
Determinants of the Development of Traditional Taxi Services

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Abstract:

Purpose: Numerous media reports about dissatisfied taxi drivers, as well as harmed customers (as referenced in the article) and the relatively limited amount of literature data prompted the authors to organize existing knowledge on the factors influencing the development of the traditional taxi service market and to search for a way out of the deadlock in this sector. To gain insight into how traditional taxi companies can maintain their presence in the market.

Design/Methodology/Approach: The CAWI method was applied and the questionnaire survey was distributed using Google Forms. Personalized, direct interviews were conducted with taxi entrepreneurs. The research results were analysed using statistical methods with the support of MS Excel and Gretl software. A literature review was also conducted.

Findings: Contains practical recommendations for Taxi companies. The subject of the study was the taxi sector in a Polish city — Zielona Góra — with a population of nearly 140.000 residents. The difficult situation of traditional taxi drivers in Poland was compared with the conditions faced by taxi drivers in Zielona Góra, located in the Lubusz Voivodeship.

Practical Implications: Determinants of market sustainability for traditional Taxi Services. Service providers operating within this narrow group identify with a national and even European and global, issue. An initial round of interviews with entrepreneurs in this medium-sized city, combined with an in-depth literature review, prompted the researchers to continue with further stages of the research process.

Originality/Value: The analysis of actual customer preferences regarding taxi services and the economic situation of enterprises in western Poland serves as a point of reference for other regions in Europe affected by the decline in profitability within this industry.

Keywords: Taxi services, urban transportation, consumer preferences, market competition,

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JEL codes: L91, D12, L15.

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1. Introduction

Remaining competitive in the market poses a significant challenge for many enterprises across various industries. The primary goal of every business activity - regardless of whether it belongs to the group of small and medium-sized enterprises (SMEs) or large corporations - is to remain profitable and in the longer term, to grow and expand operations. The increasing number of business entities influences the market landscape, particularly competition.

Moreover, it also positively impacts the national budget, as tax revenues grow and GDP increases. Many interest groups and economic experts agree that the market is not a „dream island” but rather resembles a „battlefront” - favourable conditions do not last forever.

Numerous companies have experienced this phenomenon firsthand. Among the industries that have had to face this challenge in the past decade are service providers offering passenger transport, specifically on-demand ride services. The stagnation has especially affected the traditional taxi sector (Akimova, Arana-Landín Landín, and Heras-Saizarbitoria, 2020).

In addition to the already evident causes behind the serious crisis faced by enterprises in this sector, two major contributing factors are the recent COVID-19 pandemic and the ongoing war between Russia and Ukraine. According to the Global Bankruptcy Report - 2024, published by Dun and Bradstreet, the main reasons for business bankruptcies in 2023 included geopolitical instability, armed conflicts, disruptions in international trade, difficulties in maintaining supply chain continuity and strict lending conditions.

The report states that the number of bankruptcies worldwide increased by 12.5% in 2023 compared to 2022, when a year-over-year increase of 11.6% was recorded. In the United States, Canada, Poland and the Netherlands, the number of bankruptcies rose by as much as 50% compared to the previous year (Dun and Bradstreet, 2024). The just mentioned group of entrepreneurs - commonly referred to as taxi drivers - faced additional challenges, including intensifying competition from rapidly growing international corporations such as Uber and Bolt (and similar), as well as new legal requirements.

Changes occurring within Poland triggered a significant downturn in the central European transport market. The data speaks for itself: at the beginning of 2024, 2,455 companies suspended operations, most of them being sole proprietorships. Nearly 600 others were closed down entirely and in just one and a half months - from early June to August 14, 2024 - over 200 taxi companies straight up vanished from the Polish business register (money.pl, 2024).

It is worth noting that on-demand passenger transport services are provided by two distinct groups. The first group includes traditional taxi companies, whose services are typically ordered by phone call and only occasionally via an app. The second group, referred to in academic literature as Transportation Network Companies (TNCs) (Zha *et al.*, 2016; Wang and Mu, 2018), deliver taxi-like services through mobile applications, such as those used on smartphones (Hosni *et al.*, 2014).

TNCs have introduced never seen - levels of competition within the taxi industry (Cramer and Krueger, 2016). Modern mobility systems are increasingly based on advancements in information and communication technologies, particularly the widespread use of smartphone-based ride-sharing applications (Miciuła, 2015; Harding *et al.*, 2016; Jałowiec *et al.*, 2020) and social networks (Shaheen and Cohen, 2021).

In professional literature, we encounter the term *ridesourcing*, which refers to transport services that can be used through an alternative platform by a passenger using its functions, often via a mobile application. In contrast to traditional *ridesharing*, where the driver and passenger have a similar travel destination and share the costs, in *ridesourcing* the drivers provide transport services for profit, not necessarily having the same travel goal as the passenger (Żukowska and Kuźma 2022).

In English-language literature, the term *ridesourcing* was introduced to distinguish this type of service from traditional *ridesharing*. For example, in the paper „*The Social, Economic and Environmental Impacts of Ridesourcing Services: A Literature Review*”, the authors analyse various aspects of the impact of ridesourcing services on society, the economy, and the environment (Khavarian-Garmsir *et al.*, 2021).

Numerous media reports about a dissatisfied group of taxi drivers, as well as about harmed customers (quoted in the next part of the article) and the relatively small amount of literature data - prompted the authors of this article to organize knowledge on the above topic and to find a way out of this deadlock situation in the taxi service market.

The research subject became the taxi sector in a Polish city (Zielona Góra) inhabited by nearly 140.000 people. The poor situation of traditional-profile taxi drivers in Poland was compared with the situation of taxi drivers in Zielona Góra, located in the Lubusz Voivodeship. Entities providing transport services within this narrow,

mentioned above group identify themselves with a nationwide and even European and international problem indicated, among others, by the European Commission (2022/C 62/01). A preliminary interview among entrepreneurs from a medium-sized city in Poland and an in-depth literature analysis prompted the researchers to continue the research process.

