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Demand, business profitability and competitiveness in the cableway system: A multidimensional framework

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ABSTRACT

The paper provides a theoretical framework on demand for cableway system, business profitability and competitiveness between mountain areas, including novel elements such as on-line customer satisfaction. Through an in-depth literature review, three important theoretical constructs and core determinants have been identified and further validated by a Structural Equation Model (SEM) using continuous indicators either as observable variables or as latent variables. The results show that the cableway supply in the Italian Aosta Valley Region, as a case study representing the typical alpine biodiverse region, is based on a shade public intervention. The success of the cableway system depends mainly on a loyal segment of demand, on middle/high income and on multi-elastic prices policy. Furthermore, the results provide evidence of possible cooperative competition (or win-win co-opetition) amongst agents.

1. Introduction

The literature has recently begun to explore the role of cableway systems in sustainable transportation, though studies on this topic are scarce (Brand & Dávila, 2011; Brida et al., 2014; Težak et al., 2011, 2016). Research has also examined the demand and supply of winter cableway services (Evren & Kozak, 2018); however, cableway profitability remains under-researched, and extant studies fail to consider cableways' multifaceted business environment (Falk & Steiger, 2018; Steiger et al., 2019).

In mountain areas, cableway businesses serving both residents and tourists often struggle to maintain and grow profits, especially during the winter season. The literature shows that ski activity relying on cableway systems has reached maturity in many mountain areas (Kuščer et al., 2017; Steiger et al., 2019). This phase denotes a peak of tourism overnights, at which point a destination begins to lose appeal for first-time visits, attracting mostly repeat customers. To maintain profits, stakeholders must create novel interest by enhancing key infrastructure and marketing. This often creates social and economic conflicts that negatively affect cableway profitability. By the end of a skiing enterprise's life cycle, competition has increased, and many companies suffer losses. Within such a market, it is important to profile customers and target repeaters, who tend to be less price-elastic (Tjørve et al., 2018). Public intervention can be also pivotal in restructuring obsolete infrastructure and planning new revitalization projects. Through taxation, venture capital, and even direct participation, the public can revitalize a sector and guarantee infrastructure maintenance, upgrades and steady water supply for artificial snowmaking. Public action can also protect the environment in less-inhabited areas and facilitate green mobility in remote valleys (Cobo-Soler et al., 2018; European Union, 2019; Scuttari et al., 2016).

This paper provides a multifaced overview of tourism and cableway demand, public intervention and business profitability and competitiveness that mirrors the actual business environment within a mature mountain destination (Falk & Tveteraas, 2019; Zanetti et al., 2005, pp. 28–29). To achieve this aim, the author uses a two-stage flexible framework (i.e. an iterated principal factors [IPF] analysis with no rotation and structural equation modelling [SEM]) to identify the main business drivers. Such a framework connects several elements that are generally analysed separately: in this case, consumers, companies and destination. It also introduces novel indicators, such as the profitability of ski lift companies and online customer satisfaction, that are still

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under-researched (Cristobal-Fransi et al., 2018; Matzler et al., 2019). In addition, the simultaneous framework supports the identification of short-, middle- and long-run determinants; increased revenues; reduced business risks; greater business opportunities; and better evaluations of economic and financial costs and benefits. From a methodological perspective, SEM is a flexible tool because it deals with a system of regression equations, rather than a single or multiple linear regression (Bollen, 1989; Golob, 2003; Nachtigall et al., 2008). More generally, SEM allows: 1) hypothesis testing, 2) inclusion of both empirical variables and latent variables; 3) inclusion of multiple groups, 4) multilevel analysis, and 5) goodness-of-fit tests (Tarka, 2018).

2. Literature review

The present review covers two main research streams. Based on a theoretical framework, the first thread examines the main factors likely to affect winter demand for cableways. The second thread concerns business profitability and competitiveness in winter resorts.

2.1. Cableway demand

Winter demand for cableways is related to tourism demand, which is covered by a vast body of literature. According to economic theory, consumers derive utility from vectors of goods and services ranging from food to travel and recreation. Consumer theory also suggests that an individual consumer maximises his/her utility subject to budget constraints (Frank, 2008; Massidda & Etzo, 2012). Demand is a function of a set of indicators, including customers' disposable income, prices of commodities and services, prices of substitutes, transportation costs, marketing expenditures and special events, and tourists' tastes and preferences. Notably, empirical evidence for summer tourism shows that tourism demand also depends heavily on a country's gross domestic product (GDP) per capita and the relative costs of living at the destination (Garin-Munoz, 2009).

The extant research uses different proxies as the dependent variable, including expenditure levels and tourism arrivals (Gonzàles & Moral, 1995). Tourism expenditures are useful for assessing the economic impact of tourism activity, while tourism arrivals and overnights are more important indicators for businesses, policy-making in planning future investments and levels of infrastructure and conceiving governance for new high-biodiversity cableway spaces (Sheldon, 1993).

As per capita income rises, individuals are willing to travel and spend more nights at a destination, although this relationship may be nonlinear. Several authors have explored demand elasticity in winter destinations and found mixed results. For Austrian winter resorts, Falk (2010) found a higher income elasticity for high-elevation resorts and a lower elasticity for low-elevation resorts, implying different types of demand (see also Peng et al., 2015). This outcome is in line with Massidda and Etzo (2012), who identified tourism as a luxury good with an income-based demand elasticity (Engel curve) between one and two (Eilat & Einav, 2004), though some exclusive resorts (e.g. Courmayeur) enjoy a "Veblen effect" that contradicts typical demand theory.

Winter tourism demand also depends on natural and human-made resources. Snow depth, climate conditions and snowmaking are important factors influencing tourism flows. Englin and Moeltner (2004) investigated the impact of snowfall and temperatures on travel demand among skiers and snowboarders, controlling for participant income, prices and other factors, and found that ski demand increased with snow amount (albeit with a diminishing effect). Several studies have found a non-linear effect between weather conditions and tourism flows (Englin & Moeltner, 2004; Martín, 2005; Gössling et al., 2012), suggesting that most skiers prefer sunny weather and pleasant temperatures. As Gössling and Hall (2006) emphasised, tourists' choices tend to be driven by weather at the destination. In Austria, Falk (2010) found a low impact of natural snow depth on tourism demand, likely due to significant investments in snowmaking at both low- and high-elevation resorts. In a similar study of Sweden, Falk and Lin (2018) showed that the impact of snow depth on ski lift revenues declined over time. Yet, Falk and Hagsten (2016) revealed the importance of considering sub-season effects. Employing monthly data for Sweden, they found that each 10 cm of early-season snow depth increased ski lift revenues by 9 per cent for the same period.

Mobility from, to and within a destination influences winter tourism demand (Massidda & Etzo, 2012), and transportation costs are often proxied by either the consumer price index or oil prices (Albalate & Bel, 2010; Henderson, 2009; Sheller, 2009). Notably, the demand literature has used different aggregation levels, namely cross-country and individual resort-level data (Englin & Moeltner, 2004; Hamilton et al., 2007; Shih et al., 2009).

2.2. Business profitability and competitiveness

While demand is well-researched, studies on cableway profitability and competitiveness remain scarce (Brida et al., 2014; Falk & Steiger, 2018; Goncalves, 2013). From a supply perspective, several factors drive break-evens and operational losses. Internal causes include high sunk costs and labour costs, while external causes include interactions with other complementary and "impedential" business units, such as access areas (e.g. airports, harbours, motorway), local transportation systems (e.g. bus connections, trains), average fuel prices, economic shocks (e.g. economic turmoil, the COVID-19 pandemic) and public intervention. Intense climate changes increase costs for electricity and snowmaking, further challenging cableways' competitive advantages (Berard-Chenu et al., 2020; Joly & Ungureanu, 2018; Scott, 2011; Steiger et al., 2019).

