develop retail marketing strategies where the mix of retail format and related assortment is designed to better reflect the characteristics of their target consumers. Further, insights from my studies suggest that airport and airline managers should focus their attention when deciding to incentivise their customers who pass through the experience of web check-in.



In fact, favouring web check-in could contribute to reduce the queuing time both at the traditional check-in points and security (thus increasing the passengers' satisfaction and contributing to keep lower the number of employees that would be needed to manage whether all check-ins are managed in a traditional manner). Despite these advantages, my results suggest that favouring web check-in will decrease overall mean expenditures. That said, airport managers should make their decisions comparing costs and benefits of each alternative (for traditional versus web check-in) also considering the effect that the different check-in modalities exert in terms of passengers' expenditures.

Furthermore, airport managers and airport-based retail managers should invest in continuous improvement of their offerings (in terms of atmospherics, staff quality and product quality) to meet the expectations of women and experienced travellers and/or to push the price/quality ratio higher when dealing with younger folk. This should be done with the specific aim to capturing the travellers' preferences and expectations, making them more satisfied and more prone to talk positively about the F&B offerings at the airport. The fact that some segments (i.e. 'enthusiastics', and, particularly, 'price sensitives') were reported not to be particularly prone to spread e-WOM about F&B services, despite being satisfied with the F&B offerings, suggests that airport and retail managers should proactively incentivise their customers to post a comment or review online. In doing so, airport managers and retailers could use modern reputation management systems that first ask their customers to assess their satisfaction towards their experience with F&B services at airports and then ask just those customers providing assessments falling in a positive range to post a comment and review.

## **Limitations and future research directions**

In spite of the theoretical and managerial contributions, the studies presented and discussed in this PhD thesis are not free of limitations. First, the three studies used a sample which is highly site-specific (i.e. data was collected at one and not multiple airports) and not representative of the overall population under investigation (i.e. airport travellers at the Olbia-Costa Smeralda Airport). These circumstances render findings hardly generalisable. In the future, it would be useful to repeat the study at other airports and geographical circumstances to further confirm the robustness of my results. Second, a wider number of variables that could moderate airport travellers' shopping behaviour, perceptions, satisfaction and behavioural intentions towards airport-based retailers' offer could have been considered (e.g. travel party size, personality traits, emotions exuded and prior experience in using F&B services at the airport selected as research setting). These variables can be taken into account in future research. Furthermore, my study did not investigate passengers' consumption behaviour towards different types of F&B services that currently exist at the airport (e.g. bars, fast food joints, restaurants and pizzerias). Hence, future studies could consider the possibility of investigating passengers' perceptions, satisfaction and behavioural intentions towards different types of F&B retailers at the airport. The third limitation is conveyed by the fact that it is difficult to confirm all retailers' features in detail. This fact, in turn, makes it difficult to explain the reason why certain airport travellers were reported to spend more and/or to express certain levels of satisfaction or dissatisfaction. Therefore, future studies can consider the possibility of conducting a qualitative study (or a mixed-method study-perhaps an explanatory mixed-method approach) to gain a more comprehensive understanding and explanation about what exactly was stimulating shopping behaviour (e.g. service scape),

airport travellers' satisfaction/un-satisfaction and what they would have liked to have experienced to spend more and/or to have been more satisfied. Finally, studies specifically devoted to analyse the shopping behaviour of airport travellers focused on the actual expenditure reported by travellers, and the declared expenditure could have been biased by the recall of respondents and did not directly consider the moderator effect that the economic budgets of passengers could exert on their spending behaviours. Future studies could use other more sophisticated techniques to collect data about expenditure behaviour and should consider the extent to which the planned economic budgets could affect the passengers' actual spending behaviour.

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