The aim of the conducted research was to obtain an answer to the question of how taxi entities with a classic profile can remain on the market. The specific objectives of the conducted research were:

- analysis of the economic situation of taxi companies in Zielona Góra;
- determination of the main factors influencing the condition of companies in relation to the competition;
- determination of consumer preferences regarding services provided by classic taxis, app-based taxis, or taxis that allow ordering the service both via app or by calling;
- analysis of the determinants influencing the choice of a given taxi fleet by consumers.

For the purpose of the study, the following hypotheses were formulated:

1. The economic situation of taxi companies with a classic business profile depends on the functioning of transport companies which are based on mobile applications (on-demand transport), which are at the same time an association of international corporations.
2. The modern consumer of on-demand rides appreciates the convenience of mobile applications.
3. Ecological solutions of companies are not a determining factor affecting the economic condition of companies providing on-demand rides.

The goal was achieved through questionnaire interviews addressed to potential taxi customers. The survey involved 300 respondents who used taxi services. The CAWI method was used, and the form was disseminated using Google Forms. The results of the study were analysed on the basis of statistical methods using MS Excel and Gretl software and a literature review was carried out.

The following research study brings significant value to the discipline in five dimensions, i.e.:

1. It expands the literature resources in the field of effective management of enterprises of the traditional taxi industry – which are in a potential crisis. On the basis of the analysis of the literature, it was found that there is not enough literature showing a practical solution to counteract the deepening of the unstable market situation of taxi companies with classic business profile; therefore, the obtained data may prove crucial for this area of science.

2. The research study has a practical dimension and is an integral part of the implications of management at various government- and business levels. It contains practical recommendations for taxi companies that are in poor financial condition. It is a kind of recovery plan, indicating areas that should be improved, also gives an answer to the question: how to attract new taxi customers and retain those who are long-term passengers of the company.
3. In addition to recommendations for enterprises and improvement of their economic situation, the level of satisfaction may also increase among the taxi consumers and this could provide a wide social impact, which is important in comprehensive management.
4. The data obtained on pro-environmental activities provide real knowledge about the legitimacy of changes in this area, perceived both by potential taxi customers and by enterprises, including data on their involvement in this aspect.
5. The scientific material is a response to suggestions of national and EU policy on the need for market regulations and laws in the field of efficiently functioning and sustainable local passenger transport on demand; it is a scientific, research-based response to the very much alive- significant voice of the transport industry; a checking form of the effectiveness of legal reforms, less than a year after the introduction of legislative changes.

The nature of the research is strictly in line with the sustainable development policy commonly recommended (among others) by the EU, taking into account its three basic pillars of functioning: economy, society and the environmental dimension.

2. Literature Review

In order to demonstrate the factors and determinants, an analysis of the literature on the subject was carried out. Of the most important elements that have had a major impact on the transport sector (which includes taxi services), important mentions are: Russia's attack on Ukraine, changes in regulations and laws, sustainable development policy, the introduction of on-demand transport ordering mobile applications - to the market, the COVID pandemic and others.

The recent worldwide pandemic has significantly affected the transport industry and disrupted its functioning. With its outbreak, there was a collapse in demand for transport services in many areas of the economy. The COVID-19 pandemic was the reason for the weakening of transport flexibility and lead times.

With the spread of the virus, since March 2020, individual countries have decided to introduce restrictions on the mobility of the population. Long-term checks and sanitary controls for drivers have been restored at the borders. At the same time, in Europe, there were problems with the supply of goods from China, where the pandemic began earlier (Ziółkowska, 2021).

Regarding the impact of the war in Ukraine, data has been found that presents an analysis of the economic situation in the transport and warehousing industry. Based on data from the Lubuskie Voivodeship, the data confirms the words of experts from the logistics industry (participants of the conference: VI International Scientific Conference mSVOK), where when asked about the impact of the war on the sector, everyone agreed that the impact of the conflict is insignificant and the crisis of the sector was almost immediately averted (Mazurkiewicz *et al.*, 2023).

The change in the regulations on taxi drivers' driving licences, introduced on 17 June 2024, has affected many people in the taxi industry. It made it mandatory for the drivers – in order to transport passengers on behalf of a company - to have a driving licence issued or approved in Poland.

These changes are primarily intended to improve the safety of road users, but also to improve the effectiveness of work of the police officers. Until now, it has been difficult to verify identity or driving privileges. The introduced changes are primarily aimed at transporting people by the so-called "app-based taxis". These transports are usually carried out by drivers from outside the European Union who have their driving licenses issued in their countries (Dziennik Ustaw Rzeczypospolitej Polskiej, 2023, pos. 1123).

In an analysis conducted by K. Laskowska from 2025 on robberies of taxi drivers in Poland, where the author emphasizes that the only such source that points to this topic at all comes from the 90s. She concludes that the research hypothesis: "Performing the profession of a taxi driver poses a number of threats to his safety" has been confirmed. An analysis of police reports undeniably indicates many risks associated with the profession of a taxi driver.

Contact with intoxicated, sometimes aggressive passengers, not always willing to pay for the ride, treating the taxi driver as easy prey due to the taxi driver's possession of cash, is conducive to dangerous behaviour. The risk of the profession includes contact with people, working at different times (including night), in different places (including secluded places) (Laskowska, 2025).

It is also worth mentioning the other side - the assault on taxi customers by taxi drivers. In 2021, 23 cases of sexual assault in taxis were reported, in 2022 this number increased to 43, while in 2023 - 31 such incidents were recorded. In the transport ordered through mobile applications, the number of attacks fell from 28 in 2022 to 14 in 2023. This decrease is attributed to the tightening of driver verification procedures and the introduction of the obligation to have a Polish driving license (or Poland-approved one) from June 17, 2024.

