# An empirical model of long-term development for accommodation facilities: the role of smart destination

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**Abstract**

This paper draws on the literature on innovation and networking in tourism industry to investigate how the promotional tools developed by destinations – websites for information and booking, mobile apps, e-commerce websites, tourist cards, Business Intelligence (BI) and Customer Relationship Management (CRM) software – may contribute to the long-term development of accommodations in the territory. A model is created to analyse the impact of destinations' digital tools on booking channels, direct and intermediated (both online and offline), and in turn their effect on revenue. Furthermore, a deeper investigation is conducted to have evidence of possible different output by clustering accommodation facilities by location, typology or clientele. Hypotheses are tested with a generalized linear model and an ordered logistic regression on data retrieved from 1,226 accommodations distributed in the Italian territory. Empirical results evidence the contribution of smart destinations in increasing the competitiveness of the tourism firms in the same area.

**Keywords**

tourism; DMO; destination marketing organization; smart destination; accommodation facilities; OTA; online travel agencies; ICT; information and communication technology; digital technology; digital marketing; booking channels; revenue; long term development.

## 1 Introduction

The rapid growth of the World Wide Web in the 1990s and wide introduction of Information and Communication Technologies (ICTs) have modified the structure and business models of the tourism industry. Electronic channels are now predominant in hospitality, gathering the largest portion of sales. In fact, tourists are even more digital – they rely on the Internet in the many phases of the journey, from inspiration to post-travel activities like lodging reviews – and online distribution channels perfectly match their preferences for booking online (Amaro and Duarte, 2013; Toh et al., 2011a). The Internet makes the search of destinations, tourism providers and services easier and richer than traditional channels do; for that reason more than 50% of hotel reservation is made online (Hospitalitynet, 2015; Kim and Kim, 2004). From suppliers' point of view, online channels allowed accommodation facilities to reduce costs, maximize market exposure, grow booking volumes and increase revenues (Buhalis, 1999; Toh et al., 2011b). It led the birth of new virtual actors that increased the variety of distribution and modified the competitive landscape (Hojeghan and Esfangareh, 2011). Online travel agencies (OTAs) are the ones that gained major importance thanks to their wide products assortment and convenience (both in term of price and cancellation policies). This resulted in an imbalance of power at the expense of accommodation suppliers: they largely depend on online intermediaries to reach a wide customer base with consequent more complexity in managing the relationships with customers and high commissions to be paid for the brokerage service.

However, the introduction of smart technology has opened new possibilities for collaboration. ICTs support organizations to enhance their networks by interconnecting systems and adding value for all stakeholders (Buhalis and Amaranggana, 2015). In particular, partnerships could arise between Destination Management Organizations (DMOs) and accommodation facilities located in the same territory as they are interwoven realities (Buhalis and Molinaroli, 2003; Correia and Brito, 2014): while DMOs create and maintain the touristic demand, accommodations provide the supply. The outcome of such relationships is an increase in sales and consequent generation of more revenue into the local economy (Hojeghan and Esfangareh, 2011). Thus, technology brings various benefits to companies in hospitality ecosystem: disseminates marketing information (Okumus, 2013), co-creates customer experiences (Neuhofer et al., 2015), increases operation efficiency and effectiveness (Yu and Lee, 2009) and improves organisational performance (Melián-González and Bulchand-Gidumal, 2016).

Despite the growing interest of the literature on the topic, at our best knowledge benefits of networking in hospitality industry have not been quantitatively analysed yet. For this reason, the aim of this paper is to assess the value for accommodation facilities – meaning distribution channels performance and revenue growth – resulting from the use of digital tools provided by DMOs. Research draws on 1,226 accommodations located in the entire Italian territory interviewed during 2015. The empirical part outlines a model to measure the impact of the use of digital tools developed by DMOs on booking channels management and revenue, applying generalized linear model and ordered logistic regression techniques.

The rest of the paper is organized as follows. In Section 2, we present the theorical background and research questions. Section 3 is devoted to model and data description. The empirical analysis is conducted in Section 4. Section 5 concludes.

## 2    Literature review

### 2.1 Theoretical background

The introduction of Information and Communication Technologies (ICTs) in 1990s revolutionized the tourism industry (Poon, 1993; Sheldon 1997), leading to the birth of new virtual actors and the consequent creation of new market relationships (Aldebert et al., 2011). The transformation of the competitive landscape brought a change in the market share and bargaining power (Buhalis and Law, 2008). Traditionally, tourists contacted accommodation facilities through direct channels, like phone calls or walk-ins, and travel agencies. Due to the advent of the Internet, tourists have at their disposal a plethora of channels to make room reservations. Above all, online travel agencies (OTAs) gained the greatest popularity, since they provide price and product comparisons among different suppliers (Rao and Smith, 2005) and the benefit of one-stop shopping available 24 hours a day, seven days a week (Buhalis and Licata, 2002; Emmer et al., 2003; O'Connor, 1999). Among these, there are Expedia, Booking.com and Travelocity. Also players who do not sell directly to the final customer but promote the tourist offers are assuming an increasingly important role (Podu, 2013). It is the case of metasearch engines that are used to search rooms' availability among multiple websites such as Skyscanner, Kayak and Trivago. Moreover, in the last years, also big players like Google, Facebook and Amazon are widening their business models and entering the tourism system, introducing new potential distribution channels (Oskam and Zandberg, 2016). As a result, service providers experiment a more complicated management of the relationships with their customers, who now interface with a large number of actors (Mihălcescu and Sion, 2011; Ruiz-Molina et al., 2011). Consumers highly rely on intermediaries to search for travel information and cheaper rates (Law et al., 2004; Masiero and Law, 2016). On their side, intermediaries build brand and product awareness through advertising, gather market information, satisfy demand, process bookings and support customers (Tsay and Agrawal, 2004). This sales service is paid by providers through commissions that can vary considerably according to the platform used.  Typically travel agencies apply a 10% commission of the total booked revenue (Choi and Kimes, 2002), while the average commission charged by OTAs is more than 18 per cent of the price (Garrigos-Simon et al., 2017). Thus, it is clear that accommodation facilities' income is mostly reduced by costs from OTAs (Buhalis and Law, 2008; Carroll and Siguaw, 2003; Ford et al., 2012). Besides, OTAs attire a huge portion of tourists – reaching the 40% of share in the European market (European Commission, 2017) – that make them attractive to travel suppliers. As a result, they deliberately act as oligopolies (Oskam and Zandberg, 2016).

This situation, in addition to the fragmented nature of the tourism industry, should stimulate the many actors to develop entrepreneurial networks, supported by ICTs, for the creation and delivery of tourism products and the development of common resources (Buhalis and Molinaroli, 2003). The shift from competition to cooperation enables many benefits: production, innovation and profitability (Longhi, 2008; Merenda et al., 1994). In addition, in tourism sector there are disparities in the possessing of technological tools to distribute information and allow reservations and in the ability to use them effectively (Minghetti and Buhalis, 2010); they could be overcome by mutual cooperation with the advantage of knowledge transfer and resource exchange. In order to survive in the market, networks seem essential to increase efficiency and competitiveness (Peltier and Naidu, 2012; Butler et al., 1990). However, the sustainability of these cooperative relationships is confined to the return gained by each single side (Berné et al., 2015). Common interests are expected for tourist destinations and accommodation facilities situated in the same territory since they are related entities; such collaborations could result into a positive outcome. In fact, the destination is one essential motivating factor behind the tourists' decisions, which in turns are the result of the marketing strategies adopted by its various stakeholders. Consequently, touristic enterprises have to market both their own product and the area as a single

unified product. On the other hand, marketing a tourist destination is often difficult to organize since there are many actors involved with their own goals that have to co-exist (Grängsjö, 2003); many authors affirm that regional innovation system should stimulate network linkages both for operational and strategic goals (Buhalis, 1998), enhancing regional innovation, competitiveness, growth (Carrincazeaux and Gaschet, 2015; Chaminade and Plechero, 2015; Collits and Rowe, 2015) and the value of long-term relationships (Firoiu and Dodu, 2010).

Effective marketing and distribution strategies are often built around a centralized tourism data warehouse that allows enterprises offer personalized services, which result in high percentage of online bookings (Minghetti and Buhalis, 2010). In fact, in such information-intensive industry, big data are considered the new key source for value creation. Hospitality companies are recommended to combine internal data and external information to carry out effective revenue management, using them for forecasting bookings and achieve better performance (Ling et al., 2015). However, due to the huge amount of data, often in non-standard formats, tourist providers have difficulties to retrieve and consolidate them in a meaningful manner in order to support decision-making process. Networks could support the creation of collective knowledge and value for all stakeholders, enhancing the competitiveness of the entire hospitality ecosystem (Buhalis and Leung, 2018). Indeed, through datamining and statistical techniques the knowledge exploited from tourists' data can be transformed into competitive assets (Del Vecchio et al., 2018). Thus, network development should be triggered by digital technologies, which contribute to provide better services and offer valuable experiences for tourists and to create wealth, profit, and benefits for the tourist firms and destinations (Boes et. al, 2015; Boes et al., 2016).

