

Article

# Example of a German Free-Float Car-Sharing Company Expansion in East-Central Europe

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**Abstract:** This study examines the expansion of a German free-float car-sharing company in Hungary from financial and sustainability perspectives. BMW and Daimler recently created the joint ventures ShareNow, ChargeNow, ReachNow, FreeNow, and ParkNow, which are having a significant global impact, as their services are now available in 14 different countries. We also expect further market development, since ShareNow started to operate in Hungary in May 2019. The whole EU market is just one step away from being covered by the same professional service, and the future might bring a real globally available free-float car-sharing service provider. Our review used a combination of two methodologies: financial statement-based business analysis and sustainability analysis. On the basis of this study, we concluded that these companies are primarily operated for profit and not on a sustainable operation basis. Additionally, it was also found that the current statistical data collection method does not measure precisely these activities. Financial reporting and sustainability reporting are connected, but they cover different areas. As a subject of further research, we suggest examining whether it is possible to establish a clear connection between these methodologies in the foreseeable future.

**Keywords:** Car2Go; DriveNow; GreenGo; MOL LIMO; sustainability; economies of scale; sharing economy

## 1. Theoretical Background

The objective of this study was to examine the performances of free-float car-sharing entities in Hungary and compare them to those of their German counterparts from financial analysis and sustainability perspectives. On the basis of actual financial results in Hungary, they appear to be less profitable businesses compared to other rental service companies. Recently, Car2Go and DriveNow created joint ventures, which generated significant competition because they entered the Hungarian market in May 2019.

In Hungary, free-float car-sharing companies might follow different business models, which can cause unusual results. We also reviewed the available sustainability reports to define a possible connection to financial statements. Additionally, we tried to evaluate these companies from the sustainability perspective.

### 1.1. Business Model Review

The free-float car-sharing business model was categorized, defined, and described in a car-sharing business model review by Deloitte [1]. Since then, other studies reviewed the model and the markets itself, for example that of Munoz and Cohen [2]. Several studies raised sustainability-related questions regarding sharing economy models.

Reitmann and Lieven [3] examined how policy measures succeeded in promoting electric mobility in 20 countries by measuring the influence of monetary incentives, regulations, and charging

infrastructure. Hartl et al. [4] addressed the gap between business-to-consumer (B2C) and peer-to-peer (P2P) car-sharing services from the customer's perspective. Overall, these previous studies on free-float car-sharing businesses support the initial assumption that these entities are profit-oriented, and their operations can be questioned from a sustainability perspective. From the business model perspective, in Hungary, there is a unique situation for free-float car-sharing companies, considering the impact of the international lease regulation changes. A wide range of studies, such as those of Wheeler and Webb [5] and Barone et al. [6], have provided summaries on the expected impact of lease capitalization and its effect on profitability and leverage ratios. Giner and Pardo [7] reviewed the value relevance of operating lease liabilities.

### 1.2. Sustainability Reviews

Sustainable business model (SBM) types were introduced to describe groupings of mechanisms and solutions that may contribute to building a business model for sustainability. Examples are: Maximize material and energy efficiency; Create value from 'waste'; Substitute with renewables and natural processes; Deliver functionality rather than ownership; Adopt a stewardship role; Encourage sufficiency; Re-purpose the business for society/environment; and Develop scale-up solutions [8].

Geissinger et al. [9] described and classified the sustainability connotation of sharing-economy platforms for Sweden. Indeed, sharing economy can be considered as a path towards sustainability [10]. Bernardi and Diamantini [11] explored how sharing economy, adopted by an increasing number of cities, may be integrated into the urban agenda, fostering its positive aspects (like decreased carbon emissions [12]), while avoiding its negative externalities, and focused, as examples, on Milan and Seoul. Ma et al. [13] proposed an alternative governance model to improve the effectiveness of a collaborative governance regime towards urban sustainability. Albinsson et al. [14] developed a two-dimensional sharing economy matrix for sustainability reviews, which focuses on collaborative consumption users vs. non-users in the US and Indian markets. Ma et al. [15] argued that the two-level transformations, triggered by the disruptive innovation of the sharing economy and led by urban change towards sustainability, mutually influence each other in the fast-changing urban context in Shanghai.

### 1.3. Sharing Economy Reviews

The emergence and rapid spread of the 'sharing' or 'collaborative' economy is one of the most significant social-economic challenges of our time. The success of the concept can be traced back to the economic crisis. It focuses on usage and not on owning goods. The debate over the regulation of the sharing economy has become polarized between those who are radically opposed to any intervention and those who favor some form of regulation (Table 1).

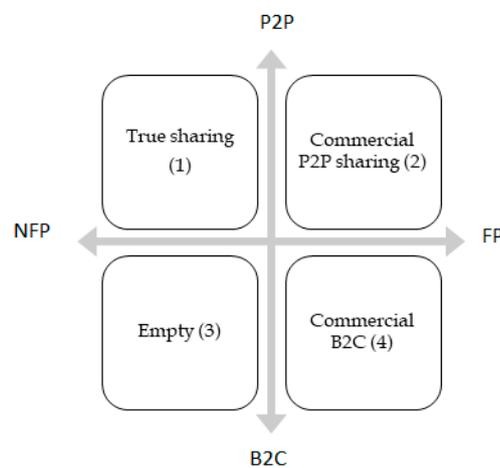
**Table 1.** Opinions on the regulation of the sharing economy.

