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Tourism industry analysis with the Czech Republic as the focal point

Zuzana Jurigova[a*]

[a]Tomas Bata University in Zlin, nam.T.G.Masaryka 5555, Zlin 760 01, Czech Republic

Abstract

According to the NACE statistical classification, tourism is an industry composed of hotels and restaurants; transport; storage and communication as well as activities carried out by travel agencies and tour operators, which altogether represent an important contribution to the economy of the given country. In order to determine the efficiency in each tourism sector, statistical classification of the tourism industry is designed according to the economic performance of each European state. The purpose of this paper is to examine the basic economic secondary data retrieved from the official NACE business statistics in the tourism industry and its individual sectors, specifically applied to the conditions of the Czech Republic. With this analysis, the reader will be informed about the concrete structure of tourism entities in a given state and the importance of identifying the economy of tourism on a national scale. Initially, the paper theoretically discusses the NACE classification, the importance of recording economic activities in various sectors and their further division. Theoretical knowledge is then applied using a practical example based on collection of statistical data. The practical layer of this paper deals firstly with primary findings from NACE statistics in selected European countries and their tourism structures. Subsequently, this data will be analyzed and processed in the conditions of the Czech Republic as to ascertain the sustainability of each tourism sector. The overall data compilation serves as the foundation for further research.

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[*] Zuzana Jurigova. Tel.: +420-728-691-283
E-mail address: zjurigova @fame.utb.cz

1. Introduction

In many states, the tourism industry represents an engine of the economy consisting of individual economic activities that are interlinked. The Czech Republic is not an exception to this rule, even though the percentage share of GDP is not as high as for instance in other European states such as Croatia (12.2%) or Greece (6.5%). Tourism in the Czech Republic is considered to be statistically consistent. In 2013, the most widely used macroeconomic indicator of the economic prosperity of the Czech tourism economy, namely the total contribution of Travel & Tourism to GDP, was estimated at 2.9%. Among country rankings this number equals to the world´s average percentage share in 2013, whereas the European average standard of GDP share is slightly higher, specifically 3.1 %. (World Travel & Tourism Council, 2014)

In order to capture the economic power comprising all activities in the tourism field, Eurostat, the Statistical Office of the European Communities, issued a statistical document for all economic activities in the European states, called NACE. Not only this document divides the industries into transparent clusters but furthermore this classification serves as a basis thanks to which individual European states can collect and measure statistical data in these activities. In the Czech Republic, this document is applied under the code CZ NACE.

By using the CZ NACE classification, national institutional bodies have an opportunity to classify and measure the impact of tourism in an overall national context. Besides measurement, a CZ NACE classification allows the monitoring of sustainability of the given economic activity in a long term. Such monitoring is vital for tourism facilities to ensure their operation in the next years.

The given study presents the outputs of chosen NACE statistical data in the Czech Republic. The retrieved secondary data will serve as a foundation for preparing a complex structure of Czech tourism economic activities. By analyzing numerical data in a time line, this paper will seek to explore the trend for principal tourism sub-sectors in the given state with respect to sustainability.

The aim of this paper therefore resides in an analysis of the chosen statistical data regarding NACE classification of tourism industry applied in the Czech Republic and its relationship towards tourism sustainability. The principal findings of this paper are retrieved from the secondary data of Czech Tourism which are further analyzed by descriptive statistics in the form of time series and 95% confidence interval. For further research dealing with measurement of sustainability of a chosen tourism economic activity, it is necessary to analyze the most crucial tourism activities in order to determine the specific ones which will be further subjected to future research.