However, the changes did not take place only in Polish law. The platforms themselves – including Bolt and Uber – have made significant changes to driver verification to improve passenger safety. Now each driver must personally report to the designated

point, where he undergoes a detailed inspection of documents, including a driving license, a certificate of no criminal record, medical and psychological examinations and a taxi license.

Previously, the procedure was carried out digitally, which led to numerous abuses. Currently, the system allows you to check whether the driver is actually using his own account and his ID is visible in the car. In addition, all vehicles serving transport applications must be properly marked (Zawadka, 2024).

The biggest change or hesitation on the taxi market was definitely caused by the entry into the market of mobile applications that allow you to order a ride on demand, conveniently - in a dozen or so seconds on your phone, with a few clicks. This completely eliminated the need to look for the phone number of the taxi company and call to find a free ride and get information about the potential price of one.

Now everything is shown on the phone screen before the ride and this is usually how the payment is made if customers decide on a cashless form. One of the biggest "players" in this industry are currently Uber and Bolt. Uber first appeared under the name UberCab in San Francisco in 2010 and came to Poland in 2014, starting in Warsaw. Bolt, on the other hand, launched in Estonia under the name Taxify in 2013, and came to Poland only in 2017.

After all, quoting Tom Goodwin *Uber, the largest taxi company in the world, does not own any vehicles* (Goodwin, 2015), one can conclude that these "players" do not actually function as taxi companies. They are more like an intermediary between the customer and the taxi driver, which allows them to contact them each other much easier than it ever was before.

New technologies that have drastically modernized the entire taxi industry and affected everyone - those who used them and those who didn't, are: shipping software, a terminal for drivers and an automated telephone system. They are key digital technologies that have allowed the traditional taxi operator to continue to grow.

Together, these three technologies provided the primary platform for the smooth operation of private taxi hiring, with a particular focus on making even more profit (Snarska, 2020). Until 2020 (incl.), in order to become an "app-based" taxi driver, i.e. in Bolt or Uber - all you had to do was register, own a car and, in fact, you could immediately leave and start transporting people. Whoever wanted, how he wanted, where he wanted. The requirement to have a license for domestic passenger transport was to be introduced in 2020, but the Covid pandemic prevailing at the time made it impossible to go through, so they did not come into force until 2021.

Before these changes came into life, there were all sorts of anomalies. In a 2018 study conducted by DELab UW: *Taxi driver - Digital entrepreneur*, there was information that digital taxi drivers faced strong competitive pressure: drivers who did not pay for

licenses, increased insurance covering the passenger or depreciation of a car marked as a taxi in the registration certificate or provide passenger transport services without a work permit were willing to accept ride fares at a much lower price (Mazur, Włoch, and Śledziwska, 2018).

Due to the fact that virtually anyone with a car and a driving license could become such a driver, there were newcomers daily. The lack of almost any costs allowed them to reduce prices in such a way that it was actually no longer profitable for ordinary taxi drivers to work and the competitiveness between these "digital" ride offers increased day after day.

It was not until the Act of 16 May 2019, which came into force on 1 October 2020, that according to Polish law, drivers providing passenger transport services via applications such as Uber or Bolt are required to have a taxi licence and appropriate vehicle marking. This means that they are treated equally as all the other traditional taxi drivers (Dziennik Ustaw Rzeczypospolitej Polskiej 2019, pos. 1180).

The development of platforms such as Uber, Bolt and FreeNow has forced traditional taxi companies to adapt to the new reality. To stay competitive - more and more carriers started deploying their own mobile apps, offering customers the convenience and speed of requesting rides without having to call a real dispatcher or taxi driver (as many do figure as their own dispatcher).

In 2024, mobile applications have become the dominant way of ordering rides (taxi), gradually displacing traditional contact methods. Companies that have quickly adapted to this change are seeing an increase in the number of customers and growing revenues. Although the pandemic has had a strong impact on the industry, the taxi sector proves that flexibility and the ability to quickly adapt to new technologies are crucial in the dynamically changing world of transportation (Wojtal, 2024).

Sustainable development is another aspect that has affected the industry. It consists in striving for a model of growth that not only fosters progress, but also involves all social groups and enables them to reap real benefits. It is an idea based on intergenerational solidarity – the idea is to develop wisely, without overexploiting resources, so that future generations also have a chance for prosperity.

Initially, discussions about sustainable development focused mainly on minimizing the negative impact of economic activities on the environment. Over time, however, the view on this topic has broadened – today we are talking about three equal pillars: ecology, social justice and economy. The concept has penetrated the mainstream of development policy and has become a key reference point for strategy development at both national and global levels (GOV.pl, 2025).

Sustainable development in transport is not only about reducing emissions, but also about looking for solutions that combine ecology with cost-effectiveness. That is why

more and more companies are turning to modern cars and technological solutions that reduce their carbon footprint and at the same time reduce operating costs. Electric cars are distinguished by quiet operation, zero CO₂ emissions while driving and lower operating costs compared to traditional combustion vehicles.

Currently, the largest and most environmentally conscious fleets working with mobile applications such as Uber or Bolt are focused primarily on hybrids. This is because - although electric and hydrogen technologies still face challenges related to charging and refuelling infrastructure - hybrid vehicles offer an optimal compromise between ecology and ease of use. Hydrogen vehicles also have great potential.

Hydrogen as a fuel ensures clean, emission-free driving and instant refuelling – a key asset for transport companies that need to operate without downtime. Although the development of hydrogen infrastructure is just gaining momentum, growing investment and interest from the automotive industry indicate that this technology can play a significant role in the future of transportation.

Moreover, both hybrids and hydrogen vehicles are proving to be more profitable for companies in the long run – lower fuel and operating costs make their use a more advantageous alternative to classic combustion cars (DEPartner.pl, 2024).

From January 2023, companies must prepare for a number of changes resulting from Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022.

