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# **Alternative models within the framework of the World Economic Forum's Travel & Tourism Competitiveness Index – Suggestions for theory development**

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## **ABSTRACT**

Destination competitiveness is a relatively young research area. Much research has been done on a conceptual level. Only recently, some authors have developed measures of this highly complex construct. The measure where the most data are available is the Travel & Tourism Competitiveness Index (TTCI), developed by the World Economic Forum. This paper aims at testing this measure's explanatory power and proposing alternative models within the framework of the (TTCI). Results show that the explanatory power for a dynamic performance criterion is limited and that models that are less pre-structured fit better, explain more and reveal reasons for heterogeneity.

**Keywords:** destination competitiveness, alternative models, World Economic Forum, Travel & Tourism Competitiveness Index

## INTRODUCTION

This paper builds on the Travel & Tourism Competitiveness Index (TTCI) as developed and provided by the World Economic Forum (WEF, 2008, 2009). The WEF has a long history in measuring national competitiveness (WEF, 2010). Competitiveness can be understood in different ways. In a purely macroeconomic understanding, the focus is on 'relative price and/or cost indices' (Boltho, 1996, p. 3), where it is argued that a relative increase in unit labor costs harms a nation's competitiveness. In the second half of the 20<sup>th</sup> century, however, the fastest growing countries were also characterized by a faster growth in relative unit labor costs (Fagerberg, 1988). A broader understanding of competitiveness concentrates on the structural factors affecting long-term economic performance (Fagerberg 1988, 1996). This is also the approach the WEF relies on in its Global Competitiveness Report. They define '*competitiveness as the set of institutions, policies, and factors that determine the level of productivity of a country*' (WEF, 2010, p. 4, original emphasis). However, such an understanding is also criticized. Krugman (1996) highlights that this understanding is contrary to the basics of comparative advantage. Based on Krugman's criticism, Lall (2001) states that the concept of competitiveness is only sensible when market failures exist, i.e. when the assumptions in free markets that render optimal resource allocation possible are not met. The tourism industry itself is typically characterized by imperfect markets (Zhang & Jensen, 2006). Additionally, Lall (2001) indicates that a loss of a nation's competitiveness in one specific industry is not equal to a loss of the competitiveness of this nation's whole economy. From this point of view, the WEF's recent endeavor to develop the TTCI is reasonable.

The WEF launched its Travel and Tourism Competitiveness Report (TTCR) in 2007. After some adaptations in the TTCI 2008, it remained unchanged for 2009 (WEF, 2008, 2009). This paper builds on these two years. It is argued that though the WEF itself does not explicitly develop a model of destination competitiveness, they implicitly assume one. The aim of this paper is to examine the WEF with a focus on its explanatory power and to challenge its pre-defined structure. Therefore, performance criteria are incorporated in this model and alternative models are discussed. As theory on destination competitiveness is still rather young (Mazanec, Wöber, & Zins 2007; Mazanec & Ring 2011; Pike, 2008), these alternative models should provoke thinking on the conceptual structure and measurement of destination competitiveness.

## LITERATURE REVIEW

### Destination Competitiveness

Destination competitiveness as an area of research has evolved in the 1990s and centers on Ritchie and Crouch's work (Crouch and Ritchie, 1999; Ritchie and Crouch, 1993, 2000, 2001, 2003; Ritchie, Crouch, and Hudson, 2001). They developed a comprehensive framework of destination competitiveness (Crouch and Ritchie, 1999; Ritchie and Crouch, 2003) that sets the scene for basically all destination competitiveness research.

Quality of life, the well-being of a society or a high standard of living is proposed as the ultimate goal of destination competitiveness. However, it is argued that economic prosperity is the basis (Crouch and Ritchie, 1999; Dwyer and Kim, 2003; Hong, 2009). Ritchie and Crouch build their model, therefore, on Newall's (1992, p. 94) view that competitiveness 'is about producing more and better quality goods and services that are marketed successfully to consumers at home and abroad. It leads to well paying jobs and to the generation of resources required to provide an adequate infrastructure or public services and support for the disadvantaged. In other words, competitiveness speaks directly to the issue of whether a nation's economy can provide a high and rising standard of living for our children and grand children'.