Nomenclature

GDP   Gross domestic product
NACE   Nomenclature générale des activités économiques dans les Communautés Européennes (General Industrial
              Classification of Economic Activities within the European Communities)
TSA   Tourism Satellite Account

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2. Conceptual framework

Tourism as a term is not officially identified as an industry. Therefore the term tourism industry is used in this paper as a congregate of chosen sectors concerning core tourism activities. The tourism industry is perceived as a specific multi-sector industry with an economic contribution of high importance. Such a multi-sector nature of tourism leads to difficulties with the objective measurement of economic efficiency and importance of tourism. (Leidner, 2004)

2.1. Characteristics of the NACE classification

In general, the NACE classification of economic activities was developed and used for the first time in 1970 to allow better orientation in all economic activities and measurement of economic contributions. The NACE system of classification is a part of the international system of economic classification on the European level and it is based on

a less elaborated world classification titled ISIC (the United Nations International Standard Industrial Classification of all Economic Activities). The aim of such integrated structure of economic activities is to enable comparison of statistical results in different European states. (Eurostat, 2008)

Even though no official statistical division of tourism industry exists, in this paper the tourism industry will be classified based on the narrow level of classification as stated by Leidner (2004) into main sectors described below. Such absence of an official division means that the tourism industry is therefore difficult to measure economically as it is a multi-sector industry. Based on the European NACE classification (Eurostat, 2008) and Leidner (2004), tourism is for the needs of this paper classified as an aggregate of four basic economic activities, namely: hotels and restaurants; accommodation; transport, storage and communication; and travel agencies, tour operator reservation services and related services.

Eurostat defines an economic activity (2008) as the combination of "capital goods, labor, manufacturing techniques or intermediary products" used for production of outputs in the form of goods and services. To ensure that the system is transparent and economically applicable, NACE is structured into hierarchical levels, specifically into sections marked by an alphabetical code, divisions marked by a double-digit numerical code, groups marked by a triple-digit code and classes marked by a four-digit code.

The principal criteria that are applied while dividing the economic activities into groups concern the following (Eurostat, 2008):

- "the character of the goods and services produced"
- "the uses to which the goods and services are put"
- "the inputs, the process and the technology of production"

While the core description of the NACE system is officially constructed merely by the European Commission or Eurostat, concrete statistical data are measured by individual statistical offices in a given state.

In the Czech Republic, these data are measured by the Czech Statistical Office in an elaborated file called CZ NACE. It classifies core tourism economic activities as following:

- CZ NACE – Section H: Transportation and Storage
    - 49 – Land transport and transport via pipelines
    - 50 – Water transport
    - 51 – Air transport
    - 52 – Warehousing and support activities for transportation
    - 53 – Postal and courier activities
- CZ NACE – Section I: Accommodation and Food Service Activities
    - 55 – Accommodation
    - 56 – Food and beverage service activities
- CZ NACE – Section N: Administrative and Support Service Activities
    - 79 – Travel agencies, tour operator reservation services and related activities

However, it must be stated that similar research studies concerning particularly CZ NACE analysis of tourism economic activities has not been constructed yet. Therefore the literature lacks relevant sources arguing the importance of the NACE classification and justifying the significance of its implementation into further research.

2.2. Tourism Satellite Account

For the purpose of this paper´s general overview, it is essential to ensure the reader is familiar with the statistical information data processing account called the Tourism satellite account (TSA). Generally, this gives basic information and relevant data about economic position of tourism in individual countries. Aside from the most desired information regarding the share of tourism on the gross domestic product, TSA compares the individual subsystems of tourism within annual statistical data in order to monitor the dynamic development of each. (Czech

statistical office, 2015) Generally, it is based on the balance in the national economy with respect to demand and supply of the product created by tourism.

More specifically from the perspective of demand and statistics in the Czech Republic, consumption divided into the following four main categories appeared to be the most relevant: (Czech statistical office, 2015)

- Consumption of outbound tourism in the Czech Republic (expenditures of residents on tourism within a foreign country)
- Consumption of inbound tourism in the Czech Republic (expenditures of non-residents directly in the Czech Republic and a part of expenditures spend in a home country which are subsequently directed to the Czech Republic in form of payments for accommodation, food etc.)
- Consumption of domestic tourism within the Czech Republic (expenditures of residents on tourism that includes not only expenditures spent on internal travels but also domestic expenditures spend as a preparation to travel abroad)
- Consumption of national tourism
- Consumption of internal tourism (synthesis of inbound and domestic tourism)