The new rules introduce significant modifications to Regulation (EU) No 537/2014 and Directives 2004/109/EC, 2006/43/EC and 2013/34/EU, focusing on sustainability reporting. This law came into force 20 days after its publication, imposing new reporting obligations on companies (SGS.com, 2023).

The new Corporate Sustainability Reporting Directive (CSRD) requires companies to submit annual reports, which must include detailed information on their environmental, social, human rights and corporate governance impacts.

The introduction of this directive is a response to the overly general provisions of the previous regulations on non-financial disclosure (the so-called NFRD Directive), which did not provide sufficient detail in terms of reporting the impact of companies on these key areas (DalkiaPolska.com, 2023).

The analysed corporations are those, which fit under the PKD (pl: Polska Klasyfikacja Działalności) - Polish Classification of Activities at codes: 52.29.C - Other service activities supporting transport, 49.32.Z - Road transport of goods, 49.33.Z - Road transport of goods in domestic traffic (PKD, 2025). Enterprises that use those codes, are providing the transport of passengers, as mentioned in the article.

3. Methodology

The economic situation of the taxi industry in the city of Zielona Góra was determined by creating an original questionnaire consisting of 17 questions and a data sheet. The advantage of this technique is the ability to choose different types of questions that allowed us to reach the answers we were looking for.

They were aimed at getting to know the opinions of potential taxi customers about the transport service provided by various transport companies: traditional taxis, fleets providing transport services based on a mobile application, as well as taxi companies that give the customer the opportunity to order a transport service through a phone call or through an application.

The survey form has been divided into 5 parts: the profile and 4 sections. The first section allowed to classify the respondents answers to the study, out of 306 respondents answers, 6 respondents answers were rejected because these people had never used taxi and their answers and opinions would not be real and reliable; In addition, this section includes questions about things like: the frequency and time of using "taxis", the main reasons for using taxis, and determining the main way in which passengers request a transport service.

The next section included questions about determining the needs of the taxis customer, i.e. what is taken into account by them when deciding on a taxi. The third section included questions describing the proposed improvements in "taxi" transport services, the respondents could respond to them by marking their opinion on a five-point scale: 5 – very important, 1 – not important or ticking the option of that in their opinion no change is needed.

The last section was devoted to learning about opinions on the importance of ecological transport solutions and the general awareness of consumers of transport services, as well as on the ongoing process of global warming.

The study was quantitative and qualitative. During the analysis of the results, the main focus was on the detection of qualitative traits and opinions. Both open-ended and closed-ended questions were used, the latter being single- and multiple-choice; used a multi-level single-choice matrix based on a five-point Likert scale.

The CAWI method was used and the questionnaire was distributed using Google Forms among people who mainly stay or live in the city of Zielona Góra, due to their studies; professional work; or simply their place of residence. This tool makes it possible to generate a link that can be distributed in any sort of social media where respondents actively participate.

The form was simple, accessible and intuitive for those completing the survey, while the possibility of marking questions as obligatory minimizes the risk of obtaining

incomplete questionnaires that would have to be rejected. Answers were collected from 306 respondents and the timespan of the survey was the first quarter of year 2025, and it was aimed at people who used the transport service in Zielona Góra and the surrounding areas.

In order to achieve the goal, in addition to the methods indicated above, the previously mentioned methods were used: literature analysis, document analysis, observations, mathematical and statistical analyses based on Excel and Gretl. Due to volume limitations, only selected research results are presented in this study. The pilot study was to test the accepted scientific procedure as well as the combination of selected analytical tools. In the near future, the authors plan to conduct further, extended research, which will be representative of the entire population of the country.

Based on the data obtained from the Zielona Góra City Hall, the Department of City Management Strategy and data from the Central Statistical Office (Bank Danych Lokalnych, 2025), the number of licenses issued and the number of taxis on the market were determined.

In order to verify the data on the closure of business or suspension of taxi companies, the Search Engine of Entities of the National Economy (GUS, Baza Internetowa REGON, 2025) and the online government portal called the Central Registration and Information on Economic Activity (pl: Centralna Ewidencja i Informacja o Działalności Gospodarczej) (Ceidg.gov.pl, 2025), 415 companies whose main business activity is or was registered under No. 49.32.Z PKD (pl: Polska Klasyfikacja Działalności-Polish Classification of Activities) and concerns the activity of passenger taxis, it is worth mentioning that from 2025 the number of this activity has changed and is currently No. 49.33.Z. The status of companies was analysed in the years 2017-2024 (i.e. the period of heyday of transport fleets on the application in Poland), And special attention was paid to 2024.

4. Research Results and Discussion

4.1 Subjects of Research and their Situation on the Market (Subjective Opinion of Companies)

In Zielona Góra, a city in the western of Poland with a population of 138,887 people (GUS, 2024), in 2024 there were 395 registered transport companies (including sole proprietorships – 229, and 80 which had requested 2 licenses, as the 86 companies left had over 3 – going up to 75 licenses) providing services registered under the number 49.32.Z PKD (applies to passenger taxi activities).

The analysis of determining the legal status of taxi companies and their activities was covered in the years 2017-2024. It was found that the number of licenses issued increased year by year and oscillated in the range of 340-476. A significant decrease in the number of licenses issued was recorded between 2024 and 2023, their number

was lower by 91 pcs. compared to the previous year. On the other hand, the number of licence extracts issued in 2020-2023 was in the range of 438-770 with the highest record in 2023. (Bank Danych Lokalnych, 2025). A significant number of companies suspended their operations, while as many as 40 of them (i.e. 10%) closed their operations in 2024.