ICT tools play an important role in the relationship between accommodation facilities and destination marketing organizations (DMOs): they can be used for communicating their offerings, enhancing their visibility on the market and strengthening their competitiveness (Buhalis, 1998; Gretzel et al., 2000). In addition, open online platforms can facilitate interactions between private and public hospitality stakeholders by providing access to network resources and information, increasing productivity and reducing operative costs (Hopkins, 2000; Leung and Law, 2013). ICT-skilled DMOs contribute to the competitiveness of the tourism ecosystem making use of various digital technologies, such as booking systems, location-based services, e-Commerce functionalities, recommendation platforms (Minghetti and Buhalis, 2010), which support the entire tourist journey. Innovative destinations have implemented their own websites and mobile apps to communicate with tourists with the aim to promote and raise their awareness on both the destination itself and the tourism firms (Gretzel et al., 2000). Besides, tourist cards are realized by DMOs in collaboration with the tourism destination to facilitate the on-site experience and increase the use of tourist services (Zoltan and Masiero, 2012). They are cumulative tickets that allow the tourists to access a range of services offered by destination at a total price lower than single purchases. The major benefit for service firms lies on their informative power: companies who choose to join the program have the opportunity to receive useful information to profile visitors, gain insight about their consumption behaviour and model appropriate marketing actions (Angeloni, 2015). Hospitality companies can count on Business Intelligence (BI) and Customer Relationship Management (CRM) software to organize a big amount of customer data, collect external information and extract valuable figures (Ramos et al., 2015). Such evidences can be used to develop a well-addressed communication, with relevant and personalized contents that push people to perform the desired action (Milović, 2012). Therefore, destinations assume a significant role within the tourism context as they promote the tourist offers without selling them directly to customers (Podu, 2013).

Distribution channels are pivotal in hospitality business strategies and profitability (Kracht and Wang, 2010): each channel has its own costs, favours a specific customer experience and represents a percentage of the overall revenue (Law et al., 2015). The challenge for revenue managers is creating a sustainable profit stream by investing in the

channels with the greatest returns (Green and Lomanno, 2012), ensuring maximum marketing exposure and meeting customer preferences and expectations (Dolasinski et al, 2019). In fact, a well-managed distribution system can make the difference in the market, allowing companies to grow and lead instead of struggling to survive (Kotler et al., 2013). Despite the importance to evaluate the effect of distribution channels management on revenue (Choi and Kimes, 2002), more empirical evidence is needed to further understand their impact on tourist firm's performance (Lei et al., 2019). Although direct channels are preferable to prevent loss of control, minimize commission fees and build long-term relationships, the share of reachable contacts is smaller than with intermediaries (Dolasinski et al., 2019; Kang et al., 2007; Stangl et al., 2016). In this context, the collaboration with DMOs could represent the keystone to enhance both the tourism experience and the companies' financial results.

### 2.2 Research objective

Despite the growing interest of the literature on the topic, empirical researches remain scarce. This paper investigates how the digital tools developed by destinations – websites for information and booking, mobile apps, e-commerce websites, tourist cards, BI and CRM software – may contribute to the long-term development of accommodations in the territory, in terms of  booking channels management and revenue. In specific, the study analyses the impact of destination digital tools on the channels used for booking and, subsequently, the relationship between the booking channels and revenue growth. Thus, following hypotheses are formulated:

**Hypothesis 1**. *Websites for information and booking, mobile apps, e-Commerce website, tourist card and BI and CRM software will be positively associated with direct bookings. Direct bookings will be positively associated with revenue.*

**Hypothesis 2**. *Websites for information and booking, mobile apps, e-Commerce website, tourist card and BI and CRM software will be negatively associated with intermediated online bookings. Intermediated online bookings will be positively associated with revenue.*

**Hypothesis 3**. *Websites for information and booking, mobile apps, e-Commerce website, tourist card and BI and CRM software will be negatively associated with intermediated offline bookings. Intermediated offline bookings will be positively associated with revenue.*

**Hypothesis 4**. *Websites for information and booking, mobile apps, e-Commerce website, tourist card and BI and CRM software will be positively associated with destination intermediated bookings. Destination intermediated bookings will be positively associated with revenue.*

The impact of usage of digital tools on booking channels could vary among accommodation facilities that respond to specific characteristics. Thus, a further investigation will be conducted to test the same hypotheses in presence of homogeneous groups of accommodations. In particular, accommodation facilities will be classified according to their geographical location, typology (e.g. hotels, farm holidays) and clients' origin country.

## 3    Method

### 3.1 Model

We created a descriptive model to visualize the relationships between variables contained in the four hypotheses (Fig. 1). The arrows indicate the direction of causality between the independent variables and the dependent one, while the mathematical signs indicate the proportionality of the relationship (+: positive; -: negative).

**Figure 1** Research models, input (a. Hp. 1; b. Hp. 2; c. Hp. 3; d. Hp. 4)
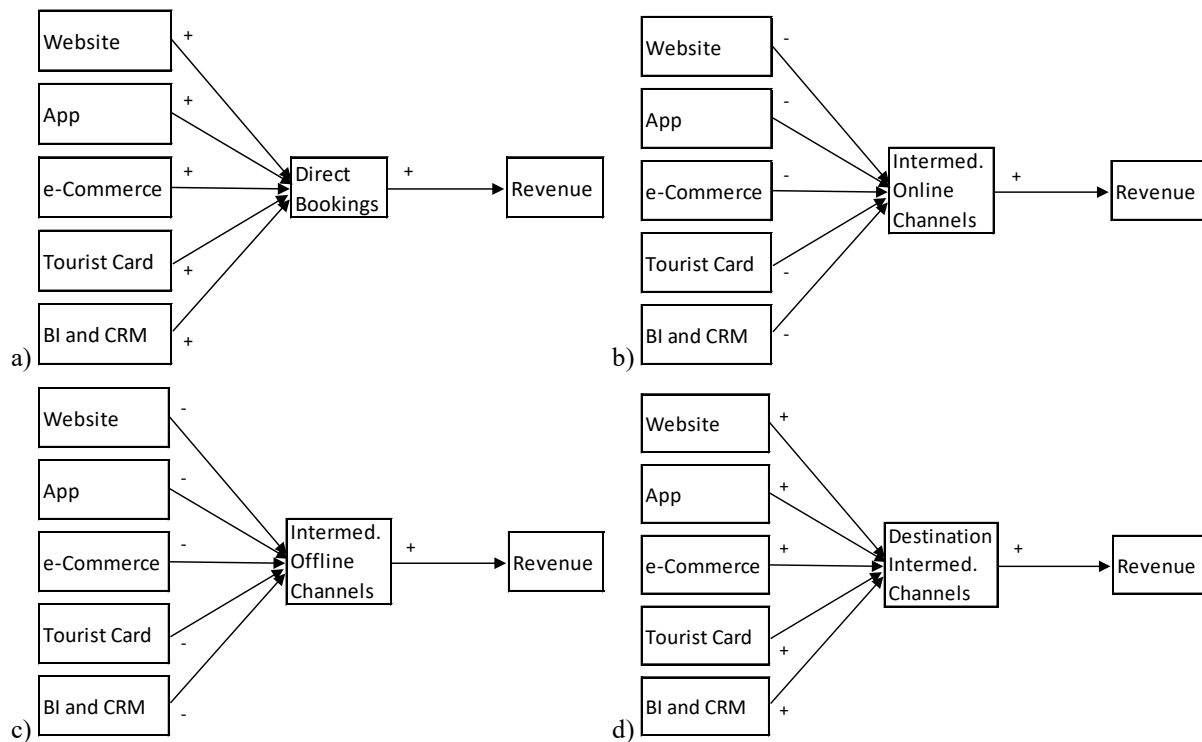
Aforementioned hypotheses will be tested with two statistical techniques. The first step is to test the impact of destination marketing tools on the booking channels; it will be used a generalized linear model with a binomial distribution and a logit link function because the dependent variables are proportional. The second step is to assess the relationship between the booking channels and the percentage of increase or decrease of revenues compared to the previous year; an ordered logistic regression will be implemented as the dependant variable is divided into ordered classes. All estimations will be conducted in STATA software, version 14. It is a statistical software used to store and manage large data set, perform data analysis and create graphics.

### 3.2 Data and variables

Data are from Italian accommodation facilities interviewed in June – September 2015 with Computer Assisted Web Interviewing (CAWI) methodology in collaboration with the Observatory of Digital Innovation in Tourism of the School of Management of Polytechnic of Milan. CAWI is an Internet surveying technique in which interviewees autonomously compile the online questionnaire by connecting to the provided web link; the website is able to customize the flow of the questionnaire based on the answers provided. The online survey was designed with Opinio program. It was composed of 37 questions, in addition to the request of personal data, structured into five sections: technological equipment, data management and communication with customers, promotional activities to attract new customers, reservation channels and impressions on future. Of the 24,407 accommodation facilities contacted, we collected 2,016 questionnaires; redemption rate is 8%. High nonresponse rate could be due to various reasons: period of survey administration – during summer – coincided with the most work intensive months for accommodation facilities; low engagement with research study since they were contacted by email only; considerable length of the survey and complexity of some questions. Final sample, after the elimination of incomplete questionnaires, consists of 1,226 accommodations. Panel data is statistically representative of the population of accommodation facilities situated in the country, as resulted by a comparison with the data from Italy's National Statistics Institute (Istat). Figure 2 shows the categories in which accommodation facilities are divided; the high difference in 'Guest House' group is because the target of the interviews were accommodations managed as enterprises and not as a second source of profits for families

(e.g. renting the second apartment for holidays). Figure 3 represents the distribution of accommodations in the Italian territory; panel data reflect the real distribution, except for a lower presence in Veneto region.

