

Golf courses in the Czech Republic: Analysis of the development and socio-economic characteristics

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Abstract

This paper aims to analyse selected socio-economic aspects of golf courses (GC[s]) in the Czech Republic (CR). The analysis strives to determine what aspects affect the development and dynamics of the golf market. The analysis revealed that the construction and development of the GCs is related to the socio-economic type of territory. Most GCs are built in the developed areas (65), followed by a stabilized area (44), while only three GCs lie in peripheral areas. The GCs differ in the variety of services provided to the players. Based on the cluster analysis, the GCs fall into three various groups, where the first cluster comprises standard playgrounds, whereas the third cluster includes rather luxurious properties, which is also reflected in the quality and variety of the services provided. The subsequent economic analysis unfolded that the costs exceeded revenues for approximately 60% of the analyzed GCs resulting in a negative economic result. The loss per hectare (ha) is up to -0.5 million CZK, and for those GCs that are profitable, these gains are only in the tens of thousands CZK. Moreover, the equity of GCs ranges from thousands (at least 1) through hundreds of thousands to millions of CZK (maximum 1.5-2.5). It seems that the motives of the holdings of the GCs are of a different character, i.e., not only financially, but also of a specific nature (owner prestige, depositing money into the assets, other uses of the acquired property and pursuing a sporting interest as a hobby). Although the paper focuses on the Czech GCs, the results could be generalized as the CR golf market is similar to other countries (i.e., saturated, stagnating membership base, low operating profitability, sustainability issues). The conclusions are beneficial not only for GCs owners or managers but also for researches concerned with socio-economic aspects of GC's construction, development, sustainability, and management.

Keywords: golf course, golf base, territorial characteristics, service, accounting analysis and relation to land

1. Introduction

The socio-economic aspects influence both the construction and the subsequent sustainability of the GCs (the operation of the GCs). GCs are not stand-alone operations in the landscape but interact significantly with their surroundings. While fulfilling the players' leisure activities, they also impact the local (or regional) economy and the land and real estate market (Completo and Gustavo, 2014 or Gibler et al., 2018).

GCs fulfil multiple functions in the landscape and the socio-economic sphere as they “communicate” (interact) with their surroundings (Completo and Gustavo, 2014). This can cover the immediate surroundings (the golf community) to longer distances (visibility of the municipality or region, sponsor and affiliate advertising; real estate and land market; etc.). Living in a golf community has advantages (+) and disadvantages (-), as reported by Gibler et al. (2018) in Alicante, Spain. The benefits include the existence of sports facilities (contribution

to a healthy lifestyle), improvement of social status, access to services, safety, green space, knowledge of environmental and natural values, availability of engineering and energy networks (water, sewage, lighting, waste disposal, etc.) and the regular availability of public transport, etc. The disadvantages are the high cost of living (the high price of real estate in the immediate vicinity). If the GC is in a peripheral area or at a greater distance from the conurbation then there is a lack of civic amenities and social services. When there is an absence of public transportation, the dependence on one's own transport remains. According to a study by [Gibler et al. \(2018\)](#), the benefits of living in a golf community outweigh the disadvantages. Therefore, the impact on residential construction is unquestionable and GCs tend to be part of larger real-estate projects ([Nicholls and Crompton, 2007](#)). The fact that a GC is not a one-man operation (in the sense of an isolated/lone subject) is confirmed by [Poulin et al. \(2006\)](#). The GC (*or golf*) creates its own portfolio of services and products on the one hand and demanding resources on the other (whether human or material – tangible and intangible) for their mediation or creation. Regarding the golf market and the golf industry, [Vamplew \(2016\)](#) adds that golfers themselves are creators and drivers of their own (golf) industry, employing a wide range of disciplines. [Wu and Ai \(2016\)](#) evaluated the golf industry and its sustainability in terms of golfers' loyalty based on their experience. Thus, they contributed through empirical research in marketing literature to fill the conceptual gap in golf tourism knowledge and to implement market strategies for golf management. It is the supersaturation of the golf market and the construction of GCs that is extremely dependent on maintaining the existing golf clientele, i.e., their loyalty ([Lee and Jee, 2016](#)).

GCs have a direct substantial and demonstrable impact on the local economy. According to a study by [KPMG \(2018\)](#), the estimated benefits for public budgets in the CR should be between 35.9-52.4 million CZK for 2018. [Gelan \(2003\)](#) gives an example of one of the oldest golf tournaments in the UK, which contributes up to 16 million GBP to the economy. The Czech Masters takes place in the CR, the cost of which is approximately 100 million CZK and covers, for example, the European Tour fee, advertising, human resources, etc. The private investor "D + D Real" ([Seznam News, 2019](#)) finances 99% of the tournament. The benefit of this tournament for the GDP of the CR is more than 3.75 million CZK and other revenues from golf tourism (see the multiplying effect of tourism, e.g., [Sharpley et al., 2002](#); [Goeldner and Ritchie, 2009](#) or [Kotler et al., 2010](#)). There is also foreign clientele, which represents up to one-quarter of visitors to the CR ([CE-Traffic, 2018](#)). The analytical study CE-Traffic estimates that foreign clients spend up to 2 billion CZK and the profit from tourism is 0.8 billion CZK. If the GC infrastructure is optimal, it sustainably strengthens the regional economy ([Martin-Utrillas et al., 2015](#)). The specifics of golf tourism create its own industry ([Hudson and Hudson, 2012](#)). Worldwide, it is estimated up to 50 million golf tourists visit 32,000 GCs per year. The increasing number of foreign golf clients in the CR mainly come from Germany (up to half of the total number of foreign clients), Austria and Poland ([CzechTourism, 2019](#)). In Michigan in the US, golfers spent a staggering \$10 billion in 1998 ([Stynes et al., 2000](#)). However, we cannot ignore the sustainability of our own GCs, which is usually dependent on the quality of the services offered to maintain their golf clientele ([Lyu and Hwang, 2017](#)).

GCs are usually built in times of an economic boom and copy economic (business) cycles ([Mothorpe and Wyman, 2017](#)). Furthermore, these authors confirm that GCs are not individual entities but are connected to other interest groups (developers). Therefore, the real estate market is affected by the construction of GCs, as is the land market. The development of other activities around the GC and the golf community (e.g., marketing strategies and job creation) is dependent on the global economy and can only be developed in a time of growth. GCs also impact their surroundings by increasing the value of the land and the land prices after construction ([Napton and Laingen, 2008](#)). This attracts investors and developers to these lucrative areas.

The primary aim of this study is to evaluate the selected socio-economic aspects affecting the construction and subsequent sustainability (operation) of the GCs. A further aim is focused on evaluating the impact of the GCs on the local (or regional) economy and on the land and real estate market. There is generally a lack of sufficient scientific literature in this area, so the authors of this study have decided to raise some of the issues related to the causes and consequences of the construction and operation of GCs. The study focuses on the following research questions (see the three subchapters in the Results):

1. What was the development of the construction of GCs and how does the development of the membership base correspond to the construction of GCs in the CR?
2. How do the socio-economic characteristics of the territory and the construction of GCs in the CR relate?
3. Are GCs in the CR profitable? What services do GCs offer and is there any similarity between them? What is their economic situation compared to other sectors (e.g., agriculture)? Does the construction and operation of GCs affect the value of the land on which the GCs lie?

2. Materials and methods

In this study, the database of GCs in the CR (Sláma et al., 2018^a) was used, which is unique because, in addition to the identification data of the individual GCs, it also contains their socio-economic and physical-geographical characteristics. For this article, new characteristics that have not yet been described or evaluated have been added to this database.

First, the development of golf club membership and the construction of GCs in the CR from 1990-2018 was examined. Based on the current data, a detailed regional and structural analysis of the GCs and **golf membership base** was conducted. The **golf membership base** data was provided by the [Czech Golf Federation \(2019\)](#) as of December 31, 2018. The accompanying data on the region's population (2019) and the economically active population (4th quarter of 2018) was downloaded from the [Czech Statistical Office \(2019\)](#). The Czech Golf Federation provided its data by region (NUTS 3) and the demographic data from the Czech Statistical Office was downloaded in the same structure. **The number of GCs and acreage** (in ha/m²) were updated to 2019. This data was entered into the database created for the study by [Sláma et al. \(2018^a\)](#).