It is assumed that gross domestic product, employment, gross value added or capital formation is highly connected with the demand side of TSA. GDP as a sum of gross added value and net taxes (i.e., taxes from tourism that are reduced by the subsidies provided for tourism products) includes consumption of internal tourism and domestic supply. (Czech statistical office, 2015)

With regards to the supply side of TSA, it is methodically suggested to divide tourism products and its subsectors into those typical for tourism, products related to tourism and following unspecific products. In the Czech Republic there are seven characteristic products related to tourism (Czech statistical office, 2015):

- Accommodation (including "hotels, resort sectors, suite/apartment hotels, motels, children and other holiday homes, visitor flats and bungalows, cottages and cabins without housekeeping services, youth hostels, mountain refuges, provision of accommodation in campgrounds, trailer parks, recreational camps, fishing and hunting camps for short stay visitors, provision of space and facilities for recreational vehicles, student residences, school dormitories, workers hostels, rooming and boarding houses and railway sleeping cars"), European commission (2008)
- Food and beverage (including "restaurants, cafeterias, fast-food restaurant, take-out eating places, ice-cream truck vendors, mobile food carts, food preparation in market stalls, event catering, bars, taverns, cocktail lounges, discotheques (predominantly serving beverages), beer parlours, coffee shops, fruit juice bars and mobile beverage vendors"), European commission (2008)
- Passenger transport services
- Travel agency and tour operators services
- Cultural services
- Recreational services and other entertainment
- Other tourism services (e.g., financial and insurance services or rental of other goods)

3. Methodology

3.1. Objective of the research

The main objective of the research is to analyze chosen statistical data regarding the CZ NACE classification of the tourism industry applied in the Czech Republic and finding its relationship towards tourism sustainability. Subsequently the results will serve as a foundation for choosing one relevant tourism economic activity in the Czech Republic that will be further subjected to the measurement of economic sustainability in follow-up research.

3.2. Data selection

The principal findings of this paper are based on the retrieved secondary data from the Czech Statistical Office and Tourism Satellite Account. In order to discover the relationship between the individual tourism economic activities, these secondary data from the Tourist Satellite Account of the Czech Republic have been selected as the primary ones for the purposes of the paper:

- Gross domestic product of tourism in the Czech Republic
- Gross value added in the Czech Republic
- Consumption of internal tourism in the Czech Republic (the sum of inbound and domestic tourism)

In order to capture the change in these economic values, the graphs provide the reader with the yearly values of variables for data samples from 2008 to 2013 (the year 2013 is based on preliminary data). Data are expressed in the Czech national currency, in millions.

The selection of the data was based on their relevance for future research. Specifically, data of consumption of internal tourism will be compared for each chosen CZ NACE sector of tourism industry in relation to the gross domestic product.

3.3. Applied methods

Due to the type of chosen data, the research statistical methods used for processing data concern descriptive statistics only. Firstly data are assessed by using econometrics with focus on time series. Analysis of time series is used for capturing the sequence of observed data arranged in time.

Secondly the 95% confidence interval is used for providing the range of an interval that "sets the probability that an estimate derived from the sample will fall within the interval". (Smith, 2010, p.101) This means that the interval estimates the lower and upper boundary that is likely to happen in 95%. The remaining 5% will not contain the estimated and predicted values. From a sample of chosen secondary data, standard deviation and average relative frequency has to be calculated in order to obtain the concrete values of the confidence interval for the monitored period.

4. Results and findings

In the Czech Republic, the Czech Statistical Office counts eight characteristic tourism products mentioned in chapter 2.2. Only four CZ NACE economic categories characteristic for tourism were chosen for processing due to their main economic relevance for a national tourism economy, namely transportation and storage, accommodation and food and beverage service activities. However the fourth relevant indicator of tour operators and travel agencies has been omitted from research graph 1 as it has the smallest basis with comparison to the three aforementioned tourism categories. Moreover, its absolute growth is too small and relative growth too high, and this result does not mirror the reality (e.g. -12, 31% or -14, 26%). This is visible in table 1 and table 2.