From a theoretical point of view, models of destination competitiveness build on Porter's (1990) national 'diamond'. These include Dwyer et al.'s model (Dwyer & Kim, 2003; Dwyer et al., 2004), Ritchie and Crouch's model (2003), Enright and Newton's model (2004, 2005) and Hong's (2009) model. Crouch and Ritchie's model on destination competitiveness (1999, 2003) stresses the importance of comparative advantage for the tourism industry, as compared to other industries. For example, natural resources are a central part of a destination's attractiveness. Additionally, competitive advantage is also included. Comparative and competitive advantage make up the outer layer of their model. The inner layer consists of the competitive environment, the global environment, core resources and attractors, supporting factors and resources, destination management and qualifying determinants. In general, their model summarizes the whole surroundings and factors of destination competitiveness, which is also reflected in their definition of destination competitiveness: '[W]hat makes a tourism destination truly competitive is its ability to increase tourism expenditure, to increasingly attract visitors while providing them with satisfying, memorable experiences, and to do so in a profitable way, while enhancing the well-being of destination residents and preserving the natural capital of the destination for future generations' (Ritchie and Crouch, 2003, p. 2).

Comparative and competitive advantage are also important in other models (Hong, 2009). Hong (2009) presents a ranking of the most important factors for destination competitiveness that was derived based on Analytic Hierarchy Process, where *exogenous comparative advantages* are by far considered to be the most important. Dwyer et al. (2004) identify *destination management* as a major part of destination competitiveness. Enright and Newton (2004, 2005) show empirical support for the basic idea of Crouch and Ritchie's model and argue that it is important to include *business-related factors* as well as *tourism attractors* as determinants of destination competitiveness. However, they (2005) also show that a universal concept of destination competitiveness that applies to all destinations, irrespective of markets, size, etc. may not be feasible. Gooroochurn and Sugiyarto (2005) who develop and use the World Travel and Tourism Council's Tourism Competitiveness Monitor (TCM), find out that *technology* and *social indices* are the most important factors determining competitiveness.

Mazanec and colleagues (Mazanec, Wöber, & Zins, 2007; Mazanec & Ring, 2011), go one step further and embed existing measures of competitiveness (TCM and TTCI, respectively) in a full model, where outcomes (performance criteria) are included. Both, TCM and TTCI explain to some extent static performance criteria (arrivals and receipts), but fail to predict dynamic performance criteria. Consequently, measurement and proposed outcomes of destination competitiveness needs further research.

The different empirical investigations are not completely consistent (though not necessarily contradictory). They show that destination competitiveness is in fact a complex construct. Hong (2009) provides a comprehensive summary of indicators for the different parts that are common to most existing models.

The general meaning of destination competitiveness seems to be agreed on (see above; Crouch & Ritchie, 2003, p.2), but the measurement is yet unclear. Crouch and Ritchie's all-embracing model was developed to explain, and not (yet) as a causal model (Crouch & Ritchie, 1999). However, the next step in theory development has to focus not only on the measurement, but also on the predictive power of the concept. This is where the TTCI can be classified. Even though it has been criticized for not relying on previous research in tourism (Crouch, 2007) and its prediction ability is weak (Mazanec & Ring, 2011), it is nevertheless a step towards measuring destination competitiveness for a considerable amount of countries.

## CONCEPTUAL FRAMEWORK

The most comprehensive collection of data on destination competitiveness, i.e. the TTCI (WEF, 2008, 2009), starts from 72 variables that are a mixture of hard econometric data provided by several partner institutions and soft data (survey data) from the WEF's Executive

Opinion Survey (WEF, 2008: xi, 25). Those 72 variables are aggregated in three steps, where the higher level is always calculated as an unweighted average. In a first step, 14 pillars are formed. Data for these 14 pillars are publicly available (WEF, 2008, 2009) and are used in this paper. In a second step, those 14 pillars are grouped together in three subindices: the Travel & Tourism (T&T) regulatory framework subindex, the T&T business environment and infrastructure subindex and the T&T human, cultural and natural resources subindex. Table 1 shows the subindices and the corresponding pillars. The pillar ‘affinity for travel & tourism’ was removed to avert tautologies as this pillar includes tourism receipts and expenditures as percentage of the GDP, which are used as a dependent variable in this model (see Figure 1). Finally, those three subindices are subsumed under the TTCI.

Though the methodological approach of the TTCI is criticized (Crouch, 2007), it can be regarded as a comprehensive and systematic collection of data on destination competitiveness. Consequently, examining this data material more closely is worthwhile. Mazanec and Ring (2011) showed that though the model underlying the TTCI exhibits some predictive power, further conceptual research is needed in order to develop the theory on destination competitiveness that is testable in empirical research. This is where this paper builds on. By closely examining other theoretically possible models within the framework of the TTCI, it is argued that further research on a conceptual level is needed in order to clarify the structure of destination competitiveness.