Second, the **territorial socio-economic characteristics** of GCs were evaluated. The relevant methodology used by the Ministry of Regional Development (MRD) of the CR, which is included in the government's "Strategy of Regional Development of the CR 2014-2020", was used to define the **territorial socio-economic characteristics**. This methodology was fully published by [Integra Consulting \(2013\)](#) and [Postránecký \(2013\)](#). The **territorial typology** used is determined with regard to the economic performance, socio-economic development, geographical location and development dynamics. The methodology of the territorial typology is based on the three main aspects: 1) socio-economic potential (a concentration of the settlement/a size of population, a rate of unemployment, a number of business entities and an annual tax revenues); 2) location potential (an accessibility to centres of the settlement and main traffic routes by cars and public transport and 3) dynamics of the development (a change in the number of inhabitants, flats, unemployment and business entities in 2001 - 2011). The methodology divides the territory of the CR into three basic categories: 1) development, 2) stabilised and 3) peripheral areas. The classification of GCs according to the territorial typology was made possible by the implementation of GIS (= Geographic Information System) tools. First, the territorial typology map was georeferenced and digitised. The digitisation produced a vector polygon layer dividing all the municipalities of the CR into the three above-mentioned

territorial typology categories. Based on this dataset, the GCs were divided into the three territorial typology categories and the share of these categories within the NUTS 3 regions of the Czech Republic was calculated using the Overlay (Intersect) GIS tool. This regional division (NUTS 3) is further elaborated in the text and tables. The maps were created in ArcGIS software, version 10.7 (Esri, 2019).

The next step was to analyse the proportion of GC land that is owned by the GC owners and the proportion of the total area of the GCs that is rented. To do so, the GCs **accounting data** on the total costs and revenues and the turnover from services and land ownership (land improvement) were examined. This data was downloaded from the database (accessible to academically authorised persons) by Albertina (2019). In addition, the accounting data was supplemented from the Public Business Register and the associated Document Register (Justice.cz, 2019). The accounting data was available for 13 out of a total of 14 regions in the CR. A minimum of one accounting entity (i.e., GCs) was chosen for this research in each region and a total of 39 out of 112 GCs were examined. The data was from 2014 when the time series was the most continuous. The GCs (accounting units) were found to have 1. a book value of the land resulting from their ownership (acquisition) and 2. the market price of (not only) the agricultural land. The market prices for the cadastral territories, where the selected GCs are located, were surveyed from the available price map (Louky-Pole.cz, 2019) then 3. the property value (criterion value) was chosen according to Act. No. 151/1997 Coll. (1997), on which the basis for the annual collection of the real estate tax is set. The land ownership is related to its book value kept at historical prices. The book value represents the price at which the land was purchased. This price remains unchanged in the accounts as the land is not subject to wear so is not depreciated. However, over time, the price of land may increase if the land has been modified and its value has been improved. The analysis could not be conducted for all the GCs as the detailed accounting data from public registers is only available for those GCs that have the legal form of a limited liability company (Inc.) or a joint-stock company. GCs with the legal form of registered associations are not obliged to publish their data in a detailed structure, only in simplified summary data.

Another investigated characteristic (factor) was the portfolio of services offered by the GCs (e.g., restaurant, accommodation, wellness, congress centre...). The **service** portfolio was extracted from the GCs website (112 in total). The features were detected by an expert (a marketing specialist in the area of services) investigating the GCs websites. The survey results were coded, usually on a binary scale (e.g., golf equipment rental yes/no to 1/0). However, some features took on more values (e.g., accommodation services 0 - no, 1 - own facility, 2 - accommodation in a partner facility). The input to the analysis was the description of the GC given by the vector of the properties that describe the GC. Subsequently, the GCs were classified according to the portfolio of services offered. A cluster analysis has been used to classify the GCs, which appropriately reflects the chosen task as a method (Hennig et al., 2015) and is widely used in similar studies, e.g., Pagliacci (2019). To segment the GCs into clusters based on their similarity in the services offered, the optimal number of clusters was first estimated. R Package NbClust was used to do this, which, based on 30 indices, proposes the best clustering approach by varying all the combinations of the clusters, distance measures or clustering methods. This was followed by a cluster analysis (K-means) conducted in SPSS software (2019). The next step was to identify the features that contribute most to the clustering results. The statistical assessment and methods used (e.g., ANOVA) have been described in numerous articles in the literature (Heumann et al., 2016 or Lepš and Šmilauer, 2016).

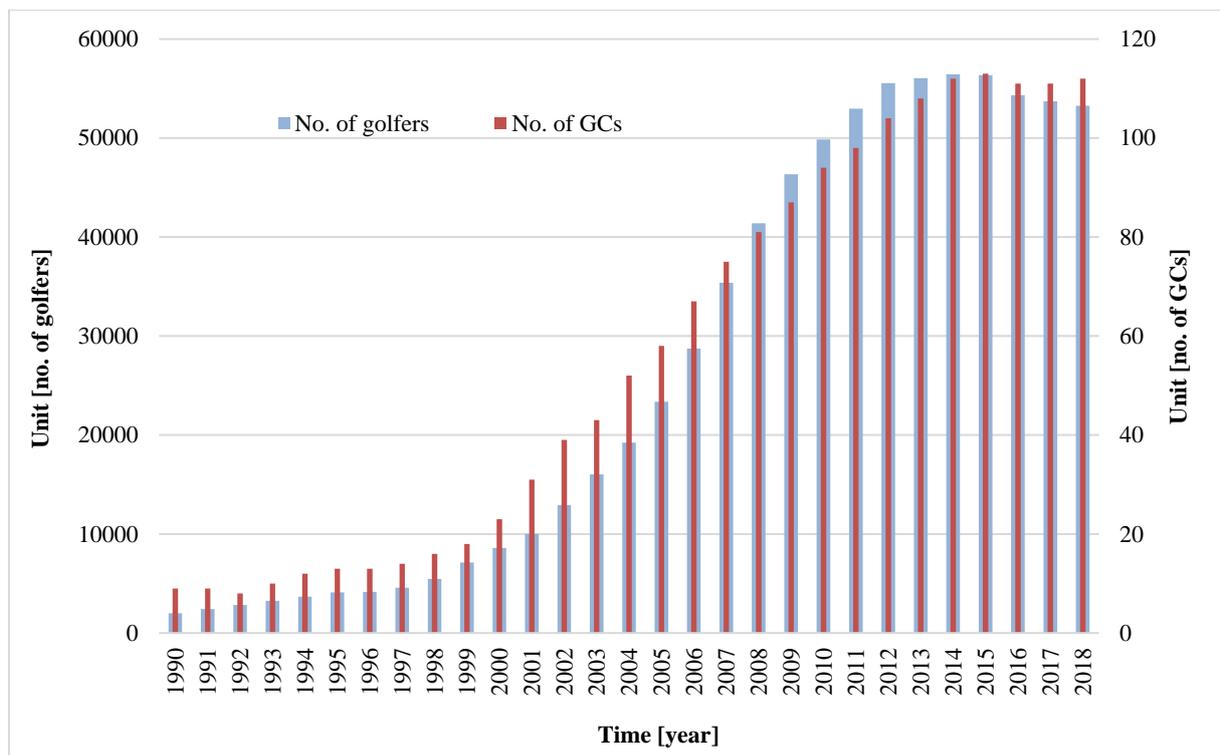
Using the aforementioned data and the developed methodological procedure, a detailed regional analysis of the development of the number of GCs and the golf base in the CR since 1990 was conducted and the relevant socio-economic and ownership characteristics (factors) affecting the location, development and sustainability of GCs were evaluated.