Cableway profits are influenced not only by clients' propensity to consume and household expenditures (e.g. motivations, attitudes and lifestyle), but also by satisfaction and word of mouth (WOM; see Faullant et al., 2008; Matzler et al., 2007, 2019). Competitive advantage and reputation are increasingly built through online social networks (Evren & Kozak, 2018; Floreddu et al., 2014), and customers who have positive experiences may act as marketing channels with friends and family. Intangible and experiential goods are affected by the choices of customers, who search for information before purchasing and write evaluations following their resort experiences (Steiner et al., 2009). Thus, electronic WOM (e-WOM) is a key marketing channel likely to impact both business profitability and pricing policies (Cristobal-Fransi et al., 2018; Litvin et al., 2008; Papathanassis & Knolle, 2011; Rouliez et al., 2019; Wiedemann et al., 2008, pp. 75–85). However, research on e-WOM in transport services remains scarce, and there are no studies on cableway services (see e.g. Leonnard et al., 2017, for online transportation services; Mogaji & Erkan, 2019, for train services; and Nazifi et al., 2020, for freight services).

As stated, a destination's lifecycle stage impacts business profitability and competitiveness (Hallmann et al., 2012), and the maturity stage (e.g. ski demand) often creates competitive conflict. For example, in South-Tyrol (Italy), Falk and Tveteraas (2019) showed that, although installing a new ski lift would increase skiers by 6% the following winter season, the effect would fade within two years.

In traditional markets, the resorts with the best reputations (Claude & Zaccour, 2009) can maintain their market shares and profitability (Belén del Río et al., 2001; Sarstedt & Mooi, 2019), while other resorts, such as those located in less attractive areas, compete by reducing prices and/or targeting products to specific demand segments (Wind & Rangaswamy, 2001), such as conference events, enogastronomy events or schooling/learning activities (Liquori, 2010). Small- and medium-sized ski resorts also engage in "conglomerate" strategies, in which they share capital, resources and profits (Morrison & Pickering, 2013; Scott, 2011), and cooperative competition (coopetition), in which they simultaneously cooperate and compete. As Falk (2017) reported, this form of competition is increasingly common when intrinsic geographical constraints allow firms to create value by integrating assets, services, facilities and knowledge. The author found that collaboration through lift-linking increases tourist overnights, particularly for small and remote villages.

3. Conceptual framework and methodology

3.1. Framework and hypotheses

Based on this in-depth literature review (and, especially, Golob, 2003; Dwyer & Kim, 2005; Gössling & Hall, 2006; Falk, 2010; Franch, 2010; Castro-Nuñ o et al., 2013; Brida et al., 2014; Falk & Hagsten, 2016; Falk & Lin, 2018), Fig. 1 presents the theoretical framework.

Model 1 presents the linkage between *destination demand* and *cableway profitability* and assesses the main explanatory factors. The dependent variables are proxied by the following indicators:

- ***on the supply side***: **a1)** *Winter inc.*: cableways' gross revenue; **a2)** *Marg. oper.*: cableways' gross operating margin (in euros);
- ***on the demand side***: **b3)** *Arrivals*: number of arrivals in official accommodations; **b4)** *Pres. tot.*: nights of stay at official accommodations

The explanatory variables are as follows:

c1) *Econ VDA*: a latent variable including the following observed indicators: 1. consumer price index; 2. resident and non-resident household expenditures (in euros);
c2) *Competit*: number of ski resort competitors in the region's districts;
c3) *Promo*: amenities and promotional activities (e.g. events, festivals, etc.);
c4) *Supply*: a latent variable including following observed indicators: 1. number of days cableways are open to the public; 2. maximum price for a cableway pass; 3. maximum price for an accommodation near the resort.

Within this theoretical framework, five hypotheses are tested, which can be integrated into two main comprehensive positive and negative effects, as follows:

Hp1. ***Macro- & micro-economic factors*** positively influence destination and business profitability; ***increased competition*** positively affects destination demand; ***Promotional activities*** & ***destination amenities*** positively influence both destination demand and business profitability; ***supply factors*** related to prices and cableway opening days positively influence both destination demand and business profitability.
Hp2. ***Increased competition*** negatively affects business profitability.

Model 2 presents the main framework to assess the factors influencing cableways' *competitiveness*. The dependent variables are proxied by the following indicators:

a1) *Arrtot*: tourist arrivals in each district at an official accommodation;
a2) *Passages*: total people transported uphill at the resorts during the winter season;

The explanatory variables are as follows:

b1) *Natural resources*: a latent variable including the following observed indicators: 1. Winter minimum temperature (C°) at the skiing resort; 2. Winter maximum temperature (C°) at the skiing resort; 3. Resort downstream altitude (metres)
b2) *Consumer satisfaction*: number of stars gathered from tripadvisor.com;
b3) *Influx*: traffic per hour;
b4) *Anthr. Res.*: human-made resources, a latent variable that includes the following items:

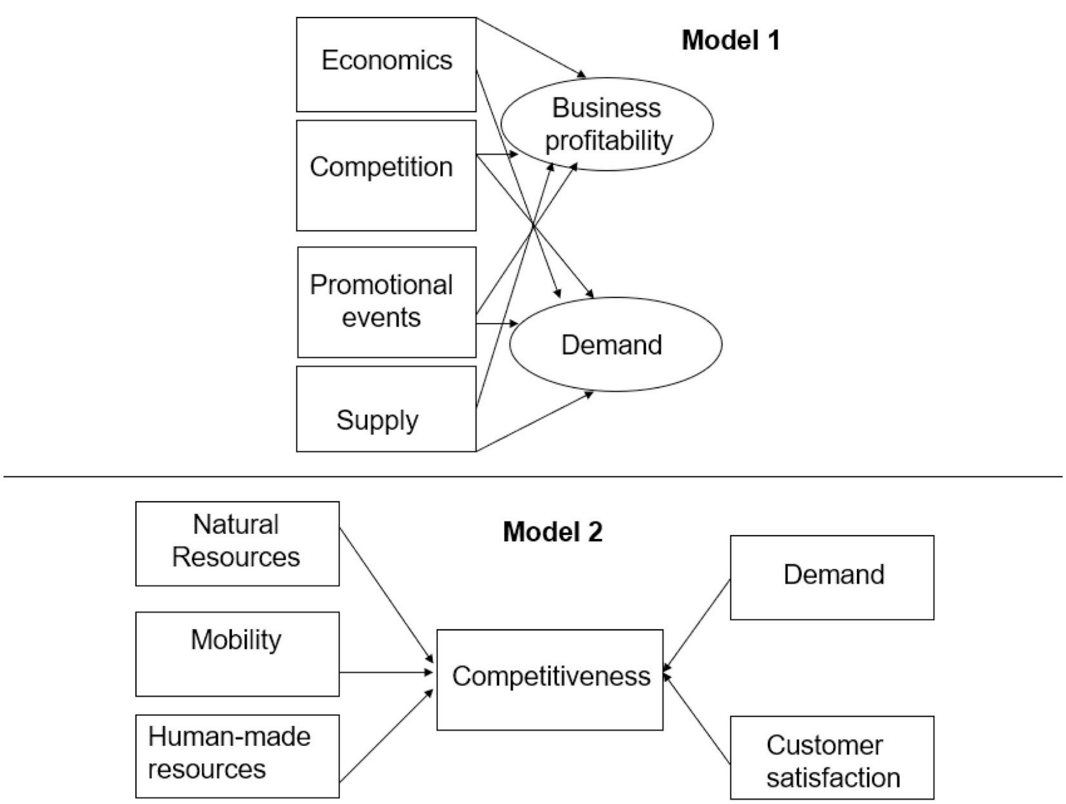


Fig. 1. Theoretical framework: demand, business profitability and competitiveness.

1. housing: number of beds in official accommodations; 2. number of daily bus return transfers; 3. skiing length of slopes (km); 4. artificial snowmaking (days): 5. amenities and promotional activities (events, festivals).

