

# Network Analysis of Cooperation in Tourism Destinations

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## Abstract

Globalisation on the tourism market causes that the competition is not formed only between stakeholders in a destination, but more and more it is created among destinations. Therefore tourism stakeholders in a destination have to act together and cooperate. The cooperative behaviour of destination stakeholders is seen as a main prerequisite of applying the cooperative destination management, which influences the competitiveness of destination on tourism market.

The aim of the paper is to analyse and measure cooperation of stakeholders in the selected destinations in Slovakia and Switzerland and to show the contribution of the network analysis to the quantitative research in tourism destinations. The article presents the network analysis of cooperation in product development and integrated marketing communication in the High Tatras, Liptov, Davos – Klosters and Engadin St. Moritz. The measurement of the cooperative behaviour helps to better understand the problems of cooperative destination management and creates a tool for comparing the destinations.

## Keywords

Cooperation, DMO, network analysis, stakeholders, tourism destinations

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## Introduction

Tourism destination is a target of tourists' travelling and stay. Tourism product of a destination is created by several stakeholders; therefore the fragmented nature of the product requires a substantial degree of cooperation. The way how to create such a product is the strengthening of the cooperative behaviour in destinations.

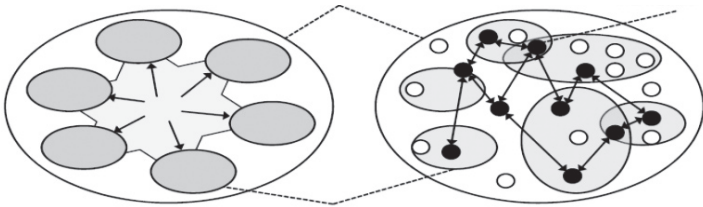
Creating a destination management organization (DMO) is a crucial step in applying cooperative behaviour. DMO coordinates the activities of tourism stakeholders under one coherent strategy, brings together the resources and undertakes several marketing activities. According to UNWTO (2007), it acts as a strategic leader in destination development. Perhaps the most important challenge for DMO is to bring the stakeholders together to cooperate, rather than to compete (Buhalis, 2000).

The cooperative destination management is a tool for coalition of interests in a destination and it represents a new strategy of cooperation (Maráková, 2012). The preconditions of forming the cooperative management are influenced by economic, social and environmental conditions in a destination. According to Wang and Fesenmaier (2007), the most important precondition which drives tourism stakeholders to act together is the increasing competition on the tourism market. The globalization causes that the competition is not formed only between stakeholders in a destination, but more and more it is created among destinations. Therefore it is up to the destinations, precisely DMOs, to increase the level of cooperative behaviour, which will lead to the creation of a complex tourism product and integrated marketing communication and thus, to higher competitiveness on a tourism market.

## Theoretical basis

Cooperative behaviour of tourism stakeholders is the research object of several Slovak (e.g. Gúčík, 2007; Patúš, 2010; Lencséssová, 2012; Maráková, 2012; Šebová, 2014) and foreign authors (e.g. Wang & Fesenmaier, 2007; Holešinská, 2013; Fyall, Garrod, & Wang, 2012; Pechlaner et al., 2012). These authors use mainly a qualitative perspective of the research. However, in the last years, there has been a shift in the research methodology to the quantitative perspective (e.g. Scott, Baggio, & Cooper, 2008a, b; Beritelli, 2011; Del Chiappa & Presenza, 2013; Beritelli, Strobl, & Peters, 2013). This change in methodology is emphasised mainly by Beritelli (2011), who suggests examining the cooperative behaviour in tourism destinations from the quantitative point of view with the help of network perspective and qualitative case studies (Figure 1).

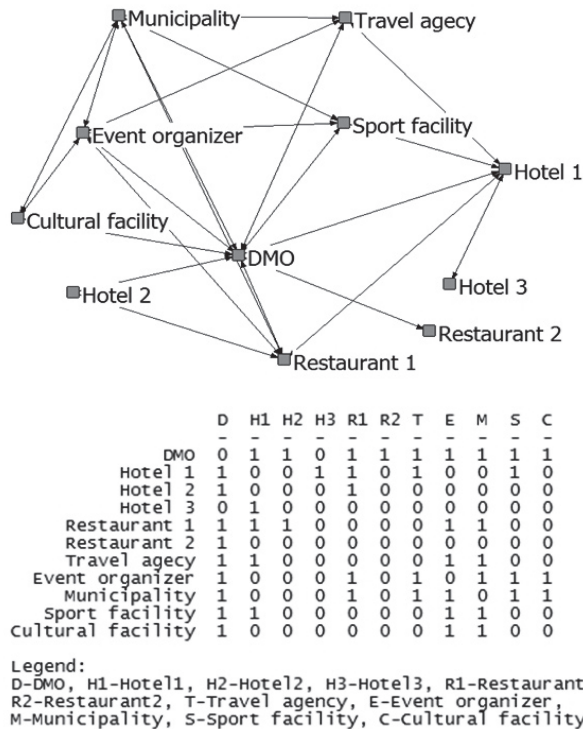
**Figure 1** Change in the methodology of research of cooperative behaviour in the tourism destination

|                          | Traditional approach   | New approach   |
|--------------------------|--|--|
| Method                   | – qualitative case studies   | – quantitative and qualitative case studies                          |
| Relationships            | – aggregated or dyadic perspective   | – network perspective  |
| Levels of research       | – institutions/ stakeholder groups destination                                     | – (relevant) individuals institutions/ stakeholder group destination |
| Graphical interpretation |  |  |