**Figure 2** Accommodation facilities grouped by typology
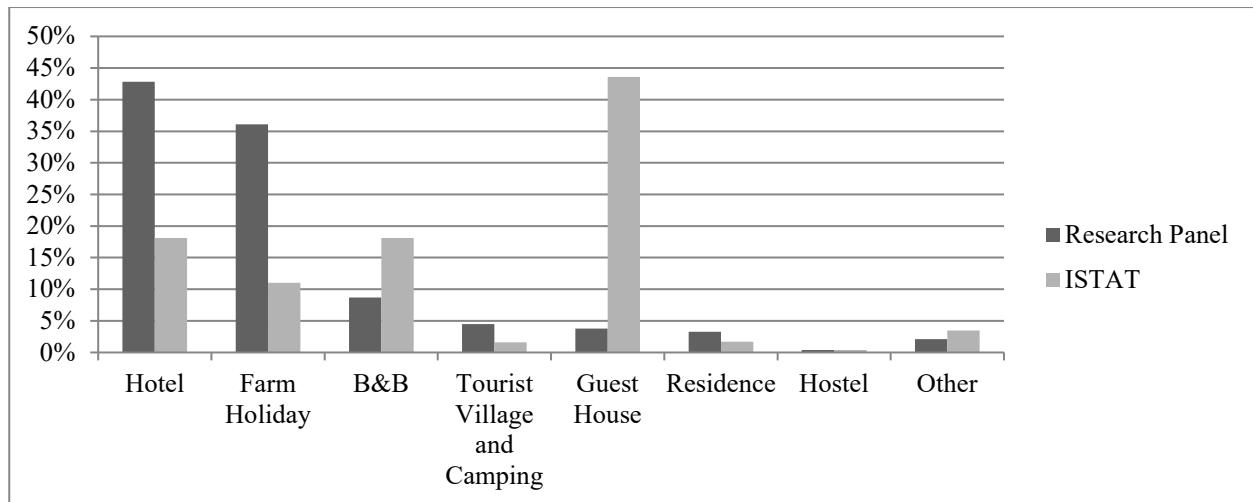


Obs. research panel: 1,226; Obs. ISTAT (2015): 167,718

**Figure 3** Accommodation facilities grouped by geographical regions
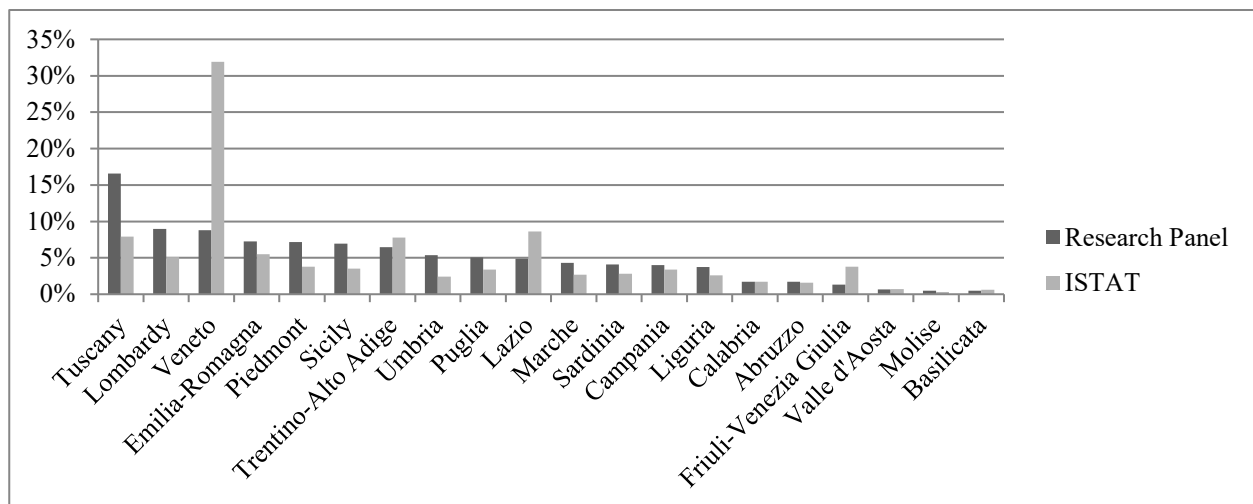


Obs. research panel: 1,226; Obs. ISTAT (2015): 167,718

Dependant variables are five. *Direct_bookings*, *Intermediated_online_channels*, *Intemediated_offline_channels* and *Destination_intermediated_channnles* are proportional variables with values from 0 to 1, which represent the percentage of bookings coming from the corresponding type of channel. *Direct_Bookings* are bookings received from a direct contact of the client (e.g. by email, phone, walk-in, own website, own app). *Intermediated_online_channels* are intermediated bookings through online channels like websites and apps (e.g. from OTAs, metasearch). *Intemediated_offline_channels* are the ones coming from traditional means, namely travel agencies and tour operators. *Destination_intermediated_channels* are bookings intermediated by DMOs. The last dependant variable, *Revenue*, is ordinal divided into six classes, according to the percentage of increase or decrease of revenue compared to the previous year (1: less than -10%; 2: between -10% and -5%; 3: between -5% and 0%; 4: between 0% and 5%; 5: between 5% and 10%; 6: more than 10%).

Independent variables are binary, taking value equal to 1 if the linked promotional tool provided by the destination is used by the accommodation facility, 0 otherwise. The selection of the digital tools is carried out taking into account

their spread, accessibility and usability. According to this criterion we've included in the models websites for information and booking, mobile apps, e-Commerce websites, tourist cards and BI and CRM software.

Summary statistics of the variables employed in the econometric model are provided in Table 1. They are used to present a set of observations in a meaningful way, in order to allow a simpler interpretation of data. In particular, the mean describes the central position of the frequency distribution for the dataset, while the standard deviation measures how spread out the data are. Minimum and maximum are the smallest and the largest observations in the data set. Dependant variables related to booking channels have 0 and 1 as minimum and maximum values respectively because they are percentages numbers; *Revenue* is an ordinal variable with values in the range 1 – 6; independent variables are binary variables that can only assume value of 0 or 1.

**Table 1** Summary statistics

| Variable | Mean | Std. deviation | Min | Max |
|---|---|---|---|---|
| Direct_bookings | 0.4520 | 0.2752 | 0 | 1 |
| Intermediated_online_channels | 0.4152 | 0.2779 | 0 | 1 |
| Intemediated_offline_channels | 0.0999 | 0.153 | 0 | 1 |
| Destination_intermediated_channels | 0.033 | 0.1021 | 0 | 1 |
| Revenue | 3.6256 | 1.3942 | 1 | 6 |
| Website_Info_Book | 0.6852 | 0.4646 | 0 | 1 |
| Mobile_app | 0.1525 | 0.3597 | 0 | 1 |
| Website_eCommerce | 0.1166 | 0.3211 | 0 | 1 |
| Tourist_card | 0.3613 | 0.4806 | 0 | 1 |
| BIandCRM_sw | 0.0693 | 0.2541 | 0 | 1 |

Obs: 1,226

In regression model independent variables should not be correlated, otherwise they could create problems when interpreting the results. At this purpose a correlation analysis was performed: the output, in Tab. 2, evidences that there is no correlation between independent variables. In fact, the coefficients represent the magnitude of the association between the variables: a correlation of 0.9 suggests a strong association, while a correlation close to 0 denotes no association. In the analysis all the independent variables show a weak association and thus they can be used in the model.

**Table 2** Analysis of correlation

| | Website_Info_Book | Mobile_app | Website_eCommerce | Tourist_card | BIandCRM_sw |
|---|---|---|---|---|---|
| Website_Info_Book | 1.0000 | | | | |
| Mobile_app | 0.1807 | 1.0000 | | | |
| Website_eCommerce | 0.2387 | 0.2487 | 1.0000 | | |
| Tourist_card | 0.2467 | 0.2186 | 0.3137 | 1.0000 | |
| BIandCRM_sw | 0.1366 | 0.2710 | 0.2861 | 0.1824 | 1.0000 |

Obs: 1,226

The bar chart in Figure 4 shows the percentage of usage of promotional tools provided by destinations, according to respondents.

