Tourism Economics, 2011, 17 (4), 725–751 doi: 10.5367/te.2011.0065

Tourism destination competitiveness: second thoughts on the World Economic Forum reports

JOSEF A. MAZANEC

Institute for Tourism and Leisure Studies, Vienna University of Economics and Business, Augasse 2–6, A-1090 Vienna, Austria. E-mail: mazanec@wu.ac.at. (Corresponding author.)

AMATA RING

BWZ, University of Vienna, Bruenner Strasse 72, A-1210 Vienna, Austria. E-mail: amata.ring@univie.ac.at.

The Travel and Tourism Competitiveness Reports of the World Economic Forum elaborate the Travel and Tourism Competitiveness Index (TTCI) as an overall measure of destination competitiveness for 130 economies worldwide. From a tourism management point of view, a measure such as the TTCI is expected to be instrumental in explaining and predicting the tourism performance of receiving countries. This study explores several ways to transform the TTCI into a formative structural model. Partial least squares path modelling, PLS regression, mixture modelling and non-linear covariance-based structural equation modelling are applied to examine the TTCI's predictive power. The analysis probes possible measures for improvement. The destination countries may be subject to unobserved heterogeneity with regard to how the various constituents of competitiveness act on tourism performance. Interaction phenomena seem to prohibit a simple cause–effect pattern and non-linear relationships show encouraging results.

Keywords: destination competitiveness; formative construct; partial least squares; mixture modelling; non-linear structural equation models

This study does not propose a new destination competitiveness index. Its purpose is much more modest as it builds on the Travel and Tourism Competitiveness Reports of the World Economic Forum (WEF, 2008a, 2009). The WEF reports provide an overall measure of destination competitiveness (DC) for 130 economies worldwide. The measure is called the Travel and Tourism Competitiveness Index (TTCI) and is intended to be used 'by all stakeholders to work together to improve the industry's competitiveness in their national economies, thereby contributing to national growth and prosperity' (WEF, 2008a, p xi). The report cannot achieve its objectives unless the competitiveness indicators compressed into the overall index exhibit significant relationships with tourism performance criteria. The TTCI, like a similar endeavour undertaken by the World Travel and Tourism Council, is expected to explain and predict the performance-related consequences of tourism activity (Mazanec *et al*, 2007). The analyses that follow will examine several modelling alternatives for incorporating the TTCI in such an explanatory system where it functions as a precursor of destination success. By exploring the predictive capabilities of the TTCI one may examine its claim of offering guidelines for developing competitiveness-enhancing strategies.

DC literature and the WEF system of tourism competitiveness

The DC literature rests on Porter's (1980) five forces of competition and his framework of the 'diamond of national competitiveness' (1990), though the usefulness of this model of competitiveness for the tourism industry has also been criticized (Hassan, 2000). There is not yet a rich tradition of destination competitiveness literature, but following Porter's seminal work, research on the competitiveness of tourist destinations has grown steadily. Up to now, the literature has dealt with understanding and explicating DC (Crouch and Ritchie, 1999; Dwyer *et al*, 2000, 2004; Hassan, 2000; Ritchie *et al*, 2001; Dwyer and Kim, 2003; Ritchie and Crouch, 2003; Vengesayi, 2003; Enright and Newton, 2004, 2005; Gooroochurn and Sugiyarto, 2005; Garau-Taberner, 2007), with some publications developing a conceptual model or index (Crouch and Ritchie, 1999; Hassan, 2000; Dwyer and Kim, 2003; Ritchie and Crouch, 2003, 2005). More recently, several authors have tried to take one step further by testing indices to identify the relevant factors of DC (Dwyer *et al*, 2004), detecting clusters of similar competing destinations (Gooroochurn and Sugiyarto, 2005) or evaluating an index's explanatory power (Mazanec *et al*, 2007). Recently, Hall (2007) criticized that, so far, the literature on DC has not discussed the philosophical and ideological underpinnings and underlined the need for in-depth reflection on the current situation of DC research. Up to now, there has been no general agreement on how to measure DC or whether this is at all feasible and reasonable, or what DC can influence or explain.

Destination competitiveness is said to serve several objectives: to increase the standard of living and the real income of the destination's citizens (Crouch and Ritchie, 1999; Dwyer and Kim, 2003; Dwyer *et al*, 2004), to contribute to the prosperity and the well-being of a society (Crouch and Ritchie, 1999), to generate more wealth (Crouch and Ritchie, 1999), to promote the country (Dwyer and Kim, 2003) and to promote the success of the tourism activity as measured by the number of visitors, tourism expenditure, market share, foreign exchange earnings and economic impacts on income and employment, and by providing satisfying experiences for visitors (Ritchie *et al*, 2001; Dwyer *et al*, 2004). Consequently, the literature indicates that destination competitiveness is, in fact, conceived as a latent variable capable of explaining the outcomes summarized above. Therefore, DC is 'not an end but a means to an end' (Dwyer and Kim, 2003, p 372).

Different models and indices of DC

Over the last decade researchers have developed conceptual models or indices to depict DC. Hassan (2000) builds on the theory of comparative advantage and the destination's ability to create a competitive market position out of comparative advantages. In particular, this author emphasizes the importance of demand orientation and environmental commitment. Environmental commitment and sustainable tourism are crucial not only per se, as most destinations depend on the uniqueness of the environment and nature, but also as a means for positioning the destination in a market niche (Hassan, 2000).

The most comprehensive work on DC has been published by Crouch and Ritchie, who have been focusing on destination competitiveness since the early 1990s (Ritchie and Crouch, 1993, 2000, 2003, 2005; Crouch and Ritchie, 1999; Ritchie *et al*, 2001). They have developed a complex model embracing a broad area of influencing factors that: (i) lie within the destination (qualifying and amplifying determinants, destination policy, planning and development, destination management, core resources and attractors, and supporting factors and resources); (ii) originate from the main area of a destination's tourism activities (competitive (micro)environment); or (iii) stem from outside the tourism industry (global (macro)environment). The Ritchie–Crouch model considers comparative and competitive advantages. The authors regard their model as continuously evolving and, given the stage of research, state that its main objective is to explicate destination competitiveness (Ritchie and Crouch, 2003). Ritchie and Crouch underline that the focus of DC is the destination experience, rather than the competition between enterprises (Crouch and Ritchie, 1999; Ritchie and Crouch, 2000). Their main concern is the link between destination competitiveness and sustainability, as 'competitiveness is illusory without sustainability' (Ritchie and Crouch, 2000, p 2).

Dwyer and Kim (2003) have developed a model which is slim and more parsimonious than the one proposed by Ritchie and Crouch (2003). In their model, Dwyer and Kim (2003) explicitly acknowledge *demand* as an important factor and add *socio-economic prosperity* as the required outcome, which reflects their view that destination competitiveness is not an end in itself.

Furthermore, the World Travel and Tourism Council (WTTC) initiated a *Competitiveness Monitor*, which aimed to make DC measurable by developing an index. The index recognizes the multidimensional nature of competitiveness as it includes elements which are supposed to constitute DC and relies on the theory of comparative advantage. It is composed of several indicators: price competitiveness, infrastructure development, environmental quality, technology advancement, human resources, level of openness, social development and human tourism. The indicators are made up of 23 variables in total, which come from sources such as the World Bank or the United Nations Development Programme and, therefore, are readily available and comparable (Gooroochurn and Sugiyarto, 2005).

The Travel and Tourism Competitiveness Index

The most recent attempt to measure destination competitiveness was undertaken by the World Economic Forum (WEF). The Travel and Tourism Competitiveness Report (TTCR) is a relatively new publication of the Global Competitiveness Network of the WEF (WEF, 2008c), which was first published in 2007. The core element of the TTCR is the Travel and Tourism Competitiveness Index (TTCI), representing an aggregate value for the travel and tourism competitiveness of each nation (WEF, 2008a, p xiii). The TTCI results for 2008 and 2009 (WEF, 2009) to be used in the forthcoming analyses are fully comparable, where only one country with incomplete data (Uzbekistan) had to be eliminated.