Source: Beritelli (2011)

The network perspective of stakeholders' cooperation has drawn attention since the 1960s. However, it was not before 2000 when the importance of cooperative relations between several organizations and the impact of these relations on the organizational structure and behaviour was examined. This concept is based on relationships between the subjects and the properties of networks studied by researchers with respect to the structure of these relationships (Scott, Baggio, & Cooper, 2008a). The network theory gives valuable information about the exchange of information and resources between several stakeholders (Fyall, Garrod, & Wang, 2012).

The network analysis is a way how to describe the structure of relations between stakeholders and the use quantitative characteristics allows the measurement of these relationships. Based on these characteristics, one can assess the properties of the whole group as well as individual stakeholders. The network analysis is the application of matrix and graph theory (Hanneman & Riddle, 2005). The matrix of a network is symmetric and binary, has the shape of a square and contains variables with values "0" and "1". Rows and columns in the matrix represent the stakeholders, while the individual binary values show whether these subject cooperate or not (0 = stakeholders do not cooperate, 1 = stakeholders cooperate). The methods and techniques of linear algebra can thus be used to analyse the whole network (Figure 2).

**Figure 2** Example of a matrix and graph of the network analysis

Source: Own processing, based on Scott, Baggio, and Cooper (2008a)

The network perspective is more and more used in the context of the tourism destination. The tourism destinations are characterised as places where cooperation and collaboration between the stakeholders creates a tourism product (Pechlaner et al., 2012). These networks, whether based on informal local alliances, informal or formal partnerships, help to compensate the fragmented nature of tourism. Tourism is seen as geographically dispersed, consisting of small independent businesses where the creation of a comprehensive product lies in the ability to cooperate (Scott, Baggio, & Cooper, 2008a). The main advantage of the network perspective lies in the quantification of cooperative behaviour of tourism stakeholders in a destination, which helps to understand the problems of the cooperative destination management.

## Methodology

The aim of this article is to analyse and measure cooperation of stakeholders in the selected destinations in Slovakia and Switzerland and to show the contribution of the network analysis to the quantitative research in the tourism destinations. The stakeholders in

each destination were identified, based on the database in the destination management system, official web page and booking system used in each destination. As these sources are used to inform the visitor about all the attractions and products in the destination, it can be assumed that the number of the identified stakeholders reflects their actual number in the destination.

The cooperation of the destination stakeholders is identified on the basis of the relationships during the creation of the complex tourism product and the integrated marketing communication of destinations in the winter season of 2013/14 and summer season of 2014. In order to determine the cooperative relations, the secondary sources of information were used. These include destination brochures, internal materials of destination management organisations, web sites of tourism stakeholders and destination management system. If the tourism stakeholder is mentioned in the secondary sources as the one who participates in the creation of the destination product or is mentioned together with another stakeholder in the marketing communication tools of the destination, their relationship in the matrix is marked as “1”. On the other hand, if the stakeholder is not mentioned in the sources with another stakeholder in the product development or marketing communication, “0” is used to express this situation. As only values 0–1 are used, the strength of cooperation is not measured. Such a network, formed on the basis of the above criteria, can be considered an actual network of cooperative destination management.

The networks will be examined on the basis of the selected quantitative characteristics of the network analysis (Table 1). The network analysis thus provides statistical tools for exploring the relationships between the subjects and helps to compare them. It also graphically displays the relationships of cooperation in the destination and enables to see clearly and comprehensively the cooperation of the stakeholders.

**Table 1** Selected quantitative characteristics of the network analysis

| Category                            | Quantitative characteristics | Formula  | Description  |
|-------------------------------------|------------------------------|--|--|
| Main characteristics of the network | Size of network (m)          | $m = \sum_i \sum_j a_{ij}$                       | - number of cooperative relations  |
|                                     | Network density ( $\delta$ ) | $\delta = \frac{2 \sum_i \sum_j a_{ij}}{n(n-1)}$ | - the ratio between m and the maximum possible number of relations that a network can have |
|                                     | Average degree (deg)         | $\sum_{v \in V} \deg(v) = 2 E $                  | - average number of relations, that the subject has with neighbours                        |

|                                  |   |  |   |
|----------------------------------|---|--|---|
| Intensity of cooperation         | Clustering of coefficient (C)                 | $C = \frac{1}{n} \sum_i \frac{2t_i}{k_i(k_i - 1)}$                                     | - tendency of subjects to create homogenous groups with relatively high density |
|                                  | Weighted clustering coefficient ( $\bar{C}$ ) | $\bar{C} = \frac{1}{n} \sum_{i=1}^n C_i.$  | - probability that a subject cooperates with another subject in the network     |
| Power of the subject and network | Degree centrality ( $C_D$ )                   | $C_D(v) = \deg(v)$   | - number of relations of the subject  |
|                                  | Centralization index ( $C_x$ )                | $C_x = \frac{\sum_{i=1}^N C_x(p_*) - C_x(p_i)}{\max \sum_{i=1}^N C_x(p_*) - C_x(p_i)}$ | - the power of the strongest subject comparing to other subjects                |