Point of View	Authors	Main Messages
All interventions are rejected	[16–20]	Excessive regulation eliminates consumer benefits and efficiency gains. Using platforms reduces market failures.
Some regulation required	[21–28]	Innovative and intelligent regulation that enforces consumer protection without disrupting innovation. Certain areas of the sharing economy are suitable for regulatory intervention, others for self-regulation. Co-regulation: responsibilities are shared between government and industry. A new legal framework is needed to regulate the sharing economy, as according to the current legal framework many inadequate practices in the sharing economy do not require any regulation as they pertain to the private sphere.

Table 1. Cont.

Point of View	Authors	Main Messages
Strict regulation required	[29]	Taxation of sharing economy companies is possible by law, although questions about law application may arise. Everyone involved should be submitted to regulations (for example, in the case of car-sharing services, licenses issued to drivers, and identification of drivers).

Sharing economy platforms can be represented in a two-dimension matrix. The first dimension of the matrix classifies sharing platforms into for-profit (FP) and not-for-profit (NFP) activities. The second dimension follows the B2C–P2P axis [30]. Car-sharing business models are for-profit, B2C sharing economy platforms and therefore belong to group 4. (Figure 1).



**Figure 1.** Two-dimensional sharing-economy matrix [31]. P2P: peer-to-peer, B2C: business-to-consumer, NFP: not-for-profit, FP: for-profit.

## 2. Materials and Methods

From the available financial and legal information, the following elements were reviewed:

- The list of entities in Hungary based on the principal operational activity code (TEÁOR) classification in the companies' court register
- Profitability review based on published financial statements
- Certain aspects of the lease accounting regulation and comparison between the International Financial Reporting Standards (IFRS) 16 Leases and the Hungarian Accounting Law
- Car-sharing companies' fleet size, car-sharing costs, opinions of registered users in Hungary and Germany.

Sustainability was reviewed on the basis of Penz et al. [32], exploring and explaining how, why, and when a sustainable operation is adopted and participation in the sharing economy becomes key, as well as how sharing economy models and sustainability (sustainable sharing economy, SSE) correspond conceptually in the collected articles. Seven sustainability aspects were addressed, of which four refer to car-sharing (Table 2).

**Table 2.** Sustainability aspects of car sharing.

<b>Producing Less</b>	
<b>Idle Capacity and Under-Utilized Physical Assets</b>	“As cars stand idle 95% of the time, any sharing scheme that makes cars accessible to non-owners would reduce the number of cars required for a given mileage level.” [33]
<b>Reduce Waste</b>	
<b>Resource Efficiency through Using rather than Owning</b>	“Car sharing contributes to a more efficient and rational mobility (with a lower number of vehicles per capita among members, lower demand for parking space, lower fixed costs, and a complement to public transport.” [34]
<b>Extended Use Pattern</b>	
<b>Low Ecological Footprint/Low Carbon</b>	“Carbon dioxide emissions and copper usage decrease with the diffusion of car- and ride-sharing services.” [35]“With a lower consumption of physical and economic resources, car-sharing can also contribute to the reduction of energy and environmental impacts” Baptista et al. [34]
<b>Own Less, Interact More, Build Social Capital</b>	Different studies document the high impact of car-sharing on car ownership. [36]

### 3. Results and Discussion

#### 3.1. Free-Float Car-Sharing Business Models in Hungary and Germany

Specific free-float service providers are defined as companies offering the service of car-sharing, i.e., the use of vehicles that can be rented and parked freely throughout the entire business area without having to determine the start and the end of the rental period in advance. The beginning and end of the rent are established for all vehicles through a specific smartphone application. Payment is based on usage and according to a fixed minute rate.

Comparing this market to the sharing economy review models, according to Codagnone and Martens [30] (Figure 1), free-float car-sharing entities are B2C entities focused on profitable operation, and this requires strict regulation (Table 1). This business model represents a different resource utilization with respect to P2P-based common sharing, which motivated us to perform a parallel profitability and sustainability review.

To accurately identify all key free-float companies, the complete database of the firm registry was reviewed, considering the defined principal operational activity of each company. This classification (TEÁOR'08) is “identical and fully harmonized with the European one, NACE Rev.2. Statistical Classification of Economic Activities in the European Community, 2008 (Nomenclature des activités économiques dans les Communautés européennes) [37]. Based on Regulation 1893/2006/EC, with effect from 1 January 2008, TEÁOR'08 is used to determine the principal activities of enterprises, in the calculation of economic and social indicators as well as for the publication of statistical data.” The car-sharing activities are classified under Section “N” as administrative and support service activities, in division 77, group 77.1, and class 77.11 “renting and leasing of cars and light motor vehicles”. From the registered Hungarian companies’ database, 362 companies were identified. This analysis covers all Hungarian operational entities. In order to include recently established objects, all companies above 10 staff headcounts were investigated, according to the EU commission-defined categories. On the basis of a detailed review, 28 companies were identified, as presented in Appendix A (Figure A1).

According to the Hungarian Accounting Regulation Act C of 2000, in Hungary [38], companies need to file a financial statement by the end of the fifth month after the fiscal year. Consequently, the latest reports available were for 2017.

From Appendix A, on the basis of their financial statements, as of April 2019, only 2 companies out of the total 28 entities, i.e., #11 GreenGo Car Europe Korlátolt Felelősségű Társaság (hereinafter: GreenGo) and #20 MOL Limitless Mobility Korlátolt Felelősségű Társaság (hereinafter: MOL LIMO), were real free-float car-sharing companies, and both operate in Budapest. This list contained all free-float service providers but did not represent the total lease market, because financial lease activities are classified in a different statistical segment, in section K Financial and insurance activities,

divisions 64–66. It did, however, represent all non-micro-level free-float car-sharing companies. This is the consequence of the unclear current statistical data, which do not identify specific lease, rental, or free-float services. In the case of a larger population, it would be challenging to sort out such companies manually; sub-sections could be created to evaluate lease and rental services accurately in the statistical classification. In 2017 for Hungary, free-float car-sharing represented a 110.7 million Hungarian forint (HUF) (€358,300) market.