Based on this framework, five hypotheses are tested, which are gathered into two main positive and negative effects, as follows:

Hp3. ***anthropogenic resources*** positively affect competitiveness, possibly creating substitution effects; increased ***load capacity*** of cableways positively affects competitiveness; increased ***district tourism demand*** positively affects competitiveness; increased ***consumer satisfaction*** positively affects competitiveness;
Hp4. ***rising temperatures*** adversely affect competitiveness;

3.2. Method

So far, the majority of studies exploring cableway systems in mountain areas have employed time series, cross-section or panel data (Falk & Hagsten, 2016; Falk & Lin, 2018; Falk & Steiger, 2018), geometrical models (Težak et al., 2016), difference-in-difference approaches (Falk, 2017; Falk & Tveteraas, 2019), data envelopment analysis and stochastic frontiers (Brida et al., 2014) and qualitative analysis (Heinrichs & Bernet, 2014) to investigate sector efficiency. The present paper further validates the theoretical models through an SEM using continuous indicators as either observed or latent variables, building on a factor analysis (Van Acker & Witlox, 2010).

A set of latent factors were attained by running an IPF as a linear combination of the initial variables to reduce the framework to a more manageable set (in STATA 15.1). First, a standard Chronbach's alpha was employed to assess the reliability of each factor. On this basis, the IPF approach was used, with a minimum factor loading of 0.40 (Stevens, 2002). This set of latent factors was then standardized, and the program PRELIS was employed to build the correlation matrices (KM) to account for potential non-normality (Byrne, 1998).

Hence, the SEM included all variables of interest (in LISREL 8.80; Jöreskog & Sörbom, 1993), comprising a set of structural equations supporting the simultaneous analysis of multiple relationships amongst potential exogenous and endogenous variables. Several measures were employed to test for SEM robustness. A chi-square test was run to test the null hypothesis that the observed variance–covariance matrix was empirically equal to the predicted variance–covariance matrix, as a goodness-of-fit measures of the theoretical model. A statistical value of zero denotes a perfect fit, while a statistically large value denotes a poor fit. Since this test depends on sample size, one also accounts for degrees of freedom (df): a satisfactory chi-square is achieved with a df less than 2.5 for medium-sized samples ($100 < N < 200$) and less than 2 for small-sized samples ($N < 100$; Bollen & Long, 1993). Furthermore, a *root mean square error* of approximation (RMSEA) close to zero suggests goodness-of-fit.

4. The empirical framework

4.1. The case study: Aosta Valley

Aosta Valley was used as the case study to validate the theoretical framework, as it is the only Italian Alpine region with a data collection system. Though these data are not centralized in a single statistical authority, they are certified by collectors according to the National Institute of Statistics (ISTAT) standards. This Italian region, characterized by a special autonomous administration, constrained mobility and accessibility, and unique geographical features (e.g. the Alps and V-shaped valleys), was one of the first in Italy to implement a Protected Mountain Area (approximately 13% of its territory) to preserve its biodiversity space (Le Saout et al., 2013). When contacted, other Italian Alpine regions failed to collaborate in a comparative analysis.

Aosta Valley invested in a cableway system to facilitate transport in remote areas and encourage tourism (and mountain activity). Today, it has more than 200 cableways and ski lifts and 700 km of slopes within the 25 districts considered in the present analysis (Table A.1). These districts are linked by a cableway system and tourist infrastructure and services. The present study does not consider the aggregation of the districts by management companies (under public governance), as these do not offer homogenous data (reporting consumption per mountain tourism district, rather than per separate realities).

Public agent intervention in planning policy, mainly through provisions and subsidies from FinAosta's regional public finance, promotes and implements activities with socio-economic benefits for not only the mountain communities, but also the Italian economy through direct and indirect taxation revenues. Thus, it is important to support and enhance cableway services in mountain districts, since management losses are more than offset by the economic benefits generated for the region. For example, in line with similar studies, Zanetti et al. (2005, pp. 28–29) found that the winter tourism contribution to GDP had a multiplier of $\Delta Y = 1/(1\text{-c}) * (\Delta C + \Delta I)$ (where Δ = variation; Y = GDP; c = marginal propensity to consume; C = consumption; and I = investments) of 1.6. For Aosta Valley, the cableway added value accounts with a multiplier of five, while cableway multipliers in France and Piedmont (Italy) were eight and ten, respectively (Massarutto et al., 2002).

The study data cover a panel of eight years (2009–2016) and 25 districts. They were collected from several official sources: the Tourism, Sport, Trade, Agricultural and Cultural Statistical Office of the Aosta Valley Region; the Cableway Office; the Civil Protection and Fire Brigade Office; and the Socio-Economic Observatory. The main descriptive statistics are reported in Table A2.

4.2. The iterated principal factors result

The first factor (*natural resources*) comprises three variables: the altitude of the downstream skiing resorts, expressed in meters, which also has the highest loading value (LV = 0.93); the average maximum temperature during the winter season, expressed in C°; and the average minimum temperature during the winter season, expressed in C°. Snow depth, an indicator used in previous studies, was only available for four weather stations (Centro Funzionale Regione AutonomaValle d'Aosta [FRVDA], 2020).

The second factor, *human-made resources*, comprises the following observed variables: the average number of bus return transfers in a day (LV = 0.72); the length of the skiing slope (LV = 0.72); the number of beds in the official accommodation (LV = 0.71); promotional events, such as festivals and exhibitions (LV = 0.48); and the average number of days of artificial snowmaking (LV = 0.41). The third factor, *economic indicators (Italy)*, includes the Italian GDP per capita and the Italian household income (LV = 0.76). The fourth factor, *economic indicators (Aosta Valley)*, comprises the consumer price index and household expenditures (LV = 0.87, respectively). The fifth factor, *supply*, comprises the number of days the cableways stayed open (LV = 0.99); the maximum price paid for a cableway transfer (LV = 0.77); and the maximum price for an accommodation close to the skiing resort (LV = 0.75). All these latent variables are reliable, with Chronbach's alphas higher than 0.70 (Table 1).

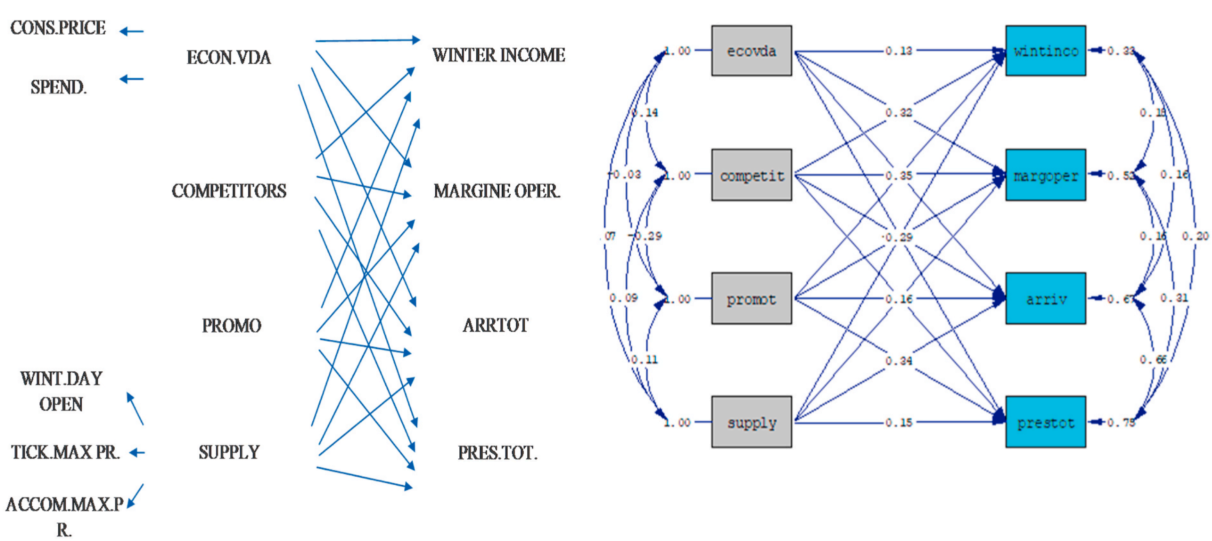
4.3. Business profitability and destination demand

The SEM developed here includes two analysis steps: 1) a structural model with a causal relationship between dependent and independent variables and 2) a measurement model. It assesses two main components of business profitability: cableway profitability, expressed as total gross revenue (*winter inc.*) and operating margins (*marg. oper.*), and accommodation profitability, expressed as attractiveness (number of arrivals, *arrtot*) and retention (number of nights, *prestot*) (Fig. 2).