3. Results

3.1. Analysis of GC construction and the development of golf membership

There are currently 112 GCs in the CR with a total approximate area of 5,107 ha, while there were 114 GCs at the end of 2016. Three GCs were closed while one (The Oaks Prague) on the outskirts of Prague is currently under construction. However, this GC is part of a wider residential development project, not an isolated element. The construction of GCs in the CR roughly corresponds to the development of the golf base membership (see [Graph 1](#)). Since 2012, the Czech golf base has undergone a very slow growth rate and reached its maximum in 2014 (56,438 golfers) as shown in [Graph 1](#). The Czech golf base stagnated in 2014-2015, which was when it reached its highest historical values. Since 2016, there has been a slight decline in membership to 54,320 golfers. The latest figure from the [Czech Golf Federation \(2019\)](#) for the 2018 year is 53,252 members. The Czech Golf Association is the fifth largest sports association in the CR (The Football Association of the CR is first with almost 0.5 million registered members).

Graph 1: Development of golf base members and constructions of GCs in the CR (1990-2018)



The absolute highest number of golfers is found in the Capital City of Prague, and this absolute value corresponds to the ratio indicator – the percentage of golfers in the population ([Table 1](#)). This is followed by the Central Bohemian region with almost 10,000 golfers (absolute number). However, the ratio to the population in the region no longer corresponds to the absolute number, where the Central Bohemian region was in the hypothetical third place. The absolute number of golfers corresponds to the population of these regions. The traditional golf region of Karlovy Vary, i.e., approximately 1%, has nearly the same value of the ratio of golfers per population as the Capital City of Prague. On the other hand, the regions of Vysočina and Olomouc have the lowest number of golfers, even in relation to the population of the region.

Table 1: The number of golf base members in the individual regions in the CR (as of December 31, 2018)

Code (NUTS 3)	Region (NUTS3)	Size of the membership base	Population in the region	Total share of golfers per population
CZ010	Capital City of Prague	13 362	1 308 632	1.02%
CZ020	Central Bohemian	9 935	1 369 332	0.73%
CZ031	South Bohemian	2 668	642 133	0.42%
CZ032	Pilsen	2 299	584 672	0.39%
CZ041	Karlovy Vary	2 850	294 896	0.97%
CZ042	Ústí	2 559	820 789	0.31%
CZ051	Liberec	2 490	442 356	0.56%
CZ052	Hradec Králové	2 803	551 021	0.51%
CZ053	Pardubice	2 105	520 316	0.40%
CZ063	Vysočina	979	509 274	0.19%
CZ064	South Moravian	4 004	1 187 667	0.34%
CZ071	Olomouc	1 063	632 492	0.17%
CZ072	Zlín	1 593	582 921	0.27%
CZ080	Moravian-Silesian	4 542	1 203 299	0.38%

The other summary data for the regions is contained in [Table 2](#) (the number of GCs and the total area, the number of golfers per GC and how many golfers per ha). [Table 2](#) shows that the highest number of GCs and their area is located in the Central Bohemian region and the Karlovy Vary region. The number of golfers per GC is the highest in the Capital City of Prague and this ensures their maximum revenue (as shown by the number of golfers per hectare - hereafter ha). Part of the historical territory of Moravia (specifically the South Moravian and Moravian-Silesian regions) shows high values indicating a good revenue for GCs. Conversely, the regions of Karlovy Vary, Ústí and Zlín show the lowest values in terms of the GCs revenue. *About one-third of the GCs can be said to be at a high level of comfort for golfers in terms of the area on which they move. However, this figure is considerably hypothetical, since the total area of GCs (including rough and semi-rough areas) and the full involvement of the membership base per one game instance are considered.*

Table 2: The selected characteristics per member of the golf base in the CR

Code (NUTS 3)	Region (NUTS3)	No. of GCs in region	Total area of GCs [hectare = ha] per region	No. of golfers per GC	No. of golfers per ha
CZ010	Capital City of Prague	8	257.36	1 670	52
CZ020	Central Bohemian	24	1 368.62	414	7
CZ031	South Bohemian	8	473.63	334	6
CZ032	Pilsen	5	238.27	460	10
CZ041	Karlovy Vary	10	589.25	285	5
CZ042	Ústí	9	277.82	284	9
CZ051	Liberec	8	268.13	311	9
CZ052	Hradec Králové	8	268.65	350	10
CZ053	Pardubice	5	204.23	421	10
CZ063	Vysočina	2	76.96	490	13
CZ064	South Moravian	7	319.59	572	13
CZ071	Olomouc	2	102.93	532	10

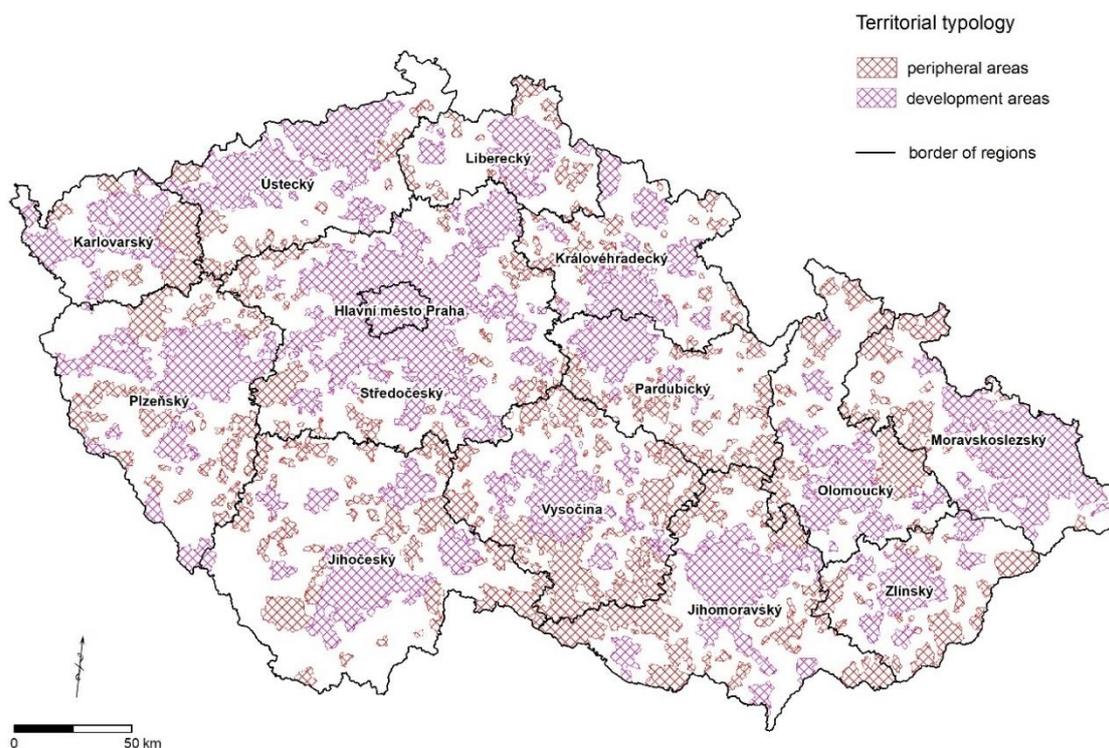
CZ072	Zlín	7	122.27	228	13
CZ080	Moravian-Silesian	9	539.55	505	8
NUTS 1 = The Czech Republic (CZ0)		112	5 107.26	476	10

In terms of other hypothetical data concerning the area, the number of hectares per golfer can be illustrated. The three regions with the highest area per golfer are shown and the area rounded to two decimal places in parentheses: the Karlovy Vary region (0.21), the South Bohemian region (0.18) and the Central Bohemian region (0.14). In contrast, the smallest area per golfer is in the Capital City of Prague (0.02).