In the analyzed group from the profitability perspective, it was visible that the free-float car-sharing service providers delivered significantly worse results in Hungary compared to lease and rental service companies in 2017, as shown in Figure 2.

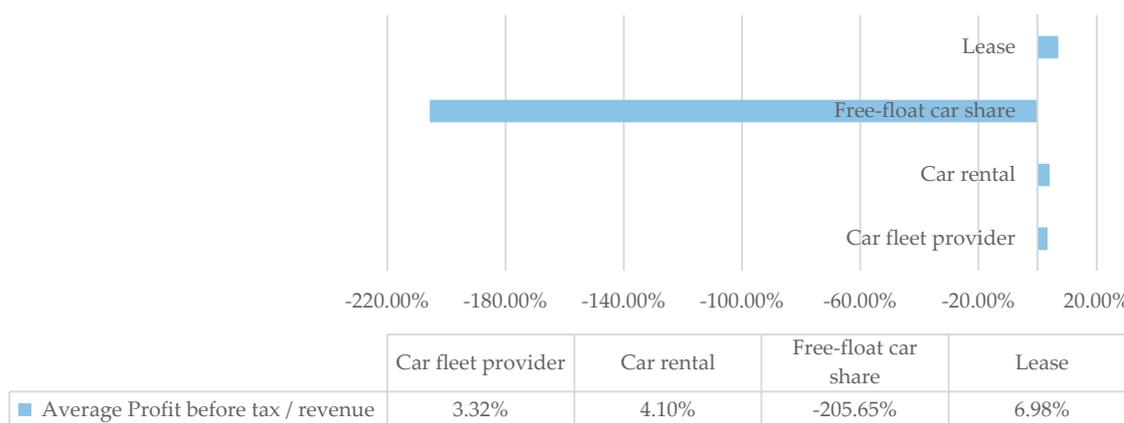


Figure 2. Changes in asset structure, GreenGo (2014–2017 in EUR) [39].

To gain a better understanding of the situation, each Hungarian free-float service was separately examined and later compared to German service providers.

### 3.1.1. Financial Statement Analysis and Review of the Financing Model

GreenGo was established in 2014 as the first free-float car-sharing service in the Hungarian market, where it was the only market participant until 2017. The first day of real operation, when the company started to provide services, was in November 2016, with 45 electric cars.

From the financial perspective, the assets and liabilities of the company looked as follows. Assets: The long-term assets value continuously increased from HUF 69 M in 2019 to HUF 102 M on 2017, which consists of intangible assets of HUF 43 M, tangible assets of HUF 58 M, and other investments of HUF 1 M. This breakdown would give the reader important information if we included the published data from January 2018 when GreenGo reported 168 vehicles, which in case of purchase, should be recorded as property, plant, and equipment (PPE). It appears that HUF 58 M/168 vehicles = HUF 0.34 M (approx. €1060) per car is a very unreasonable figure. The only reasonable explanation is if the company applied operational leases, and these assets are off-balance-sheet financed items. Later in this review, this business model will be compared to that of the other Hungarian competitor. Below in Figure 3 is a summary table related to the asset items for the period 2014–2017:

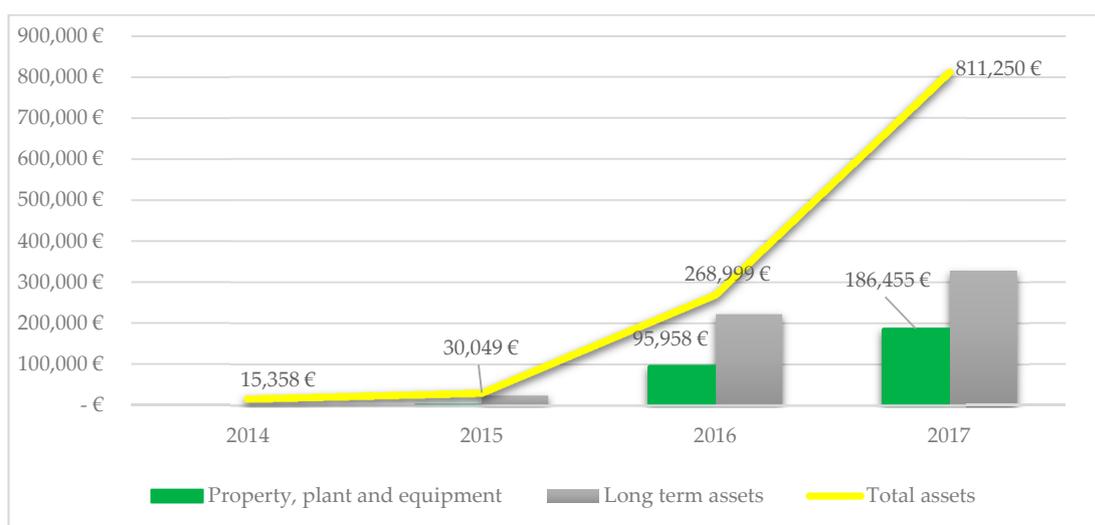


Figure 3. Changes in asset structure, GreenGo (2014–2017 in EUR) [39].