As expected (Hp1), the cableway business indicators are highly and positively influenced by the regional economic conditions: *econ. vda.*, a

Table 1
Iterated Factor analysis (no rotation, run in STATA 15.1).

LATENT VARIABLES	CHRONBACHS ALPHA	VARIANCE 1st FACTOR	VARIABLES	VAR. FACT. LOADING	LR TEST PROB. X^2	AVE (Average var. extr.)
NATURAL RESOURCES	0.75	100 per cent	Resort downstream altitude (mt.)	0.93	0.000	0.545
			Maximum Temperature	0.71		
			Minimum Temperature	0.52		
HUMAN-MADE RESOURCES	0.75	77 per cent	Bus	0.72	0.000	0.364
			Skiing slopes (Km)	0.72		
			Beds (accommodation)	0.71		
			Amenities/promotional activities	0.48		
			Artificial snow (days)	0.41		
ECONOMICS INDICATOR (ITALY)	0.86	100 per cent	GDP (Italy)	0.76	0.000	0.671
			Income (Italy)	0.76		
AOSTA VALLEY ECONOMICS INDICATOR *(econ.vda)*	0.74	100 per cent	Consumer Price Index	0.87	0.000	0.784
			Household expenditure	0.87		
SUPPLY	0.85	92 per cent	Winter Open Days	0.99	0.000	0.660
			Ticket Maximum Price	0.77		
			Accommodation Maximum Price	0.75		



n. = 109

Parameters estimates (ML)

	ECON.VDA	COMPETIT	PROMO	SUPPLY	R^2
WINTER INC.	0.13 **	0.12 **	-0.08	0.78 ***	0.67
	(0.06)	(0.06)	(0.06)	(0.06)	
MARG.OPER.	0.32 ***	0.50 ***	-0.08	0.17 ***	0.48
	(0.07)	(0.07)	(0.07)	(0.07)	
ARRIVALS	0.36 ***	-0.22 ***	0.36 ***	0.04	0.33
	(0.08)	(0.08)	(0.08)	(0.08)	
PRES.TOT.	0.30 ***	0.16 **	0.34 ***	0.15 *	0.25
	(0.08)	(0.09)	(0.09)	(0.09)	

Chi-square = 0.00, df = 0, P = 1.00, RMSEA = 0.000

Fig. 2. Model 1. tourism demand and business profitability – SEM
Notes. ***, **, * coefficient statistically significant at the 1 per cent, 5 per cent, and 10 per cent level, respectively.

latent variable driven by resident and non-resident expenditures and prices, and *supply* (Hp1), a latent variable driven by opening days and maximum prices at the skiing resort and accommodations. The most interesting finding relates to the *competition* (Hp2) amongst the skiing districts, which has a strong and positive effect on the dependent variable. Economic theory suggests that higher competition yields lower margins, especially in the long run. Hence, the observed positive effect is likely due to coopetition designed to enhance infrastructure and share technology. Coopetition seems a win–win strategy to attain higher margins, in line with the findings of Falk (2017).

The promotional activities (*promo*) coefficient is not statistically significant (Hp1). This outcome may signal a lack of networking among skiing agents and other destination activities and requires further investigation. To give resorts higher social network visibility, it is important to create an Aosta Valley ski brand promoted by international testimonials.

Aosta Valley's attraction and retention as a tourism destination positively and strongly depend on the economic latent variables (*econ. Vda,* Hp1) and the promotional activities (*promo,* Hp1), which boost image during the winter season. While *supply* (Hp1) shows a weak but statistically significant effect on regional demand retention, possibly driven by the cableway system, it does not impact attraction. Furthermore, while competition exerts a negative effect on tourist arrivals (Hp2), it positively effects overnights, due to the resorts' ability to attract demand for longer periods, especially among loyal (and moneyed) skiers.

The business profitability model presents the highest R-squared (i.e. 0.67 and 0.48, respectively), while the demand model explains relatively lower levels of variance (R-squared values of 0.33 and 0.25, respectively). The chi-square, df and RMSEA show the models to be empirically satisfactory.

4.4. The competitiveness framework

This section validates the competitiveness framework (Fig. 1). The dependent variable comprises: district attractiveness, expressed as tourist arrivals at official accommodations in each district over the total number (i.e. *arrtot*), and ski resort retention, defined as total passages at each ski resort over total passages (i.e. *passages*), as presented in Model 2 (Fig. 3). The robustness of the empirical specifications is supported by the R-squared, df and *RMSEA*.

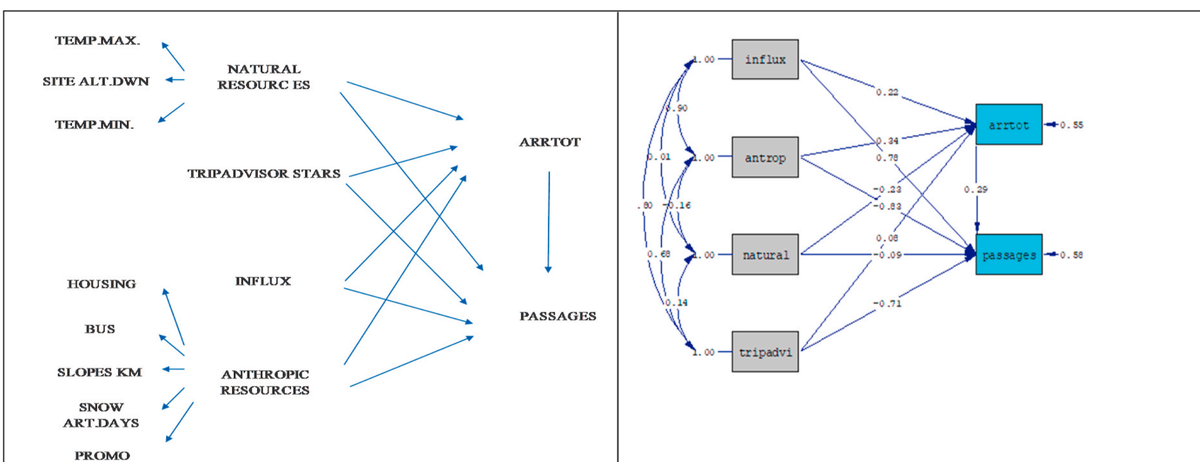
District competitiveness (*arrtot*) has a high and positive impact on competitiveness (*passages*, Hp3), though the reverse is not true. A higher speed per hour of the cableway plant (*influx*, Hp3) corresponds to higher competitiveness. In line with previous findings, the maximum carrying capacity seems to encourage loyal skier segments. While human-made resources (*anthr. res.*, Hp3) presents a positive and statistically significant effect on attraction, it has a strong and negative effect on retention, in line with the outcome in Model 1 (i.e. tourism demand). Infrastructure and services supplied at the destination enhance district competitiveness but limit resorts' long-term success, signalling substitution effects for the non-loyal skiing segment.

The natural resources factor (*natural res.*, Hp4), which comprises maximum and minimum winter temperature averages and resort downstream altitudes, exerts a negative effect on district competitiveness. This finding suggests that clients are less keen to spend their winter vacations in downstream locations with higher temperatures (Hamilton et al., 2007). In a novel approach within cableways research, the present study considered clients' reviews published on social media (Hp3). Interestingly, the coefficient of this variable was negative and highly statistically significant. As Book et al. (2018) reveal, social influence has a strong effect on resort evaluations. Nonunanimous reviews tend to increase dissonance and have a higher impact on individuals' choice than prices. This outcome encourages further investigation on the impact of online customer evaluations on business competitiveness.

4.5. Public agent intervention: an explorative analysis

In the maturity lifecycle stage, with high maintenance costs, public intervention plays an important role in skiing activity. Aosta Valley's cableways are owned by both private firms and the public agent, either directly or with large capital participation, especially in small and medium-sized districts vulnerable to market dynamics and climate change. As reported by Bobbio et al. (2017), in the last two decades, the Autonomous Region of Aosta Valley, through FinAosta, has directly financed 230 million euros for infrastructure maintenance, 73 million for rescue services, and 64 million for snowmaking given climate change, especially in downstream skiing resorts. The greatest public contribution to snowmaking occurred in 2011/2012, for a total of 747 thousand euros. Thanks to this direct intervention, in 2017, the cableway sector recovered 81 million euros in revenues, breaking even and, in some districts, even profiting (Marinet, 2017).