**Table 1. The TTCI subindices and pillars**

T&T Regulatory Framework ( <i>RF</i> )	Policy rules and regulations ( <i>pol</i> ) Environmental sustainability ( <i>env</i> ) Safety and security ( <i>saf</i> ) Health and hygiene ( <i>hea</i> ) Prioritization of Travel & Tourism ( <i>prio</i> )
T&T Business Environment and Infrastructure ( <i>BEI</i> )	Air transport infrastructure ( <i>air</i> ) Ground transport infrastructure ( <i>ground</i> ) Tourism infrastructure ( <i>tour</i> ) ICT infrastructure ( <i>ict</i> ) Price competitiveness in the T&T industry ( <i>price</i> )
T&T Human, Cultural, and Natural Resources ( <i>RES</i> )	Human resources ( <i>hum</i> ) (Affinity for Travel & Tourism) Natural resources ( <i>nat</i> ) Cultural resources ( <i>cul</i> )

### Alternative and equivalent models

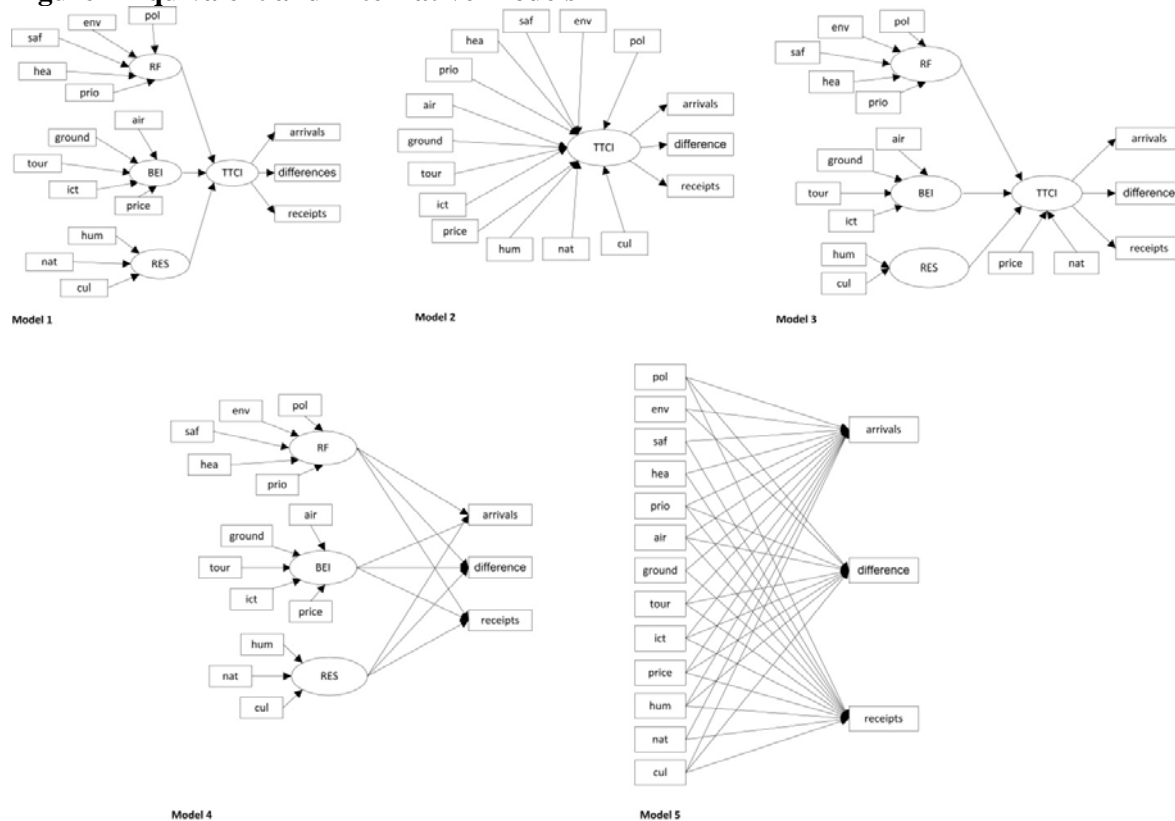
Within the framework facilitated by the existing data, other models than the one underlying the TTCI are plausible. Some of them can be statistically tested against each other, i.e. their Bayesian Information Criteria (BIC) can be compared, whereas some cannot, as they represent equivalent models. Equivalent models reproduce the same set of covariance matrices and, therefore, fit the data equally well (e.g. in terms of chi-square or any other common fit index), i.e. one cannot be preferred over the other based on statistical criteria. These models have different parameters, so they can have a substantially different meaning (Lee & Hershberger 1990). In general, equivalent models are considered as a threat to the substantive meaning of a model that has been shown to fit the data acceptably (Raykov & Marcoulides, 2001). In an early stage of theory development, however, they can be useful (MacCallum et al., 1993).