Liabilities, equity: The equity value remained relatively the same over 2016–2017, i.e., HUF 43 M; however, the generated loss increased significantly from HUF 18 M (€59,000) to HUF 158 M (€512,600), which was compensated by the equity contribution from owners. The debt/equity ratio also significantly increased in relation to the liabilities increase by HUF 129.3 M, mainly as a result of the short-term shareholders’ loans of HUF 115 M and the long-term related parties’ credit of HUF 16 M. Profit and loss statement: The realized revenue increased from the 2016 value of HUF 8 M (€26,000) to the 2017 value of HUF 111 M (€358,000), while the expenses increased from HUF 27 M to HUF 275 M. This was the principal reason for the generated loss as the company did not realize enough revenue to compensate for the increased material expenditures. Below in Figure 4 is a summary of the statement of profit and loss of GreenGo for the period of 2014–2017.

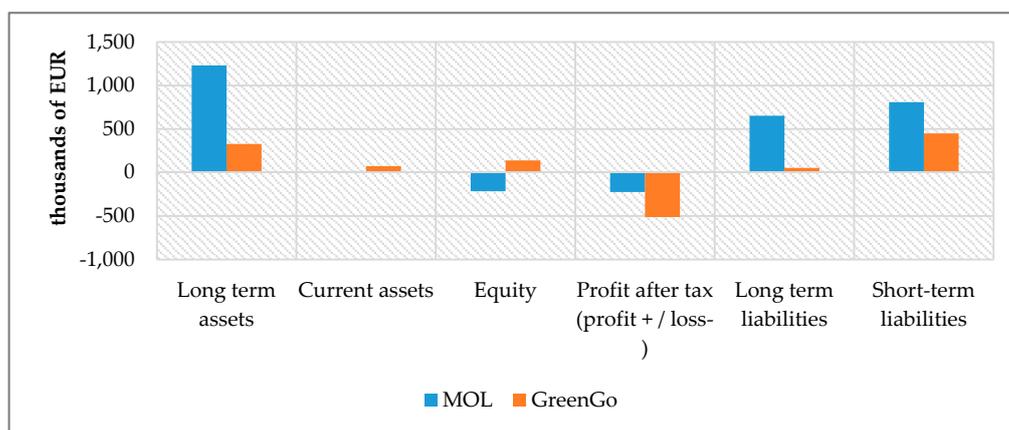


Figure 4. Comparison of assets and liabilities of MOL Limo and GreenGo (2017) [39]

In 2017, MOL Limo entered the market with secured funding from the listed Hungarian Oil-and-Gas Company (whereas GreenGo owners are private investors). MOL Limo market presence did not cause the reported increasing loss of GreenGo, because, in 2017, it did not realize any revenue. In Table 3, a comparison between the profit and loss statements of these two entities is presented.

**Table 3.** Comparison of the profit and loss statement for MOL Limo and GreenGo (2017) [39].

2017 Statement of Profit and Loss and Other Comprehensive Income (Data Translated to €)	MOL LiMo	GreenGo
Revenue	0	374,391
Results from operation (profit +/-loss -) (EBIT)	-215,512	-484,509
Results from financial activities (profit +/-loss -)	-9392	-27,408
Profit before tax (profit +/-loss -)	-224,904	-511,918

MOL Limo generated a significantly higher loss compared to GreenGo, but 2017 was the year of its establishment, with a large scale of operation and considerable fleet investment, as presented in Table 3. The difference in asset value is related to a specific accounting regulation difference in lease accounting. MOL Limo prepared an IFRS-based financial statement, and GreenGo prepared a simplified national accounting-based financial report.

From the operation perspective, it is essential to mention that GreenGo only uses electric vehicles differently from MOL Limo. The total number of 400 electric vehicles operated by these two companies represents approx. 10% of the registered fully electric (excluding hybrids) cars in Hungary, as presented in Table 4. It should also be highlighted that hybrid vehicles increased more significantly in Hungary compared to fully electric ones from 2017 to 2018. This trend seems to continue and could be a subject of future investigation.

**Table 4.** Registered electric vehicles in Hungary and comparison MOL LIMO and GreenGo fleets [39].

Description	2017	2018
Registered number of vehicles in Hungary	3,471,997	3,641,823
Budapest total number of registered vehicles	633,554	659,513
Registered “green plate” vehicles in Hungary	4543	8482
Registered hybrid vehicles in Hungary	2414	4709
Registered number of electric vehicles in Hungary (5E category)	2129	3773
GreenGo fleet	168	300
MOL Limo electric fleet	100	100
GreenGo and MOL fleet electric vehicles	268	400
Car-sharing % of electric vehicles in Hungary	12.59%	10.6%

### 3.1.2. Lease Accounting Differences

Lease accounting is significantly different in the C Act of 2000 compared to IFRS. According to Hungarian Accounting Law (HAL) and IFRS, the definition of lease is different, and other fundamental accounting difference regard, for example, operating leases, which are not required by HAL to be recorded in the balance sheet, as shown in Table 5. Also, in the disclosure requirements, as in the HAL-based financial statements, operational leases only appear in the profit and loss statement.

**Table 5.** Comparison of operational lease accounting between the Hungarian Accounting Law and IFRS 16 from the lessee perspective.

Denomination	Hungarian Accounting Law		IFRS 16
	Finance Leases	Operating Leases	All Leases
Assets	→ ∞	—	→ → ∞ ∞ ∞ ∞ ∞
Liabilities	\$\$	—	\$\$\$\$\$\$
Off-balance sheet rights/obligations	—	∞ ∞ → ∞ ∞ \$\$\$\$	—

IFRS 16 key objective was to record the operational lease committed rights (rights of use, ROU) as assets and committed liabilities to reduce the off-balance sheet items. For the entities reporting under HAL regulation, this is not a requirement, and in case of an independent financial analysis or a credit strength testing, they can be invisible. The recorded off-balance sheet value can be significant from a creditor's or financial analysis' point of view. GreenGo reported under HAL regulation, where the operational leases as off-balance sheet items might create a business advantage from the presentation perspective because the leverage ratio does not show the total minimum of liabilities from the lease obligations.