3.2. Socio-economic characteristics of the territory of GCs

Map 1 shows the territorial distribution of the CR into 14 regions (NUTS 3) as well as the territorial distribution of three territorial types of socio-economic areas based on the MRD methodology of the CR: stabilised, developmental and peripheral. All the regions are made up of more territorial types, except for the Capital City of Prague, which consists purely of a developmental territorial type. In terms of development, this region can be classed as dynamic with an average economic performance. The tables refer to the share of the area of individual territorial types in regions (Table 3) and the localisation of the GCs in individual regions and territorial types (Table 4, see Annexe 1). Using this data, the context in which the construction of GCs has been placed can be evaluated.

Map 1: The regions of the CR and the types of territory according to the methodology of the MRD of the CR (white areas in the map = stabilised areas)



In addition to the aforementioned Capital City of Prague, more detailed findings on the other regions are provided in Table 3. If the development area is perceived as a dynamically developing environment, this territorial type is strongly represented (more than one-third) in

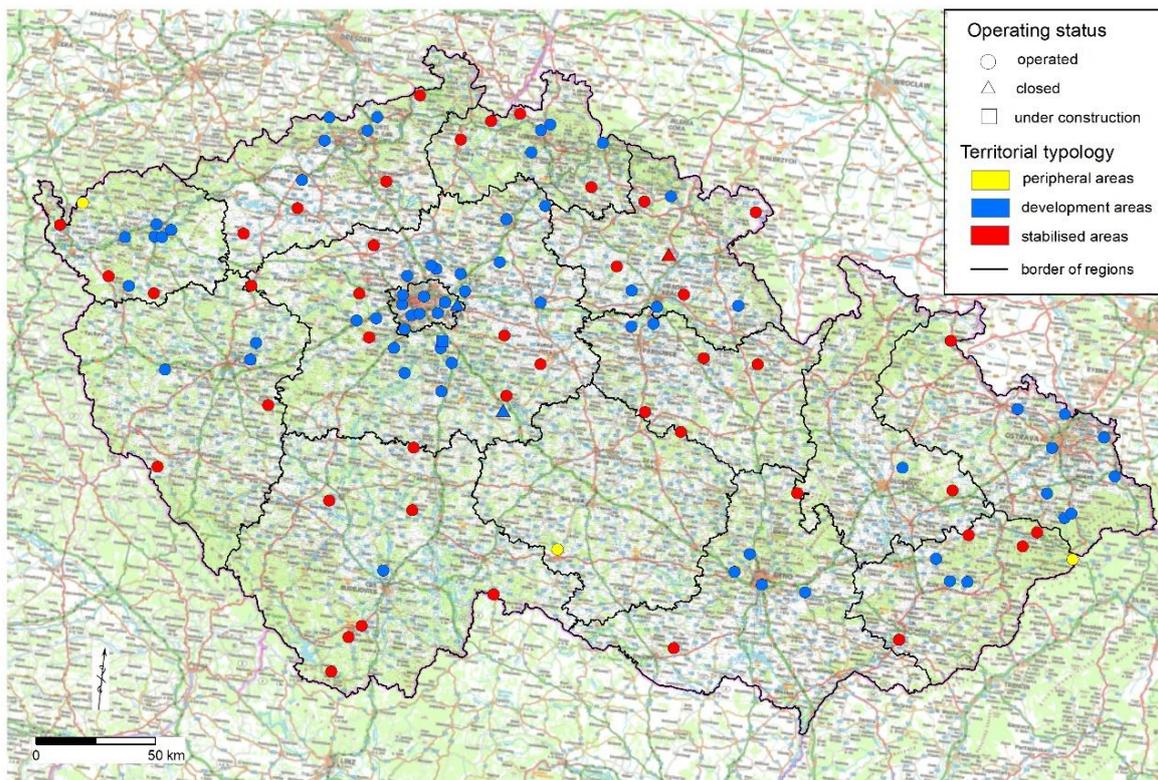
the following regions: Moravian-Silesian, Central Bohemian, Ústí and Karlovy Vary. On the contrary, a peripheral area, which can be considered (at the same time, not prognostically) as static or declining, and a significant area (more than one-third) can be found in the Vysočina region. The stabilised area (about 60% representation), where the development process is weaker, can be identified in South Bohemia, Hradec Králové, Liberec and Pardubice.

Table 3: The percentage of the types of territory in the regions of the CR

Code (NUTS 3)	Region (NUTS3)	Percentage of the region in the area of the CR	Percentage [%] representation in individual types of territory
CZ010	Capital City of Prague	0.63%	Development area: 100
CZ020	Central Bohemian	13.97%	Peripheral area: 9.91, Development area: 39.60 and Stabilised area: 50.49
CZ031	South Bohemian	12.75%	Peripheral area: 18.75, Development area: 17.86 and Stabilised area: 63.39
CZ032	Pilsen	9.59%	Peripheral area: 17.07, Development area: 26.30 and Stabilised area: 56.62
CZ041	Karlovy Vary	4.20%	Peripheral area: 22.20, Development area: 36.70 and Stabilised area: 41.10
CZ042	Ústí	6.76%	Peripheral area: 9.84, Development area: 38.21 and Stabilised area: 51.94
CZ051	Liberec	4.01%	Peripheral area: 13.88, Development area: 26.23 and Stabilised area: 59.89
CZ052	Hradec Králové	6.03%	Peripheral area: 12.30, Development area: 26.35 and Stabilised area: 61.35
CZ053	Pardubice	5.73%	Peripheral area: 23.59, Development area: 17.12 and Stabilised area: 59.29
CZ063	Vysočina	8.62%	Peripheral area: 33.40, Development area: 18.57 and Stabilised area: 48.03
CZ064	South Moravian	9.12%	Peripheral area: 28.55, Development area: 23.25 and Stabilised area: 48.20
CZ072	Zlín	5.02%	Peripheral area: 20.01, Development area: 22.79 and Stabilised area: 57.20
CZ080	Moravian-Silesian	6.88%	Peripheral area: 14.34, Development area: 41.34 and Stabilised area: 44.32

Regarding the construction of GCs in the individual regions within the three territorial types, it can be stated that the construction of the GCs is still ongoing in the different regions and territorial types. [Map 2](#) illustrates the construction of the GCs in the different territories according to the MRD methodology of the CR. Eight GCs are located in the dynamically developing (100%) Capital City of Prague ([Table 3](#) and [Table 4](#), see [Annexe 1](#)). The second most dynamic region in the CR is Central Bohemia with 16 out of 23 GCs in the development area.

Map 2: The GCs in the different types of territory according to the methodology of the MRD of the CR



The South Bohemian region has the same number of GCs (7) in the stabilised area as the Central Bohemian region. However, in the South Bohemian region, this territorial type is dominant in terms of the GCs built. There is currently no significant development activity in the South Bohemian region, although there is a tendency to make this region more dynamic again. It is worth mentioning that only three GCs in the CR are located in the peripheral areas (one GC in each of the following regions: Karlovy Vary, Vysočina and Zlín). These GCs are either historic or have been created with the assumption of levelling their standards in the previously mentioned areas (engineering and energy networks).

3.3. The selected indicators of the accounting analysis of the GCs

Selected analysis of the accounting data and services of the GCs

The data from [Table 5](#) (see [Annexe 1](#)) describes the total cost and income figures available for thirteen of the fourteen regions in the CR. A minimum of one accounting entity is available in each region (i.e., GC). The data is from 2014, where the time series was the most continuous. Altogether, 39 out of 112 GCs (almost 35%) were identified in this way; the total area is 2,213.55 out of 5,105.98 ha (i.e., more than 43% of the total area of the GCs in the CR).

The costs and benefits between the GCs per ha were calculated. The most expensive GCs in the CR are located in the Capital City of Prague and the Pardubice, Vysočina and South Moravia regions. Concurrently, the GCs in the Capital City of Prague and the region of Pardubice have the highest total revenue (including the sales of services). The GCs in the Moravian-Silesian region do not show as unfavourable results as could be expected from a regional macroeconomic comparison in the CR. However, this region has been showing progressive improvement in recent years. When comparing the costs and revenues, it can be observed that

in eight out of the thirteen regions under review, the costs exceed revenues (and, thus, also the revenues from the services). In four cases out of thirteen, the revenues slightly outweigh the costs and only in Pardubice are the revenues are more significant than the costs. *The analysed GC in the South Moravian region did not show any service revenues (i.e., zero) in its financial statements*. The following [Table 6](#) depicts the revenues from the services per area (ha).