Note:  $a$  = value of a relation (0–1),  $n$  = no. of subjects,  $E$  = no. of relations,  $v$  = no. of graph vertices,  $\sigma_s$  = no. of the shortest paths from subject  $s$  to subject  $t$ ,  $t$  = no. of relations between neighbours,  $k$  = degree of a node,  $A$  = adjacency matrix,  $d$  = distance between subject,  $C_x(p_i)$  = centrality measure of point  $i$ ,  $C_x(p_*)$  = largest centrality measure in the network

Source: Processed according to Hanneman and Riddle (2005); Scott, Baggio, and Cooper (2008a); Baggio, Scott, and Cooper (2010)

The data will be analysed by using the program UCINET 6.560 and NetDraw which enable to calculate all selected quantitative characteristics and visualize the cooperative behaviour.

## Results

Nowadays, it is the destination and its product that influence the purchasing behaviour of tourism visitors, not the individual services. Therefore the cooperation of the stakeholders influences the competitiveness of a given destination. To meet the aim of this article, the cooperative behaviour in two destinations in Slovakia (High Tatras and Liptov) and two destinations in Switzerland (Davos – Klosters and Engadin St. Moritz) was analysed. All destinations are mountain destinations of international significance. The detailed analysis of cooperation in the selected destinations will lead to better understanding of the cooperative destination management and examination of the applicability of the network analysis in the tourism research.

Cooperation of the destination stakeholders in the selected destinations in Slovakia

Tourism development in the High Tatras has a long tradition. This destination has been during the last two centuries a place of winter sport and health tourism. The beginning of cooperative behaviour of tourism stakeholders started in 1994 with the creation of Tourism Association of the High Tatras, which represents the interest of accommodation and catering facilities. Although this association created the baseline for cooperation, it was the creation of the DMO Region High Tatras in 2012 that started the application of the cooperative destination management. The mission of the DMO

is increasing the competitiveness and attractiveness of the destination High Tatras on domestic and international tourism market and creating the brand and image of the destination. This DMO represents the interest of three municipalities, the Tourism Association of the High Tatras, the operators of mountain transport facilities and aqua park. Tourism businesses (e.g. accommodation and catering facilities, tour operators) are represented by the Tourism Association.

The cooperation of stakeholders in Liptov is concentrated on two destination management organizations – DMO Cluster Liptov and DMO Region Liptov, which cooperate closely with each other. DMO Cluster Liptov was established in 2008 as the first destination management organization in Slovakia. From the membership point of view, the cluster is represented by the operators of mountain transport facilities and aqua parks, supporting businesses and 19 municipalities. The vision of the cluster is to create from Liptov the European recognizable tourism destination with the strategic objective to increase a number of visitors. DMO Region Liptov was established in 2012, following the Law no. 91/2010 Coll. on Tourism support, which creates the conditions for the establishment of local and regional tourism organizations. DMO Cluster Liptov and DMO Region Liptov do not compete with each other and they build together the brand “Liptov”. Smaller tourism organizations are supported by organization Cech Liptov.

The cooperative behaviour in these destinations is analysed on the basis of the integrated marketing communication and the creation of complex product of the destination, which in Slovakia is most often presented through a destination visitor's card. Although this kind of card is not considered as a product itself, it allows visitors to choose from a list of services offered in the destination and then to create a complex product. Table 2 presents the structure of the examined tourism stakeholders in the selected Slovak destinations.

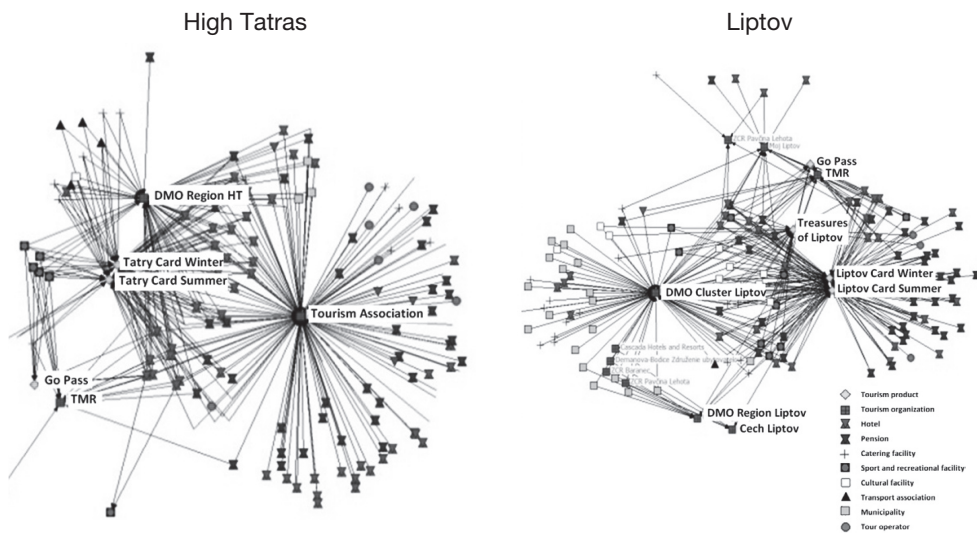
**Table 2** The structure of the tourism stakeholders in the destinations High Tatras and Liptov