**Figure 4** Usage of destination digital tool
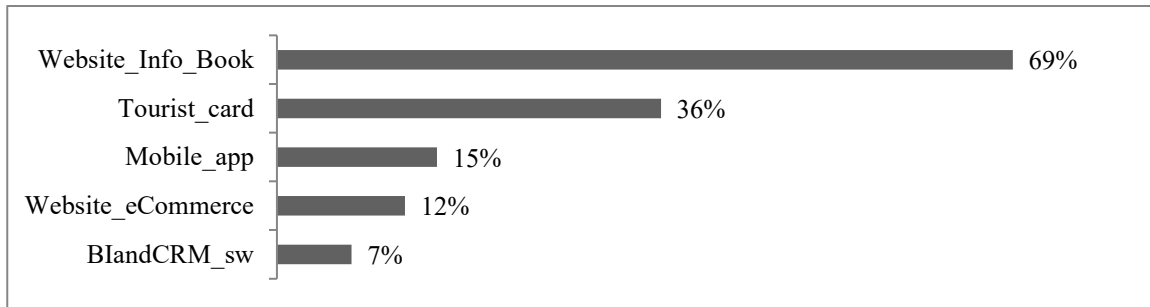
Obs: 1,226

Categorical variables are used to subset the database in homogeneous groups of accommodations relevant for the study (Table 3). *Location* states the geographical location of the accommodation facilities and consists of four categories (North, Center, South, Islands). *Typology* indicates the type of accommodation facility (Hotel, Residence, Tourist Village, Farm Holiday, Hostel, Camping, B&B, Guest House, Other). *Clients* designates the origin of the majority of guests (Italians, Foreigners, Balanced mix). All the categories are mutually exclusive and collectively exhaustive. *Location* variable has been introduced because some geographical areas could present a different interaction between the territory and its enterprises, for example due to regional incentives or guidelines. *Typology* and *Clients* denote accommodations facilities targeted to different type of tourists that may respond differently to marketing stimulus.
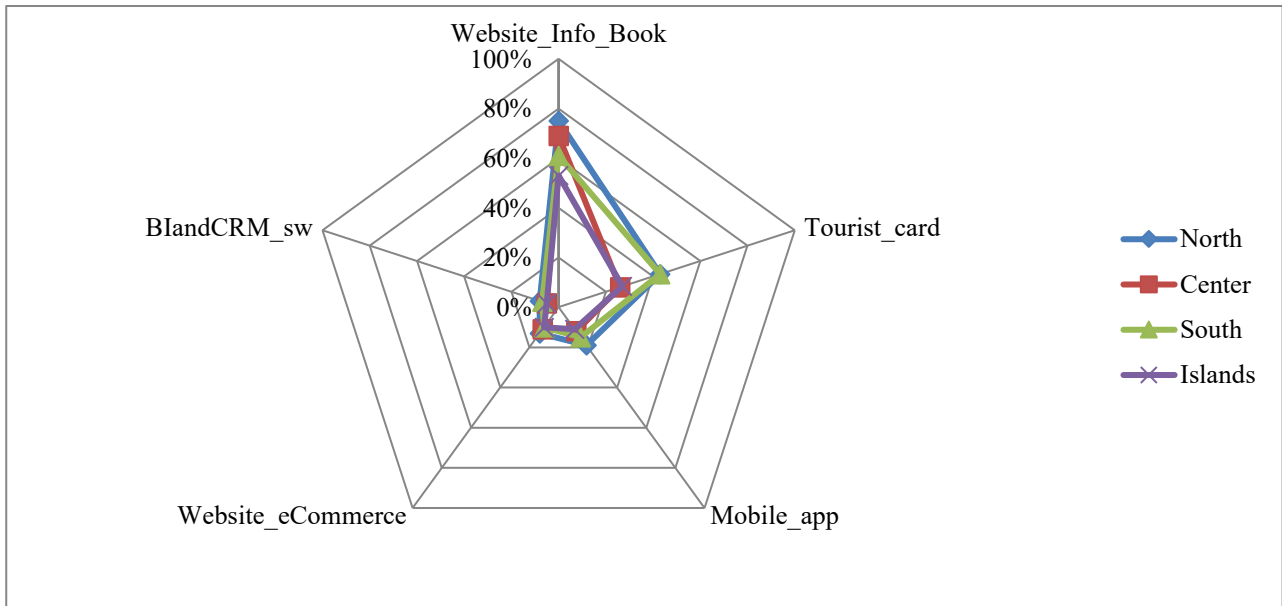
**Table 3** Categorical variables

| Variable | Categories | Number of obs. (%) |
|---|---|---|
| Location | North | 544 (44%) |
| | Center | 382 (31%) |
| | South | 165 (13%) |
| | Islands | 135 (11%) |
| Typology | Hotel | 525 (43%) |
| | Residence | 40 (3%) |
| | Tourist Village | 19 (2%) |
| | Farm Holiday | 442 (36%) |
| | Hostel | 5 (1%) |
| | Camping | 15 (1%) |
| | B&B | 107 (9%) |
| | Guest House | 47 (4%) |
| | Other | 26 (2%) |
| Clients | Italians | 475 (39%) |
| | Foreigners | 403 (33%) |
| | Balanced mix | 348 (28%) |

Obs: 1,226

The variable *Typology* presents categories with very little data; in order to maintain the significance of results, only categories Hotel, Farm Holiday, B&B will be considered for the statistical analysis.

The following figures show the usage of destination tools for each category. Figure 5 shows a difference percentage of usage of destination tools according to the geographical distribution. North of Italy is predominant, followed by South Italy, especially for tourist card and mobile app, and Center Italy for website for information and booking. Moving the analysis to categories (Figure 6), hotels are the ones more inclined to collaborate with destinations, even though farm holidays lead for the use of e-commerce websites. The adoption of tools does not seem much influenced by the country of origin of clients; Figure 7 indicates only a slight increase of usage of tourist cards in presence of non-Italian guests.
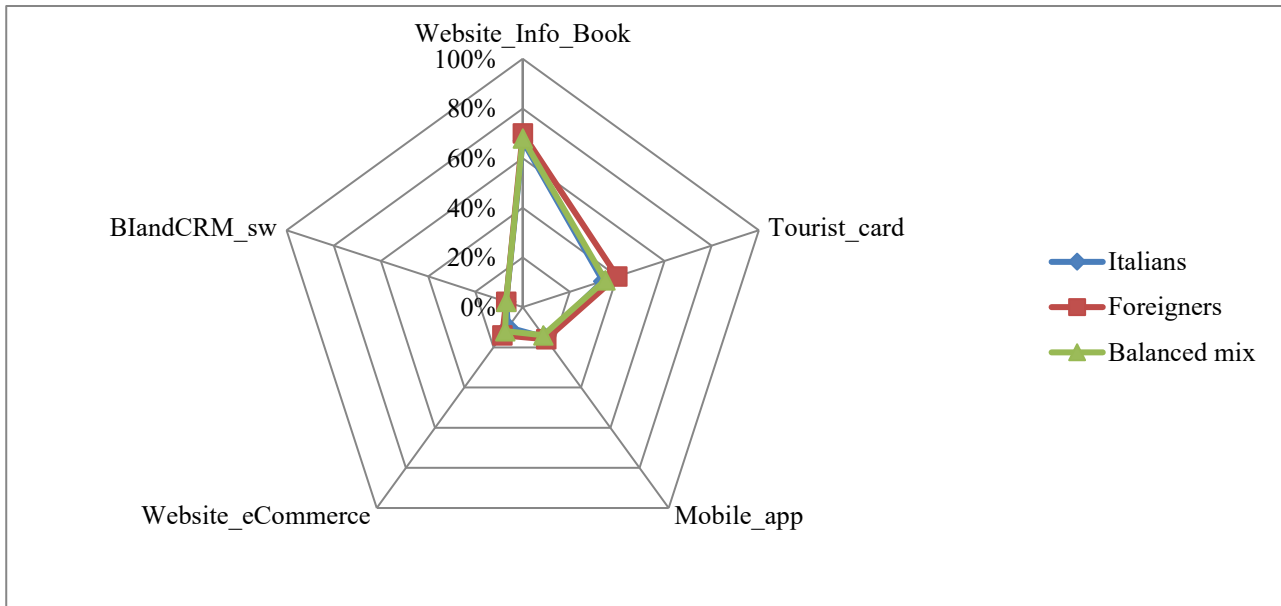
**Figure 5** Usage of destination digital tool, for categorical variable *Location*