The 'flagship publication' of the Global Competitiveness Network is the Global Competitiveness Report (GCR), which has been published annually since 1979. The aim of the GCR has been to set up an index of national competitiveness which incorporates both microeconomic and macroeconomic factors and provides benchmarking tools for business leaders as well as national policymakers (WEF, 2008b, p 3). The WEF defines competitiveness 'as *the set of institutions, policies, and factors that determine the level of productivity of a country*' (WEF, 2008b, p 3, original emphasis). Consequently, the WEF focuses on productivity to be at the centre of competitiveness, which follows Porter's seminal ideas (Porter, 1990). In the TTCI the WEF pursues the same approach, as it 'aims to measure *the factors and policies that make it attractive to develop the T&T sector in different countries*' (WEF, 2008a, p 4, original emphasis).

The TTCI consists of three subindices: the travel and tourism (T&T) regulatory framework subindex; the T&T business environment and infrastructure subindex; and the T&T human, cultural and natural resources subindex. These three subindices are made up of 14 pillars: policy rules and regulations, environmental sustainability, safety and security, health and hygiene, prioritization of T&T, air transport infrastructure, ground transport infrastructure, tourism infrastructure, ICT infrastructure, price competitiveness in the T&T industry, human resources, affinity for T&T, natural resources and cultural resources (see Table 1). These 14 pillars are composed of 72 variables in total, which include both hard econometric data and opinion survey judgements. The survey data are taken from the World Economic Forum's Executive

Table 1. Competitiveness subindices and their scales in the WEF system.

T&T regulatory framework	
1.	Policy rules and regulations
2.	Environmental sustainability
3.	Safety and security
4.	Health and hygiene
5.	Prioritization of T&T
T&T business environment and infrastructure	
6.	Air transport infrastructure
7.	Ground transport infrastructure
8.	Tourism infrastructure
9.	ICT infrastructure
10.	Price competitiveness in the T&T industry
T&T human, cultural and natural resources	
11.	Human resources
(12.	Affinity for T&T)
13.	Natural resources
14.	Cultural resources

Opinion Survey; hard data are contributed by several partner institutions (WEF, 2008a, pp xi, 25). In order to make hard data comparable with survey data, the hard data indicators are transformed into a 7-point scale. At each step of aggregation – from 72 variables to 14 pillars to 3 subindices to TTCI – the next higher level is always calculated as an unweighted average.

Both the GCR and the TTCI have been criticized, primarily with regard to methodological issues (Lall, 2001; Crouch, 2007; Squalli *et al*, 2008). The main points of criticism are: (i) the composition of the index, especially how hard data and survey data are combined (Lall, 2001; Squalli *et al*, 2008); (ii) the use of weak theoretically justified variables (Lall, 2001; Crouch, 2007); (iii) the comparability of countries on different levels of development (Lall, 2001; Crouch, 2007); (iv) the arbitrary weighting of variables (Crouch, 2007; Squalli *et al*, 2008); and (v) the reliability and validity of the index and the statistical methods used to demonstrate the index's usefulness (Lall, 2001; Crouch, 2007). Lall (2001) sums up that 'the WEF's statistical analysis does not allow for strong causal or policy conclusions – it simply shows that a whole lot of variables move together with each other and nothing more' (p 1515).

In the remainder of this article the results of the most recent TTCI for 2008 and 2009 will be examined in greater detail. Compared to all other indices published and used so far, the WEF report 2008 takes a step towards explanation and prediction, as it relates the overall TTCI to (the logarithmically transformed) tourist arrivals and tourism receipts for 2006, yielding correlation results of 0.65 and 0.75. There are two precautions to consider in these relationships. (i) As country size is ignored, the comparability over 130 receiving countries is limited. (ii) The competitiveness factor named *Affinity for T&T* includes tourism expenditure and receipts as a percentage of GDP; placing the same variable in the explanatory and dependent sets introduces a tautological element and disturbs the cause–effect conclusions. Both shortcomings (i) and (ii) must be repaired to eliminate concerns of spurious association. Making one further step towards explanation requires changing the WEF strategy of determining higher-level indices with unweighted averages of lower-level indices. The weights within such an index system may be determined by managerial or expert judgement and there are examples of this strategy in the DC literature (Enright and Newton, 2004). However, an objective procedure subjecting the weights to statistical estimation is preferable. It reveals the strength of relationship within a system intended to explain some consequences of travel and tourism competitiveness. In the following model specification the hierarchy of indices begins with the second level of the 14 pillars. They remain unchanged compared to the WEF formulation, where they represent unweighted averages made up of about 70 variables of hard data and opinion survey results (see WEF, 2008a, pp 463–466, for the sources).

Figure 1 transforms the system of second-level indices proposed by the WEF report into a joint measurement and structural model. In the WEF framework the TTCI is conceived as a composite construct resulting from the three subindices, T&T regulatory framework, T&T business environment and infrastructure, and T&T human, cultural and natural resources (WEF, 2008a, p 7). The TTCI clearly represents an emergent construct and the three subindices are composed of formative indicators too. While latent variable models in consumer or tourist behaviour research may sometimes be ambiguous with respect to

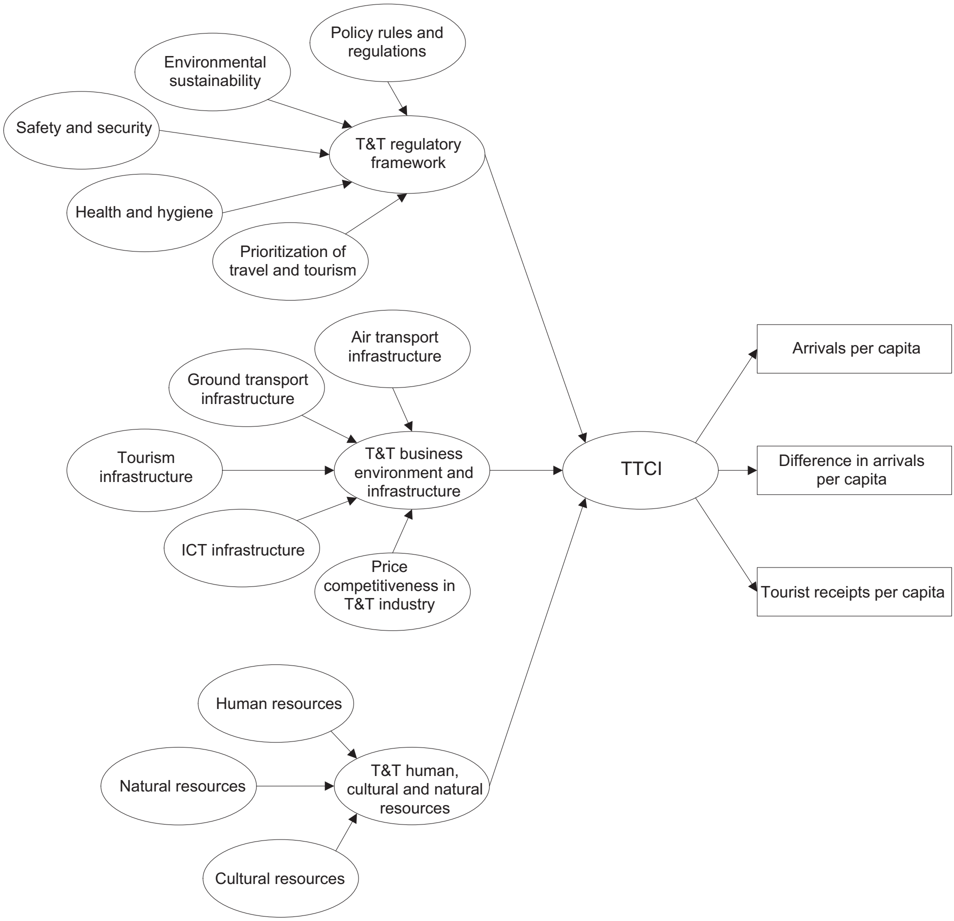

Figure 1. Modified conceptual model of the WEF system of TTCI.