Given this, an SEM was run to explore the impact of the economic latent variable (*econ. Vda.*) and the public agent's *subsidies* on the latent variable *supply* (winter opening days and maximum prices for cableway passes and accommodations near the ski resort). Public *subsidies* accounted for only 58 observations; hence, this variable was not employed in the previous models due to problems of convergence



n. = 149

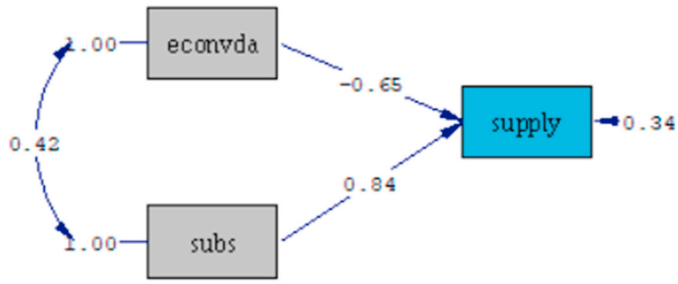
Parameters estimates (ML)

	ARRTOT	INFLUX	ANTHR.RES.	NATURAL RES.	TRIPADVIS.STARS	R^2
ARRTOT	–	0.22	0.34 **	-0.23 ***	0.08	0.45
		(0.17)	(0.15)	(0.07)	(0.10)	
PASSAGES	0.29 ***	0.79 ***	-0.83 ***	-0.09	-0.71 ***	0.42
	(0.08)	(0.18)	(0.16)	(0.07)	(0.11)	

Chi-square = 0.00, df = 0, P = 0.95, RMSEA = 0.000

Fig. 3. Model 2: *competitiveness* – SEM

Notes.***, **, * coefficient statistically significant at the 1 per cent, 5 per cent, and 10 per cent level, respectively.



N. = 95

Parameters estimates (ML)

	ECON.VDA	SUBS	R^2
SUPPLY	-0.65*** (0.06)	0.84*** (0.06)	0.66

Chi-square = 0.0, df = 0, P = 1.0, RMSEA = 0.000

Fig. 4. Model 3 Public intervention and supply – SEM
Note: *** coefficient statistically significant at the 1 per cent level.

(Fig. 4, Model 3). The findings show that public intervention exerts a high and positive effect on the dependent variable, confirming FinAosta's key role in the region's cableways. However, the coefficient of the *econ. vda.* factor, comprising the consumer price index (CPI) and resident and non-resident expenditures, presents a negative and strong impact on *supply*, suggesting that ski activity is a luxury good affordable to high income and/or loyal customers (CISET, 2009; Pechlaner & Manente, 2002). Notably, the model is satisfactory, as shown by the R-squared (0.66), *df* and *RMSEA*.

5. Discussion and conclusions

The relevant literature framed three theoretical models: competitiveness, demand attraction and retention and cableway and accommodation profitability. These models were validated through a two-step empirical analysis: first, an IPA extracted observed variables into a unique latent variable; second, an SEM explored the interactions between continuous and observed exogenous and endogenous variables and the latent factors obtained from the IPA. The main hypotheses based on the theoretical construct supported strong similarities with findings reported for other international and national mountain destinations.

The descriptive statistics show that ski demand came primarily from middle- and upper-class customers with a per capita income less than 40,000 euros. This loyal segment is price-elastic and psychocentric, returning to the same destination with their families. These families, which comprise up to four members on average, use other services and attend events at the destination while the principal member skies. This was further confirmed by the SEM, which detected a positive effect between promotional activities and demand, defined in terms of attraction and retention, and a substitution effect with the cableway system, which is unable to retain non-loyal customers, indicating a lack of networking between destination agents and ski resorts. Stronger synergy and interaction are likely to attract new demand beyond ski enthusiasts. Hence, winter tourist activity is a key economic opportunity that not only increases business profitability but also protects the environment and prevents migration by young people.

The cableway system appeared to have implemented total quality management (TQM) protocols with customers, but the empirical analysis highlighted issues with the yield management (Venturi, 2015). From a managerial perspective, cableway providers should enhance service quality and diversify prices to attract non-loyal customers, since winter tourism in the Aosta Valley could stem from emotions in addition to social position. The outcome revealed that, through social media, consumer evaluation exerts a strong and negative effect on ski resort competitiveness. In this respect, ski agents should be more aware of the impact of e-WOM has on cableways and their profitability. As shown in recent studies, electronic reputation plays a key role in firm reputation and competitive pricing (Abrate & Viglia, 2016; Book et al., 2018). This requires a cultural change driven primarily by technological skills, which, when lacking, limit innovation within revenue management (see Melis & Piga, 2017). As Cristobal-Fransi et al. (2018) suggested for ski lifts in France and Spain, managers should move beyond traditional internet presences and encourage online customer interaction to acknowledge specific issues and needs.

Cost control is a priority for a long-term cableway development, which requires synergic action with other destination stakeholders (Sainaghi & Baggio, 2014). The present study's SEM indirectly assessed the actions exerted by the public agents, detecting a regime of coopetion. This outcome is in line with Falk (2017), who found that cooperation amongst firms is increasingly common, especially in disadvantaged areas. There is empirical evidence that greater competition, supported by cooperation in implementing shared technology and knowledge, new joint projects and infrastructure maintenance, can increase business profitability and operating margins (Falk & Tveteraas, 2019; Scuttari et al., 2016). Hence, this special market regime can serve as an economic lever within geographical settings characterized by private and public financial constraints, exacerbated by exogenous shocks (e.g. economic turmoil and the COVID-19 pandemic).

In the short run, melting glaciers and a lack of snow have caused business uncertainty and increased operating costs to produce artificial snow. In the long run, extreme weather conditions may reduce the appeal of mountain destinations (Boller et al., 2010; Hamilton et al., 2007). The present study shows that public intervention, combined with coopetition and e-commerce, can counter the adverse effects of climate changes (Cristobal-Fransi et al., 2018; Joly & Ungureanu, 2018). Climate change undermines cableway profitability, especially for firms at lower altitudes with drier weather and higher temperatures. On the basis of economic theory, snow can be defined as a public good and as such can be neither excluded nor competitive unless it is regulated. Yet, snow can become rival if social optimization is not reached. In these circumstances, at the Lindhal equilibrium, pareto efficiency can be achieved if marginal costs equal marginal benefits, under Samuelson's assumption. This outcome is feasible through public intervention in the cableway sector with subsidies directed to, amongst other targets (e.g. sunk costs, plant maintenance), the production of artificial snow, which Berard-Chenu et al. (2020) found to be a major cost in the French Alps (see also Sainaghi, 2015, pp. 379–401). The allocation of public resources to small-sized and remote firms can guarantee lower prices than in a typical market equilibrium. Thus, public action creates positive externalities (Veeneman & Mulley, 2018) that limit migration by young people while mitigating economic disadvantage and fostering environmental protection.

This research presented some limitations, especially related to relatively small sample size (Hair et al., 2016) and the case study on a sole region, which are likely to influence the representation of this setting. Yet, the paper enriched this thread of the literature with a multidimensional demand-supply framework and novel indicators, such as the e-WOM. It would also be interesting to compare and elicit homogenous results with other methodologies, such as SEM with random effects (Little et al., 2007; McArdle, 2009) or Pesaran's (2006) common correlated effects mean group (CCEMG) estimator.

CRediT authorship contribution statement

Moreno Ferrarese: Conceptualization, Funding acquisition, Formal analysis, Writing - original draft. **Enzo Loner:** Conceptualization, Formal analysis, Writing - original draft. **Manuela Pulina:** Conceptualization, Formal analysis, Writing - original draft.