**Figure 6** Usage of destination digital tool, for categorical variable *Typology*
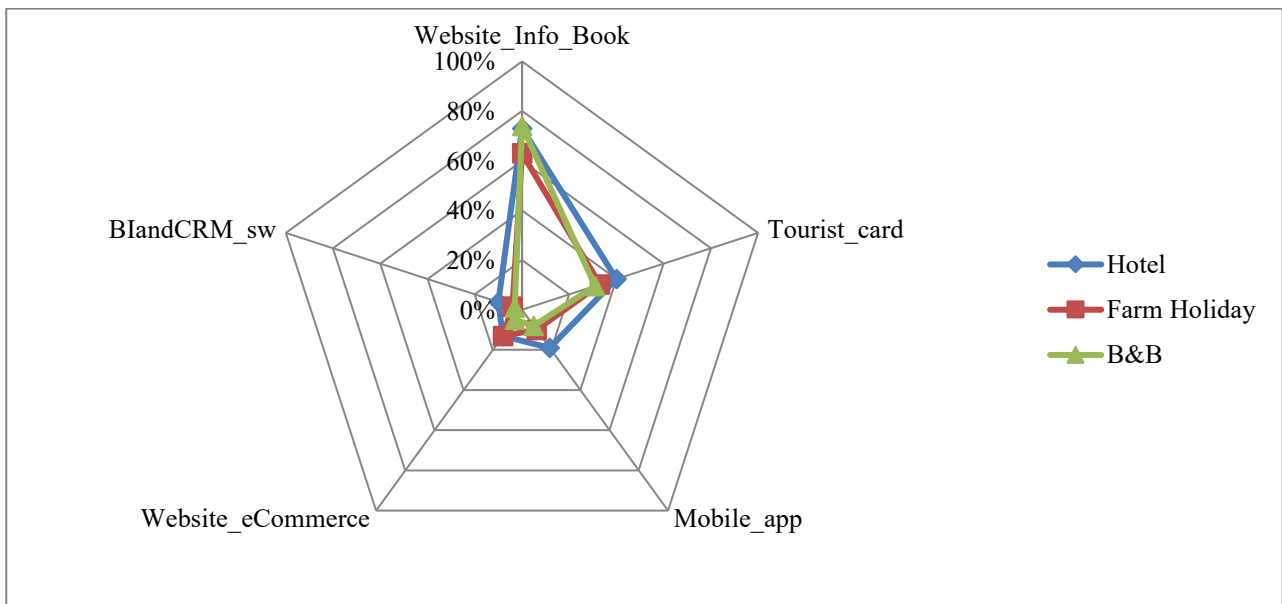


**Figure 7** Usage of destination digital tool, for categorical variable *Clients*

## 4    Results

### 4.1 Main results

Table 4 shows the output of the generalized linear model, while Table 5 presents the results of the ordered logistic regression.

**Table 4** Generalized linear model results

|  | Direct_bookings | | Intermediated_online_channels | |
|---|---|---|---|---|
|  | *Coef* | *p-value* | *Coef* | *p-value* |
| Website_Info_Book | .1216359 | **0.092*** | -.2693717 | **0.000****** |
| Mobile_app | .0321509 | 0.727 | -.0771829 | 0.417 |
| Website_eCommerce | .0733814 | 0.457 | -.1282451 | 0.219 |
| Tourist_card | .124955 | **0.077*** | -.0543885 | 0.459 |
| BIandCRM_sw | -.1035951 | 0.370 | -.0043005 | 0.972 |

|  | Intermediated_offline_channels | | Destination_intermediated_channels | |
|---|---|---|---|---|
|  | *Coef* | *p-value* | *Coef* | *p-value* |
| Website_Info_Book | .1928427 | **0.095*** | .7574764 | **0.004***** |
| Mobile_app | .1014701 | 0.438 | .0078409 | 0.972 |
| Website_eCommerce | -.1025447 | 0.532 | .4904055 | **0.066*** |
| Tourist_card | -.1327132 | 0.206 | -.1826409 | 0.359 |
| BIandCRM_sw | -.0298011 | 0.872 | .6068399 | **0.037**** |

*Direct bookings*: Deviance: 436.37; AIC: 1.05; BIC: -8239.68
*Intermediated online channels*: Deviance: 453.89; AIC: 1.04; BIC: -8222.15
*Intermediated offline channels*: Deviance: 268.59; AIC: 0.53; BIC: -8407.45
*Destination intermediated channels*: Deviance: 163.94; AIC: 0.25; BIC: -8512.10
   Obs: 1,226. **** $p < 0.001$; *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

**Table 5** Ordered logistic regression results

| | Revenue | | |
|---|---|---|---|
| | *Odds ratio* | *z* | ***p-value*** |
| Direct_Bookings | .06296264 | -2.46 | **0.014**\*\* |
| Intermediated_online_channels | 1.486359 | 2.09 | **0.037**\*\* |
| Intermediated_offline_channels | 1.832549 | 1.82 | **0.069**\* |
| Destination_intermediated_channels | .4399399 | -1.68 | **0.094**\* |

*Direct bookings*: Prob > chi$^2$: 0.014; Pseudo R$^2$: 0.0015

*Intermediated online channels*: Prob > chi$^2$: 0.037; Pseudo R$^2$: 0.0011

*Intermediated offline channels*: Prob > chi$^2$: 0.069; Pseudo R$^2$: 0.0008

*Destination intermediated channels*: Prob > chi$^2$: 0.094; Pseudo R$^2$: 0.0007

Obs: 1,226. \*\*\*\* $p < 0.001$; \*\*\* $p < 0.01$; \*\* $p < 0.05$; \* $p < 0.1$

The significance of the coefficients of the models is determined by the p-values. The p-value is the probability that the null hypothesis is true, assuming that the null hypothesis states that there is no relationship between the two variables being studied. The range of p-value is between 0 and 1; the smaller the p-value, the stronger is the evidence that the null hypothesis should be rejected, in favour of the alternative hypothesis. In that case, results will be significantly supported by the theory being investigated as the independent variable affects the dependent variable. In this study the cut-off point for significance is a p-value of 0.10, meaning that there is less than 10% of probability the null is correct (90% confidence level).

In generalized linear model the goodness of fit is expressed by the deviance measure. It measures the deviance of the fitted generalized linear model with respect to a perfect model, known as the saturated model, in which the fitted responses are the same as the observed responses. If the deviance is small the model has a good fit. Included in the output there are also values for the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). Both are used to assess the quality of the model through comparison with related models: a smaller value generally indicates a better model fit.

In ordered logistic regression Prob > chi$^2$ statistic represents the probability that that all of the regression coefficients in the model are equal to zero (null hypothesis). This p-value is compared to a specified alpha level, typically set at 0.01; if the p-value is lower than alpha it would lead to conclude that at least one of the regression coefficients in the model is not equal to zero. To be noted that it is not the same as testing each coefficient separately: since the research question is not specifically about the joint null hypothesis of the coefficients being all zero, the overall chi square for the model can be ignored. McFadden's pseudo R$^2$ is another indicator included in model summary. Anyway, since there is a variety of pseudo R$^2$ statistics that can give contradictory conclusions and they do not have the same meaning of R$^2$ in OLS regression, it is suggested to interpret this statistic with great caution.

Magnitude and significance of causal connections between variables are reported in the constructed models. In specific, in below Figure 8, the values in the first part of the models represent the coefficients of generalized linear model, while the ones in the second part are the odds ratio of the ordered logistic regression. Asterisks indicate the p-value (\*\*\*\* $p < 0.001$; \*\*\* $p < 0.01$; \*\* $p < 0.05$; \* $p < 0.1$).

**Figure 8** Research models, output (a. Hp. 1; b. Hp. 2; c. Hp. 3; d. Hp. 4)

a) b) c) d)
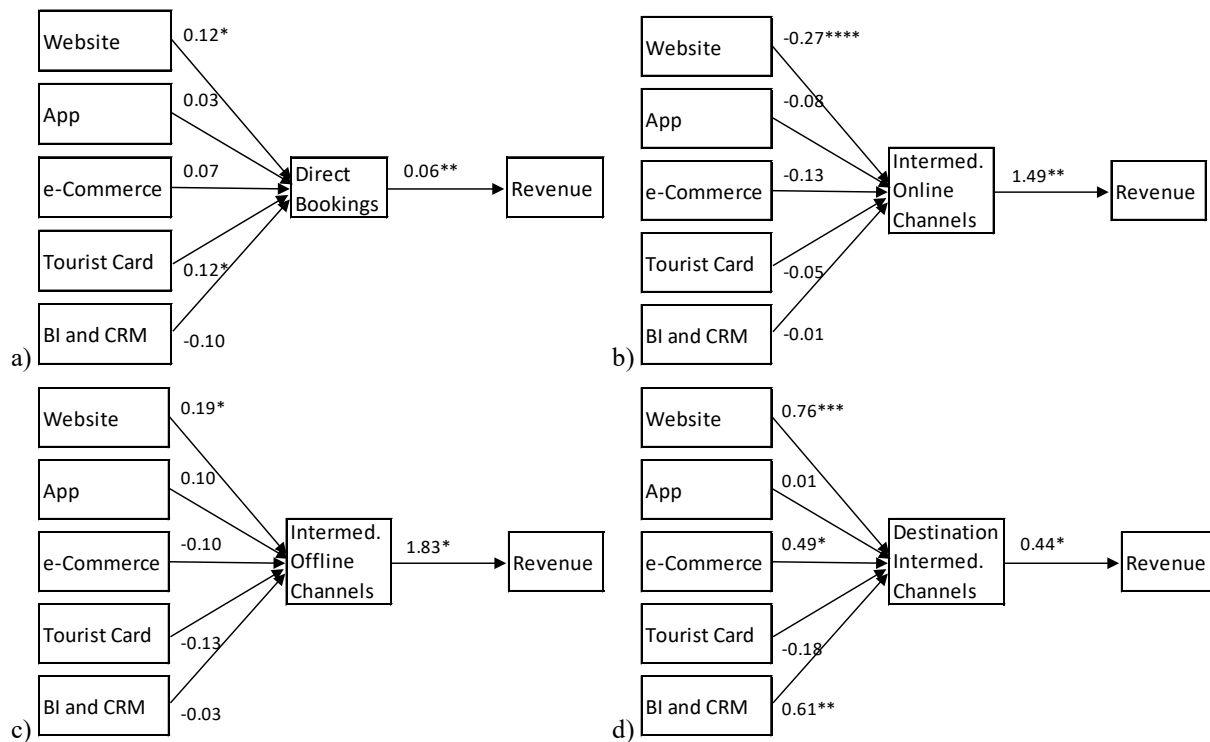
In all four models there are variables that resulted statistically significant. In particular, analysing the first part of the models, website for information and booking is significant in each model, tourist card is significant for direct bookings, e-commerce website and BI and CRM software for destination intermediated bookings. The variable mobile app is not significant in any model. Moving to the second part of the models, all the variables are significant. Anyway, while in two cases – intermediated online and offline bookings – the odds ratios (1.49 and 1.43 respectively) indicate an increase of revenue, direct channels and bookings intermediated by destination are more likely to get lower revenue in comparison to previous year. The model with more significant coefficients is the one related to destination intermediated channels.