| Category of the subject           | High Tatras | Liptov |
|-----------------------------------|-------------|--------|
| Tourism organisations             | 2           | 9      |
| Hotels                            | 69          | 43     |
| Pensions                          | 58          | 56     |
| Catering facilities               | 43          | 44     |
| Sport and recreational facilities | 5           | 10     |
| Cultural facilities               | 2           | 12     |
| Transport associations            | 4           | 1      |
| Municipalities                    | 3           | 25     |
| Tour operators                    | 9           | 10     |
| Σ                                 | 195         | 210    |

Source: Own processing based on the destination management system of each destination (2015)

The cooperative relationships of the destination stakeholders in the High Tatras and Liptov are presented in the graphs of the network analysis (Figure 3). The graph of the network analysis in the High Tatras indicates that the cooperation of stakeholders, particularly the accommodation facilities, is concentrated in the Tourism Association and DMO Region High Tatras. The stakeholders cooperate in the development of the destination visitor's card *Tatry Card Winter* and *Tatry Card Summer*, through which visitors can enjoy discounts in sports and recreational facilities, cultural and catering facilities and also free transport by aqua ski bus. This cooperation can be seen also within *Go Pass card*, which is the loyalty program of the corporation Tatry Mountain Resort (TMR), but due to the inclusion of the major tourist attractions in the destination, this card acts as a destination visitor's card. However, this is undesirable because of the increasing monopoly position of the corporation TMR, weakening of other stakeholders and reducing the effects of cooperative management and marketing.

**Figure 3** Graphs of the network analysis in the destinations High Tatras and Liptov



Source: Own processing (2015)

In Liptov the cooperative behaviour of mainly accommodation facilities and destination management organisations can be observed. The stakeholders create products *Liptov Card Winter* and *Liptov Card Summer*. The visitor can benefit from discounts in major attractions in the region. Similarly to the High Tatras, the undesirable effect of the *Go Pass card*, which affects other stakeholders and increases the monopoly dominance of the corporation TMR, prevails. An interesting product of the summer season is the product *Seven Treasures of Liptov*, which uses elements of geocaching and motivates visitors to get to know the entire region Liptov. The network analysis also allows to examine the



quantitative characteristics of the cooperative behaviour in the analysed Slovak destinations (Table 3).

**Table 3** Quantitative characteristics of cooperation in the High Tatras and Liptov

| Category                            | Quantitative characteristics    | High Tatras | Liptov |
|-------------------------------------|---------------------------------|-------------|--------|
| Main characteristics of the network | Size of the network             | 696         | 794    |
|                                     | Network density                 | 0.018       | 0,017  |
|                                     | Average degree                  | 3.569       | 3.710  |
| Intensity of cooperation            | Clustering of coefficient       | 0.543       | 0.413  |
|                                     | Weighted clustering coefficient | 0.037       | 0.035  |
| Power of the subject and network    | Degree centrality               | 2.071       | 1.742  |
|                                     | Centralization index            | 66.65       | 32.28  |

Source: Own processing (2015)

The main characteristics of the networks indicate a comparable size and network density of these destinations. The network density in both destinations is quite low, while the average degree shows that the average number of relations that the subject has with its neighbours is almost 4. From the intensity of cooperation point of view, the most important characteristics are clustering coefficient and its weighted value, which measure the tendency of the subject to create homogenous groups with relatively high density. Based on the values of these characteristics, which are larger than 0 in both destinations, the creation of the groups where the cooperation is higher than in other places in the network, can be observed. The reason for the creation of such clusters is the cooperation within the framework of the marketing activities and complex destination product.

As far as the power of subject is concerned, the degree centrality shows that in the High Tatras the subject can influence on average two subjects and in Liptov only 1.7. However, it is important to emphasize the ability to find the leaders of cooperation in both destinations, which is measured by the degree centrality (Table 4).