### 3.1.3. Comparison to German Entities

Germany has the most significant car-sharing market in Europe, with several service providers and over 30,000 registered users, as summarized below in Table 6 in comparison to Hungary.

**Table 6.** Comparison of German and Hungarian entities' published users, fleet size, and serviced cities.

Provider's Name	Registered Users	Fleet Size	Service Available in the Number of Cities
Free-float car share providers in Germany			
Share Now (car2go and DriveNow)	3,000,000+	20,000+ out of 3200+ electric	31
Flinkster (DB)	315,000	4000	300
Cambio	77,000	1600	22
Stadtmobil	63,000	2600	100
Book N Drive	43,000	1015	14
teilAuto	35,000	1000	19
Free-float car share providers in Hungary			
GreenGo (HUN)	30–40,000	300 electric	1
MOL LIMO (HUN)	40,000	100 electric350 petrol	1

From this table, it can be concluded that German free-float car-sharing companies operate significantly larger fleets and have a substantially larger number of registered users in absolute terms. Hungarian companies operate only in one city, namely, Budapest, with a total of 750 vehicles for a 525 km<sup>2</sup> city area, where the population is approx. 1.75 M. In contrast, only one company, ShareNow, operates approx. 4000 cars in Berlin for an 891 km<sup>2</sup> city area with a 3.6 M population. For additional comparison, in the capital city in the region with the most similar population, Vienna, only ShareNow operates, with 2000+ vehicles for a 1.8 M population and a 415 km<sup>2</sup> city area.

The service fees can also be compared, because in April 2019, ShareNow announced to extend the operation in Budapest as well, with approx. 240 vehicles (of which, 40 electric BMW i3). Table 7 shows the fee and car type comparison.

**Table 7.** Comparison of free-float service costs between ShareNow, MOL Limo, and GreenGo (2019) [39–41].

Provider's Name	Service Fee	Car Type	Additional Conditions
ShareNow (BMW and Daimler)	from 99 HUF/min (0.32 cent/min)	Mini, BMW	38.7 €/h
GreenGo	from 65 HUF/min (0.21 cent/min)	VW Up	
MOL LIMO	from 66 HUF/min (0.21 cent/mind)	VW Up, Mercedes A class	

ShareNow provides services across the EU and, in 2019, established the most significant European fleet; additionally, it published a plan to invest further €1 billion. With 20,000+ vehicles, joint companies operate in 24 countries globally. It is only a matter of time to utilize the economies-of-scale advantage and provide service in all European countries. A coverage map for Car2Go and DriveNow is shown in Figure 5.

From the operation and financial analysis perspectives, an apparent market concentration is happening now in Europe, which is a successful business model. Without doubts, it supports sustainability; however, there is no core sustainability element in this business model. The more effective utilization of the resources has an impact on sustainability, but it is based on a usual corporate profit model.

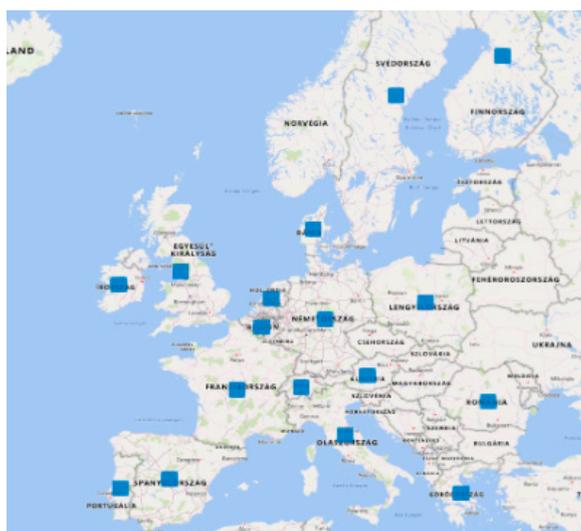


Figure 5. Car2Go and DriveNow joint coverage.

### 3.2. Sustainability

From the sustainability perspective (Table 2), three statements (out of a total of seven) appeared in the official communications of the reviewed companies, presented in Table 8.

Table 8. Sustainability-related aspects of car-sharing [32,39–41].

Sustainability-Related Aspects of Car-Sharing	GreenGo	MOL Limo	BMW DriveNow	Daimler Car2Go
Resource efficiency through using rather than owning	There is less of an emphasis on parking infrastructure and road expansion		Digital parking service Park Now	The smart ForTwo can fit in almost any parking spot and can maneuver around even the most intense downtown rush hour traffic jams.
Low ecological footprint/low carbon	300 electric * cars	The VW MOL Limo fleet is 450-strong (100 electrical and 350 gas-powered vehicles)	900 Electric vehicles in Europe, 1300 in the USA	
	Shared cars are smaller than those in the average household.			
Own less, interact more, build social capital			Digital networking	Over 50% of Car2Go members do not own a car.

\* Electric cars have two main advantages: unlike gasoline, electricity can be generated from various sources including renewable ones, and electric vehicles can reduce urban air pollution from road transportation. “However, while electric cars can reduce gasoline use, they increase electricity consumption. Depending on how the electricity is generated, emissions of particular air pollutants may reduce or increase” [42]. In Appendix B (Table A1), we list the vital sustainability-related statements from car2go and DriveNow sustainability reports; the reviewed sustainability reports are all related to Corporate Social Responsibility (CSR) orientation.