Examining the direction of causality, there are some cases in which actual signs do not correspond to the expected. It is in the relationships between destination tools and booking channels in models *c* and in the effects of direct bookings and destination intermediated bookings on revenue in model *a* and *d*.

In conclusion, the four hypotheses are partially confirmed.

### 4.1.1. Results, cluster Location

**Table 6** Generalized linear model results, for categorical variable *Location*

| | Direct_bookings | | Intermediated_online_ channels | |
|---|---|---|---|---|
| | *Coef* | *p-value* | *Coef* | *p-value* |
| *North* | | | | |
| Website_Info_Book | .2977474 | **0.013**** | -.4203324 | **0.001***** |
| Mobile_app | .0076169 | 0.954 | -.1207213 | 0.371 |
| Website_eCommerce | .1438923 | 0.358 | -.3276833 | **0.046**** |
| Tourist_card | -.0317787 | 0.768 | .0696355 | 0.537 |
| BIandCRM_sw | -.212468 | 0.211 | .1304202 | 0.470 |
| *Center* | | | | |
| Website_Info_Book | -.0878709 | 0.493 | -.113316 | 0.387 |

| | | | | |
|---|---|---|---|---|
| Mobile_app | .0346141 | 0.852 | .1058856 | 0.579 |
| Website_eCommerce | .1180608 | 0.470 | .1705154 | 0.326 |
| Tourist_card | .0872808 | 0.507 | -.1198808 | 0.375 |
| BIandCRM_sw | .0638447 | 0.778 | -.0947612 | 0.660 |
| *South* | | | | |
| Website_Info_Book | .0456205 | 0.801 | -.1106907 | 0.555 |
| Mobile_app | -.2115485 | 0.263 | -.0771708 | 0.723 |
| Website_eCommerce | .1022327 | 0.691 | .1529013 | 0.562 |
| Tourist_card | .1838348 | 0.279 | -.1119023 | 0.541 |
| BIandCRM_sw | .0157702 | 0.954 | -.4249235 | 0.262 |
| *Islands* | | | | |
| Website_Info_Book | -.0222095 | 0.904 | -.3436222 | **0.062*** |
| Mobile_app | .4004675 | 0.148 | -.285959 | 0.291 |
| Website_eCommerce | -.337811 | 0.210 | .4521017 | 0.105 |
| Tourist_card | .1230504 | 0.578 | .0187002 | 0.936 |
| BIandCRM_sw | -.2946619 | 0.358 | .2674519 | 0.443 |

| | Intermediated_offline_ channels | | Destination_ intermediated_channels | |
|---|---|---|---|---|
| | *Coef* | *p-value* | *Coef* | *p-value* |
| *North* | | | | |
| Website_Info_Book | .3716473 | **0.059*** | .0945377 | 0.801 |
| Mobile_app | .1288561 | 0.511 | .3720841 | 0.245 |
| Website_eCommerce | .1822132 | 0.506 | .4937369 | 0.188 |
| Tourist_card | -.0452293 | 0.783 | -.1362387 | 0.619 |
| BIandCRM_sw | -.15762 | 0.572 | .6308426 | 0.153 |
| *Center* | | | | |
| Website_Info_Book | .1408626 | 0.510 | 1.269762 | **0.010*** |
| Mobile_app | -.0831618 | 0.759 | -.712645 | **0.037** |
| Website_eCommerce | -.1306691 | 0.600 | .554913 | 0.223 |
| Tourist_card | .0306903 | 0.874 | .1675408 | 0.647 |
| BIandCRM_sw | .2302015 | 0.498 | -.4640047 | 0.396 |
| *South* | | | | |
| Website_Info_Book | .0871204 | 0.728 | .352595 | 0.440 |
| Mobile_app | .7738186 | **0.007*** | -.3285837 | 0.569 |
| Website_eCommerce | -.7459951 | 0.104 | -.0924596 | 0.881 |
| Tourist_card | -.1315776 | 0.598 | -.3605639 | 0.345 |
| BIandCRM_sw | .1311441 | 0.725 | 2.012612 | **0.000**** |
| *Islands* | | | | |
| Website_Info_Book | .4297486 | **0.091*** | 2.465566 | **0.001**** |
| Mobile_app | -.2052393 | 0.480 | .1074712 | 0.851 |
| Website_eCommerce | -.4399436 | 0.225 | .5428791 | 0.363 |
| Tourist_card | -.1150395 | 0.641 | -1.102978 | 0.104 |
| BIandCRM_sw | -.5228594 | 0.386 | 1.264064 | 0.126 |

Obs: 1,226. **** $p < 0.001$; *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

**Table 7** Ordered logistic regression results, for categorical variable *Location*

| | Revenue | | |
|---|---|---|---|
| | *Odds ratio* | *z* | *p-value* |
| *North* | | | |
| Direct_Bookings | .9284896 | -0.27 | 0.788 |

| | | | |
|---|---|---|---|
| Intermediated_online_channels | 1.37364 | 1.12 | 0.261 |
| Intermediated_offline_channels | .6632454 | -0.66 | 0.511 |
| Destination_intermediated_channels | .2663302 | -1.61 | 0.106 |
| *Center* | | | |
| Direct_Bookings | .4546915 | -2.21 | **0.027**** |
| Intermediated_online_channels | 1.703905 | 1.58 | 0.115 |
| Intermediated_offline_channels | 2.029478 | 1.44 | 0.151 |
| Destination_intermediated_channels | .4687129 | -1.02 | 0.309 |
| *South* | | | |
| Direct_Bookings | .0817101 | -4.36 | **0.000***** |
| Intermediated_online_channels | 6.454981 | 3.28 | **0.001***** |
| Intermediated_offline_channels | 10.5883 | 2.17 | **0.030**** |
| Destination_intermediated_channels | 1.203585 | 0.08 | 0.935 |
| *Isalnds* | | | |
| Direct_Bookings | .4100838 | -1.37 | 0.171 |
| Intermediated_online_channels | .722752 | -0.52 | 0.600 |
| Intermediated_offline_channels | 12.5815 | 2.77 | **0.006**** |
| Destination_intermediated_channels | .7041275 | -0.28 | 0.781 |

Obs: 1,226. **** $p < 0.001$; *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

### 4.1.2 Results, cluster Typology

**Table 8** Generalized linear model results, for categorical variable *Typology*

| | Direct_bookings | | Intermediated_online_channels | |
|---|---|---|---|---|
| | *Coef* | *p-value* | *Coef* | *p-value* |
| *Hotel* | | | | |
| Website_Info_Book | .2403802 | **0.017**** | -.2724259 | **0.004*** |
| Mobile_app | -.0364054 | 0.755 | .0052266 | 0.963 |
| Website_eCommerce | .1292671 | 0.353 | -.1462936 | 0.285 |
| Tourist_card | .0755531 | 0.422 | -.0259508 | 0.775 |
| BIandCRM_sw | .0235219 | 0.868 | -.0156282 | 0.910 |
| *Farm Holiday* | | | | |
| Website_Info_Book | -.0343049 | 0.787 | -.2467687 | **0.064*** |
| Mobile_app | -.1145177 | 0.578 | .1226799 | 0.564 |
| Website_eCommerce | .1156286 | 0.486 | -.2246023 | 0.224 |
| Tourist_card | .1789786 | 0.181 | -.0527163 | 0.704 |
| BIandCRM_sw | -.0101855 | 0.970 | -.0405386 | 0.901 |
| *B&B* | | | | |
| Website_Info_Book | -.0900735 | 0.747 | -.0888261 | 0.758 |
| Mobile_app | -.0275583 | 0.936 | .1053072 | 0.740 |
| Website_eCommerce | .1088205 | 0.727 | .1673552 | 0.573 |
| Tourist_card | -.2637269 | 0.329 | .3284036 | 0.214 |
| BIandCRM_sw | -1.312512 | **0.000***** | 1.353121 | **0.000***** |