**Table 4** Leaders of cooperation in the destinations High Tatras and Liptov

| High Tatras            |                   | Liptov            |                   |
|------------------------|-------------------|-------------------|-------------------|
| Stakeholder            | Degree centrality | Stakeholder       | Degree centrality |
| Tourism Association    | 78.075            | Cluster Liptov    | 51.643            |
| DMO Region High Tatras | 38.503            | TMR               | 11.268            |
| TMR                    | 11.765            | DMO Region Liptov | 7.042             |

Source: Own processing (2015)

When examining the degree centrality of each subject, the Tourism Association has a central position in the High Tatras. The degree centrality of this subject is the highest and DMO Region High Tatras is the second most powerful subject in the cooperative network. The reason for the lower values of centrality of DMO lies in the fact that when tourism businesses want to become a member of the DMO, at first they must be a member of the Tourism Association. This creates a situation where the Tourism Association cooperates with more businesses than DMO, or the cooperation with DMO is not active. The third major player, in terms of cooperation, is TMR, which due to the interdependence of financial capital can affect a significant proportion of subjects.

A similar situation is in Liptov where the highest centrality is possessed by Cluster Liptov. It influences the cooperation longer than other subjects, which reflects in a higher value of the degree centrality. Therefore the authors of this article positively evaluate close cooperation between Cluster Liptov and DMO Region Liptov because they can together affect a higher number of stakeholders. Among the most powerful subjects there is also TMR, which is the owner of several hotels and mountain transport facilities.

### **Cooperation of the destination stakeholders in the selected destinations in Switzerland**

The cooperative relationships of the tourism stakeholders will be examined in the destinations Davos – Klosters and Engadin St. Moritz. These destinations are in terms of primary supply comparable with the analyzed destinations in Slovakia. However, it is important to show the ability to compare these destinations in terms of the cooperative destination management.

Davos - Klosters is a winter destination located in the east part of Switzerland in canton Graubünden. Despite the fact that it consists of two separate villages, it represents one strong, consolidated tourism destination in the Alps. It seeks to be the premier destination for tourism through offering hospitality services ten months per year, demonstrating reliability, quality and authenticity surrounded by natural beauty and being one of the top five tourism brands in the Alps. Davos Destination Organization (DDO) represents the destination management organisation which focuses on coordinating destination product, its marketing communication and building the destination brand. Davos Klosters Mountains (DKM) represents the operators of mountain transport facilities and organization The organisation Mountain Hotels Davos Klosters (MHDK) represents the interest of mountain hotels in the destination. Accommodation and catering facilities are grouped in the organizations Hotellerie Suisse Davos and Gastro Suisse Davos. The cooperation of these subjects creates the baseline of the cooperative management.

Region Engadin St. Moritz is located in the south-east of Switzerland and consists of several mountain resorts. In 2007, tourism organizations in these resorts merged and created a single competitive destination management organisation Engadin St. Moritz Tourism (ESMT). The mission of the ESMT is to ensure the sustainable development of tourism and employment by developing and promoting corporate identity through

management and marketing activities. The operators of mountain transport facilities are grouped in the organisations Engadin St. Moritz Mountains (ESMM) and Corvatch, while accommodation and catering facilities are grouped in the organizations Hotellerie Suisse St. Moritz, Hotellerie Suisse Maloja / Sils / Silvaplana, Hotellerie Suisse Pontresina and Gastro Suisse St. Moritz.

The cooperative relations in Davos – Klosters and Engadin St. Moritz are examined also by the network analysis in which the structure of the tourism stakeholders was identified (Table 5).

**Table 5** The structure of the tourism stakeholders in the destinations Davos –Klosters and Engadin St. Moritz

| Category of the subject           | Davos - Klosters | Engadin St. Moritz |
|-----------------------------------|------------------|--------------------|
| Tourism organisations             | 5                | 9                  |
| Hotels                            | 66               | 121                |
| Pensions                          | 19               | 30                 |
| Catering facilities               | 53               | 75                 |
| Sport and recreational facilities | 16               | 14                 |
| Cultural facilities               | 17               | 14                 |
| Transport associations            | 2                | 3                  |
| Municipalities                    | 2                | 13                 |
| Tour operators                    | 9                | 8                  |
| Σ                                 | 189              | 287                |

Source: Own processing based on the destination management system of each destination (2015)

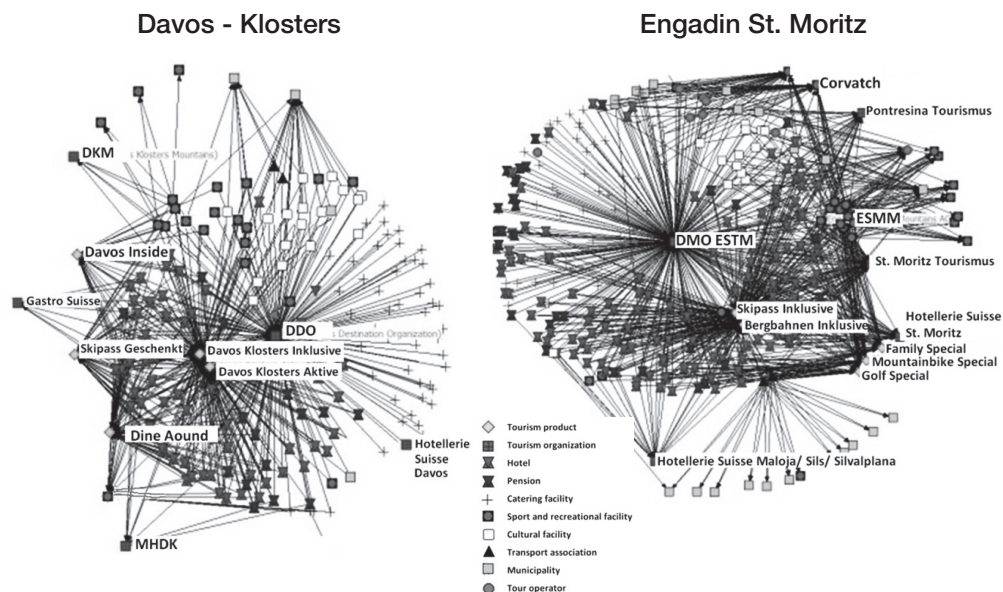
The cooperative relations were examined in winter and summer season and the formation of competitive tourism products and integrated marketing communication can be observed. Those cooperative relationships among the subjects involved in tourism development in the selected destinations are shown in graphs of the network analysis (Figure 4).