### 3.3. Analytic Hierarchy Process

To resolve the lack of reconciliation between financial and sustainability reporting, potential decision-support models, such as the analytic hierarchy process model, can be utilized to present the connection between the different reporting systems. It is crucial to determine the factors and to apply proper weights for the specific items. To measure impacts, the method of the analytic hierarchy process (AHP) was used, where the weights of the factors were identified in order from the most to the least significant from the investor decision’s perspective.

When constructing the decision-making environment, it is crucial to identify issues or attributes that may be helpful [43,44], which brings the disharmony of traditional financial performance measuring

attributes and sustainability aspects into perspective. The AHP theory aims to find the preferable alternative by weighing the priorities of the involved factors on a 1–9 scale (1: equal importance, 9: higher importance with respect to another component) and carrying out pairwise comparisons and standardization of the results to validate the overall ranking of factors [43,44]. Considering the findings of the current study, six elements were selected and weighed (w), as shown in Figure 6.

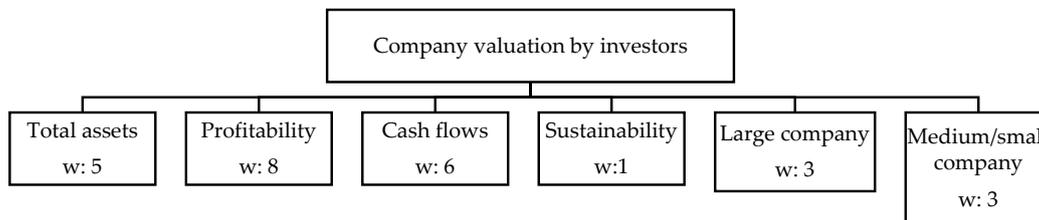


Figure 6. Decision factors and assumed weights.

In the analysis process, pairwise comparisons were developed for each criterion using linear integer scaling, summarized in a 6 × 6 matrix, which was then normalized using natural logarithms (ln(A)) [45]. Using the AHP template and methodology of Goepel [46], the results were then averaged by rows, and the impacts were measured by the Eigenvector method (EVM). The summary matrix is presented in Figure 7.

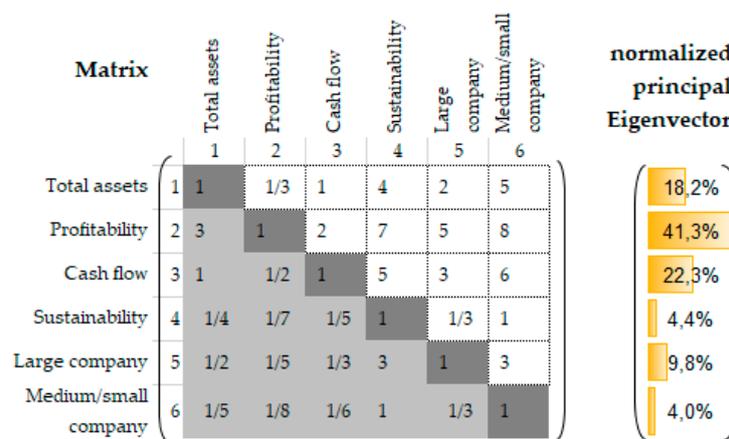


Figure 7. Summary of the analytic hierarchy process (AHP) matrix.

Additionally, the Eigenvalue (or  $\lambda$ , consistency measure), the consistency index (CI), the mean relative error (MRE) of the weights, and the consistency ratio (CR) were calculated [47]. If the Eigenvalue (the matrix product of normalized principal Eigenvectors) equals the sample size (6), perfect consistency can be identified ( $\lambda = n$ ), which in our case corresponds to the value of 6.091.

The priorities  $\pi_i$  in the input matrix were transformed into a near-consistent model using the EVM. In the pairwise  $n \times n$  comparison matrix  $A = a_{ij}$ , where  $\Omega_1, \Omega_2, \dots, \Omega_n$  are comparable elements with a positive numerical value, the transformation procedure is as follows:

$$\left\{ \begin{matrix} \Omega_1 \\ \dots \\ \Omega_n \end{matrix} \right\} \xrightarrow{\text{measurement procedure}} \left\{ \begin{matrix} w_1^{(1)}, \dots, w_1^{(n)} \\ \dots \\ w_n^{(1)}, \dots, w_n^{(n)} \end{matrix} \right\} \tag{1}$$

with the use of EVM, the measuring procedure can be adapted to pairwise comparisons:  $\sum_{k=1}^n a_{ik}w_k = \lambda_{max}w_i$ ,  $i = 1, \dots, n$ , where  $\lambda_{max}w_i$  are the principal Eigenvectors [48].

The normalization process is as follows:

$$p_i = r_1 / \sum_{i=1}^N r_i \quad (2)$$

The CI was calculated by:

$$CI = \frac{(\lambda - n)}{n - 1} = 0.18\% \quad (3)$$

Error calculation of the priority vector  $w_i$  with the used EVM followed:

$$\Delta w_i = \sqrt{\frac{1}{n-1} \sum_{k=1}^n \left( \frac{n}{\lambda} a_{ik}w_k - w_i \right)^2}, i = 1, \dots, n = 19.0\% \quad (4)$$

In the CR, the Alonson/Lamata linear fit was used:  $CR = \frac{\lambda - n}{2,7699n - 4,3513 - n} = 1.4\%$  [47].

From the hierarchical structure and from the potential AHP model presented in Figure 7, profitability remains the most significant factor in an investor company valuation with a normalized principal Eigenvector of 41.3%, followed by the cash flows (22.3%) and total assets (18.2%). From the investor decision's perspective, as long as sustainability reporting does not harmonize with financial reporting, the sustainability aspects tend to have a low impact factor (4.4%). In conclusion, the AHP statistical method is usable for the prioritization of factors, but it should be emphasized that the applied weights of the factors can be depend on subjective evaluations.