| | Intermediated_offline_channels | | Destination_intermediated_channels | |
|---|---|---|---|---|
| | *Coef* | *p-value* | *Coef* | *p-value* |
| *Hotel* | | | | |
| Website_Info_Book | -.0697218 | 0.586 | .854258 | **0.005*** |
| Mobile_app | -.0059554 | 0.966 | .2399786 | 0.417 |
| Website_eCommerce | -.0428358 | 0.823 | .1118713 | 0.728 |
| Tourist_card | -.1240418 | 0.287 | .109883 | 0.634 |

| | | | | |
|---|---|---|---|---|
| BIandCRM_sw | -.2764676 | 0.170 | .7534219 | 0.017 |
| *Farm Holiday* | | | | |
| Website_Info_Book | .7536691 | **0.004*** | .8176678 | **0.054*** |
| Mobile_app | .1267766 | 0.727 | -.2496326 | 0.636 |
| Website_eCommerce | -.157682 | 0.645 | .70929 | 0.116 |
| Tourist_card | -.1935317 | 0.436 | -.4502127 | 0.215 |
| BIandCRM_sw | -.0505173 | 0.907 | .3478504 | 0.725 |
| *B&B* | | | | |
| Website_Info_Book | 1.382391 | **0.006*** | .6281994 | 0.383 |
| Mobile_app | -.2988784 | 0.696 | -.4672048 | 0.512 |
| Website_eCommerce | -2.554379 | 0.006 | -14.38392 | **0.000**** |
| Tourist_card | -.0029679 | 0.994 | -.4030533 | 0.506 |
| BIandCRM_sw | -.2829556 | 0.758 | -.8091353 | 0.237 |

Obs: 1,226. **** p < 0.001; *** p < 0.01; ** p < 0.05; * p < 0.1

**Table 9** Ordered logistic regression results, for categorical variable *Typology*

| | Revenue | | |
|---|---|---|---|
| | *Odds ratio* | *z* | *p-value* |
| *Hotel* | | | |
| Direct_Bookings | .8774739 | -0.41 | 0.681 |
| Intermediated_online_channels | 1.203259 | 0.51 | 0.612 |
| Intermediated_offline_channels | 1.406362 | 0.63 | 0.529 |
| Destination_intermediated_channels | .1712056 | -1.50 | 0.135 |
| *Farm Holiday* | | | |
| Direct_Bookings | .4315746 | -2.87 | **0.004*** |
| Intermediated_online_channels | 2.475958 | 3.29 | **0.001**** |
| Intermediated_offline_channels | .9975149 | -0.00 | 0.996 |
| Destination_intermediated_channels | .4342903 | -1.34 | 0.181 |
| *B&B* | | | |
| Direct_Bookings | .5447689 | -1.01 | 0.311 |
| Intermediated_online_channels | 1.327276 | 0.48 | 0.631 |
| Intermediated_offline_channels | 7.2192 | 0.49 | 0.624 |
| Destination_intermediated_channels | 3.624329 | 0.97 | 0.334 |

Obs: 1,226. **** p < 0.001; *** p < 0.01; ** p < 0.05; * p < 0.1

### 4.1.3 Results, cluster Clients

**Table 10** Generalized linear model results, for categorical variable *Clients*

| | Direct_bookings | | Intermediated_online_channels | |
|---|---|---|---|---|
| | *Coef* | *p-value* | *Coef* | *p-value* |
| *Italians* | | | | |
| Website_Info_Book | .0484178 | 0.673 | -.300106 | **0.010*** |
| Mobile_app | .2342217 | 0.097 | -.1954512 | 0.173 |
| Website_eCommerce | .0298637 | 0.864 | -.0920275 | 0.613 |
| Tourist_card | .0850938 | 0.454 | .0162767 | 0.890 |
| BIandCRM_sw | -.1293797 | 0.493 | .1606218 | 0.428 |
| *Foreigners* | | | | |
| Website_Info_Book | .2828715 | **0.033**** | -.3543492 | **0.011**** |
| Mobile_app | -.0629972 | 0.696 | -.1061436 | 0.537 |
| Website_eCommerce | -.0591677 | 0.704 | .0216007 | 0.896 |
| Tourist_card | .0796934 | 0.520 | -.0464357 | 0.726 |

| | | | | |
|---|---|---|---|---|
| BIandCRM_sw | .0579902 | 0.765 | -.4287398 | **0.038\*\*** |
| *Balanced mix* | | | | |
| Website_Info_Book | -.0006731 | 0.996 | -.1154629 | 0.373 |
| Mobile_app | -.0905394 | 0.589 | .1218071 | 0.488 |
| Website_eCommerce | .1487288 | 0.401 | -.2658201 | 0.177 |
| Tourist_card | .1535126 | 0.209 | -.10986 | 0.403 |
| BIandCRM_sw | -.1612 | 0.412 | .1041038 | 0.619 |

| | Intermediated_offline_channels | | Destination_intermediated_channels | |
|---|---|---|---|---|
| | *Coef* | *p-value* | *Coef* | *p-value* |
| *Italians* | | | | |
| Website_Info_Book | .4296991 | **0.014\*\*** | .6689061 | 0.180 |
| Mobile_app | -.1004369 | 0.630 | .0796169 | 0.867 |
| Website_eCommerce | .0673794 | 0.807 | .20129 | 0.753 |
| Tourist_card | -.225001 | 0.187 | .0526748 | 0.906 |
| BIandCRM_sw | -.2479085 | 0.420 | .4283618 | 0.543 |
| *Foreigners* | | | | |
| Website_Info_Book | -.0364152 | 0.872 | .5079838 | 0.191 |
| Mobile_app | .5193281 | **0.036\*\*** | .0597519 | 0.824 |
| Website_eCommerce | -.4286825 | 0.127 | .6419992 | **0.067\*** |
| Tourist_card | -.0439862 | 0.827 | -.1828613 | 0.491 |
| BIandCRM_sw | .1151904 | 0.715 | 1.004378 | **0.001\*\*\*\*** |
| *Balanced mix* | | | | |
| Website_Info_Book | -.0211905 | 0.914 | 1.284112 | **0.001\*\*\*\*** |
| Mobile_app | .0038148 | 0.984 | -.2217306 | 0.382 |
| Website_eCommerce | .0900759 | 0.711 | .4938851 | 0.224 |
| Tourist_card | .0784656 | 0.629 | -.5950379 | **0.038\*\*** |
| BIandCRM_sw | .0624266 | 0.825 | .2953188 | 0.345 |

Obs: 1,226. \*\*\*\* p < 0.001; \*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.1

**Table 11** Ordered logistic regression results, for categorical variable *Clients*

| | Revenue | | |
|---|---|---|---|
| | *Odds ratio* | *z* | *p-value* |
| *Italians* | | | |
| Direct_Bookings | 1.487396 | 1.27 | 0.203 |
| Intermediated_online_channels | .954652 | -0.16 | 0.876 |
| Intermediated_offline_channels | .8752475 | -0.30 | 0.761 |
| Destination_intermediated_channels | .2117382 | -2.11 | **0.035\*\*** |
| *Foreigners* | | | |
| Direct_Bookings | .425177 | -2.68 | **0.007\*\*\*** |
| Intermediated_online_channels | 1.970891 | 2.04 | **0.041\*\*** |
| Intermediated_offline_channels | 4.102494 | 1.78 | **0.075\*** |
| Destination_intermediated_channels | .9829427 | -0.02 | 0.983 |
| *Balanced mix* | | | |
| Direct_Bookings | .546894 | -1.46 | 0.144 |
| Intermediated_online_channels | 1.345527 | 0.75 | 0.454 |
| Intermediated_offline_channels | 2.733337 | 1.38 | 0.168 |
| Destination_intermediated_channels | .7751479 | -0.23 | 0.817 |

Obs: 1,226. \*\*\*\* p < 0.001; \*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.1