The graph of network analysis in destination Davos - Klosters indicates that the cooperation of stakeholders is concentrated on five products which are coordinated by the DDO, DKM and MHDK. For several years this destination has created many competitive winter products. Visitors who are in the pre-season period accommodated for at least one night in cooperating accommodation facility can use the product *Skipass Geschenk* and obtain a free one-day ticket for mountain transport facilities. Visitors can also use a product called *Dine Around*, which is offered by accommodation and catering facilities. This product, offered within guest's half board, offers a free choice of evening meal in any of the participating hotels and restaurants at no additional expense. The guest can thus try the gastronomic specialties of the whole region. A new feature is the product

*Davos Inside* where the visitor along with local professionals can see the backstage of services and enjoy special services that are otherwise inaccessible (e.g. skiing before the opening of slopes).

The summer product *Davos Klosters Inklusive* offers a free of charge transportation by mountain transport facilities, railways and buses during the whole stay. Another product *Davos Klosters Aktive* consists of central concerts organized by DMO and additional programs made by the hotels which enrich the hiking. The goals of these products is to attract new and more early-season guests, better utilize the mountain transport facilities and accommodation facilities, increase the number of sales and use positive and emotional experience.

**Figure 4** Graphs of the network analysis in the destinations Davos – Klosters and Engadin St. Moritz



Source: Own processing (2015)

The graph of the network analysis in the region Engadin St. Moritz presents the cooperation of stakeholders in the development of five products where the cooperation of the destination management organization, operators of the mountain transport facilities and accommodation facilities is dominant. In the winter season this destination offers a product *Skipass Inklusive*, which provides a reduced price for ski passes (up to 65 % discount) for each overnight stay in participating accommodation facility. In the summer season there is an attractive product *Bergbahnen Inklusive*, where transportation by mountain transport facilities, railways and buses is calculated in the price of accom-

modation. In order to support families with children, this destination offers a product *Family Special* where visitors can find a list of daily activities for children along with the free transport in the destination.

The off seasonal activities are promoted by products *Mountainbike Special* and *Golf Special "All in One"*. Both products are focused on a specific visitor segment. Mountain cycling enthusiasts can take advantage of the discounted rates on accommodation in the mountain-bike-friendly hotels along with the free transport of bicycles by mountain transport facilities. Golf players are offered a discount on the rental charges of a golf course along with free transport from three overnight stays. From the graph it can be seen that the creation of these products is supported by a large number of stakeholders that offer the visitor a high variability choice. The products are reasonably spread over seasons, thereby promoting the all-year-round utilization of tourism infrastructure.

In addition to the graphic representation, the network analysis allows to describe the cooperative relations by the quantitative characteristics distinguishing the main features of the network characteristics, intensity of cooperation and power of subjects (Table 6).

**Table 6** Quantitative characteristics of cooperation in Davos – Klosters and Engadin St. Moritz

| Category                            | Quantitative characteristics    | Davos - Klosters | Engadin St. Moritz |
|-------------------------------------|---------------------------------|------------------|--------------------|
| Main characteristics of the network | Size of the network             | 1182             | 1964               |
|                                     | Network density                 | 0.033            | 0.024              |
|                                     | Average degree                  | 6.254            | 6.843              |
| Intensity of cooperation            | Clustering coefficient          | 0.687            | 0.658              |
|                                     | Weighted clustering coefficient | 0.053            | 0.055              |
| Power of the subject and network    | Degree centrality               | 3.327            | 2.378              |
|                                     | Centralization index            | 71.28            | 79.41              |

Source: Own processing (2015)

The network density is the highest in the destination Davos - Klosters where there are 1,182 cooperative relations and the average degree of 6.25. The lower density of the network is in the destination Engadin St. Moritz. This figure is partially distorted by the large number of stakeholders. The key factor is therefore the average degree, which in this case better reflects the aggregated cooperative behaviour. On average, every subject in the destination has almost seven cooperative relations with the neighbouring subjects.