Table 6: Revenues from the services per ha of the analysed GCs (aggregated by region)

Code (NUTS 3)	Region (NUTS3)	No. of selected GCs	Total area [ha]	Revenue from services [thousands CZK]	Revenue from services [thousands CZK/ha]
CZ010	Capital City of Prague	3	159.23	48 988	307.66
CZ020	Central Bohemian	11	777.60	121 502	156.25
CZ031	South Bohemian	2	122.80	879	7.16
CZ032	Pilsen	1	95.93	21 883	228.11
CZ041	Karlovy Vary	7	574.96	83 392	145.04
CZ042	Ústí	3	84.19	12 668	150.47
CZ051	Liberec	1	35.10	132	3.76
CZ052	Hradec Králové	3	115.00	24 976	217.18
CZ053	Pardubice	2	58.95	41 656	706.63
CZ063	Vysočina	1	1 042.00	2 802	2.69
CZ064	South Moravian	1	15.00	0	0.00
CZ072	Zlín	2	24.48	4 189	171.12
CZ080	Moravian-Silesian	2	139.89	47 855	342.09

As the revenues from additional services represent a significant share of total revenue, the following focuses on a more detailed analysis of the GCs services portfolio.

The GCs were divided into three groups based on the cluster analysis. The subsequent ANOVA analysis also revealed which variables contributed the most to the cluster assignment. Variables with large F values provide the greatest separation between the clusters. The most important variables (services) in this respect are Restaurant (p-value = 0.000), Accommodation (p-value = 0.000), Congress Centre (p-value = 0.000), Tournaments (p-value = 0.001), Wellness (p-value = 0.007) and Teaching of Golf (p-value = 0.020). Other services provided by most GCs are clubhouse, (e)shop, rental services (i.e., golf equipment), golf simulator, or children's playground. However, such services are not statistically significant (p-value \geq 0.05) when clustering the GCs based on the additional services provided.

The characteristics of each cluster are as follows. The first cluster (48 GCs) can be characterised as public GCs, which are also suitable for beginners. There are also traditional GCs such as Golf Club Líšnice founded in 1928 or Ringhoffer Golf Club (1926) or smaller clubs (e.g. Resort Bůřov - mountain GC). In this cluster are mostly 9-hole resorts, although there are also 18-hole GCs (for example, Golf Club Český Krumlov set in beautiful natural scenery, where one can relax in the beer spa – Svach's Court). The second cluster (31 GCs) includes 27-hole GCs where professional tournaments are organised, for example, Golf Resort Karlštejn (this GC offers breath-taking view of a monument of Czech history – Karlštejn Castle built in 1365-1372). There are more luxury resorts in this cluster than in the first cluster and we can also find some Prague GCs (Golf Club Prague or Prague City Golf). The third cluster (33 GCs) is represented by the most luxurious resorts, including 27-hole GCs. This can be characterised by examples such as the Darovanský Dvůr Resort with its unique "jade" spa, Golfresort Monachus with prevailing foreign (Austrian) clientele, Ypsilon Golf Liberec (professional tournaments) and Golf Resort Barbora (built on a reclaimed area), etc. Golf Club Ještěd is an unconventional and high-altitude GC in this cluster. Most of the GCs are truly unique and outstanding in the Czech golf world. Golf Konopiště (situated in a beautiful 17th-century chateau park) and Golf Club Hluboká nad Vltavou (view of the scenery from the neo-romantic chateau) can be considered as gems. Another chateau GC is Golf Club Chateau St.

Havel in Prague. The most prestigious Prague GCs are also in this cluster (e.g. Golf Resort Black Bridge). It is also possible to locate the oldest GC in the CR, the Royal Golf Club Mariánské Lázně, which was inaugurated in 1905 by the English King Edward VII.

Even if many GCs provide a copious portfolio of additional services, the revenues fail to cover all costs (Sláma et al., 2018^a). In eight out of thirteen regions, negative economic results are achieved, which also follows the trend of higher costs than revenues. Of note is that the most negative values of the profit per ha are in the GCs in the Capital City of Prague (almost 0.5 million CZK) and the Zlín region (more than 100,000 CZK). Positive economic values are achieved in the regions of Pilsen, Ústí, Liberec, Pardubice and Vysočina. The best economic result per hectare was achieved in the Pardubice region (more than 40,000 CZK), followed by the Pilsen region (more than 20,000 CZK). *Even though a positive economic result per ha was achieved in some regions, these values are only in the order of tens of thousands of CZK (specifically 1-40 thousand).*

Regarding the equity after conversion per hectare, the GCs reach the highest values (from 1.5 to 2.5 million CZK) in the regions of Pilsen, Zlín and Moravia-Silesia. In the Capital City of Prague and the regions of South Bohemia, Karlovy Vary and Ústí, the value of equity exceeds hundreds of thousands of CZK. For the regions of Central Bohemia, Liberec and Pardubice, the value of equity is in tens of thousands of CZK. In the Vysočina region, the GCs have an equity value of less than 1,000 CZK and in the Hradec Králové region have a net equity value of around hundreds of thousands of CZK. Higher equity value is a prerequisite for better economic management.

The selected analyses of land ownership relationships and price development

Each GC needs land that it either owns or leases to operate. We analysed how many GCs own the land from the available final accounts. Of the total number of 112 GCs, data for 44 GCs was collected, which represents approximately 40% of the total GCs, of which 27 are GCs with the legal form of Inc. or a joint-stock company. Of these 27 GCs, 18 report the land value in their financial statements, i.e., 67% of the GCs are landowners and 33% operate the GCs on leased land. This analysis is loosely related to the previous analysis of the selected accounting data. It should be noted that when a GC operates on leased land, paid rentals will appear in the cost of services. If a GC operates on its own land, it will not increase any cost item.

Table 7 shows the appreciation of the land on which the GCs were built. It is a selection of the GCs, from which the value of the land was determined from the financial statements and the area in hectares of the GCs was known. In 12 cases out of the 18 analysed GCs, a significant land value assessment (accounting) was found, of which it was almost twice as much (in three cases), triple (also in three cases) and multiple times (in two cases) compared to the average market price of land at real estate agencies. In total, the land appreciated due to the construction of GCs in two-thirds of the analysed sample, and there were no differences between the market and the book value in three cases. The three cases where the book value is lower than the market value, only appear to be an advantage to the landowners. They would most likely get a higher price when it is sold than is reported in the accounts. The criterion value was chosen as supplementary according to Act. No. 151/1997 Coll. (1997), on which the basis for the annual collection of the real estate tax is set. This value is, in many cases, three to four times lower (sometimes much more) than the market price; in only two cases is it only two times lower. However, the property value can be increased by an average of 30-50% depending on the characteristics of the territory (up to two to five times its basic value for large conurbations), see Annex 5 of Act. No. 151/1997 Coll. (1997).

Therefore, it can be said that due to the construction of the GCs, the book value of land and the total volume of assets have increased. At the same time, it can be documented that the

market price of land (property) in the CR almost doubled in the period 2012-2018 (see [Table 8](#) in subchapter 4.2.).