In 2024, there were traditional taxi companies operating on the market of the academic city, whose customers order transport services mainly by phone, some of them have also introduced applications, these include: Halo Taxi Bis Zielona Góra (TaxiBis ZG, 2025), Taxi Czerwone Koguty, (Bis Taxi Zielona Góra, Hallo-Taxi, Taxi Zielona Góra, Bachus Taxi Zielona Góra, "Zielona Góra Taxi Association Hallo Taxi", Zielona Góra Taxi Association Bis, City Taxi Bis (KRS-Pobierz, 2025; eZielona, 2025). In addition, there are taxis that are under the license of Bolt, Uber, or FreeNow provide their service only through mobile applications.

Based on interviews with people representing the fleets, dividing them into companies that carry out taxi orders only through the mobile applications and those that provide passenger transport on demand based on a telephone order or an mobile application. The subjective opinions of drivers, according to the latter group, are presented below: the economic situation and demand for taxi services decreased with the appearance of fleets on based on apps, as well as the restrictions related to the Covid-19 pandemic.

Nevertheless, the pandemic has been averted, and the „unfair” taxi competition, as drivers with a traditional profile have said it - has remained. They see the main reason for the increase in business fees in the so-called competition. Inexperienced taxi drivers on the app, who - until recently had little professional experience, were the perpetrators of many road collisions, frequent accidents by drivers forced insurance companies to increase the prices of third party liability insurance.

As drivers point out, their numerous protests forced the government to change legal regulations, including mandatory licenses, for about 5 years there was an unequal policy towards all entities of the taxi industry.

The average age of „traditional” taxi drivers is 58 years, most of them already counts down the months or years when they will end their business and retire. Unfortunately, most of them show symptoms of burnout, which is much worse - they believe that their economic situation is hopeless, they compare their earnings to the national average and only in 6 months of the year, in the rest it is even lower.

They are afraid that in the last years of their professional career they will have to change their careers, but mostly they do not know a better professional alternative. They treat financial instability as the main demotivator of work. Unsatisfactory earnings also affect the bad atmosphere in the taxi industry and numerous disputes between fleets. The way to solve the bad economic situation in recent years was the consolidation of taxis through associations, as well as the introduction of various IT

solutions, i.e., expanding the way of ordering services by introducing an mobile application, which at the same time was associated with fixed subscription fees. The introduced digital improvements have revived the demand for the transport service to a small extent – said the drivers of the traditional sector.

The advantage of the above mentioned sector is: professional experience; excellent knowledge of the city's topography; propriety of drivers; long-term relationships between them and the customers; reliable availability of drivers, even 24 hours a day; honesty; having service options that not all competing companies have, i.e., the possibility of transporting a child in a child seat, the possibility of ordering the service by phone for people who value the traditional way of ordering transport, the well-known tariff price list applicable in at different times of the day, which does not change with increased demand at specific times, as is the case with the competition (app- based fares).

In addition, 99.9% of the staff is of Polish nationality, which is valued by many customers. On the other hand, the modern taxi sector, perceived by drivers working in it, also notices the positive and negative sides of the functioning of its industry.

The issue that most drivers perceives as a bad sign is earnings - as in the previous group, they believe that they are inadequate according to the intensity of work and oscillate within the national average, but this is mainly the case in the months of increased demand, i.e., from November to February, and additionally in the months when there are well-known events organized by the city, e.g., Winobranie (Zielona Góra's city festival), or the academic community being active, i.e., Bachanalia (it's an academic fest, which takes up to a week and ends with a set of concerts, often performed by well-known pop-culture stars).

There is a fundamental difference in the profile of a „mobile app taxi” driver - it is usually a person in the age range of 22-40 years old, for whom the earnings are not satisfactory, nevertheless, due to little professional experience and relatively young age and greater vigor for work than a 60-year-old, this person is able to work more at night, maybe even pull longer hours - just to repair the profit on a monthly basis.

Earnings may be comparable or relatively higher than the previous analysed group. Different problems have been observed in this industry than those presented so far in this study. Due to the fact that the staff of the analysed group is young, often just started gaining experience behind the wheel of a taxi, there are numerous collisions and accidents in the Uber, Bolt or FreeNow fleet (doesn't mean the group mentioned earlier isn't involved in any incidents, but it shows to happen less often).

Improper fleet management and monitoring system meant that the perpetrators of car damage did not reveal themselves or even quickly resigned from work. The employer was left alone with the problems and all the costs.

Drivers of "taxis through mobile apps" said that the work system provides them with great comfort of work by reporting their availability - and not being given a schedule created by some sort of boss above them. This freedom to work at any given any time gives you the opportunity to reconcile other responsibilities related to e.g. studies.

Nevertheless, the intensity of work, i.e. a very large number of trips at selected times burdened with high physical exploitation, confirmed more than half of the drivers is in the belief that this is not their target job and they want to change this job within a maximum of 5 years.

The drivers also noticed a conflict between the competition, cited unfortunate situations provoked by "traditional taxi drivers", i.e. blocking the entrance to a place intended for a taxi rank, e.g. at sensitive places of demand for the service, i.e. railway stations. In addition, they know the common opinion that taxis, e.g. Bolt, Uber, have taken away their labour market and are considered unnecessary ballast.

4.2 Characteristics of the Respondents

Among the respondents, 52.1% of the participants represented women, while 47.9% represented the group of man. The dominant group of respondents were participants aged 20-29 (64.8%). The second group consisted of participants aged 40-49 years (15.3%) and 30-39 years (13.8%).