The intensity of cooperation, based on the clustering coefficients, determines the existence of close groups with high intensity cooperation. When comparing the clustering coefficients of the Swiss networks with the Slovak ones, it can be found out that the intensity of cooperation is much higher in Davos – Klosters and Engadin St. Moritz than in the High Tatras and Liptov. This fact indicates better cooperation in creating

a complex and consistent tourism product and integrated marketing communication of these destinations.

The average power of the subjects in the network is determined by the degree centrality, which ranges from 2.378 to 3.327. Comparing these values to the Slovak destinations, they are almost two times higher and the centralization index of the network indicates that the strongest subject can affect the network for more than 70 %. Therefore it is a major coordinator of the relations between the stakeholders.

According to Table 7, the degree centrality allows to measure the strength of each subject. The most powerful subject in both networks is a destination management organization, which acts as a strategic leader in the cooperative behaviour.

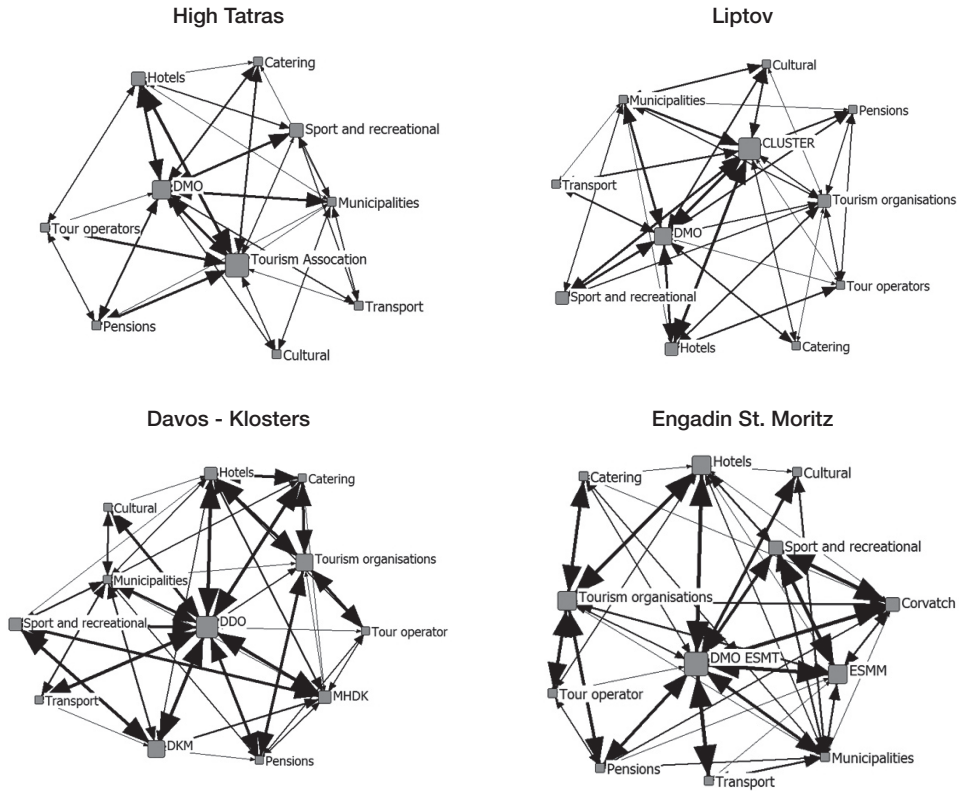
**Table 7** Leaders of cooperation in the destination Davos – Klosters and Engadin St. Moritz

| Davos - Klosters        |                   | Engadin St. Moritz   |                   |
|-------------------------|-------------------|----------------------|-------------------|
| Stakeholder             | Degree centrality | Stakeholder          | Degree centrality |
| DDO (DMO)               | 98.936            | ESMT (DMO)           | 100.000           |
| Hotellerie Suisse Davos | 27.660            | St. Moritz Tourismus | 22.028            |
| DKM                     | 13.986            | ESMM                 | 17.133            |

Source: Own processing (2015)

All other powerful subjects represent tourism associations and not individual businesses with a dominant position. Compared to the examined destinations in Slovakia, all essential characteristics of the network analysis are better in the Swiss destinations. It can be also seen in Figure 5, which simplifies the whole network analysis. For clarification the situation is interpreted graphically, where the strength of the lines reflects the intensity of cooperation (expressed by clustering coefficients of each stakeholder) and the size of the mark is in line with the power of the subjects (expressed by degree centrality).

From these graphs, it is obvious that the cooperative behaviour in the Slovak and Swiss destinations is different. The long tradition of applying the cooperative destination management in Switzerland leads to the more intense cooperation and stronger position of the destination management organisations than in Slovakia. The intensity of cooperation leads also to a higher number of overnight stays (Table 8) and thus, to higher economic impacts of tourism.