choosing formative versus reflective indicators (Diamantopoulos and Winklhofer, 2001; Rossiter, 2002; Diamantopoulos, 2008), the competitiveness case is obvious. There is nothing like the latent quality of a receiving country's named destination competitiveness that mysteriously determines the country's tourism success or failure. All latents are just shortcuts and compound variables meticulously compiled with numerous constituents. Consequently, we are facing an elaborate definition of TTCI excelled in richness and complexity only by the Ritchie and Crouch system of destination competitiveness (Ritchie and Crouch, 1993, 2000, 2003, 2005; Ritchie *et al*, 2001). Again, the diagram in Figure 1 captures the second and third levels of TTCI formation and does not portray the first level, where 72 individual variables are condensed into the 14 pillars of the TTCI. Note that the tautologically suspect *Affinity for T&T* has been removed from the list of indices forming the *Resources* construct.

The TTCI is considered to manifest itself in three measures of tourism performance: (i) arrivals per capita in 2006 (2007); (ii) difference in arrivals between 2001 and 2006 (2007) per capita; and (iii) tourism receipts 2006

(2007) per capita. The TTCI is an antecedent of these effects, assigning them the role of reflective indicators of the overall competitiveness construct. Building ratios with respect to the population of the receiving countries mitigates the bias of country size. Measure (ii) injects a simple dynamic component; (iii) acknowledges the variation in purchasing power actually activated by the tourist influx. Receipts are the only variable where a few countries attain extreme values. To avoid potential bias caused by outliers, the receipts per capita were log-transformed.

Partial least squares estimation

According to the results of a large-scale comparative simulation study by Reinartz *et al* (2009), PLS analysis should be preferred over covariance-based structural equation modelling when the focus is on prediction and theory development and the sample size is in the range between 100 and 250 observational units. As the annual WEF reports do not involve more than 130 destination countries, the first approach chosen here relies on PLS path modelling and provides separate estimation results for 2008 and 2009. A complementary PLS regression will be run for assessing the system's predictive power when the predetermined grouping of competitiveness criteria into three subindices gets relaxed.

PLS path model

Squeezing the WEF competitiveness indicators into a predictive model perfectly represents a situation which the inventor of PLS characterized as 'data-rich and theory-primitive' (Wold, 1982, p 4f). The TTCI alone does not constitute a theory. It is nothing more than a comprehensive definition of destination competitiveness. By relating the TTCI and its subindices to a set of dependent variables, it may be extended into a simple 'theory'. Conceptualizing this new system in terms of a PLS path model benefits from the typical advantages ascribed to PLS modelling: (i) the sample size of receiving countries is small; (ii) the system contains (many) formative and (few) reflective indicators; (iii) considering the 7-point index scales in the WEF system, multivariate normality and a true interval-scale property are poorly approximated; (iv) multicollinearity is ubiquitous; and last but not least, (v) the theoretical underpinnings of the relationships posited are rather weak. PLS estimation is compliant in all these respects and offers a soft-modelling alternative to covariance-based structural equation models (CBSEMs) (Fornell and Bookstein, 1982). PLS also avoid the identification problems that often plague the formative specifications of CBSEMs (Hildebrandt and Temme, 2006).

Destination competitiveness is expected to entail tourism performance effects such as tourist arrivals or receipts. Formally, this is equivalent to stating that DC manifests itself in these observables. The TTCI subindices are also defined ('formed') by a number of indicators. Hence, there are formative as well as reflective indicators and the system corresponds to an estimation exercise introduced as 'PLS mode C_{12}' (Wold, 1982, p 11; also see 'Model 3' discussed in Fornell and Bookstein, 1982, p 447). For each of *n* tourism receiving countries, $i = 1,\ldots,n$, the measurement model conceptualized in Figure 1 is equivalent to (1)–(3). For convenience, index i is suppressed; all variables are standardized. (1) and (2) represent the outer model, with (1) being the formative section. Following the index constructions in the WEF reports, the three WEF subindices are formed by their indicators without any surplus variance. However, the specification in (1) does not enforce predefined weights (uniformly set at 1.0 in the WEF system), but lets the $\omega_{i,j}$ vary according to their predictive potential regarding the tourism performance indicators. (2) is the reflective part where the TTCI is expected to cause three tourism performance criteria.

$$\begin{pmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \end{pmatrix} = \begin{pmatrix} \omega_{1,1} & \omega_{1,2} \ldots & \omega_{1,5} & 0 & 0 & \ldots 0 & 0 & 0 & 0 \\ 0 & 0 & \ldots 0 & \omega_{2,6} & \omega_{2,7} \ldots & \omega_{2,10} & 0 & 0 & 0 \\ 0 & 0 & \ldots 0 & 0 & 0 & \ldots 0 & \omega_{3,11} & \omega_{3,12} & \omega_{3,13} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \\ \ldots \\ x_{13} \end{pmatrix} \tag{1}$$

$$\begin{pmatrix} y_1 \\ y_2 \\ y_3 \end{pmatrix} = \begin{pmatrix} \pi_1 \\ \pi_2 \\ \pi_3 \end{pmatrix} \eta + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \end{pmatrix} \tag{2}$$

where

- ξ = vector of subindices of the TTCI
- x = formative indicators making up ξ_1 to ξ_3 (see Table 1 and Figure 1)
- ω = weights for x generating ξ
- π = loadings in the measurement model for η
- y = effects dependent on the TTCI (reflective indicators)
- η = the TTCI construct
- ε = error term.

The structural part of the model (inner model) for each country i (i suppressed) is given by

$$\eta = (\beta_1 \beta_2 \beta_3) \begin{pmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \end{pmatrix} + \upsilon \tag{2}$$

where

- β = coefficients for the regression of the TTCI on its antecedents
- υ = residual.

Equation (3), again, does not merely accumulate the index values of the three subindices of destination competitiveness to define the TTCI, but allows for individual β weights for *Regulatory framework*, *Business environment* and *Resources*.

The SmartPLS software (Ringle *et al*, 2005) is applied for estimating the outer and inner weights, loadings and path coefficients of the system specified in (1)–(3). While the WEF reports compile their competitiveness indices with equally weighted component parts, the coefficients in (1)–(3) are expected to reveal the contributions of the scales to forming the three subindices and the importance of these three pillars in building the TTCI. However, the immunity of PLS path modelling to multicollinearity only applies to reflective indicators.

Table 2. Outer weights for the three subindices of the TTCI (2008 and 2009).

Subindex	Scale	Estimate 2008	Estimate 2009	*t*-value[a] 2008 2009
T&T regulatory framework	Policy rules	0.21	0.15	1.83 1.41
	Environmental sustainability	–0.15	–0.09	1.09 0.82
	Safety	0.48	0.36	6.20 5.17
	Health	0.36	0.46	4.96 7.92
	Prioritization	0.34	0.40	5.04 5.85
T&T business environment	Air transport	–0.04	0.04	0.36 0.28
	Ground transport	0.30	0.23	1.62 1.80
	Tourism infrastructure	0.81	0.67	5.59 4.83
	ICT	0.14	0.27	0.62 1.06
	Price competitiveness	0.33	0.25	3.83 2.91
T&T human, cultural and natural resources	Human capital	0.73	0.88	5.90 9.94
	Natural resources	–0.35	–0.21	3.30 2.63
	Cultural resources	0.30	0.15	2.09 1.19

Note: [a]Based on bootstrapping with 1,000 resampling runs.