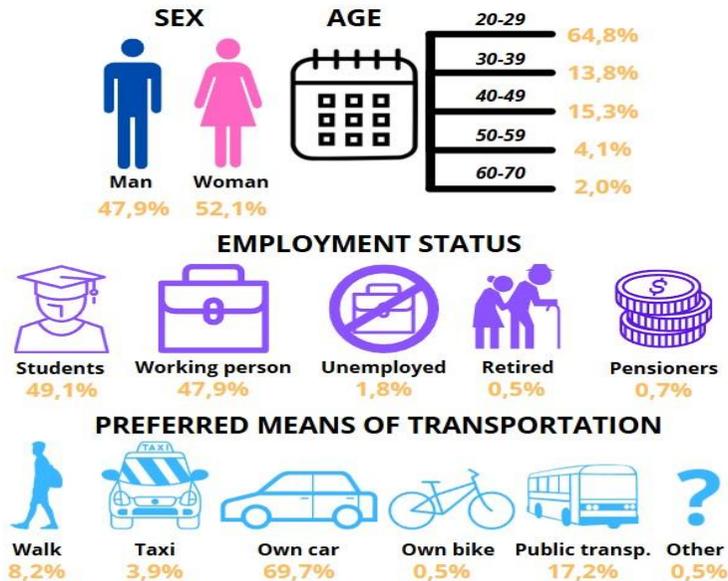
The participants of the study were people who are socially or professionally active in the city of Zielona Góra or are residents of the city. The group of employed people constituted 42.9%, and students were represented by 54.4% of the respondents. The majority of respondents are people without a disability certificate (93.1%).

The structure of working people in relation to students is quite comparable. A slight deviation is made up of people who are not employed. Among the respondents surveyed, the majority most often use their own vehicle (69.7%), which is their own car, motorcycle or scooter.

Over 17% of the survey participants use public transport (city bus). The vast majority of respondents (98%) declare that they have used taxi services at least once. 61.3% of them used taxi services several times a year, while 12.6% of respondents used taxi services several times a month.

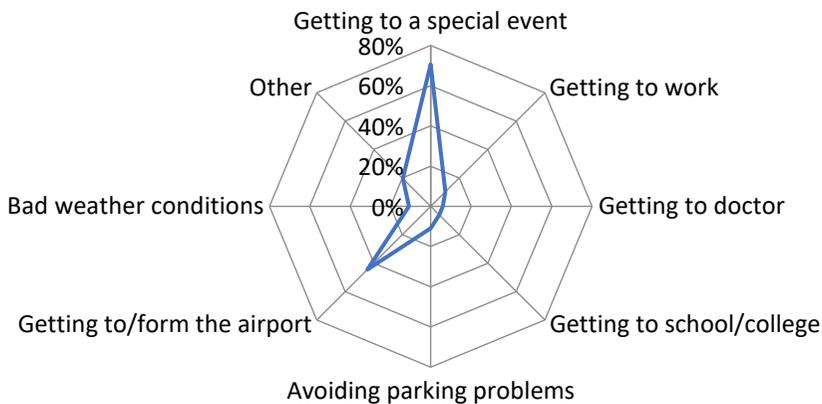
The main reasons for using private transportation services are transportation needs related to returning from evening special events (71.3%) and commuting to airports (44.1%). The declared reasons for using taxi services are confirmed by the time of using the service. The respondents use the service in the evening (57.9%) or at night (54.4%), and the taxi service used in the morning is declared by 30.3% of the respondents.

Figure 1. Summary of basic parameters



Source: Own elaboration.

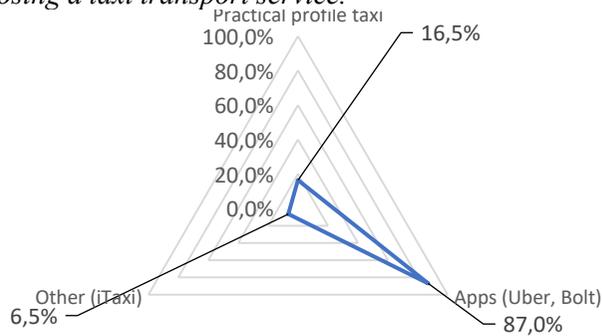
Figure 2. Circumstances of using the taxi transport service.



Source: Own elaboration.

The vast majority of respondents use well-known taxi services in the form of an application (87%), while classic services ordered by a telephone operator are declared by 16.5% of respondents. The vast majority of respondents rate the use of taxi services as very good (52.5%) and good (36.4%).

Figure 3. Choosing a taxi transport service.



Source: Own elaboration.

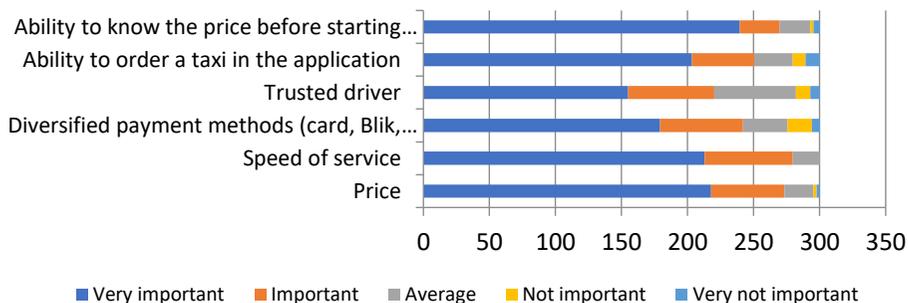
It is worth noting that there is many taxi services, in which consumers did not experience verbal or physical violence from the driver, were not deceived by the service provider, and did not suffer any accidents committed by drivers.

4.3 Customer Preferences, Needs and Factors Requiring Improvement in the Taxi Services Market

Analysing the expectations of consumers of the taxi services market, it can be concluded that the key indicators are:

- price
- speed of service delivery,
- diversification of payments (credit card, BLIK, transfer),
- information about the taxi driver,
- ease of ordering the service (mobile app),
- information about the price before using the transport service.

Figure 4. Key expectations of users of the taxi services market.