#### 4. Conclusions

From the financial and sustainability reports, the following conclusions can be made related to the Hungarian free-float car-sharing market:

1. The market competition is increasing, and Hungarian companies have so far generated only losses from the financial statement's perspective and are not competitive with respect to their German counterparts. Market concentration seems to be increasing since the end of April 2019, when ShareNow started to provide services in Hungary. Additionally, we found that the reviewed companies follow a business model and not a sustainability model. Tóth et al. [49] defined truly responsible enterprises and developed a sustainability ranking model based on three key aspects i.e., local economic role, environmental impact, and social responsibility, which are measured on a five-point scale, ranging from destructive to sustaining operations. From the environmental impact and social responsibility perspectives, car-sharing entities may be considered even as sustaining or public-spirited entities, but with the international market concentration, their local economic role is reduced; solutions should be found to achieve a more sustainable operation.
2. From the statistical data collection's perspective, on the EU level, a separate car-sharing sub-category should be created because, at the moment, rental and lease companies are not separated in statistical reports.
3. In the reviewed sustainability reports, four areas were compared for Car2go and DriveNow, as follows: (a) new business model; (b) geographic expansion; (c) public transport; (d) electric vehicles. The basic idea of sustainable mobility is simple: "We need to shape our city mobility in such a way that the ease and safety of our everyday movements now and in the future will not diminish but grow, and the quality of life will not suffer but improve for us and for the generations to come" [50]. For sustainability achievement, three key areas can be defined as the targeted goals for the reviewed entities: (a) Efficiency of resource utilization, (b) Low carbon footprint, and (c) Build of social capital.

Sustainability reports in the examined sample cannot be connected to the financial statements, whereas harmonization is essential and should be a subject of future studies.

- This study provides additional information and evidence regarding financial and sustainability report harmonization, confirming the “importance of environmental accounting on financial performance” [51,52] and policy development in the car-sharing industry.
- Future research studies can focus on harmonization development between the different reporting standards and the next harmonization steps planned by the International Accounting Standard Board (IASB) in this area.
- Considering the available information and the early stage of harmonization, this paper has certain limitations. We concluded that no clear connection exists between financial and sustainability reporting, but we could not precisely link those reporting standards; financial statements were only available until 2017.

**Author Contributions:** A.T. and C.S. initiated the study and performed the conceptualization, A.T. prepared the literature review, designed the methodology and collected the data, C.S. validated the results, A.T. and C.S. wrote the paper.

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**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A

#	Company name	Registered address	Establishment year	Employer	Data in THUF			Key operation
					Revenue 2017	PBT 2017	Profit %	
1	ALD Automotive Magyarország Autópark-kezelő és Finanszírozó Korlátolt Felelősségű Társaság	1133 Budapest, Váci út 76.	2001	108	16 471 970	1 108 227	6,73%	Lease
2	ARVAL Magyarország Járműparkkezelő Kft.	1113 Budapest, Bocskai út 134-146.	2002	46	9 598 635	976 847	10,18%	Lease
3	AUTO REFA Rent Autókölcsönző és Szolgáltató Korlátolt Felelősségű Társaság	2220 Vecsés, Ecséri út 21.	2010	52	1 733 054	158 709	9,16%	Car rental
4	AVIAION Car(e) Services Korlátolt Felelősségű Társaság	1142 Budapest, Tengerem utca 106.	1989	24	371 938	29 593	7,96%	Car rental
5	BÉK-ELEK Flotta és Autópark Kezelő Korlátolt Felelősségű Társaság	1138 Budapest, Váci út 113.	2007	25	1 612 429	99 194	6,15%	Car rental
6	Business Lease Hungary Kereskedelmi és Szolgáltató Korlátolt Felelősségű Társaság	1124 Budapest, Csórsz utca 41. Gellért torony. ép. 3. em.	2003	29	5 351 868	376 017	7,03%	Lease
7	EuRent Autókölcsönző Kft.	1238 Budapest, Szentlőrinci u. 195853. hrsz.	1989	59	3 218 105	65 175	2,03%	Car rental
8	EuroFleet Gépjármű Flottakezelő Zártkörűen Működő Részvénytársaság	9111 Tényő, Kossuth L. u. 39.	2008	34	2 207 047	332 127	15,05%	Lease
9	Euroleasing Kereskedelmi Szolgáltató Korlátolt Felelősségű Társaság	1134 Budapest, Lőportár utca 24.	1995	56	561 959	3 304	0,59%	Lease
10	GAS-CAR Gépjárműkölcsönző, Autópark-kezelő és Szolgáltató Korlátolt Felelősségű Társaság	8600 Siófok, Fő utca 262.	1994	56	1 044 191	11 304	1,08%	Car rental
11	GreenGo Car Europe Korlátolt Felelősségű Társaság	1075 Budapest, Rumbach Sebestyén utca 15.	2014	20	110 788	-142 291	-142,88%	Free-float car share
12	HARUM INVESTMENT Gépjármű Üzemeltető Zártkörűen Működő Részvénytársaság	1118 Budapest, Rétköz utca 5.	1999	12	1 128 502	4 402	0,39%	Car fleet provider
13	IVANICS Autópark -kezelő Kereskedelmi és Szolgáltató Korlátolt Felelősségű Társaság	8097 Nadap, Haladás út 56.	2005	14	3 283 259	68 525	2,09%	Car fleet provider
14	KÉSZGO Flotta és Gépjárműkezelő Korlátolt Felelősségű Társaság	6000 Kecskemét, Izsáki út 6.	1993	13	1 195 742	39 497	3,30%	Car fleet provider
15	LAFUT Service Kereskedelmi és Szolgáltató Korlátolt Felelősségű Társaság	3527 Miskolc, Zsigmondy út 2.	2015	22	74 246	722	0,97%	Car rental
16	LeasePlan Hungaria Gépjárműpark Kezelő és Finanszírozó Zártkörű Részvénytársaság	1113 Budapest, Bocskai út 134-146.	1994	95	22 451 996	2 082 167	9,27%	Lease
17	Mercarius Flottakezelő Korlátolt Felelősségű Társaság	1142 Budapest, Komáromi út 36-38.	1996	81	4 539 377	767 564	16,91%	Lease
18	Mercur Rent a Car Autókölcsönző és Szolgáltató Kft.	2220 Vecsés, Hertz u. 2.	1995	80	5 498 329	291 926	5,31%	Car rental
19	Mobil Credit Kereskedelmi Korlátolt Felelősségű Társaság	4026 Debrecen, Bem tér 14. A. ép. 1. em. 3.	2000	14	1 272 146	116 266	9,14%	Car fleet provider
20	MOL Limitless Mobility Korlátolt Felelősségű Társaság	1117 Budapest, Október huszonharmadika utca 18.	2017	32	0	-69 543	N/A	Free-float car share
21	NELSON FLOTTALÍZING Eszközberbérelő és Autóparkkezelő Korlátolt Felelősségű Társaság	8000 Székesfehérvár, Vörösmarty tér 1.	1992	38	2 917 894	139 365	4,78%	Lease
22	Otokoc Hungary Autókölcsönző és Szolgáltató Korlátolt Felelősségű Társaság	1134 Budapest, Kassák Lajos utca 19-25.	2015	29	2 031 185	-24 873	-1,22%	Car rental
23	Porsche Lizing és Szolgáltató Kft.	1139 Budapest, Fáy u. 27.	1993	54	29 728 668	1 047 108	3,52%	Lease
24	Rapid Rent Autó Kereskedelmi és Szolgáltató Korlátolt Felelősségű Társaság	1037 Budapest, Zay u. 24.	2011	25	529 054	1 067	0,20%	Lease
25	RELEASE Zártkörűen Működő Részvénytársaság	1054 Budapest, Zoltán utca 8. 2. em. 2.	2009	19	592 100	41 393	6,99%	Lease
26	UniCredit Leasing Kereskedelmi Korlátolt Felelősségű Társaság	1118 Budapest, Budaörsi út 64.	1995	24	1 206 524	-162 445	-13,46%	Lease
27	VR Transport and Rental Korlátolt Felelősségű Társaság	2141 Csömör, Bence utca 22 (3397. hrsz.).	2017	10	45 974	6 089	13,24%	Car rental
28	ZENIT-AUTO RENT Szolgáltató és Kereskedelmi Korlátolt Felelősségű Társaság	3519 Miskolc, Miskolcpatcai út 25-27.	2017	14	177 215	10 350	5,84%	Car rental