Table 7: The accounting appreciation of the selected GC land

No. of selected GC	Area of GC [ha]	Region (NUTS 3)	Book value of the land [thousands of CZK / ha]	Value of the land according to Act No. 151/1997 Coll. (1997)* [thousands CZK / ha]	Market price** of the land [thousands of CZK / ha]
1	73.54	Karlovy Vary	242	35	178
2	69.95	Karlovy Vary	529	42	177
3	119.46	Central Bohemian	486	58	209
4	52.05	Central Bohemian	11	60	210
5	50	Pardubice	810	91	211
6	131.08	Central Bohemian	10	68	203
7	47.9	South Bohemian	153	42	192
8	8.95	Pardubice	139	71	204
9	36.9	Ústí	390	52	202
10	72.45	Hradec Králové	168	28	178
11	28.66	capital city of Prague	401	61	211
12	84.14	Central Bohemian	458	128	278
13	72.15	Central Bohemian	66	72	222
14	12.54	Hradec Králové	1 596	79	229
15	71.6	Moravian-Silesian	3 664	21	171
16	20.54	Zlín	211	20	170
17	68.29	Moravian-Silesian	389	102	252
18	28.31	Capital City of Prague	657	83	233

*According to the latest valuation decree and the current wording of the Act of 2017.

** The market price of the land is the price at which the land is normally sold in the cadastral territories where the individual GCs are located.

Note: For this analysis, the values were rounded to whole numbers.

4. Discussion

4.1. Analysis of the construction and socio-economic characteristics of the territory of GCs

The main aim of this study was to evaluate the development and localisation of the GCs and selected socio-economic factors affecting the construction and the subsequent sustainability (operation) of the GCs. From a detailed analysis of the development of the construction of the GCs in the CR, it is evident that the 1990s were characterised by a gradual increase in the construction of GCs in the CR (1999: 18 GCs). The period associated with the new millennium reflects the economic boom, which manifested itself in the dynamic construction of GCs (2019: 112 GCs). The trend of the dynamic development of GCs over the last 30 years is a global trend ([Petrosillo et al., 2019](#)). At this point, it is necessary to remember that in the early 1990s the paradigm of many countries in the world changed, and geopolitical changes occurred throughout the continents. The old continent, Europe, was mostly affected by the collapse of the Soviet Union in 1991 ([Marples, 2016](#)), causing global changes in the world economy. The CR was one of the satellite countries of the “Eastern Bloc”. Now, after only 30 years, the socio-economic saturation of the global economy has occurred. The first wave came with the global economic crisis of 2007-2008 ([Eckhard, 2019](#)). Recent [KPMG \(2019\)](#) data on the example of GCs in Europe indicates that the global economy is stagnating once again following the economic recession that followed the last economic crisis. Almost half of the countries (21 of 47) in continental Europe (e.g., England, Scotland and the Scandinavian countries) report a slight decline in the level of their local golf markets, and the number of registered players has also slightly decreased (- 0.6%). This is shown in [Graph 1](#) in the CR, which reflects the global economic context (the saturation of the golf market and the stagnation of the golf base). The

stagnation in the golf base is not only a problem affecting the CR and continental Europe. The stagnation of the golf base as a global problem is also mentioned, for example, by [Chi-Hyung \(2015\)](#). Three closed GCs (all three of which were situated in the historical territory of Bohemia) prove that the golf market is truly saturated. All three resorts were closed in 2016, so this particular year can be considered a milestone in Czech golf. One of these complexes (GC Nová Amerika) was significant as it was the first ever 27-hole complex in the Czech lands ([Sluka, 2019](#)). Its prestige and duration date back to 2002-2016 when it hosted European tournaments. In just two years, the access road and the GC itself were abandoned because it was not maintained. *The problem of the saturation of the golf market is not only threatened by a low standard and public GCs, but also by luxury resorts.*

There is no doubt that the golf market in the CR is truly saturated. The only exception is the emerging Prague Oaks GC, which is part of the project of the same name with a complex residential solution (urbanised development with all the infrastructure), which is responding to the current market requirements in real estate. The trend of constructing GCs with a residential development has penetrated the CR from the USA, where approximately 12% of the GCs are developed in this way ([Napton and Laingen, 2008](#)). *The complexity plays an important role here to help ensure sustainability.*

A detailed look at the structure of the GCs and the Czech golf membership base in the individual regions can be compared with the local socio-economic characteristics ([Postránecký, 2013](#)) and the socio-economic situation of the area. The uneven distribution of GCs in the regions was examined in detail in this study, and, for this reason, the GC database used was supplemented with territorial characteristics (stabilised, developmental and peripheral areas). These socio-economic characteristics better reflect the macroeconomic and partly the microeconomic level. From this point of view, Central and West Bohemia (i.e., the regions of the Capital City of Prague, Central Bohemia, Karlovy Vary and Hradec Králové) are among the macroeconomically strongest and, in terms of time, the most stable regions in the CR ([Czech Statistical Office, 2019](#)). On the other hand, the Moravian-Silesian region is considered to be peripheral in the long-term. Regarding the construction of GCs in the individual regions within the three territorial types, it can be stated that the construction of the GCs took place and is continuing in the different regions and territorial types. However, it is possible to find a tendency to build GCs in the developing and stabilised areas (a significant percentage of the GCs built in the most developed regions of Prague and Central Bohemia). Only three GCs in the CR are located in the peripheral areas. Over the longer term, no significant changes are expected in the construction of GCs in the CR; in the short term, the emphasis will be placed on the quality of the GCs and the stabilisation/development of the membership base.

4.2. Selected indicators of the accounting analysis and services of the GCs

GCs expand the regional range of services, so the local economy benefits from the presence of GCs, as they create lucrative jobs in their specific industry (golf tourism; [Peter, 2007](#)). The service offer (due to its specificity) requires a unique approach (due to the uniqueness of each golf destination that may be close to ideal, as discussed in the study by [Kim et al., 2005](#)). Our results (see subchapter 3.3.) confirm that additional services provided with the main business (golf) can be used as a significant predictor and distinguish between various types of GCs. In general, three different types (clusters) of GCs were identified. The clusters were further expertly described (characterised). It is clear from the description of clusters that the GCs in the CR are not uniform. Although all the GCs achieve a high standard in terms of services offered (and the Czech Golf Federation is standardised in terms of play), they form their own distinctive groups. **A relationship (or similarity) between the services offered by the GCs in the CR exists and is also the basis for belonging to a certain group of GCs.**

Boukas and Ziakas (2013) confirm the necessity of the concept of providing marketing services at the GCs. In particular, the destination of the GC itself must be taken into account. The uniqueness of the golf destinations in the CR was proven in a study by CE-Traffic (2018). Foreign clients consist of up to one-quarter of all visitors to the GCs in the CR. Visitors from Germany, Slovakia and Poland are mostly represented. The dominant groups of visitors are businessmen aged 40-49 and senior couples. Although the current share of foreign clients may seem sufficient, the GCs themselves rate them as relatively low. Foreign players are lucrative for the GCs in the CR. Boukas and Ziakas (2013) confirm that GCs increase golfers' motivation with additional services and amenities (i.e., links to other facilities – infrastructure and development activity). *The Executive Director of the PGA European Tour stated the need for innovation to keep the interest of players.* GolfCut.cz responded to innovations in the CR (expansion of the existing portfolio), which started to provide an “individual corporate programme” for more than 25 GCs (more than 20%). The programme is designed for company management and as a benefit for their employees. These GCs can be run officially as a business.

The saturation of the golf market is also reflected in the services in this area. An example in the CR is the decline of GolfProfi, the largest specialist golf shop (Fojtík and Kotrbatý, 2019). The stagnation of the golf base and the loss of GCs thus have an impact on golf equipment stores.

According to our results, 67% of the GCs are landowners and 33% operate the GCs on leased land. For GC operators that operate on leased land, this seems to be favourable as they are in the role of a tenant. Table 8 shows the average growth of the market prices in the CR since 2012 (Farmy.cz, 2019). The price of land increased by almost 10% up to 2017. In 2018, prices stagnated against 2017 (Farmy.cz, 2019). In 2018, agricultural land was most often traded at market prices ranging from 15-40 CZK/m². For exceptionally high-quality arable land and in locations with high competition among shoppers, the prices also exceeded the mentioned upper limit, exceptionally up to around 50 CZK/m². Relationships between GCs in the CR and the agricultural land market were discussed by Sláma et al., 2018^a). The results documented that in the CR more than 34% of the GCs were built on high-quality soil.