This paper builds on the TTCI and its implicitly underlying model (Model 1 in Figure 1) as demonstrated by Mazanec and Ring (2011). In this model, the general structure of the TTCI, its subindices and pillars is reproduced, whereas three performance measures are added (arrivals per capita, receipts per capita and differences in arrivals). In order to stimulate discussion regarding theory development, two equivalent models are presented (Models 2 and 3 in Figure 1). Model 2 is a MIMIC Model and, therefore, disregards the proposed structure of

subindices as postulated in the TTCI. Though, for conceptual understanding, subindices are useful, their necessity in model testing can be questioned. Model 3 keeps the basic structure but takes out price competitiveness and natural resources. Here, they are modeled directly on the TTCI. This model takes into account that Dwyer, Forsyth and Rao (2000) showed the existence of price competitiveness on its own and acknowledges the special role attributed to natural resources in destination competitiveness (Crouch & Ritchie, 1999). These models should be seen as a starting point for discussion on how structured the theory should be.

Additionally, two competing models are presented (Models 4 and 5 in Figure 1). Model 4 focuses only on the subindices and models their effects directly on the three outcome variables. Similar to model 2, model 4 can be considered as challenging the necessity of a strict structure of the concept of destination competitiveness. Model 5 is the most extreme model regarding dissolving of the structure as it is a pure path model. However, some paths to the dynamic performance criterion have been restricted to zero (see also Table 4) as the corresponding independent variables reflect a clear static dimension. Figure 1 exhibits all five models.

**Figure 1 Equivalent and Alternative Models**



## METHOD AND DATA

Data on the pillars of the TTCI are publicly available and are used in this paper. For 129 countries data are available for both, the TTCI 2008 and 2009 (WEF, 2008, 2009). In order to increase sample size, both data sets have to be pooled. As destination competitiveness is expected to manifest itself in tourism performance, three performance criteria are incorporated in the models: arrivals per capita 2006/2007 (*arrivals*), log-transformed receipts per capita 2006/2007 (*receipts*) and difference in arrivals between 2001 and 2006 (*difference*) which introduces a simple dynamic measure. For estimation of the models (see Figure 1), *Mplus* was used (Muthén and Muthén, 1998). Two limitations regarding the different models

have to be mentioned: for Model 1, 3 and 4, correlations and error variances of the subindices had to be set to zero.

## RESULTS

Table 2 summarizes the models' fit criteria. Tables 3 and 4 depict the standardized results for all models.

**Table 2 Summary of Fit Criteria**

	CFI	TLI	sample-size adjusted BIC
Model 1, 2, 3	.911	.856	9097.62
Model 4	.962	.928	9072.54
Model 5	1	1.05	9068.11

Model 1, which is the original model as implied by the TTCI, explains two of the performance criteria rather well, i.e. the snapshot criteria *arrivals* and *receipts*. However, the growth criterion (*difference*) is not explained well. Both, *RF* and *BEI* have a positive influence on the TTCI, as expected. However, *RES* is negatively connected to the TTCI, which is clearly contrary to what is expected. The two equivalent models (Models 2 and 3) do not change anything when it comes to the paths of the resources variables. Interestingly, in all three models, natural resources cannot be identified to be of importance when it comes to predicting performance. Natural resources are considered to be one of the most basic factors increasing the attractiveness of a destination and acting as a pull factor to increase motivation to travel to that destination, and, hence, as a major driver of arrivals (Crouch and Ritchie 1999; Hassan, 2000; Hong, 2009). Two reasons might explain why differences in natural resources do not go hand in hand with success of a destination. Firstly, natural resources might be so basic that literally every destination has some of them and that the quantity is not important (on a national level). Secondly, natural resources might be important at a regional level, when it comes to the specific decision where to go, i.e. which region(s) are going to be visited. Consequently, natural resources on the national level might not be a good proxy. On national level, natural resources may only show whether or not there is any potential for tourism at all. Additionally, also environmental sustainability does not influence the TTCI. This is clearly in contrast to the theoretical discussion of the importance of (environmental) sustainability when it comes to destination competitiveness (Poon, 1993; Crouch and Ritchie, 2003; Hassan, 2000). However, it is in line with Gooroochurn and Sugiyarto's (2005) findings which were also not able to support such a relationship.