**Figure A1.** TEÁOR 77.11 main renting or lease activity of companies with at least 10 staff headcounts in Hungary [25].

## Appendix B

Table A1. Aspects of the sustainable sharing economy (SSE) [40,41].

	BMW	Daimler
New business model	<p>“The focus will continue to be placed on the development, production, and sale of vehicles, with a wide range of innovative mobility services on top.” (p. 11)</p> <p>“Providing opportunities to test the BMW i3 as part of our DriveNow car-sharing scheme.” ([40], p. 60)</p>	<p>“Transport infrastructure and transport systems frequently operate at their limits, especially in urban areas. That is why Daimler has developed a range of pioneering mobility concepts.” ([41], p. 55)</p>
Geographic expansion	<p>“DriveNow is currently available in 13 European cities. On 8 April 2016, the BMW Group launched an advanced car-sharing program in the USA under the name ReachNow.” ([40], p. 73)</p>	<p>“The 300 new vehicles are being used in Berlin, and additional models will also be introduced to other cities in the future.” “In 2016, car2go launched in the Chinese megacity of Chongqing with the brand suffix “JiXing” (roughly translated as: “drive off immediately”). “car2go is the first international company to implement the free-floating car-sharing concept in China.” ([41], p. 55)</p>
Public transport	<p>“DriveNow in Copenhagen is operated by the city’s public transport company Arriva. With their “Rejsekort,” a card for almost all mobility services in the whole of Denmark, users also gain access to DriveNow. ([40], p. 74)</p>	<p>“From the car-sharing provider car2go and the mobility platform Moovel to the taxi app Mytaxi, the coach company Flixbus, and the Bus Rapid Transit (BRT) system.” ([41], p. 55)</p>
Electric vehicles	<p>“The fleet for both programs currently comprises more than 6000 vehicles in Europe, of which around 15% are purely electric BMW i3 vehicles. A further 1300 vehicles are available in the USA. DriveNow is one of the strongest drivers of electromobility in Germany”. (p. 71)</p> <p>“Copenhagen is the only city in Europe in which we have operated our car-sharing service from the start with a fleet of purely electric BMW i3 cars. The good charging infrastructure in the city offers ideal conditions for this.” ([40], p. 74)</p>	<p>“Car2go has added 20 smart ForTwo electric vehicles to the local fleet. This is the first step in evaluating the feasibility of using electric vehicles in our fleet by relying on Montréal’s existing charging infrastructure, as well as determining how the city’s climate conditions impact vehicle range and availability.” <a href="https://www.car2go.com/NA/en/nextgen/">https://www.car2go.com/NA/en/nextgen/</a></p>

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