*4.2 Discussion*

Empirical results evidence the contribution of smart destinations in increasing the competitiveness of the tourism firms in the same area. In particular, accommodation facilities that are present on destination's websites (for informative and/or booking purposes) receive more direct and destination's intermediated bookings and less intermediated bookings from online channels (OTAs, metasearch engines and other third parties portals), as supposed. Anyway, it is also increased the quota of intermediated bookings from traditional channels (travel agencies and tour operators), confirming the contradictory perspective of the future of traditional intermediaries. It could be the case of consumers who use the web for gathering information about the travel, but prefer to establish a face-to-face relationship with the seller in order to feel reassured with the opinion of an expert. This possibility draws attention to the multichannel journey of the tourists, with a mixed use of digital and traditional touchpoints along the purchasing process. Seizing the analysis by clusters, results give a detailed insight. The effectiveness of websites provided by DMOs for informative and booking purposes in terms of increase of direct bookings and decrease of online intermediated bookings is valid for hotel, located in North of Italy and mainly addressed to non-Italian customers. A possible explanation is that foreign tourists start searching on the Web information about the territory, landing on DMOs' web pages which in turn have direct links to accommodation facilities. On the contrary, Italians still know the Italian destinations and in their information search phase skip this step, immediately searching for hospitality service providers; in this case the online intermediated channels (OTAs, metasearch) are the most convenient as show a plethora of accommodations. The usage of offline intermediated channels (travel agencies and tour operators) is frequent as well: it is the case of farm holidays and B&B in North Italy and Islands, aimed at Italian clientele. It corroborates two suppositions: i. the role of travel agencies in tourism market is not passed over and ii. Italians still prefer to interact personally with the sellers through a vis-à-vis communication. Tourist cards, instead, increase the percentage of direct bookings without any significant effect on intermediated ones. This highlights the main usage of the tool for an advertising purpose: it sponsors the accommodation facilities that have joined the program. Results show smart destinations themselves become new intermediaries: the ones offer information and booking websites, e-Commerce portals and BI and CRM software address accommodation facilities a greater quota of bookings, supporting initial hypotheses. Although DMOs interpose between final customers and service providers, their platforms are often free and therefore they can still be considered a good brokerage channel. In specific, e-Commerce platforms result statistically significant for accommodation facilities with non-Italian customers. Online shopping is the easiest way for foreign tourists to buy Italian products – mostly culinary excellences – and make the travel experience re-live in everyday life. It bonds tourists to the destination, enticing them to book new travels in the territory. Post-visit activities are the basis of loyalty, effective means to create long-lasting relationships.

Examining the revenues, accommodation facilities that rely on intermediated online and offline channels increase the probability to grow revenue in accordance to initial hypotheses. Conversely, the probability to increase in sales over the previous year is lower for direct and destinations' intermediated booking. This output is confirmed also clustering accommodation facilities by geography, typology or clientele. A possible explanation lies on the disparity of skills and resources owned by accommodation facilities and DMOs compared to online and offline intermediaries. While OTAs, travel agencies and tour operators can count on economies of scale to maximise their investments on latest IT infrastructure and application systems with consequent results in terms of effectiveness and efficiency, accommodation facilities and DMOs – that are mainly small and medium in size – have often legacy technologies. Moreover, there could be a lack of interoperable infrastructure and data format standardisation that are essential to interchange data among accommodations and DMOs' systems. In this situation, accommodation employees have to update their website

manually, which might lead to oversell rooms or fail to maximize last-minute promotions with consequent negative effect on revenue.

## 5        Conclusions

This paper investigated the links, in hospitality industry, between the digital marketing tools developed by DMOs and the distribution of bookings accommodation facilities receive through the different channels and their consequent impact on revenue. Statistics show that 59% of the travel reservation is made online (EuroStat, 2015), indicating a strong customers' inclination towards the usage of digital technologies. Indeed, the Internet makes the search of destinations and tourism providers easier and richer than traditional channels do. For service providers, it represents the opportunity to bypass intermediaries and build direct relationships with customers (Minghetti and Buhalis, 2010). However, many new actors have entered the hospitality industry, online channels have grown at a disproportionate rate and are constantly changing (O'Connor and Frew, 2002), posing a threat for accommodation facilities. Local governments can play a significant role in gathering the benefits of digital technologies and generating more revenue into the destinations and its stakeholders (Hojeghan and Esfangareh, 2011). The developed models predict that a positive correlation between destinations' digital tools and direct and destination's intermediated bookings may exist, while the relationship with intermediated bookings may be inversely proportional; furthermore, their effect on revenue may be positive. The empirical analysis provides partial evidence in their favour. To our best knowledge, this is the first attempt to analyse which destination tools contribute to development of accommodations in terms of booking channels management and revenue. These two elements reflect the sustainable development perspective for accommodation facilities for the following reasons. Appropriate channels management – i.e. direct bookings over intermediated ones – means greater presence and control towards the final consumer, strengthening of the relationships with tourists and co-creation of contextualized offers based on their needs and less dependence on third parties that apply high commissions. Money saved could be used for further investments to create new sources of revenue (e.g. potentiating marketing strategy) and/or to improve internally (e.g. technological equipment) to reduce costs in the long period. Revenue growth is equally important as it is the primary driver for company profitability: higher levels of revenues are likely to generate higher profits, if costs rise at a lower rate, to be reinvested in the business. Moreover, a positive growth rate is a good indicator of company future stability in case of bank loan request or presence in the stock market, with the possibility to achieve better financial conditions. Similarly, benefits are found into employees' engagement and talents' attraction. Finally, a growing business is evidence of the effectiveness in delivering value to customers, which triggers confidence into new potential buyers to obtain same benefits from the service. In addition, in accommodation facilities view, the collaboration with DMOs is also a chance to link their brand to the destination one: it is a potent way to power their image and raise consumer awareness toward their service. In fact, studies demonstrated that tourist destinations touchpoints are one of the most influential factors during inspiration and information gathering phases.

Research results confirm that accommodation facilities that establish network relationships with DMOs gain a good opportunity for disintermediation, reducing an excessive reliance on intermediaries. In fact, accommodation facilities that use DMO's website for information or booking purpose receive a statistically significant higher quota of direct bookings. Money saved from third parties commissions can be internally invested to further develop a long-lasting growing. Furthermore, market and customers' data that reveal precious insights on tourists' habits can be exchanged between networks' members and used for forecasting and strategic planning (Buhalis and Leung, 2018). In this way, tourist companies can customise their services according to customers' needs and increase their revenues: as tourism is

a customer-centric industry, customer satisfaction is highly rewarded because positive service reviews automatically bring to accommodations new customers. A concrete example could be the data collected by the usage of common platforms, such as CRM and BI software. Results highlighted DMOs that provide such service are more likely to address a greater percentage of bookings to accommodation facilities. Tourist cards also allow providers to gather a wide range of customers' data; research revealed a positive effect: accommodation facilities that join these programs receive more bookings from their direct channels. Although positive results emerged in revenues analysis, there is still large space for improvements for supporting accommodations to increase their visibility and consequently their sales. In specific, interconnectivity of ICT systems and standardisation of data communication are the main hurdle to exchange data and share knowledge (Buhalis and Leung, 2018). Research output clearly proves that the challenge is mainly for enterprises small and middle in size, namely DMOs and accommodation facilities, probably due to a lack of resources and skills. In fact, on the contrary, traditional and online intermediaries that are likely to have employed up-to-date technologies and advanced booking systems, succeeded in generating for accommodation facilities a revenue increase compared to last year.

In addition, accommodation facilities should be conscious of the new consumer behaviour and adapt consequently. In their routine, people constantly switch from digital and non-technology mediated activities and therefore they tend to replicate this natural behaviour in every aspect of their life, including the purchase of travel services. Thus, accommodations do not have to consider distinctly offline and online anymore when reasoning about marketing strategy; they are now part of a single process that contribute to create a holistic touristic experience. Strategy should be omnichannel, in which offline and online tools are harmonized with each other. The evident indication from the research is in the behaviour of tourists who book accommodation facilities relying on traditional travel agencies, despite they searched for information on DMOs web portals. According to it, accommodation facilities need a variety of channels to raise customer awareness, increase booking volumes and revenues (Beritelli and Schegg, 2016; Dabas and Manaktola, 2007). Thus a multiple channel strategy is beneficial for small and medium providers, which usually have a low scale, capital and market exposure (Bastakis et al., 2004; Toh et al., 2011a).

In summary, it is now clear that collaboration between smart destinations and accommodation facilities is a win-win relationship, on which to leverage for increasing the competitiveness and the attractiveness of the tourism industry in the entire territory.

### 5.1 Limitation and future research

The main limitation of this study is the lack of absolute values for bookings and revenues that induced the use of percentage distribution among channels for bookings analysis and percentage of increase/decrease for revenue analysis.

For future research, it could be useful to employ the RevPAR indicator (total room income divided by total number of rooms) to assess the performance of accommodation facilities. It is used by many scholars and thus it could allow a direct comparison with other studies.

Furthermore, in literature it is a common opinion that accommodation facilities have to consider into their distribution strategy various channels to expand their market share (Balasubramanian, Raghunathan and Mahajan, 2005; Brewer & Kang, 2004; Buhalis and Leung, 2018; Lei, Nicolau and Wang, 2019; Schoenbachler and Gordon, 2002). All the potential channels operate "parallel to and in competition with other channels" (Tan and Dwyer, 2014, p.4) and thus managers have to develop strategies that maximize revenue through each channel (Noone et al., 2017). Indeed, effective management of distribution channels has become critical for choosing the right channel mix. Taken for granted that

collaboration with DMOs is beneficial, the developed model could be extended to find out the best multi-channel mix and common marketing strategy. In parallel, the tourist travel journey should be studied in order to provide managerial insights on the multiple touchpoints activated by tourists during the purchasing process.

Another direction that can be pursued in future research is the investigation of factors which determine successful relationships between private service providers and local tourism entities, such as mission statement, digital strategy manifesto, size, expertise and resources of both organizations. Also a qualitative analysis could be performed – with interviews and focus groups – to gain insights on how the relationships are managed.

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