In the case of a set of formative indicators, the weights are estimated iteratively by multiple regression. Hence, they may become unstable if collinearity is substantial. So far, there is no fully convincing remedy for neutralizing or circumventing the multicollinearity problem (Diamantopoulos and Riefler, 2008; Diamantopoulos *et al*, 2008). To assess the stability of the estimates, two measures are taken: (i) the analysis gets repeated for the 2008 and 2009 data sets; (ii) for each year *t*-values for the weights and path coefficients are computed via bootstrapping, with 1,000 resampling runs.

Table 2 exhibits the outer weight estimates of the 13 (14 less *Affinity for T&T*) scales for generating the three subindices of the TTCI. Separate estimates for the 2008 and 2009 data sets are listed. In determining the weights, loadings and path coefficients, PLS seek to achieve the best possible predictions of the TTCI construct and its three manifest tourism performance criteria. According to the bootstrapping results for 2008 and 2009, the *Regulatory* subindex seems to get significant input from *Safety*, *Health* and *Prioritization*, while *Policy rules* and *Environmental sustainability* fail to produce significant ($t > 1.96$) and stable

Table 3. Intercorrelations within the three subindices of the TTCI (2008).

Regulatory framework	Policy rules	Environmental sustainability	Safety	Health	Prioritization
Policy rules	1.000	0.592**	0.508**	0.611**	0.537**
Environmental sustainability		1.000	0.464**	0.409**	0.382**
Safety			1.000	0.554**	0.310**
Health				1.000	0.328**
Business environment	**Air transport**	**Ground transport**	**Tourism infrastructure**	**ICT**	**Price competition**
Air transport	1.000	0.774**	0.749**	0.800**	–0.367**
Ground transport		1.000	0.698**	0.864**	–0.332**
Tourism infrastructure			1.000	0.817**	–0.531**
ICT				1.000	–0.516**
Resources	**Human**		**Natural**		**Cultural**
Human	1.000		–0.037		0.622**
Natural			1.000		0.205*

Note: $^{*}p = 0.05$; $^{**}p = 0.01$.

estimates. The *Business* subindex appears to be based reliably on *Tourism infrastructure* and *Price competition*. In the case of the insignificant estimates for *ICT* and *Air* and *Ground transport*, the particularly high amount of multicollinearity must be taken into account (see the dendrogram in Figure 3). In the *Resources* pillar, the *Cultural* scale is insignificant for the 2009 sample. The implausible finding that the *Natural* scale decreases the scores of its formative construct significantly in both samples necessitates further investigation; two potential causes will be explored. The unexpected sign might be regarded as indicative of (i) unobserved heterogeneity prevailing in the 2 × 129 countries database or (ii) non-linear relationships and interaction effects among the scales.

The pairwise correlations within each formative set of indicators in Table 3 (exemplified by the 2008 data) indicate the amount of multicollinearity. It becomes evident that the intercorrelations among several index subscales lead to unstable weight estimates for half of the indicators. As a consequence, the attempt of attributing competitive strength conclusively to the individual scales is bound to fail. Note, however, that the joint predictive power of the variables combined into the three subindices is not affected. *Regulatory*, *Business* and *Resources* still get meaningful aggregate values, though the contributions of their subscales cannot be soberly disentangled.

At the opposite end of the competitiveness model, the influence of the TTCI on two of its reflective indicators *Arrivals*, *Difference* and *Receipts* (Table 4) is firmly established. For the two 'static' indicators, 2008 and 2009 give rise to very similar and significant estimates. The 'dynamic' component *Difference* is least stable; a result confirming the findings in Mazanec *et al* (2007) regarding the slope of arrivals as a dependent variable within a covariance-based model adjusted to the WTTC Competitiveness Monitor. Taking the squares of the loadings shows that the TTCI accounts for satisfactory portions of the variance

Table 4. Outer loadings for the three reflective indicators of the TTCI (2008 and 2009).

Scale	Estimate 2008	Estimate 2009	*t*-value[a] 2008 2009
Arrivals per capita	0.89	0.85	14.00 18.60
Difference in arrivals per capita	0.69	0.29	5.36 2.63
Tourist receipts per capita	0.87	0.92	13.15 17.03

Note: [a]Based on bootstrapping with 1,000 resampling runs.

Table 5. Path coefficients for the three antecedents of the TTCI (2008 and 2009).

Subindex	Estimate 2008	Estimate 2009	*t*-value[a] 2008 2009
Regulatory	0.53	0.64	4.21 8.50
Business	0.48	0.49	6.32 5.66
Resources	–0.18	–0.22	2.08 3.32

Note: [a]Based on bootstrapping with 1,000 resampling runs.

of *Arrivals* and *Receipts*. *Difference* misses the 50% level by a narrow margin in 2008 and produces a negligible value for 2009.

The estimates of the path coefficients and their *t*-values in Table 5 indicate that the contributions of the *Regulatory* and *Business* components are highly stable. The *Resources* factor persistently produces significant estimates with an implausible negative sign. This effect has already announced itself in the *Natural resources* scale of Table 2 and underscores the necessity of examining unobserved heterogeneity and non-linear phenomena. Overall, the explained variance of the PLS re-engineered TTCI amounts to 0.68 (2008) and 0.77 (2009). Its predictive ability excels the correlation coefficients between the unweighted compilation of the TTCI and the log-transformed arrivals (0.65) and receipts (0.75) reported by the WEF (2008a). The PLS result outstrips the WEF correlation analysis, though the WEF-TTCI contains the tautologically suspect *Affinity for T&T* scale which incorporates receipts; this means that, in the WEF framework, receipts are correlated with a partially receipts-dependent variable and, therefore, *Affinity* has been removed from the PLS path model specification.

PLS regression

If a set of explanatory variables is subject to substantial multicollinearity, PLS regression (PLSR) provides an effective solution. This procedure transforms the highly collinear predictors into orthogonal components in a data-driven manner. Hence, it differs from PLS path modelling in a similar way as exploratory from confirmatory factor analysis. It will be instructive to expose the TTCI data to PLSR to get a benchmark result from a methodology which is atheoretic but uncompromising in achieving the best possible predictions.

The three antecedents of the TTCI proposed in the WEF system represent a small but noticeable theoretical element introduced into destination competitiveness research. Prior knowledge and reasoning is applied to classify numerous competitiveness indicators and sort them into substantively meaningful compound indices. (For the moment, disregard the unsatisfactory equal weighting.) To examine whether this endeavour is worthwhile, one needs a benchmark for comparison. PLSR is chosen as a suitable candidate for this comparison exercise. It belongs to the same modelling framework, but unlike the PLS path model specified before, it does not predetermine the number and composition of the components to be extracted from the set of predictors. PLSR ignores the prior knowledge about how the 13 subindices are aggregated into meaningful sets. Compacting the scales into components circumvents the collinearity problem one would have to face with ordinary multiple regression (see Tenenhaus *et al*, 2005, p 168).

The *pls* package of the *R* system is used (Mevik, 2006; Wehrens and Mevik, 2007). Figure 2 (a and b) exhibits the root mean squared error of prediction (RMSEP) gained for the set of three dependent variables with 1–10 components for the 2008 and 2009 data sets. The cross-validation (CV) is based on a leave-one-out procedure; the superimposed curves denote that the CV and its bias-corrected estimate (adjCV) are almost identical. Two components for 2008 and four components for 2009 appear to be a good compromise for all three tourism performance indicators, *Arrivals*, *Receipts* and *Difference*. The explained variance of the three performance criteria reaches 41%, 76% and 15% for 2008 and 46%, 79% and 27% for 2009. Again, *Difference* withstands prediction most stubbornly. The PLSR run suggests that the restrictions imposed by the 'three-subindices' model do not deteriorate the predictive ability of the unrestrained system of the 13 subindices. In other words, it is sound to adopt the theoretical element of positing three subindices of DC.