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Appendix A

Table A.1
Ski-resort districts in Aosta Valley

Ski-resort
Antagnod
Brusson – Estoul
Buisson – Chamois
Cervinia – Breuil
Champoluc – Frachey
Champorcher
Cogne
Col de Joux Saint Vincent
Courmayeur-Chécrouit-Val Veny
Crèvacol – Saint Rhemy
Doues
Etrouble
Gressoney La Trinitè
Gressoney Saint Jean
La Magdeleine
La Thuile
Monte Bianco – Courmayeur
Ollomont
Payel di Valsavarenche - Dègioz
Pila
Rhémes Notre Dame-Chanavey
St. Oyen Flassin
Torgnon
Valgrisenche
Valtournenche

Table A.2
Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
tempmax	200	20	30	25.90	2.15
SKIRES TEMPERATURE C° (max.-summer) resorts					
tempmin	200	−23.00	−5.00	−12.60	3.04
SKIRES TEMPERATURE C° resorts (min. winter)					
sitealtitdwn	192	1176	2050	1563.79	193.73
SKIRES SITE ALTITUDE - DOWNSTREAM resorts (low elevation resorts) (m)					
housingn	200	109	8408	2239.68	2231.13
SKIRES HOUSING (number of beds)					
accombusperday	200	4	80	30.20	20.41
SKIRES ACCOMODATION BUS-TRANSFERT (bus run per day - return)					
Slopes_Km	176	1	150	27.86	35.86
Slopes Km					
	197	7	175	100.38	30.27

(continued on next page)

Table A.2 (*continued*)

	N	Minimum	Maximum	Mean	Std. Deviation
snowartifdays					
SKIRES ARTIFICIAL SNOWMAKING (days)					
promotactivities	192	3	31	12.00	8.40
SKIRES AMENITIES-PROMOTIONAL ACTIVITIES					
pilita	200	26,400.20	27,718.80	26,910.00	422.61
ITA GDP per capita at current prices (euros) Italy					
incita	200	37,708.70	40,426.70	39,403.14	832.31
ITA Income per capita					
conspricevda	200	97.28	107.20	104.15	3.53
VDA Consumer price index (NIC annual average – base 2010)					
spendvda VDA	200	2701.20	3000.80	2860.32	86.93
Household expenditure					
Accommaxprice	200	68.73	1129.96	205.52	204.28
SKIRES MAX ACCOMODATION PRICE per double room, euro					
ticketmaxprice	192	6.40	49.50	29.17	12.52
SKIRES Maximum price per ticket (su NIC)-Euro					
winterdayopen	128	83	196	117.28	23.21
SKIRES Winter opening days – station					
Competit	192	1	4	3.13	0.93
Number of competitors – within					
Tripadvisorstars	192	1	4	2.92	0.81
Consumer satisfaction (scale 1 to 5)					
Subsidies (public subsidies)	142	177,000	19,733,496	7,972,980	3,996,421

References

Abrate, G., & Viglia, G. (2016). Strategic and tactical price decisions in hotel revenue management. *Tourism Management, 55*, 123–132. https://doi.org/10.1016/j.tourman.2016.02.006

Albalate, D., & Bel, G. (2010). Tourism and urban public transport. Holding demand pressure under supply constraints. *Tourism Management, 31*, 425–433. https://doi.org/10.1016/j.tourman.2009.04.011

Belén del Río, A., Vazquez, R., & Iglesias, V. (2001). The effects of brand associations on consumer response. *Journal of Consumer Marketing, 18*(5), 410–425. https://doi.org/10.1108/07363760110398808

Berard-Chenu, L., Cognard, J., Hugues, F., Morin, M., & George, E. (2020). Do changes in snow conditions have an impact on snowmaking investments in French Alps ski resorts? *International Journal of Biometeorology*, 1–17. https://doi.org/10.1007/s00484-020-01933-w

Bobbio, S., Dematteis, M., & Rabbia, D. (2017). Cara neve: Ma quanto ci costi?. https://www.mountainwilderness.it/impianti-di-risalita/cara-neve-ma-quanto-ci-costi/ Accessed January 6, 2018.

Bollen, K. A. (1989). *Structural equations with latent variables*. New York, NY: Wiley Series in, *Probability & Mathematical Statistics*, Wiley. https://doi.org/10.1002/9781118619179

Bollen, K. A., & Long, J. S. (1993). *Testing structural equation models*. Newbury Park, CA: Sage.

Boller, F., Hunziker, M., Conedera, M., Elsasser, H., & Krebs, P. (2010). Fascinating remoteness: The dilemma of hiking tourism development in peripheral mountain areas. *Mountain Research and Development, 30*(4), 320–331. https://doi.org/10.1659/MRD-JOURNAL-D-10-00018.1

Book, L. A., Tanford, S., Montgomery, R., & Love, C. (2018). Online traveler reviews as social influence: Price is no longer king. *Journal of Hospitality & Tourism Research, 42*(3), 445–475. https://doi.org/10.1108/JHTI-06-2019-0080

Brand, P., & Dávila, J. D. (2011). Mobility innovation at the urban margins. *City, 15*(6), 647–661. https://doi.org/10.1080/13604813.2011.609007

Brida, J. G., Deidda, M., & Pulina, M. (2014). Tourism and transport systems in mountain environments. analysis of the economic efficiency of cableways in South Tyrol. *Journal of Transport Geography, 36*, 1–11. https://doi.org/10.1016/j.jtrangeo.2014.02.004

Byrne, B. M. (1998). *Multivariate applications book series. Structural equation modeling with LISREL, PRELIS, & SIMPLIS. Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Castro-Nuño, M., Molina-Toucedo, J. A., & Pablo-Romero, M. P. (2013). Tourism and GDP: A meta-analysis of panel data studies. *Journal of Travel Research, 52*(6), 745–758. https://doi.org/10.1177/0047287513478500

CISET. (2009). *Il turismo montano in Italia. Modelli, strategia, performance*. Roma: Doxa Mercury srl.

Claude, D., & Zaccour, G. (2009). Investment in tourism market and reputation. *Journal of Public Economic Theory, 11*(5), 797–817. https://doi.org/10.1111/j.1467-9779.2009.01430.x

Cobo-Soler, S., Fernández-Alcantud, A., López-Morales, J. M., & Santamaría-García, M. (2018). Public support for entrepreneurship, human capital and talent in the context of Spanish tourism. *Investigaciones Regionales – Journal of Regional Research, 42*, 53–74. https://investigacionesregionales.org/en/article/public-support-for-entrepreneurship-human-capital-and-talent-in-the-context-of-spanish-tourism/ Accessed March 15, 2018.

Cristobal-Fransi, E., Daries, N., Serra-Cantallops, A., Ramón-Cardona, J., & Zorzano, M. (2018). Ski tourism and web marketing strategies: The case of ski resorts in France and Spain. *Sustainability, 10*(8), 1–24. https://doi.org/10.3390/su10082920

Dwyer, L., & Kim, C. (2005). Destination competitiveness. Determinants and indicators. *Current Issues in Tourism, 6*(5), 369–414. https://doi.org/10.1080/13683500308667962

Eilat, Y. E., & Einav, L. (2004). Determinants of international tourism. a three-dimensional panel data analysis. *Applied Economics, 36*(12), 1315–1327. https://doi.org/10.1080/000368404000180897

Englin, J., & Moeltner, K. (2004). The value of snowfall to skiers and boarders. *Environmental and Resource Economics, 29*(1), 123–136. https://doi.org/10.1023/B:EARE.0000035453.78041.71

Evren, S., & Kozak, N. (2018). Competitive positioning of winter tourism destinations: A comparative analysis of demand and supply sides perspectives–cases from Turkey. *Journal of Destination Marketing and Management, 9*, 247–257. https://doi.org/10.1016/j.jdmm.2018.01.009

Falk, M. (2010). A dynamic panel data analysis of snow depth and winter tourism. *Tourism Management, 31*, 912–924. https://doi.org/10.1016/j.tourman.2009.11.010

Falk, M. (2017). Gains from horizontal collaboration among ski areas. *Tourism Management, 60*, 92–104. https://doi.org/10.1016/j.tourman.2016.11.008