**Figure 5** Comparison of the cooperative behaviour in Slovakia and Switzerland

Source: Own elaboration (2015)

**Table 8** Correlation between the intensity of cooperation and a number of overnight stays in the examined Slovak and Swiss destinations

| Characteristics                 | Spearman correlation coefficient | Significance |
|---------------------------------|----------------------------------|--------------|
| Clustering coefficient          | 0.862                            | 0.027        |
| Weighted clustering coefficient | 0.894                            | 0.016        |

Source: Own processing (2015)

The correlation between the clustering coefficients and the number of overnight stays in the examined Slovak and Swiss destination proves a strong dependence. Therefore it is obvious that the higher the intensity of cooperation in the destination is, the higher the number of overnight stays are.



## Discussion

The level of cooperative behaviour in Slovakia is considerably underdeveloped when compared to Switzerland. The network analysis of the tourism stakeholders enables to compare the analysed results. The differences are observed in all quantitative characteristics of the networks of the selected destinations in Slovakia and Switzerland. While destinations in Switzerland have higher network density, centrality and clustering coefficients, in Slovakia significantly lower quantitative characteristics of cooperation can be observed.

The destination management organisations in the examined Slovak destinations are not strong enough to be real leaders in cooperative networks. The creation of complex products in the Slovak destinations should have an all-year-round character and thus encourage appropriate distribution of demand during seasons. This suggests that efforts should be made to increase the competitiveness of Slovak destinations on the tourism market. The destination management organization should strive to improve the relationship with the stakeholders in terms of trust, transparency and leadership, which will strengthen motivation and reduce barriers of cooperative management. It is up to them to promote cooperation, and thus accelerate the formation of the cooperative destination management, which brings higher competitiveness on the tourism market.

The lack of experience with the application of the cooperative destination management in Slovakia causes that destinations are not sufficiently competitive on the tourism market and the activities of destination management organizations do not meet the requirements of professional management and marketing organizations. The cooperation of stakeholders in Slovakia is not very intense, which negatively influences the formation of the complex product and thus affecting the number of overnight stays.

Based on the comparison of quantitative characteristics of cooperative behaviour in Slovakia and Switzerland, the authors can conclude that its application in Switzerland can be inspiration for many Slovak destinations. The exchange of experience with respecting differences between Switzerland and Slovakia can overcome the shortcomings in the implementation of cooperative destination in Slovakia. The higher intensity of cooperation of stakeholders, understanding their motivations and barriers can help Slovak destinations to better compete on the international tourism market.

## Conclusion

By applying the network analysis on the cooperative behaviour in the selected tourism destinations in Slovakia and Switzerland, its contribution to the tourism research has been proved. The main characteristics of the network can be used to analyse and compare the aggregate cooperative behaviour in tourism destinations, while the clustering coefficients show the intensity of cooperation. The centrality measures help to identify the strongest subjects in the network and can prove the position and role of the destination management organisations. Therefore the network analysis can be used to compare the destinations according to the relationships of its stakeholders.



The results of the research can be compared to the research of Baggio, Scott, and Cooper (2010) or Grama and Baggio (2014) who, based on the list of organization's members, ownership and members of boards of directors, identified mutual relations in the destinations Elba and Sibiu. The quantitative characteristics are comparable with the Slovak and Swiss ones, which documents the ability to compare the destinations among themselves and thus applying the best practices.

Nevertheless, the research has also some limitations which were the examination of only four destinations and the cooperative behaviour for only a short period of time (one year). For the next research, it is therefore necessary to examine more destinations and apply the dynamic perspective, including several years and calculating the quantitative characteristics. It is recommended to use the retrospective network analysis based on the older secondary sources. By maintaining the same methodology, the comparability of data will be preserved.

Other implication for further research would be the modification of the examined networks by adding or removing several subjects and recalculating the quantitative characteristics. The simulation would be useful for anticipating changes in the structure of networks. A similar application can be seen in the research of Baggio (2008), who modified the examined network in the destination Elba by randomly adding the stakeholders in order to increase the clustering coefficient.

It would be also essential to focus the research on the relationships within the destination management organizations as it is in the research of Beritelli, Strobl, and Peters (2013) who examined the structure of the board of directors of DMOs and thus, studied the flow of information and social capital by network analysis.

The contribution of the presented paper lies in proving that the network analysis helps to clearly and quantitatively examine the cooperative relations in the destination. The opportunity to explore the cooperative relationships between the stakeholders in quantitative terms allows researchers to look at the cooperation in the destinations in terms of structure, strength and intensity and compare these destinations with each other. Together with the qualitative case studies from the destinations, the paper provides a comprehensive overview of cooperation of the destination's stakeholders. From the network analysis it should be obvious among which subjects there are cooperative relationships and which the strongest subjects in the destination are. This allows a more objective assessment of the cooperative destination management and determines its shortcomings. The simulation-based network analysis can help to examine the flow of information in the destination and to test the ability of the destination to respond to changes in the structure of stakeholders. This view can be used in future research, enabling to describe more accurately the impact of cooperative management to the development of the destination and the validity of destination management organizations. The proposed methodology is based on a review of available secondary data collection, which requires a depth analysis of the destination. However, without further knowledge of the destination characteristics, it is not recommended to form definitive conclusions.

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