The three equivalent models show similar results when it comes to substantive meaning. For theory development it has to be decided whether some conceptual structure that is useful for theoretical considerations should be transferred to measurement of destination competitiveness or not. Data suggests that the distinct consideration of price competitiveness is sensible. Additionally, they show that based on statistical reasons one cannot distinguish between the 'structured' model as proposed by the TTCI (Model 1), a model that ignores subgrouping of the different pillars (Model 2), and a model where the price competitiveness and natural resources are each hypothesized not to be part of a subindex (Model 3).

**Table 3 Equivalent Models**

Model 1		Model 2	Model 3
		TTCI	TTCI
RF		.652***	.652***
Pol	.173**	.113**	.173**
Env	-.115	-.075	-.115
Saf	.406***	.265***	.406***
Hea	.413***	.270***	.413***
Prio	.386***	.252***	.386***
BEI		.598***	.657***
Air	.061	.036	.055
Ground	-.045	-.027	-.041
Tour	.765***	.458***	.697***
Ict	.362**	.217**	.330**
Price	.197**	.118**	.118***
RES		-.266***	-.265***
hum	.561***	-.15**	.565***
nat	.049	-.013	-.013
Cul	.538***	-.143**	.542***
		arrivals	difference
TTCI		.666***	.912***
R <sup>2</sup>		.444	.832

*p-value* <.01 \*\*\*, <.05\*\*, <.1\*

**Table 4 Alternative Models**

Model 4		Model 5		
		arrivals	difference	receipts
RF		.359***	.038	.563***
Pol	.147*			-.137*
Env	-.091			.009
Saf	.398***			-.177**
Hea	.425***			.197***
prio	.393***			.240***
BEI		.713***	-.103	.267***
Air	.115			.191***
ground	.019			.142*
tour	.718***			.221***
lct	.261*			.511***
price	.198***			.144
RES		.487***	-.326***	.152**
hum	.502***			.141
Nat	-.267**			.002
				.252***
Cul	.530***			-.084
R <sup>2</sup>		.516	.077	.813

*p-value* <.01 \*\*\*, <.05\*\*, <.1\*

The two proposed alternative models fit better. Model 4, which ignores the second-order grouping of the subindices into one index, increases the R<sup>2</sup> for the differences criterion. The somewhat increased fit of this model should add to the discussion on the conceptual definition of destination competitiveness. The primary concern in this model remains *RES*. The negative influence of *RES* on *difference* might be explained through a third variable, namely degree of development. Gooroochurn and Sugiyarto's (2005) findings point to a similar direction, where



they found clusters of similarly competitive countries that could be profiled by the level of development. The general development might act as a background variable, explaining the observed paths from the pillars (*hum, nat, cul*) via *RES* (negative) to *difference* (negative). Compared to Model 1, where there was a negative effect of *RES* on the TTCI, which had then hardly any effect on *difference*, in Model 4, the results seem to uncover some heterogeneity in the data. Typically, countries that are less developed are endowed with a multitude of natural and cultural resources, and, as they are usually at the beginning of their development of tourism, they have low arrivals and receipts, but a much higher increase in arrivals, compared to industrialized countries. This is in line with the results. However, also human resources, which are typically high in *industrialized* countries, show the same pattern. Consequently, the interpretation of this model is not straightforward. In Model 5, the same picture is presented. This model fits slightly better than Model 4. Here, the suspicion that general level of economic development might act as a background variable accounting for heterogeneity, is substantiated. For the resources variables, the disparity between *arrivals* and *receipts* on the one hand and *difference* on the other hand, becomes even more obvious. Human and cultural resources are negatively linked to *arrivals* and *receipts*, natural resources show a non-significant zero-relationship. Considering *difference*, cultural resources are now positively connected, whereas human resources do not have an influence (natural resources were set to zero due to the 'fixed' character, see above). Additionally, environmental sustainability has a negative effect on *difference*, which can also be explained by general economic development, as, generally, higher developed countries also have stricter environmental regulations. Compared to the other models (especially to Model 1-3), the  $R^2$  of *difference* is much higher in this model.

Though Model 4 and Model 5 fit better than Models 1-3, from a conceptual point of view, they are less elegant. Consequently, the results should stimulate the discussion on how important different input variables are, and whether the importance changes for subgroups of countries. Future research should discuss on how much structure within such a complex construct is necessary and how the structure should be operationalized.