Falk, M., & Hagsten, E. (2016). Importance of early snowfall for Swedish ski resorts. Evidence based on monthly data. *Tourism Management, 53*, 61–73. https://doi.org/10.1016/j.tourman.2015.09.002

Falk, M., & Lin, X. (2018). The declining dependence of ski lift operators on natural snow conditions. *Tourism Economics, 24*(6), 662–676. https://doi.org/10.1177/1354816618768321

Falk, M., & Steiger, R. (2018). An exploration of the debt ratio of ski lift operators. *Sustainability, 10*(9), 1–15. https://doi.org/10.3390/su10092985

Falk, M., & Tveteraas, S. L. (2019). Modelling the wider effects of ski lift investments. *Empirical Economics, 59*, 259–274. https://doi.org/10.1007/s00181-019-01626-3

Faullant, R., Matzler, K., & Füller, J. (2008). The impact of satisfaction and image on loyalty: The case of alpine ski resorts. *Managing Service Quality, 18*(2), 163–178. https://doi.org/10.1108/09604520810859210

Floreddu, P. B., Cabiddu, F., & Evaristo, R. (2014). Inside your social media ring: How to optimize online corporate reputation. *Business Horizons, 57*(6), 737–745. https://doi.org/10.1016/j.bushor.2014.07.007

Franch, M. (2010). *Marketing delle destinazioni turistiche*. Milano: MCGraw-Hill.

Frank, R. H. (2008). *Microeconomics and behavior*. New York: McGraw-Hill Professional.

Garin-Munoz, T. (2009). Tourism in galicia: Domestic and foreign demand. *Tourism Economics, 15*(4), 753–769. https://doi.org/10.5367/000000009789955107

Golob, T. F. (2003). Structural equation modeling for travel behavior research. *Transportation Research Part B, 37*, 1–25. https://doi.org/10.1016/S0191-2615(01)00046-7

Goncalves, O. (2013). Efficiency and productivity of French ski resorts. *Tourism Management, 36*, 650–657. https://doi.org/10.1016/j.tourman.2012.06.008

Gonzàles, P., & Moral, P. (1995). An analysis of the international tourism demand in Spain. *International Journal of Forecasting, 11*, 233–251. https://doi.org/10.1016/0169-2070(94)00570-3

Gössling, S., & Hall, M. (2006). Uncertainties in predicting tourist travel flows under scenarios of climate change. *Climatic Change, 79*(3–4), 163–173. https://doi.org/10.1007/s10584-006-9081-y

Gössling, S., Scott, D., Hall, C. M., Ceron, J. P., & Dubois, G. (2012). Consumer behaviour and demand response of tourists to climate change. *Annals of Tourism Research, 39* (1), 36–58. https://doi.org/10.1016/j.annals.2011.11.002

Hair, J. F., Jr., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications, Inc. https://us.sagepub.com/en-us/nam/a-primer-on-partial-least-squares-structural-equation-modeling-pls-sem/book244583 Accessed November 06, 2017.

Hallmann, K., Müller, S., Feiler, S., Breuer, C., & Roth, R. (2012). Suppliers perception of destination competitiveness in a winter sport resort. *Tourism Review, 67*(2), 13–21. https://doi.org/10.1108/16605371211236108

Hamilton, L. C., Brown, C., & Keim, B. D. (2007). Ski areas, weather and climate. Time series models for New Engl & case studies. *International Journal of Climatology-A Journal of the Royal Meteorological Society, 27*(15), 2113–2124. https://doi.org/10.1002/joc.1502

Heinrichs, D., & Bernet, J. S. (2014). Public transport and accessibility in informal settlements: Aerial. Cable cars in medellín, Colombia. *Transportation Research Procedia, 4*, 55–67. https://doi.org/10.1016/j.trpro.2014.11.005

Henderson, J. (2009). Transport and tourism destination development. An Indonesian perspective. *Tourism and Hospitality Research, 9*, 199–208. https://doi.org/10.1057/thr.2009.1

Joly, M., & Ungureanu, E. I. (2018). Global warming & skiing: Analysis of the future of skiing in the Aosta Valley. *Worldwide Hospitality & Tourism Themes, 10*(2), 161–171. https://doi.org/10.1108/WHATT-12-2017-0077

Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8. Structural equation modeling with the SIMPLIS comm & language*. Scientific Software International. https://books.google.it/books?hl=it&lr=&id=f61i3quHcv4C&oi=fnd&pg=PR15&dq=J%C3%B6reskog,+K.+G.,+%26+S%C3%B6rbom,+D.+(1993).+LISREL+8.+Structural+equation+modeling+with+the+SIMPLIS+comm+%26+language.+Scientific+Software+International.&ots=ujyjue6F5y&sig=m2pNte-iHY777fw3yo3YwlclbbI&redir_esc=y#v=onepage&q&f=false Accessed June 15, 2017.

Kuščer, K., Mihalič, T., & Pechlaner, H. (2017). Innovation, sustainable tourism and environments in mountain destination development: A comparative analysis of Austria, Slovenia & Switzerland. *Journal of Sustainable Tourism, 25*(4), 489–504. https://doi.org/10.1080/09669582.2016.1223086

Le Saout, S., Hoffmann, M., Shi, Y., Hughes, A., Bernard, C., Brooks, T. M., & alii. (2013). Protected areas and effective biodiversity conservation. *Science, Nov., 15*. https://doi:10.1126/science.1239268.

Leonnard, S. E., Comma, M., & Thung, F. (2017). The relationship of service quality, word-of-mouth, and repurchase intention in online transportation services. *Journal of Process Management – New Technologies, International, 5*(4), 30–40. https://doi.org/10.5937/jouproman5-15210

Liquori, A. (2010). Turismo della neve e sviluppo sostenibile: La fattibilità economica degli impianti sciistici. *La Rivista-Bimestrale del Club Alpino Italiano, 6*, 32–33. https://www.cai.it/attivita-associativa/cultura/editoria/periodici/archivio-la-rivista/ Accessed September 20, 2017.

Little, T. D., Preacher, K. J., Selig, J. P., & Card, N. A. (2007). New developments in latent variable panel analyses of longitudinal data. *International Journal of Behavioral Development, 31*(4), 357–365. https://doi.org/10.1177/0165025407077757

Litvin, S. W., Goldsmith, R. E., & Pan, B. (2008). Electronic word-of-mouth in hospitality and tourism management. *Tourism Management, 29*(3), 458–468. https://doi.org/10.1016/j.tourman.2007.05.011

Marinet, E. (2017). *L'esempio trentino per lo sci valdostano tutti soci nelle funivie dai maestri agli albergatori*. Retrieved from https://www.lastampa.it/2017/08/18/aosta/lesempio-trentino-per-lo-sci-valdostano-tutti-soci-nelle-funivie-dai-maestri-agli-albergatori-CbTXzmDwIWrzFElDvewpGL/pagina.html Accessed February 19, 2018.

Martín, M. B. G. (2005). Weather, climate and tourism: A geographical perspective. *Annals of Tourism Research, 32*(3), 571–591. https://doi.org/10.1016/j.annals.2004.08.004

Massarutto, A., Grossutti, J. P., Troiano, S., & Visintin, F. (2002). *Valutazione Economica dei benefici indotti dall'intervento pubblico per lo sviluppo del turismo invernale in Friuli Venezia Giulia. WP Economics n°7/2002*. Università degli Studi di Udine.