Considering unobserved heterogeneity among the destination countries

The competitiveness indicators cover a wide range of 129 countries in very diverse stages of economic development. Misleading conclusions may be drawn owing to marked heterogeneity in the observed data. Gooroochurn and Sugiyarto (2005) give credit to this assumption and condense the WTTC competitiveness profiles of 93 countries into a four-cluster solution. A simultaneous approach is preferred here. It combines the PLS framework with finite mixture modelling, thereby generating class probabilities for each individual country

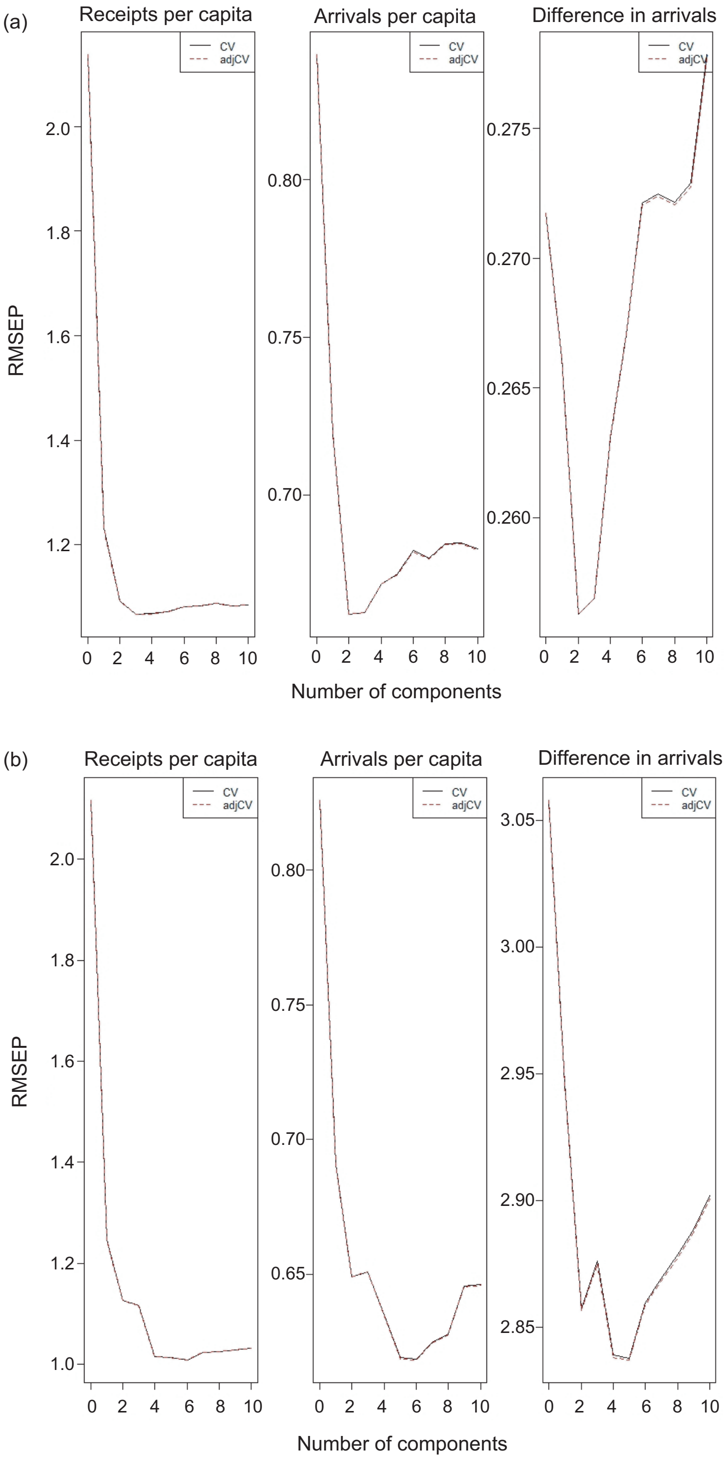

Figure 2. Root mean squared error of prediction in PLSR: (a) 2008; (b) 2009.

Table 6. Goodness-of-fit criteria for the 2–6 class solutions (pooled sample).

	Number of classes				
	2	3	4	5	6
AIC	276.83	289.24	443.74	450.56	557.51
BIC	308.81	338.99	511.25	535.83	660.55
CAIC	308.84	339.04	511.32	535.92	660.66
Entropy	0.99	0.67	0.53	0.58	0.68
	Size of classes (%)				
	1.5	1.27	1.1	1.2	1.9
	98.5	71.4	52.5	51.1	52.8
		27.4	18.9	19.1	6.6
			27.5	24.5	29.3
				4.1	5.6
					3.8

and a class-specific set of parameter estimates for the three antecedents of the TTCI. This corresponds to the response-based approach developed for mastering unobserved heterogeneity in market segmentation studies (Wedel and Kamakura, 1998). It is important to emphasize that heterogeneity under the response-based philosophy relates to the strength and direction of how the predictors impact on an endogenous variable. Consequently, one cannot rule out that countries exhibiting fairly different levels of *Regulatory*, *Business* and *Resources* emerge in the same response-based group.

The FIMIX-PLS procedure (Hahn *et al*, 2002; Ringle *et al*, 2008) is employed to account for the discrete heterogeneity residing in the data set of the destination competitiveness of 129 countries. Recent comparison studies of heterogeneity-capturing PLS methods by Esposito Vinzi *et al* (2007) and Sarstedt (2008) demonstrate that the FIMIX-PLS routine as implemented in SmartPLS excels five rivalling approaches. One restriction ought to be emphasized. FIMIX-PLS assumes that the heterogeneity resides in the path coefficients of the structural model and does not affect the formative submodels. Therefore, the classes of destination countries detected are interpreted with respect to how they combine the *Regulatory*, *Business* and *Resources* subindices into a destination competitiveness compound. For the data at hand, this restriction is not really relevant. Considering the small sample size estimating class-specific weights and loadings for all indicators would be prohibitive. The 2008 and 2009 data sets must be pooled to allow estimating specific path coefficients for up to six classes.

Finite mixture PLS results are generated for two to six latent classes. In a recent simulation study the consistent Akaike information criterion (CAIC) turned out to yield the most reliable recommendation regarding the number of classes to be considered in FIMIX-PLS estimation (Sarstedt and Salcher, 2007). The information criteria collected in Table 6 are univocal and suggest that there is no need for class-specific estimates of the path coefficients. Despite this finding, one may still want to explore the implausible coefficient for the

Table 7. Path coefficients for the three-class solution.

	Class No 1	Class No 2	Class No 3
Size (%)	1.2	71.4	27.4
Regulatory → TTCI	0.35	0.77	0.17
Business → TTCI	4.64	0.43	0.45
Resources → TTCI	–2.18	–0.30	0.10

Resources dimension. It might be instructive to verify whether the negative sign for *Resources* is a universal phenomenon or rather class specific. In this case, the fit criteria do not recommend extracting more than three classes of destination countries. The extremely skewed two-classes solution must be ignored.

The heterogeneity in the path coefficients becomes obvious in Table 7. The tiny class 1 is ignored. For the majority of countries (class 2), the competitiveness-enhancing effect of the *Regulatory* subindex meets with the negative influence of the *Resources* index. The *Business* environment has clearly positive repercussions on overall competitiveness everywhere. Only a 27% minority of destinations (class 3) exhibits a positive influence of the *Resources* index. Obviously, the attempt of accounting for unobserved heterogeneity on a structural level does not eliminate the reverse effect of the *Resources* factor.

Pursuing interaction effects with a non-linear covariance-based SEM

Reinartz *et al* (2009) demonstrate that CBSEMs outstrip PLS in terms of parameter consistency and accuracy once the sample size exceeds a threshold of 250 observational units. CBSEMs also prove to be extremely robust with respect to violations of the underlying distributional assumptions. This justifies an attempt to specify the TTCI system in a CBSEM framework. To fulfil the sample requirements, the 2008 and 2009 data are pooled. Therefore, each country is represented twice and contributes two data records. This is admissible as the TTCI operates in relative terms (that is, there are always winners and losers), thus excluding a time-dependent bias (that is, an overall trend of DC improvement).