The average absolute growth of consumption of internal tourism for the period 2008 – 2013 changed significantly in the accommodation sector, both positively and negatively. On one hand, this sub-sector has been prospering in the last two years. This means that the change of expenditures spent by domestic and inbound tourists financially supported the tourism economy. On the other hand, it is also a sector which was strongly affected by the economic crisis between 2008 and 2009, leading to a significant drop of expenditures spent by inbound and domestic tourists in the Czech Republic. This fact can also be observed in table 1.

Table 1. Average absolute rate of growth of expenditures on chosen tourism economic activities according to CZ NACE
(own processing based on data from Czech statistical office, 2008-2013)

Monitored NACE indicator	2009	2010	2011	2012	2013	Average absolute growth
Gross domestic product	842	-4 040	2 022	9 125	6 533	2 896
Gross value added	2 015	-1 080	1 373	7 748	5 495	3 110
Accommodation	-2 548	1 996	-1 651	2 205	3 991	799
Food and beverage	-1 513	-4 211	214	1 093	3 558	-172
Transportation	-2 502	1 085	-1 229	268	2 934	111
Travel agencies and tour operators	-954	-241	-935	435	267	-286

In order to support the previously mentioned results, the highest average growth in the accommodation sector, amounting to nearly 102%, is apparent from table 2 which contains a relative expression of the values. Such extensive growth in accommodation services requires careful consideration of the sustainability aspect, in order to prevent future negative consequences for this sector. In the food and beverage sector, the downfall due to the economic crisis is visible from both table 1 and table 2. The economic crisis forced some domestic and inbound tourists to omit expenditures on food and to avoid frequent visits to restaurants, bars or other food establishments in this period. The downfall visible in the travel agencies and tour operators sector is also significant and in table 2 the relative differences between each year are visible.

Table 2. Average rate of growth of expenditures on chosen tourism economic activities according to CZ NACE
(own processing based on data from Czech statistical office, 2008-2013)

Monitored NACE indicator	2009	2010	2011	2012	2013	Average rate of growth
Gross domestic product	0.81%	-3.87%	2.02%	8.92%	5.86%	102.65%
Gross value added	2.33%	-1.22%	1.57%	8.73%	5.70%	103.36%
Accommodation	-6.46%	5.41%	-4.24%	5.92%	10.11%	101.95%
Food and beverage	-3.34%	-9.61%	0.54%	2.74%	8.70%	99.62%
Transportation	-5.76%	2.65%	-2.92%	0.66%	7.14%	100.25%
Travel agencies and tour operators	-12.31%	-3.55%	-14.26%	7.74%	4.41%	96.01%

Expenditures spent on food and beverages are logically the highest, however their oscillation is visible in the years of financial crisis and they have only reached their approximate pre-crisis levels in the last two years. However, the expenditure indicators of accommodation and transport services have both developed in the same direction. By comparing the expenditures of internal tourism aimed at accommodation facilities with others, it is easy to see that this is the fastest-growing of all chosen tourism facilities. This growth in the accommodation sector can be partly caused by the change of preferences and behavior of the clients directly proportional to the higher living standards. Gross domestic product and gross value added do not significantly copy any of the expenditures in the NACE division demonstrated in fig.1.
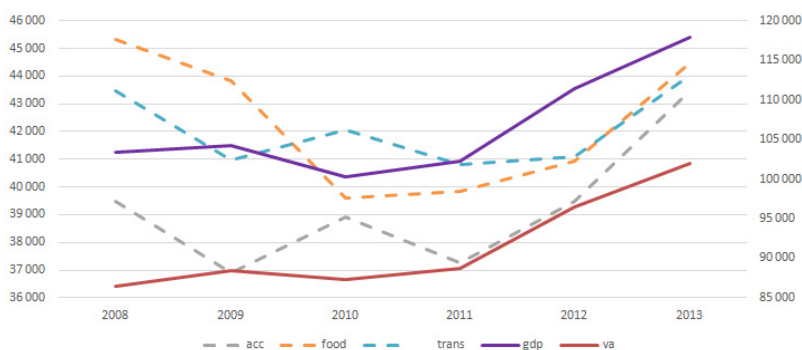
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Fig. 1. Overall number of tourism economic activities according to CZ NACE
(own processing based on data from the Czech Statistical Office, 2008-2013)