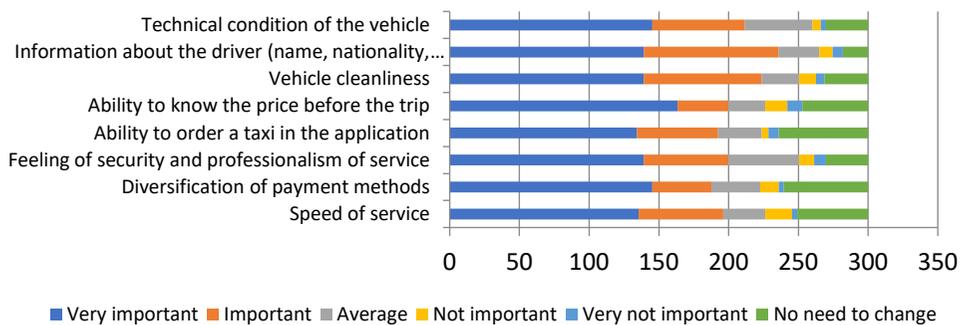


Source: Own elaboration.

Thus, the majority of survey participants, when asked about guidelines for changes in the classic market of taxi services ordered by phone and operator, point to the above indicators related to receiving a lot of information about the service before ordering it and creating the possibility of ordering the service using an easy and intuitive mobile application. Additional factors that should be introduced in a taxi service, regardless of its type, include:

- the ability to choose a vehicle without the smell of nicotine products inside the vehicle,
- possibility of operation in a foreign language,
- the possibility of traveling with a third party, thus sharing the costs of travel (carpooling),
- more information about the driver (age, nationality, seniority, ratings of other users),
- the ability to deliver courier shipments.

Figure 5. *Key factors for improvement in the taxi services market.*



Source: *Own elaboration.*

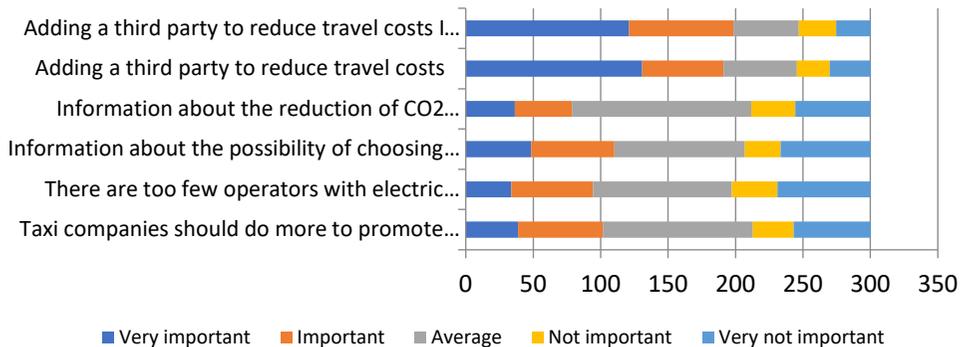
A little-known solution in taxi services are subscriptions for the use of transport services paid by workplaces. There is also no reaction of respondents to loyalty programs, while respondents declare receiving information about discounts in the mobile applications of individual entities providing transport services.

4.4 Users Opinion on Pro-Environmental Solutions and Zero-Emission

In the results of the survey, respondents declare an ambivalent attitude towards zero-emission vehicles, both in terms of the size of their electric vehicle fleet and the need to promote zero-emission travel.

Of greater importance for the surveyed users is the possibility of using the concept of carpooling, which consists in sharing a ride with third parties, whose main task is to reduce the unit costs of transport services, and thus reduce the negative impact on the environment.

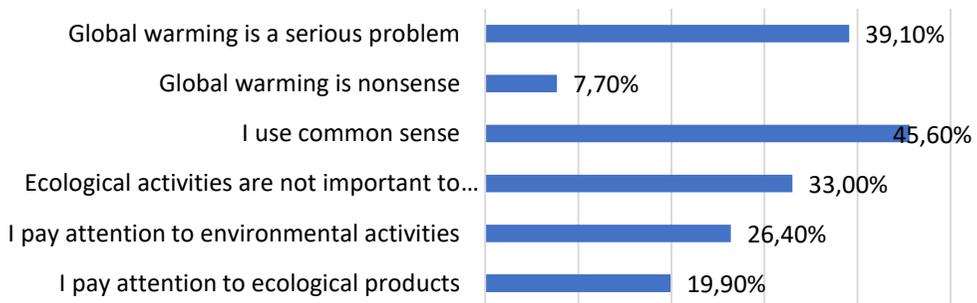
Figure 6. Users' opinion on pro-environmental solutions and zero-emission.



Source: Own elaboration.

Users of taxi services are guided by common sense, they are aware of climate change, but zero-emission and ecological solutions offered by taxi entities are not a key factor in choosing a transport service.

Figure 7. Respondents opinion on ecology and environment



Source: Own elaboration.

5. Discussion

The study conducted in the above form was not recorded in the literature on the subject; there are studies that deal with customer preferences in the taxi sector, but in a different dimension and they were carried out a few years ago, as well as in other parts of the world and Europe.

Due to the limitations of the size of the article, the following areas of research analysis were selected for discussion: the scale of the problem of additional competition on the taxi market, market opportunities and the profile of the taxi customer. A 2017 study (Nie Yu) in China confirms that the decline in services provided by the traditional sector was noticeable mainly during the first year of ridesourcing, while it gradually decreased in the following years.

Taxis were found to compete more effectively with ridesourcing during rush hour (6-10 am, 5-8 pm) and in densely populated areas. These studies positively correlate with the results from Poland, because according to the opinions of taxi entrepreneurs and customers, during increased occupancy, i.e., during festivals, occasional and outdoor events, especially in the evening and night hours, the waiting time for taxis increases and their availability decreases; According to customers, the number of taxis is insufficient, and the prices are not always better for taxis with the mobile app.

Particularly noteworthy is the study that appeared in the article entitled Ridesourcing vs. traditional taxi services: *Understanding users' choices and preferences in Spain* carried out in 2018, attention was paid to: *general socio-economic and demographic information*; patterns of urban mobility and the use of transport services; attitudes and personal preferences towards taxis and transport. It was found that, as with other case studies in the US and Asia, the article identifies greater adoption of ridesourcing services among people of the younger generation.