The PLS path model and PLS regression demonstrate that the three subindices of competitiveness in the TTCI system contain elements with predictive power regarding overall destination competitiveness and its tourism performance indicators. However, the problem of the implausible role of the *Resources* index could not be resolved satisfactorily by accounting for unobserved heterogeneity. The linear index system may be too simple to capture the cause–effect relationships. One example of further hypothesizing will be pursued in this section. Consider the interplay between the potential of resources in a destination and its level of business environment. There are two scenarios: (i) resources are not transformed properly into competitive advantage unless the business environment is sufficiently developed. Then the *Resources* and *Business* factors are expected to be mutually enforcing if both are on a high level, and are likely to be deprived of their positive influence with one or both factors on a low level. (ii) Alternatively, one must consider that the *Human resources* indicator builds on education and qualification of the labour force. High levels of both *Business* and *Resources* are typical for many industrialized countries less dependent on tourist receipts. A positive or negative interaction term should indicate dominance of one of the two scenarios within the pooled sample.

Given this modest step toward theory, building a testing framework more rigorous than the PLS soft-modelling approach is appropriate. Hence, a CBSEM will be specified. In addition to the constructs already employed in the previous index system, an interaction term *Business* × *Resources* is introduced. Hence, overall competitiveness is now made up of four antecedents: *Regulatory*, *Business*, *Resources* and *Business* × *Resources*. An advanced second-generation software system providing a variety of algorithms for full-information maximum likelihood estimation such as Bengt Muthén's *Mplus* allows for modelling non-linear latent terms on the structural level (Muthén and Muthén, 1998).[1] Two limitations need to be mentioned: (i) the 2008 and 2009 data sets must be pooled to attain an acceptable sample size and (ii) correlation parameters within the set of the four competitiveness dimensions cannot be estimated. Given the dominant cross-sectional variation, the pooling is not critical. All scales, including the arrivals data, are much more indicative of the level reached rather than of the temporal change. Since the database remains the same as that used for the PLS runs (which elicited the interaction hypothesis), the analysis represents an exploratory exercise. The authors do not claim to have confirmed a new destination competitiveness model.

Columns 1 and 2 in Table 8 show the unstandardized path coefficients and their significance values for the three main effects on overall competitiveness and the *Business–Resources* interaction. Introducing the interaction leads to an improvement in goodness-of-fit (as measured by the Bayesian information criteria) from 2,471.52 (without interaction term) to 2,455.55 (with *Business* × *Resources*). Besides the highly significant contributions of *Regulatory* and *Business* ($p < 0.01$), the *Resources* factor misses the 0.05 significance level by a narrow margin. The interaction term produces a significant negative coefficient ($p = 0.013$) that partly corrects the individual effects of *Business* and *Resources*. Therefore, scenario (ii) illustrated above seems to prevail. Regarding the composition of the three subindices of competitiveness, the CBSEM confirms the stable coefficients of the same subset of indicators, namely *Safety*, *Health* and *Prioritization* to *Regulatory*; *Infrastructure*, *ICT* and *Price* to *Business*; and the (now all positive) contributions of the *Human*, *Nature* and *Culture* scales to *Resources*.

A second attempt to explore non-linear relationships is tempting. It utilizes the strategy of Mazanec (2007), who demonstrated how to capture the theoretically non-linear hygiene and delight factors in a structural equation model of tourist satisfaction. Table 8 (columns 3 and 4) also offers an alternative specification that accounts for non-linearities in the *Resources* factor. In this model *Resources* exert a polynomial effect composed of a linear and a quadratic term. Actually, the linear influence of *Resources* experiences a subtle but significant parabolic correction indicating diminishing returns of a country's endowment with *Resources*. The goodness-of-fit decreases slightly in comparison

Table 8. Path coefficients of non-linear SEMs (pooled sample 2008 + 2009).

TTCI on ...	Estimates with interaction term	*p*-values	Estimates with parabolic term	*p*-values
Regulatory	0.089	0.005	0.086	0.014
Business	0.232	0.004	0.039	0.106
Resources	0.171	0.067	0.087	0.042
Business × resources	–0.027	0.013		
Resources × resources			–0.003	0.016
BIC	2,455.55		2,464.48	

with the interaction model, and the *Business* factor loses its significance. Hence, the modelling alternative with a joint interaction and quadratic effect was not pursued further.

To sum up, the exploratory and tentative covariance-based analyses (with a pooled but still small sample) suggest that an advanced explanatory model of destination competitiveness very likely will have to incorporate non-linear relationships. The *Resources* dimension in particular seems to be a serious candidate for being entered in interaction terms or subject to a declining marginal effect.

Conclusions and directions for future research

Unsurprisingly, many unresolved problems arise from a voluminous index system like the WEF's TTCI: an infant stage of theory and ambiguity of concepts; relevance and aptitude of tourism performance criteria; multi-layered cause–effect relationships within the set of competitiveness factors; non-linearity and interaction effects; choice of destination level (country, region, resort); tourism market or market segment definition; availability, reliability and congruity of data; multicollinearity; time lags; longitudinal and cross-sectional heterogeneity . . . to name a few. Explanatory and predictive power is just one item on the research agenda.

Predictive power and non-linear relationships

Table 9 summarizes the lesson learned from the various model specifications. It shows the R^2 for the correlation analysis of the WEF report 2008 and for the PLS path model. The PLS regression result is included as it highlights whether there is something to gain by removing the predefined three-factor structure. The mixture model is excluded. It is neither supported by its overall fitness criteria nor by solving the *Resources* puzzle. If embedded in a model with explicit dependent variables such as arrivals or receipts, the WEF system predicts these standard tourism performance measures to some degree. Relieving the assumption of exactly three predetermined subindices of competitiveness (as done in PLS regression) does not improve the explained variance of the dependent variables. This may be interpreted as an

Table 9. Summary of predictive ability.

R^2	WEF report 2008	PLS path model	PLS regression	Non-linear CBSEM
Arrivals				
2008	0.42	0.79	0.41	–
2009	–	0.72	0.46	–
2008 + 2009 pooled	–	–	–	0.43
Difference in arrivals				
2008	–	0.48	0.15	–
2009	–	0.08	0.27	–
2008 + 2009 pooled	–	–	–	0.03
Receipts				
2008	0.56	0.76	0.76	–
2009	–	0.85	0.79	–
2008 + 2009 pooled	–	–	–	0.87
Strengths	–	Feasible with small sample; separate estimates for 2008 and 2009	Relaxes the three-subindices structure; copes with multicollinearity	Solves the *Resources* puzzle
Weaknesses	Equal weights; tautology in the *Affinity* scale	Implausible sign for *Resources*; suffers from multi-collinearity	Data driven (atheoretic); implausible sign for *Resources*	One insignificant and one implausible coefficient within the *Regulatory* and *Business* subscales

encouragement to develop further the 'theory' regarding determinants of destination competitiveness. Generating theory means imposing restrictions on data. Postulating three antecedents of destination competitiveness (namely, *Regulatory*, *Business* and *Resources*) is one step in this direction. If, in a model without a central DC construct, all the 13 subindices were related to each of three performance measures, 39 coefficients would have to be estimated. Modelling three intervening domain-specific competitiveness factors and one compound construct of overall destination competitiveness brings the number down to 19. If, however, the restrictions are too severe, the system may lose explanatory and predictive power. According to the preceding results, the linearity assumption seems to be too restrictive and responsible for erroneous estimates regarding the *Resources* factor. Introducing non-linear terms capturing interaction and diminishing returns proves to be a promising line of reasoning in future research.