Massidda, C., & Etzo, I. (2012). The determinants of Italian domestic tourism: A panel data analysis. *Tourism Management, 3*(3), 603–610. https://doi.org/10.1016/j.tourman.2011.06.017

Matzler, K., Füller, J., & Faullant, R. (2007). Customer satisfaction and loyalty to alpine ski resorts: The moderating effect of lifestyle, spending and customers skiing skills. *International Journal of Tourism Research, 9*(6), 409–421. https://doi.org/10.1002/jtr.613

Matzler, K., Teichmann, K., Strobl, A., & Partel, M. (2019). The effect of price on word of mouth: First time versus heavy repeat visitors. *Tourism Management, 70*, 453–459. https://doi.org/10.1016/j.tourman.2018.09.013

McArdle, J. J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology, 60*, 577–605. https://doi.org/10.1146/annurev.psych.60.110707.163612

Melis, G., & Piga, C. A. (2017). Are all online hotel prices created dynamic? An empirical assessment. *International Journal of Hospitality Management, 67*, 163–173. https://doi.org/10.1016/j.ijhm.2017.09.001

Mogaji, E., & Erkan, I. (2019). Insight into consumer experience on UK train transportation services. *Travel Behaviour and Society, 14*, 21–33. https://doi.org/10.1016/j.tbs.2018.09.004

Morrison, C., & Pickering, C. M. (2013). Perceptions of climate change impacts, adaptation and limits to adaptation in the Australian Alps: The ski-tourism industry and key stakeholders. *Journal of Sustainable Tourism, 21*(2), 173–191. https://doi.org/10.1080/09669582.2012.681789

Nachtigall, C., Kroehne, U., Funke, F., & Steyer, R. (2008). *(Why) should we use SEM? Pros and cons of structural equation modeling. Methods of psychological research* (Vol. 8, pp. 1–22). University of Koblenz-Landau, 2 http://www.mpr-online.de Accessed December 17, 2017.

Nazifi, A., Gelbrich, K., Grégoire, Y., Koch, S., El Manasterly, D., & Wirtz, J. (2020). Proactive handling of flight overbooking: How to reduce negative eWOM and the costs of bumping customers. *Journal of Service Research*, 1–64. http://doi: 10.1177/1094670520933683.

Papathanassis, A., & Knolle, F. (2011). Exploring the adoption and processing of online holiday reviews: A grounded theory approach. *Tourism Management, 32*(2), 215–224. https://doi.org/10.1016/j.tourman.2009.12.005

Pechlaner, H., & Manente, M. (2002). *Manuale del turismo montano. prospettive, cambiamenti e strategie di management*. Milano: Touring University Press. Retrieved from https://www.cipra.org/it/pubblicazioni/351.

Peng, B., Song, H., & Crouch, G. I. (2015). A meta-analysis of international tourism demand elasticities. *Journal of Travel Research, 54*(5), 611–633. https://doi.org/10.1177/0047287514528283

Pesaran, M. H. (2006). Estimation and inference in large heterogeneous panels with a multifactor error structure. *Econometrica, 74*, 967–1012. https://doi.org/10.1111/j.1468-0262.2006.00692.x

Rouliez, P., Tojib, D., & Tsarenko, Y. (2019). The influence of online review exposure on reviewers intensity level of negative word of mouth. *Journal of Hospitality & Tourism Research, 43*(5), 712–733. https://doi.org/10.1177/1096348019840798

Sainaghi, R. (2015). *Il controllo dei costi nelle imprese funiviarie*. Dicembre: Economia e Diritto del Terziario. https://doi.org/10.3280/ED2015-002005

Sainaghi, R., & Baggio, R. (2014). Structural social capital and hotel performance: Is there a link? *International Journal of Hospitality Management, 37*(2), 99–110. https://doi.org/10.1016/j.ijhm.2013.11.004

Sarstedt, M., & Mooi, E. (2019). The market research process. In *A concise guide to market research* (pp. 11–24). Berlin: Springer. https://doi.org/10.1007/978-3-662-56707-4_2.

Scott, D. (2011). Why sustainable tourism must address climate change. *Journal of Sustainable Development, 19*(1), 17–34. https://doi.org/10.1080/09669582.2010.539694

Scuttari, A., Volgger, M., & Pechlaner, H. (2016). Transition management towards sustainable mobility in alpine destinations: Realities & realpolitik in italys South tyrol region. *Journal of Sustainable Tourism, 24*(3), 463–483. https://doi.org/10.1080/09669582.2015.1136634

Sheldon, P. J. (1993). Forecasting tourism. Expenditure versus arrivals. *Journal of Travel Research, 32*, 13–19. https://doi.org/10.1177/004728759303200103

Sheller, M. (2009). The new Caribbean complexity. Mobility systems, tourism and spatial rescaling. *Singapore Journal of Tropical Geography, 30*, 189–203. https://doi.org/10.1111/j.1467-9493.2009.00365.x

Shih, C., Nicholls, S., & Holecek, D. F. (2009). Impact of weather on downhill ski lift ticket sales. *Journal of Travel Research, 47*(3), 359–372. https://doi.org/10.1177/0047287508321207

Steiger, R., Scott, D., Abegg, B., Pons, M., & Aall, C. (2019). A critical review of climate change risk for ski tourism. *Current Issues in Tourism, 22*(11), 1343–1379. https://doi.org/10.1080/13683500.2017.1410110

Steiner, F., & Harmon, R. (2009). The impact of intangible value on the design and marketing of new products and services: An exploratory approach. In *PICMET09-2009 portland international conference on management of engineering and technology* (pp. 2066–2079). IEEE. https://doi.org/10.1109/PICMET.2009.5261890.

Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences*. Mahwah, N.J: Lawrence Erlbaum Associates. Retrieved from https://www.worldcat.org/title/applied-multivariate-statistics-for-the-social-sciences/oclc/46685145.

Tarka, P. (2018). An overview of structural equation modeling: Its beginnings, historical development, usefulness and controversies in the social sciences. *Quality and Quantity, 52*, 313–354. https://doi.org/10.1007/s11135-017-0469-8

Težak, S., Sever, D., & Lep, M. (2016). Increasing the capacities of cable cars for use in public transport. *Journal of Public Transportation, 19*(1), 1–16. https://doi.org/10.5038/2375-0901.19.1.1

Težak, S., Zelenika, R., & Sever, D. (2011). Model of sustainable growth and development of the cableway transport system in Slovenia. *Promet - Traffic & Transportation, 23* (4), 253–264. https://doi.org/10.7307/ptt.v23i4.128

Tjørve, E., Lien, G., & Flognfeldt, T. (2018). Properties of first-time vs. repeat visitors: Lessons for marketing Norwegian ski resorts. *Current Issues in Tourism, 21*(1), 78–102. https://doi.org/10.1080/13683500.2015.1062472

Van Acker, V., & Witlox, F. (2010). Car ownership as a mediating variable in car travel behaviour research using a structural equation modelling approach to identify its dual relationship. *Journal of Transport Geography, 18*(1), 65–74. https://doi.org/10.1016/j.jtrangeo.2009.05.006

Veeneman, W., & Mulley, C. (2018). Multi-level governance in public transport: Governmental layering and its influence on public transport service solutions. *Research in Transportation Economics, 69*, 430–437. https://doi.org/10.1016/j.retrec.2018.07.005

Venturi, F. (2015). *Reinventare la strategia. Dalla guerra dei prezzi alla competizione pacifica*. Milano: Franco Angeli. Retrieved from https://www.ibs.it/reinventare-strategia-dalla-guerra-dei-libro-fabio-venturi/e/9788891714268.

Wiedemann, D. G., Haunstetter, T., & Pousttchi, K. (2008). *Analyzing the basic elements of mobile viral marketing-an empirical study, 7th International Conference on Mobile Business*. IEEE. https://doi.org/10.1109/ICMB.2008.41

Wind, J., & Rangaswamy, A. (2001). Customerization: The next revolution in mass customization. *Journal of Interactive Marketing, 15*(1), 13–32. https://doi.org/10.1002/1520-6653(200124)15:1%3C13:AID-DIR1001%3E3.0.CO;2-%23

Zanetti, G., Piacenza, M., & Vannoni, D. (2005). *Studio per la riorganizzazione degli impianti di risalita in Valle dAosta, Research report*. Torino: HERMES (Centro di Ricerca sui Trasporti Pubblici Locali e i Servizi Regolamentati). http://hermesricerche.it/ita/index1.htm Accessed February 15, 2017.

Sitography

Centro Funzionale Regione Autonoma Valle dAosta FRVDA. (2020). Neve. Quanto è nevicato dall'inizio dell'anno?. http://cf.regione.vda.it/neve.php.

European Union. (2019). The European green deal. Retrieved from https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_it.