Table 8: Development of the market price of land in the CR

Year	2012	2013	2014	2015	2016	2017	2018
Market price of agricultural land [CZK/ha]	118 712	124 070	139 590	162 565	204 085	235 111	240 850

The study examined the appreciation of the land on which GCs were built. A significant land value assessment (accounting) was found, which was almost twice as much (in three cases), triple (also in three cases) and multiple times (in two cases) compared to the average market price of land at real estate agencies. It was proven that the land appreciated due to the construction of GCs in two-thirds of the analysed sample, and there were no differences between the market and the book value in three cases. The criterion value was chosen as supplementary according to Act. No. 151/1997 Coll. (1997), on which the basis for the annual collection of the real estate tax is set. This value is, in many cases, 3-4 times lower (sometimes much more) than the market price. The property value can be increased by an average of 30-50% depending on the characteristics of the territory (up to 2-5 times its basic value for large conurbations), see Annex 5 of Act. No. 151/1997 Coll. (1997).

In addition to supply and demand on the market, the price of land is also affected by legislative changes. Attempts were made in 2018 to introduce legal regulations on the land market. In the last discussed amendment to Act. No. 252/1997 Coll. (1997) on agriculture, the author was the Agricultural Association of the CR. This regulation tends to limit the rights of

landowners in disposing of their property and granting a disproportionate advantage to tenants. Given that the infringement of the above-mentioned regulations would expose the owner to the threat of recovery by the landlord, the approval of such an obligation would have an impact solely on the selling landowners.

The GCs located in the different types of territory according to the MRD methodology of the CR and in the different clusters can be seen in [Table 4](#) (see [Annexe 1](#)). This is the connection of the territorial type and the “level” (similarity) of services – a kind of standard. The synthesis of both investigated areas revealed that the GCs in the individual territorial types belong to different clusters (1, 2 and 3). An example is the only three GCs located in the peripheral areas and each of the GCs are located in clusters 1, 2 and 3 (i.e., an even representation). The GCs have been continuously reconstructed and expanded in the past, mainly in 2000-2005 and 2006-2010. Reconstruction has increased their standards, both in terms of the services and existing facilities and the number of holes. *In the future, their standard and, thus, their membership of a particular cluster could be increased (although probably only by reconstruction)*. At the end of 2016, three GCs ceased to exist, two of which belonged to the development area and one to the stabilised area. Two GCs from the development area belonged to the first cluster (standard areas) and the GCs from the stabilised area were in the third cluster (luxury area). **Therefore, the eventual extinction of the GCs is not limited to the territorial type or cluster membership.** Similarly, the GCs established after 2015 belong to various clusters (first, second, or third) and are spread over various types of territory (stabilised and developing). Thus, the uniqueness of the locality itself (geographical destination, which is individual for each GCs) appears to be the key aspect when deciding on a new GC (also confirmed by [Sláma, 2018](#)).

4.3. Economy and ecological sustainability of GCs

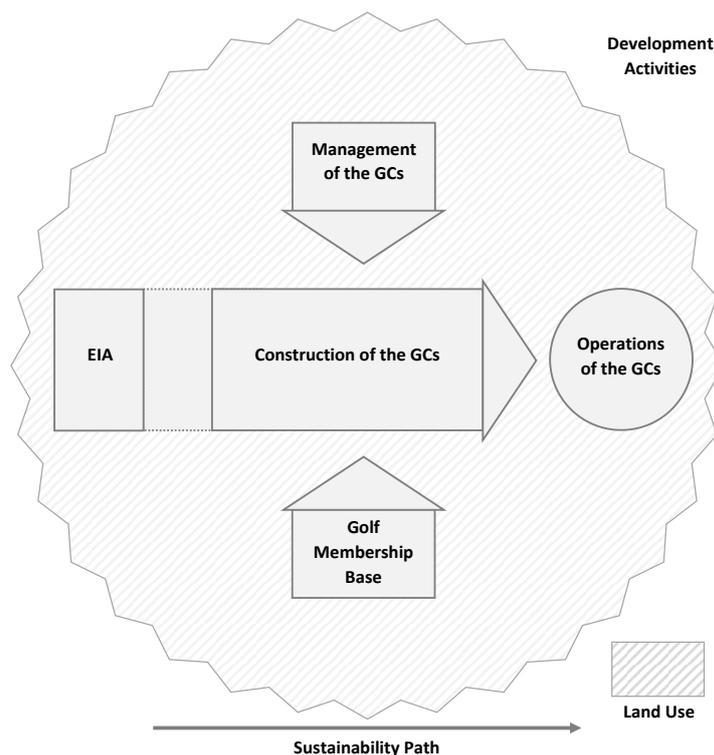
Since 1989 (after the fall of communism in the CR), the construction of GCs has been booming. The construction of GCs as a world trend is confirmed by [Petrosillo et al. \(2019\)](#). In relation to this, it has raised questions about the impacts or benefits of the construction of GCs and their subsequent operation. Some positive aspects of GCs include landscape cultivation (e.g., land reclamation or revitalisation in urban areas or green spaces in urban areas, [Clark, 2010](#)) and the socio-economic land use (e.g., infrastructure improvement). The ownership of a restricted area of land and restrictions on access to it may be negatively perceived ([Sandberg et al., 2016](#) or [Sláma et al., 2018^b](#)). Therefore, various measures are proposed inside the GCs – trails, biozones, bio-corridors, etc., and GCs can freely become accessible green zones (“parks”) outside of playing time.

In the CR, an EIA (Environmental Impact Assessment) study is prepared during the design of each GC according to the relevant [Act No. 100/2001 Coll. \(2001\)](#) and amended [Prescription Act No. 39/2015 Coll. \(2015\)](#). The EIA includes the sustainability perspective as known from the field of environmental economics or management. Various aspects of sustainability (from the environmental issues to the operations) assessed by the EIA are based on the principles of sustainability found in the Sustainable Development Assessment, according to the Organisation for Economic Co-operation and Development (OECD) or the United Nations (UN). However, these principles are not evaluation indicators or measures themselves. A comprehensive assessment within the EIA can be demonstrated in the example of Golf Club Český Krumlov ([EIA SERVIS s.r.o., 2004](#)). [Sláma et al. \(2018^a\)](#) conclude that this study was carried out before the beginning of the GC’s construction and no further study was conducted after the start of operations (apart from the monitoring reports on the financing of the EU project – the sustainability aspect of the project). The GCs owners prefer their own funding over debt financing to keep their decision-making powers.

Most of the land that is owned by GCs has the character of agricultural land. A reason for establishing and operating GCs in terms of land is the prestige of land ownership, which is a key aspect for any development activity. For economy sustainability, the advantage for GCs is that the managed farmland areas can easily change their business from sports to agriculture (currently the share of GCs is 0.12% of the total area of agricultural land in the CR, see [Sláma et al., 2018^a](#)). Revenues per hectare in agriculture do not reach the level of revenues for GCs, but agriculture is in the black in the CR (i.e., a positive economic result). In addition, farmers can and will receive subsidy titles. The positive management of Czech agriculture is connected with European subsidies and the CR's accession to the EU (2004), and these tendencies have been apparent since 1998. With the accession of the CR to the EU, business income in Czech agriculture increased by more than 270% ([Sláma et al., 2018^a](#)).

[Image 1](#) depicts a framework of the path of GCs leading to sustainability. One of the key interactions with the environment is the development activities (consisting of developers and development groups), which fundamentally affect the lucrative nature of GCs (and vice versa). The scheme also includes EIA, without which the GC project cannot be approved. GCs must be operated effectively (including financial management); simultaneously, they cannot exist without a large membership base. Therefore, additional services play an important role. All this affects the sustainability of GCs, which cannot always be measured objectively.

Image 1: Schematic representation (framework) of the path of GCs leading to sustainability



Note: Development activities influence the whole management of the GC(s).