It is intriguing to gain a glimpse of countries' competitiveness ratings that would result from the performance-dependent weighting of the subindices. Table 10 makes such an attempt. It rests on the parameter estimates of the

Table 10. Comparison of competitiveness ratings.[a]

Country	CBSEM estimated TTCI score 2008	CBSEM estimated TTCI score 2009	WEF rank 2008	WEF rank 2009
Cyprus	3.790	3.764	24	21
Iceland	3.759	3.743	11	16
Malta	3.760	3.725	25	29
Hong Kong SAR	3.672	3.712	14	12
Luxembourg	3.708	3.700	20	23
Austria	3.706	3.697	2	2
Estonia	3.697	3.697	26	27
Greece	3.653	3.679	22	24
United Arab Emirates	3.612	3.669	40	33
Ireland	3.615	3.650	21	18
Singapore	3.579	3.625	16	10
Barbados	3.649	3.617	29	30
Croatia	3.598	3.615	34	34
Norway	3.581	3.614	17	19
Bahrain	3.555	3.587	48	41
Portugal	3.579	3.585	15	17
Qatar	3.439	3.585	37	37
New Zealand	3.567	3.583	19	20
Switzerland	3.580	3.581	1	1
Spain	3.562	3.565	5	6
Mauritius	3.509	3.545	41	40
Slovenia	3.477	3.531	36	35
Australia	3.494	3.490	4	9
Canada	3.484	3.487	9	5
Finland	3.473	3.471	12	15
France	3.462	3.470	10	4
Czech Republic	3.423	3.467	30	26
Italy	3.458	3.467	28	28
Hungary	3.473	3.460	33	38
Sweden	3.450	3.439	8	7
Germany	3.468	3.437	3	3
Denmark	3.463	3.433	13	14
Latvia	3.378	3.430	45	48
Netherlands	3.407	3.415	18	13
Israel	3.379	3.411	35	36
Bulgaria	3.347	3.406	43	50
Jordan	3.396	3.399	53	54
Montenegro	3.306	3.398	59	52
Tunisia	3.362	3.379	39	44
Jamaica	3.359	3.377	57	60
UK	3.350	3.364	6	11
Lithuania	3.332	3.363	47	49
Belgium	3.349	3.351	27	22
Malaysia	3.347	3.351	32	32
Slovak Republic	3.291	3.345	38	46
Dominican Republic	3.330	3.339	63	67
Egypt	3.191	3.338	66	64

Table 10 continued.

Country	CBSEM estimated TTCI score 2008	CBSEM estimated TTCI score 2009	WEF rank 2008	WEF rank 2009
Costa Rica	3.303	3.320	44	42
Panama	3.286	3.317	50	55
Oman	3.175	3.316	76	68
Taiwan, China	3.223	3.310	52	43
Puerto Rico	3.370	3.303	46	53
Botswana	3.238	3.280	87	78
Uruguay	3.209	3.259	61	63
Chile	3.216	3.245	51	57
Turkey	3.227	3.240	54	56
USA	3.263	3.240	7	8
Korea, Republic	3.223	3.230	31	31
Thailand	3.224	3.230	42	39
Saudi Arabia	3.169	3.211	82	70

Note: [a]60 top destinations in descending order of the TTCI 2009 score.

CBSEM with the *Business–Resource* interaction. If there were no changes compared with the standard WEF ranking, the whole model-building endeavour would be futile. Table 10 uses the estimated scores of the TTCI construct and confronts them with the original WEF country ranks. The table exhibits the 60 top scoring destinations in descending order of their 2009 CBSEM estimated TTCI score. While the results in each system are reasonably stable, there are remarkable differences between the WEF unweighted and the CBSEM estimated positions. Austria is the only top rated country that loses only three or four ranks (from second to fifth or sixth). Switzerland, heading the 2008 and 2009 WEF charts, scores only 14th or even 19th. Generally, very small economies (cf Cyprus to Luxembourg) seem to benefit from the performance-dependent weighting scheme, while larger countries (France, Spain, Canada, Australia; even more, the UK or USA) suffer a severe setback. The conclusion is that indicator weights are crucial and should not be left to the discretion of the 'same-weight-for-all' principle. The Appendix presents the complete list of all 129 countries with their CBSEM derived and original WEF ranks for 2008 and 2009.

Construct formation and multicollinearity

Regarding the competitiveness constructs, one will have to explore alternative – theory guided and data driven – ways of building the various indices. Consider Figure 3, with hierarchical clustering results for the 2008 data. In the dendrogram the dissimilarities among the 13 subindices are expressed as $1–c$, where c is their intercorrelation over the destination countries. Therefore, the competitiveness indices become clustered together earlier in the hierarchy the more similarly they co-vary. For example, *Price* and *Natural* resources standing aloof in the diagram are tied together as typically many developing countries

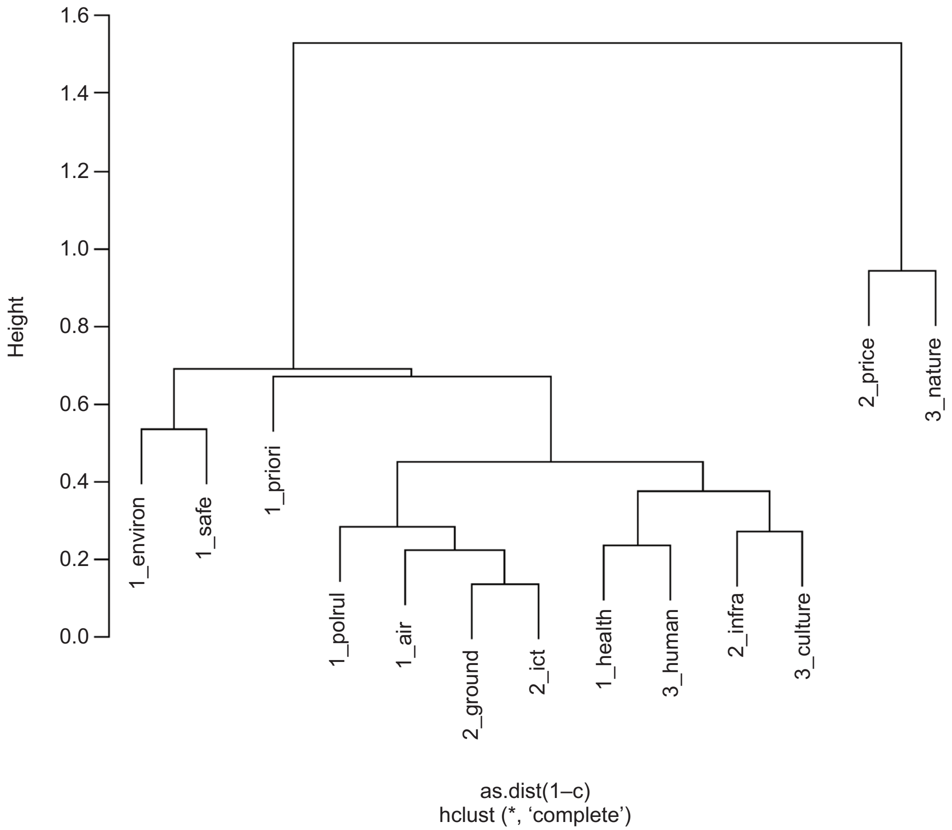

Figure 3. Dendogram of the subindices.

are endowed with rich natural attractions but operate on a very low price level. However, the WEF indicator system assigns them to the different pillars 2 (*Business*) and 3 (*Resources*). This raises the question of whether the system should be modified to form three competitiveness constructs with fully consistent orientation.