This data is in stark contrast to the 2017 National Household Travel Survey (NHTS), which shows that both Millennials (Y) and Generation Z use both transportation companies (TNC) and public transportation (PT) (Khatun, Saphores, 2022); however, according to this study, app-based transportation is also eagerly chosen by people aged 30-49. that is, also from generation Y (1980-1995) and generation X (1964-1980), but to a lesser extent.

These results may be dictated by the fact that the experience of using digital achievements by travellers is increasing year by year (the number of mobile applications in various services is increasing) and older people are becoming open to new technological solutions. Contrary to the data from Spain, the leading gender, i.e. female, who prefers ridesourcing, was not indicated.

However, the data obtained are consistent with research from previous years indicating that taxi services are more often used for leisure, recreational or social purposes, and this applies mainly to non-traditional taxi services.

6. Conclusions, Proposals, Recommendations

The study allowed us to achieve the intended research objectives it has been verified that the alarmed problem of the decline in the profitability of the traditional taxi sector is felt by entrepreneurs of the city of Zielona Góra, which belongs to Poland, as confirmed by quantitative data on closed enterprises.

The main factors affecting the condition of companies in relation to the competition were selected, their type depended on legal changes in Poland and the EU over the last years. The infamous period that lasted until October 2020, when the obligations towards drivers of in-app fleets and traditional taxis were different, led to a difference in expenses incurred by these different groups of entrepreneurs.

The ease of taking up jobs as taxi drivers by foreigners who were not required to have a driver's license has affected the traditional taxi sector. What's more, the young age of drivers, usually with little experience, has affected the frequency of collisions and increased fees by insurers.

Finally, the obvious factor, i.e., the emergence of additional competition and thus the reduced demand for classic taxi services, increased the distribution of profit among the increased number of entrepreneurs on the market. In addition, improper promotion of expanding the form of ordering services through the application through classic taxis made unaware consumers choose companies with a well-known brand logo. An analysis of consumer preferences towards services provided by a classic taxi, a taxi with an application or a taxi enabling ordering a service both via an application or by calling was carried out.

It was found that the most popular form of ordering a taxi is the possibility of placing an order via the mobile app (84% of respondents' responses), therefore it is recommended that traditional taxis expand the form of ordering and advertise it well, because even those classic taxis that have already modified the method of ordering taxi services have also experienced a decrease in profitability.

The main responsibility for the above state of affairs should be sought in negligible and ill-suited marketing activities promoting new ordering options; This is confirmed by the results of a survey in which some respondents claimed that they were not aware of the additional possibility of ordering door-to-door services provided by companies with a traditional taxi logo. What's more, it is recommended to create an easy, intuitive application tailored to the needs of the consumer profile.

According to the respondents, in addition to the previously known obligatory functions of the application, such as: ease of placing an order without the need to talk, information about the price before using the transport service, speed of service delivery, payment diversification (credit card, blik, transfer), information about the location of a moving taxi for a person indicated by the traveller.

Additional factors that should be introduced in a taxi service, regardless of its type, include: the possibility of choosing a vehicle without the smell of nicotine products inside the vehicle, the possibility of service in a foreign language, the possibility of traveling with a third party, thus sharing the costs of the ride (carpooling), broader information about the driver (age, nationality, seniority, ratings of other users), the possibility of delivering courier shipments.

These latter service improvements are important because they expand the taxi service offer, increase the customer's order basket and generate additional profits. Particularly noteworthy is the expansion of the offer, which reduces the price of the service by allowing you to travel with a third party, thus dividing the cost of travel (carpooling).

The respondents declared that knowing the difference in price between a shared service and not information about how much the travel time would be extended, they would decide on this form of travel (70% of all responses, the decision of the respondents was mainly dictated by the economic aspect, not the pro-environmental one, as confirmed by the results of the survey).

Improving the taxi service can also affect the greater willingness to use this form of transport, it has been shown that the technical condition of the vehicle, the cleanliness of the vehicle, the sense of professionalism of the service, the ability to order a taxi through the mobile application, the ability to know the price before the trip, travel safety are the key factors that need to be improved on the taxi services market, guaranteeing the high quality of these components of the service, also through their promotion among customers, may contribute to an increase in demand for the analysed service.

In addition, the need for customers to have zero-emission fleets by companies was verified. Respondents are ambivalent about zero-emission vehicles, both in terms of the scale of their electric vehicle fleet and the need to promote zero-emission travel. Of greater importance for the surveyed users is the possibility of using the concept of carpooling.

Therefore, there is no need to expand the fleet with more ecological cars, as this is not the main determinant of the choice of service on the market; In addition to the above, the general opinion on climate change was also known, 39% of respondents believe that it is a serious problem, but at the same time, the majority of people indicating such an answer also indicated that ecological activities are not important to them.

Such an attitude may indicate the belief that the state of the environment should be taken care of, but responsibility and action should lie within the governments of the countries of the world. The above results may suggest that the sustainable development policy is an area of activity of companies that should not absorb entrepreneurs in the first place, such a view is obviously inconsistent with the current EU policy, but it signals that the division of tasks in the area of environmental protection between international organizations, governments and people (customers of transport services) shows large disproportions.

Therefore, the question arises, how should entrepreneurs conduct environmental policy, comply with the guidelines of the CSRD Directive, being trapped in financial and social expectations? This subject prompts researchers to conduct further research, and the presented content is one of the parts of subsequent research studies in the intention of the authors of the article. The analysis of the research results allowed to adopt the hypotheses put forward in the research cycle of the work:

1. The economic situation of taxi companies with a classic business profile depends on the functioning of transport companies which are

- based on mobile applications (on-demand transport), which are at the same time an association of international corporations.
2. The modern consumer of on-demand rides appreciates the convenience of mobile applications.
 3. Ecological solutions of companies are not a determining factor affecting the economic condition of companies providing on-demand rides.

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