5. Conclusion

The main aim of this study was to evaluate the development and localisation of the GCs and the selected socio-economic factors affecting both the construction of the GCs and their subsequent sustainability (operation of the GCs). From a detailed analysis of the development of the construction of the GCs in the CR, it is evident that the 1990s were characterised by a

gradual increase in the construction of GCs in the CR (1999: 18 GCs). However, recent data on the example of GCs indicate that the global economy is stagnating. This is reflected in the CR, which reflects the global economic context (the saturation of the golf market and the stagnation of the golf base). The proven stagnation in the golf base is not only a problem of the CR but a global problem, and three closed GCs in the CR prove that the golf market is truly saturated. *The problem of the saturation of the golf market is not only threatened by a low standard and public GCs but also by luxury resorts.*

Regarding the construction of GCs in the individual regions within the territorial types, it can be stated that the construction of the GCs took place and is continuing in the different regions and territorial types. However, it is possible to find a tendency of the territorial concentration of GCs in the developing and stabilised area. Only three GCs in the CR are in the peripheral areas.

The results confirm that some services provided together with the GCs dominate. Based on the cluster analysis of services (predictors according to their significance), it was possible to classify the GCs into three groups (clusters). The clusters were further expertly described (characterised). It is clear from the description of the clusters that the GCs in the CR are not uniform. A relationship (or similarity) between the services offered by the GCs in the CR exists *and is also the basis for belonging to a certain group* of GCs.

A significant land value assessment (accounting) was found, which was almost twice as much (in three cases), triple (also in three cases) and multiple times (in two cases) compared to the average market price of land at real estate agencies. It was proven that the land appreciated due to the construction of GCs (in two-thirds of the analysed sample). Based on the annual collection of the real estate tax it was found that the value of the tax is three to four times lower (sometimes much more) than the market price in most cases. The property value can be increased by an average of 30-50% depending on the characteristics of the territory (up to two to five times its basic values for large conurbations), see Annex 5 of [Act. No. 151/1997 Coll. \(1997\)](#).

Most of the land that is owned by GCs has the character of agricultural land. In the GC community, the entities operating the GCs on leased land are separated from the landowners. This is related to the proposals for some, currently new, legislative measures on the land market aimed at regulating the supply of land.

In terms of sustainability, one of the key interactions with the environment is development activities (developers and development groups). Such activities fundamentally affect the profitability of the GCs (and vice versa). GCs must be operated effectively (including financial management). Simultaneously, they cannot exist without a sufficient membership base. Therefore, additional services play an important role.

Some positive aspects of GCs include landscape cultivation (e.g., land reclamation or revitalisation or green spaces in urban areas and socio-economic land use (e.g., infrastructure improvement). All these affect the sustainability of GCs, which cannot always be measured objectively.

In connection with the findings of this article, further research of GCs in the CR appears to be desirable, focusing for example, on a detailed analysis of the performance (the revenues and costs are not only per ha, but also per golf hole or member). There is also no wider sociological research among the residents near the GCs in the CR (this was just partially elaborated on by [Sláma, 2018](#) and [Sláma et al., 2018^b](#)) both quantitatively (questionnaires) and qualitatively (interviews).

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Annexe 1 – excessive table

Table 4: GCs lying in the different types of territory according to the methodology of the MRD of the CR and in the different clusters

Code (NUTS 3)	Region (NUTS3)	Type of territory according to the methodology	The number of GCs by territory in each cluster [1 st , 2 nd or 3 rd]
CZ010	Capital City of Prague	8 GCs in development area	3 GCs in each [1 st and 2 nd] and 2 GCs [3 rd]
CZ020	Central Bohemian	16 GCs in development area and 7 GCs in stabilised area	Development area: 7 GCs [1 st , 5 GCs [2 nd] and 4 GCs [3 rd]; Stabilised area: 2 GCs in each [1 st and 2 nd] and 3 GCs [3 rd]
CZ031	South Bohemian	1 GC in development area and 7 GCs in stabilised area	Development area: 1 GC [3 rd]; Stabilised area: 3 GCs [1 st] and 2 GCs in each [2 nd and 3 rd]
CZ032	Pilsen	3 GCs in development area and 2 GCs in stabilised area	Development area: 3 GCs [3 rd]; Stabilised area: 1 GC in each [1 st and 3 rd]
CZ041	Karlovy Vary	1 GC in peripheral area, 6 GCs in development area and 3 GCs in stabilised area	Peripheral area: 1 GC [3 rd]; Development area: 1 GC [1 st], 2 GCs [2 nd] and 3 GCs [3 rd]; Stabilised area: 1 GC in each [1 st , 2 nd and 3 rd]
CZ042	Ústí	5 GCs in development area and 4 GCs in stabilised area	Development area: 3 GCs [1 st] and 1 GC in each [2 nd and 3 rd]; Stabilised area: 3 GCs [1 st] and 1 GC [3 rd]
CZ051	Liberec	4 GCs in development area and 4 GCs in stabilised area	Development area: 1 GC [1 st] and 3 GCs [3 rd]; Stabilised area: 2 GCs in each [1 st and 3 rd]
CZ052	Hradec Králové	4 GCs in development area and 4 GCs in stabilised area	Development area: 1 GC in each [1 st and 3 rd] and 2 GCs [2 nd]; Stabilised area: 4 GCs [1 st]
CZ053	Pardubice	2 GCs in development area and 3 GCs in stabilised area	Development area: 1 GC in each [1 st and 3 rd]; Stabilised area: 3 GCs [1 st]
CZ063	Vysočina	1 GC in peripheral area and 1 GC in stabilised area	Peripheral area: 1 GC [2 nd]; Stabilised area: 1 GC [3 rd]
CZ064	South Moravian	4 GCs in development area and 3 GCs in stabilised area	Development area: 2 GCs in each [1 st and 2 nd]; Stabilised area: 2 GCs [1 st] and 1 GC [2 nd]
CZ072	Zlín	1 GC in peripheral area, 3 GCs in development area and 3 GCs in stabilised area	Peripheral area: 1 GC [1 st]; Development area: 3 GCs [1 st]; Stabilised area: 2 GCs [1 st] and 1 GC [2 nd]
CZ080	Moravian-Silesian	8 GCs in development area and 1 GC in stabilised area	Development area: 2 GCs in each [1 st and 3 rd] and 4 GCs [2 nd]; Stabilised area: 1 GC [1 st]

Note: The current number of GCs after the closure of three sites in the following regions (including specifications): in the Capital City of Prague (in the development area and the first cluster), in Central Bohemia (in the development area and the first cluster) and in Hradec Králové (in the stabilised area and the third cluster). The emerging GC is located in the Central Bohemian region (in the developing area and will belong to the third cluster due to its service standard).

Table 5: Total costs and income (revenues) per ha of the analysed GCs (aggregated by region)

Code (NUTS 3)	Region (NUTS3)	No. of selected GCs	Total area [ha]	Total costs of GCs [thousands CZK]	Total costs of GCs [thousands CZK/ha]	Total revenue of GCs [thousands CZK]	Total revenue of GCs [thousands CZK/ha]
CZ010	Capital City of Prague	3	159.23	128 708	808.32	55 128	346.22
CZ020	Central Bohemian	11	777.60	148 740	191.28	135 998	174.89
CZ031	South Bohemian	2	122.80	1 996	16.25	932	7.59
CZ032	Pilsen	1	95.93	20 474	213.43	22 457	234.10
CZ041	Karlovy Vary	7	574.96	193 980	337.38	148 835	258.86
CZ042	Ústí	3	84.19	12 073	143.40	12 974	154.10
CZ051	Liberec	1	35.10	5 820	165.81	5 846	166.55
CZ052	Hradec Králové	3	115.00	32 920	286.26	31 117	270.58
CZ053	Pardubice	2	58.95	39 805	675.23	42 285	717.30
CZ063	Vysočina	1	1 042.00	4 570	4.39	4 780	4.59
CZ064	South Moravian	1	15.00	101	6.73	96	6.40
CZ072	Zlín	2	24.48	9 220	376.63	6 509	265.89
CZ080	Moravian-Silesian	2	139.89	56 433	403.41	50 995	364.54