It is certainly justified to conceive destination competitiveness and its antecedents as formative constructs. The modelling alternative employing reflective indicators has weird consequences. It would have to claim that a country as an abstract entity possesses some latent traits that manifest themselves observationally. While, in principle, the formative strategy is appropriate, it must not tolerate adding or deleting indicators arbitrarily. In their recent review, Diamantopoulos *et al* (2008) provide an assessment of formative processes. These authors reiterate that the domain of the formative construct should be captured exhaustively by its set of indicators. Whether they correlate with each other positively, negatively, or not at all – contrary to reflective measurement – does not matter. In other words, judging from the dendrogram in Figure 3, it would not be feasible to squeeze, say, *Price* and *Nature* into one formative construct just because of their being strongly correlated. Conceptually, these two indicators are part of separate causal bundles and the WEF reports rightly dissociate them.

While in reflective measurement each observable depends on its latent via univariate regression, a formative construct jointly emerges from all its indicators. Formally, this corresponds to multivariate regression and often entails the multicollinearity problems also encountered in the TTCI system. The WEF reports avoid this problem by equal weighting and simple aggregation of the indicators into competitive dimensions. Future research will certainly aim at indicator weights depending on their predictive ability propagated 'down' from their respective construct. Hence, multicollinearity persists and the only remedy that Diamantopoulos *et al* (2008) deem acceptable requires explicit estimation of intra- and interconstruct indicator correlation. By so doing, the analyst increases dramatically the number of parameter estimates demanding much larger samples than currently available.

(Un)observed heterogeneity, competitive dynamics and managerial relevance

Unobserved heterogeneity of country destinations was expected to become apparent in the finite mixture PLS results. However, the goodness-of-fit criteria did not support this assumption for the pooled 2008 and 2009 data samples. In the long run, heterogeneity cannot be dismissed and will have to be examined regularly. The finite mixture modelling represents a data-driven approach. It does not hypothesize explicit criteria responsible for establishing homogeneous subgroups of destinations.

In future research a theory-guided approach to uncovering heterogeneity is desirable. It will be indicative of the advancement of destination competitiveness theory. Destinations in widely different stages of economic and social development may require phase-specific indicator systems, performance criteria, or benchmarking partners. Some countries are more efficient than others in transforming comparative into competitive advantages (Ritchie and Crouch, 2003, pp 20–24). In technical terms this means that main and interaction effects are likely to work differently for different subgroups of countries.

More sophisticated schemes for pooling time-series and cross-sectional observations are needed to monitor competitiveness trajectories over time and to warrant inferences of managerial relevance. Discussing global competitiveness assumes implicitly that all destination countries are rivalling with each other in all tourism market segments. Hence, from the marketing science point of view, and despite the omnipresent buzzword of globalization, tourism researchers must ask themselves what a global competitiveness index is good for, except rejoicing in a top rank in the hit parade. One may speculate that what tourism management really needs is a menu of specialized competitiveness criteria tailored for specific market segments and particular development strategies.

Endnotes

1. Introducing this interaction effect into the PLS path models is possible, but would have to be implemented on the observational level. This means that the new *Business* × *Resources* term is composed of all scales resulting from pairwise multiplications of each *Business* indicator with each *Resources* indicator. Besides lack of elegance, the exploding number of parameter estimates disqualifies this option.

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Appendix

Table A1. Complete listings of competitiveness rankings.[a]

Country	CBSEM estimated TTCI rank 2008	CBSEM estimated TTCI rank 2009	WEF rank 2008	WEF rank 2009
Cyprus	1	1	24	21
Iceland	3	2	11	16
Malta	2	3	25	29
Hong Kong SAR	7	4	14	12
Luxembourg	4	5	20	23
Austria	5	6	2	2
Estonia	6	7	26	27
Greece	8	8	22	24
United Arab Emirates	11	9	40	33
Ireland	10	10	21	18
Singapore	16	11	16	10
Barbados	9	12	29	30
Croatia	12	13	34	34
Norway	13	14	17	19
Bahrain	19	15	48	41
Portugal	15	16	15	17
Qatar	31	17	37	37
New Zealand	17	18	19	20
Switzerland	14	19	1	1
Spain	18	20	5	6
Mauritius	20	21	41	40
Slovenia	23	22	36	35
Australia	21	23	4	9
Canada	22	24	9	5
Finland	24	25	12	15
France	28	26	10	4
Czech Republic	32	27	30	26
Italy	29	28	28	28
Hungary	25	29	33	38
Sweden	30	30	8	7
Germany	26	31	3	3
Denmark	27	32	13	14
Latvia	36	33	45	48
Netherlands	33	34	18	13
Israel	35	35	35	36
Bulgaria	42	36	43	50
Jordan	34	37	53	54
Montenegro	46	38	59	52
Tunisia	38	39	39	44
Jamaica	39	40	57	60
UK	40	41	6	11
Lithuania	44	42	47	49

Table A1 continued.

Country	CBSEM estimated TTCI rank 2008	CBSEM estimated TTCI rank 2009	WEF rank 2008	WEF rank 2009
Belgium	41	43	27	22
Malaysia	43	44	32	32
Slovak Republic	48	45	38	46
Dominican Republic	45	46	63	67
Egypt	59	47	66	64
Costa Rica	47	48	44	42
Panama	49	49	50	55
Oman	61	50	76	68
Taiwan, China	55	51	52	43
Puerto Rico	37	52	46	53
Botswana	51	53	87	78
Uruguay	57	54	61	63
Chile	56	55	51	57
Turkey	52	56	54	56
USA	50	57	7	8
Korea, Republic	54	58	31	31
Thailand	53	59	42	39
Saudi Arabia	62	60	82	70
Japan	58	61	23	25
Romania	68	62	69	66
Argentina	65	63	58	65
Trinidad and Tobago	63	64	74	83
Ukraine	71	65	77	76
South Africa	60	66	60	61
Morocco	64	67	67	74
Kuwait	72	68	85	94
Bosnia and Herzegovina	69	69	104	106
Syria	80	70	93	84
Poland	66	71	56	58
Georgia	73	72	72	72
Macedonia, FYR	86	73	83	79
Namibia	75	74	92	81
Mexico	74	75	55	51
Serbia	70	76	78	87
Armenia	83	77	89	90
Gambia, The	76	78	84	86
Albania	78	79	91	89
Moldova	88	80	97	92
Russian Federation	90	81	64	59
Azerbaijan	91	82	79	75
El Salvador	87	83	96	93
Guatemala	77	84	68	69
Kazakhstan	79	85	90	91
Suriname	82	86	94	98
Peru	89	87	70	73
Mongolia	84	88	99	104
China	101	89	62	47

Table A1 continued.

Country	CBSEM estimated TTCI rank 2008	CBSEM estimated TTCI rank 2009	WEF rank 2008	WEF rank 2009
Libya	81	90	103	110
Honduras	67	91	75	82
Vietnam	96	92	95	88
Philippines	92	93	81	85
Nicaragua	85	94	98	102
Ecuador	93	95	86	95
Cambodia	100	96	111	107
Indonesia	94	97	80	80
Colombia	95	98	71	71
Kyrgyz Republic	111	99	112	105
Venezuela	108	100	102	103
Sri Lanka	99	101	73	77
Brazil	97	102	49	45
Senegal	98	103	107	100
Guyana	118	104	108	101
Zambia	104	105	106	99
Tanzania	105	106	88	97
Kenya	106	107	100	96
India	109	108	65	62
Madagascar	110	109	117	114
Algeria	103	110	101	113
Lesotho	115	111	128	128
Paraguay	102	112	114	119
Mauritania	112	113	121	124
Bolivia	113	114	105	112
Mali	117	115	118	116
Mozambique	116	116	122	121
Nepal	121	117	115	115
Uganda	119	118	109	109
Benin	114	119	119	117
Zimbabwe	107	120	116	118
Tajikistan	125	121	113	108
Cameroon	124	122	125	122
Pakistan	122	123	110	111
Burkina Faso	120	124	123	123
Ethiopia	123	125	120	120
Bangladesh	127	126	126	126
Nigeria	126	127	124	125
Burundi	128	128	127	127
Chad	129	129	129	129

Note: [a]129 destinations in descending order of rank based on the CBSEM estimated TTCI 2009 score.