## DISCUSSION AND CONCLUSION

Relaxing the conceptual structure of the TTCI reveals some issues that should be considered in future theory development. First, the unexpected relations of *RES* in Models 1-3 get a bit clearer when inspecting more direct influences of the input and outcome variables. Results suggest that consideration of heterogeneity may further clarify interpretation. Future research should aim at identifying whether the general economic development of countries should be integrated in a general model on destination competitiveness or not. Additionally, other causes of heterogeneity (observed or unobserved) should be explored. For example, Enright and Newton (2005) found that the factors influencing destination competitiveness are not homogeneous across different locations. Their findings suggest that the product mix and the targeted market segments may determine the importance of different factors influencing destination competitiveness. Recently, Croes (2010) has incorporated (unobserved) heterogeneity by estimating a model including fixed effects, taking into account differences that are country specific. In order to test for the many signs that heterogeneity might stem from country idiosyncrasies and the criticism that the TTCI might be more tailor-made for advanced economies, Model 4 was estimated separately for advanced economies and emerging and developing economies based on the International Monetary Fund's (2009) classification. Results show that the model fits indeed better for advanced economies (BIC 2803.77) than for emerging and developing economies (BIC 6325.15). Consequently, countries themselves seem to be a cause for heterogeneity. Taking into account for such differences seems to get a necessity, as also shown in Croes (2010).

Furthermore, it is questioned whether it is feasible at all to actually measure overall competitiveness in an undifferentiated way. Of course, a sound measure of competitiveness for the whole tourism industry which is also a reliable predictor of performance or growth is desirable. However, the tourism industry in all its heterogeneity is hard to capture in one single index. Just think of sun, sand and sea tourism on the one hand and city tourism on the other hand. Which destination is more competitive, the one that is successful in sun, sand and sea tourism or the one that is successful in city tourism? Questions that still need to be answered are how competitiveness in different kinds of tourism and markets is connected to overall competitiveness of a nation. In a theoretical sense, destination competitiveness lends itself to a hierarchical construct, i.e. countries will exhibit different levels of competitiveness in different parts of the industry as well as in different markets, and different regions of a country will not be equally competitive. How much of this complexity has to go into models of total competitiveness is yet unknown.

Additionally, an all-encompassing model might also be questioned from the demand side, as it implies that tourists perceive all destinations in an undifferentiated way (Zhang and Jensen, 2006). This implicit assumption is not realistic and is also contrary to the basic understanding of market segmentation. There is, therefore, the need to discuss how the concept of destination competitiveness can be brought closer to the central point, namely the visitor's experience (Crouch and Ritchie, 1999; Dwyer et al. 2003, Hong, 2009).

Still, research is needed to clearly differentiate between inputs into competitiveness and outcomes, or the manifestation of competitiveness (Lall, 2001). If competitiveness manifests itself in success criteria (i.e. competitiveness actually is success), the question remains unsolved how competitiveness is linked to quality of life that is often seen as the ultimate goal of (destination) competitiveness (Crouch and Ritchie, 1999; Dwyer and Kim, 2003; Hong, 2009). Additionally, other consequences of destination competitiveness should be considered. The role of attractiveness is not yet clarified. On the one hand, attractiveness can be seen as a goal of destination competitiveness, as included in Crouch and Ritchie's (2003) definition that a truly competitive destination is characterized by 'its ability [...] to increasingly attract visitors' (p. 2). On the other hand, attractors are also seen as a major factor driving destination competitiveness (Crouch and Ritchie, 1999, 2003; Enright and Newton, 2004). Consequently, it is not yet clear how destination competitiveness is embedded in its cause-effect surroundings.

Regarding performance criteria, the question remains whether the static measurement of performance or a growth oriented approach is more appropriate. It has to be discussed which destination is more competitive – the one that already yields high arrivals and receipts, or the one that is able to increase its arrivals faster than its competitors. An additional consideration on growth as an outcome of destination competitiveness can be found in Alavi and Yasin (2000). They extract that part of growth that is caused by the destination's competitiveness by means of the 'shift-share technique'. Therefore, other effects (e.g. the generally increasing numbers of journeys) can be excluded. This might provide a tool how the problematic *difference* criterion may become more reliable.

Research on destination competitiveness has evolved towards the development of measurement instruments. However, results are not yet in conformity. Therefore, the tremendous efforts that have been undertaken on a conceptual level so far should continue, inspired by empirical results that nowadays are available.

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