Given the general comparison of tourism economic NACE activities, the second phase of this research consists of the calculation of the 95% confidence interval for each tourism economic activity. In table 3, the 95% confidence interval is calculated with respect to GDP and individual consumption of internal tourism to NACE tourism activities. It suggests how the values will behave complexly, not only in the six researched years. Although the range of selected years 2008-2013 is clear from the retrieved secondary data, this identification of the confidence interval predicts how the values will develop within the long-term.

Table 3. Confidence interval for expenditures on internal tourism vs. GDP divided according to CZ NACE
(own processing based on data from Czech statistical office, 2008-2013)

95% confidence interval	Accommodation	Food and beverage	Transportation	Travel agencies, tour operators
lower	0.353761	0.369873	0.372545	0.052427
upper	0.383224	0.425967	0.418576	0.07035

This means that with 95% certainty, the middle value of the proportion of two variables, GDP of tourism and accommodation expenditures, will generally lie in the interval of 35.3761% – 38.3224%. The average relative frequency of chosen data within the accommodation sector and GDP is 36.8492%. The structure of these data describes each subsystem´s behavior with 95% certainty within more samples. This observation reliably captures the properties of each subsector of tourism from a long-term period, which is important from the sustainability aspect.

5. Conclusion and further research

Tourism is an economically important sector in the Czech Republic as it represents a 2.9% contribution to GDP. Since tourism consists of direct and indirect economic activities, it can be defined as a multi-sector industry and each of its sectors has an individual share on the GDP. Therefore this multi-sector character of tourism allows the separate measurement and specification of individual sub-sectors.

The outcome and findings of this research were aimed at comparing chosen TSA characteristics of tourism activities classified according to NACE division. This comparison will subsequently serve as a foundation for the further research of tourism sustainability. Its purpose was to find an economically important tourism sector in comparison with other relevant tourism sectors in which sustainability will be measured. The main reason for using statistical methods is due to the variability of data. In the first phase, time-series revealed that the accommodation

sector is one of the fastest growing sectors throughout the six year period of monitoring based on the selected data, namely consumption of internal tourism and gross domestic product. From 2011, a rapid growth of accommodation expenditures drives the Czech Republic´s need for sustainability. Such rapid growth can create social, economic and environmental problems in the future years. In order to prevent negative consequences of rapid economic growth in the accommodation sector, future research will allow the measurement of sustainability by using specific indicators.

Acknowledgements

References

Czech Statistical Office, 2008-2013. Tourism Satellite Account Tables. Retrieved from https://www.czso.cz/csu/czso/tabulky_satelitniho_uctu_cestovniho_ruchu

Czech Statistical Office, 2015. Tourism Satellite Account Methodology. Retrieved from https://www.czso.cz/csu/czso/tabulky_satelitniho_uctu_cestovniho_ruchu

Eurostat, 2008. NACE Rev.2: Statistical classification of economic activities in the European Community. Luxembourg: Office for Official Publications of the European Communities. ISBN 978-92-79-04741-1.

Leidner, R., Bender, M., (2004). The European Tourism Industry: a multi-sector with dynamic markets. European Commission. ISBN 92-894-7675-3.

Siegel, A.F. (2012). Practical Business Statistics. 6th edition. Elsevier Inc. ISBN 978-0-12-385208-3. 76-84.

Sirakaya-Turk, E., et.al., (2011). Research methods for leisure, recreation and tourism. Cambridge: Cambridge University Press. ISBN – 13: 978 1 84593 763 8

Smith, S.L.J., (2010). Practical tourism research. Cambridge: Cambridge University Press. ISBN: 978 1 84593 632 7.

World Travel & Tourism Council, 2014. Travel&Tourism: Economic impact 2014, Czech Republic. Retrieved from http://www.wttc.org/-/media/files/reports/economic%20impact%20research/country%20reports/czech_republic2014.pdf