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Consumer Acceptance in Measuring Greece's Readiness for Transport Automation

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Abstract: Transport automation is a reality that is quite rapidly penetrating our lives. Relevant technologies are there, continuously evolving and improving their performance, while countries all over the world are already adopting policy and legislation measures to appropriately introduce their deployment. What is however of major interest is how people and societies as a whole welcome this revolutionary transformation. To measure the preparedness of countries towards autonomous mobility, KPMG has been releasing reports, calculating the Autonomous Vehicles Readiness Index since 2017, thus investigating countries' level of readiness. In this paper we present the calculations with focus on Consumer Acceptance Pillar for Greece, placing it among the rest of the countries considered. The results show that Greece is still low in the ratings, indicating that, although primary steps have been undertaken, still significant work needs to be carried out in terms of legislation, technological development, infrastructure, testing, awareness and training to foster public acceptance in Greece.

Keywords: transport; automation; readiness; Greece; autonomous; acceptance; consumer

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1. Introduction

As automation is rushing into the reality of modern transportation systems, governments, industry, operators and all related stakeholders (including the end users, i.e., the general public) are seeking to better prepare for the smooth, effective and sustainable transition to the new era. To do this, a first concern is to specify their readiness, by identifying the areas where more effort is needed and, correspondingly, further fortifying their strong assets. In this concept, KPMG issued, originally in 2017, the Country Autonomous Vehicle Readiness Index (AVRI) for 2018 [1] (20 countries), which was updated in 2019 [2] (25 countries) and again in 2020 [3] (30 countries). The aim of this Index is to measure the level of readiness and acceptance of the introduction of autonomous vehicles at country level, through a composite indicator (AVRI), combining a series of individual variables in an overall value. The use of composite indicators is recommended on one hand for assessing multidimensional concepts that are not possible to be defined by only one indicator—as is the readiness for AVs—and, on the other hand, for performing country performance comparisons, being also recognized as an effective tool for analysis and public communication [4].

At worldwide level, numerous studies have been undertaken to measure the acceptance of AV, either in psychological terms, investigating the feeling of safety (or unsafety) the users experience in AVs [5,6] showing a rather reluctant attitude of older and less technologically savvy people to use fully automated vehicles, while acceptance is rather higher and with less variability when it comes to lower levels of automation—or in terms of their market penetration potential and the users' willingness to have/willingness to pay (WTH/WTP) [7,8]—indicating a higher interest and WTP from young, experienced and higher-income drivers, living in urban areas. In addition, studies based on social

media data sentiment analysis have been used to identify fears and restrictions of users towards autonomous mobility [9]. Of course, other parameters also significantly affect user acceptance, like social influence, individual differences, and system characteristics [10], which include also geographical and cultural features that affect the personalities and market potential. The above parameters are also considered within the KPMG approach for calculating readiness in terms of consumer acceptance, as they are addressed in the variables that constitute the particular rating (see Section 2).

Apart from studies related to identifying the acceptance level, significant work is being undertaken in terms of how to raise the acceptance level and make users accustomed and willing to use AV. Such work is mostly related to improving the user experience along with minimizing potential side-effects which would discourage the choice of AV or create a negative impression of the users towards their introduction. In this sense, different research initiatives have focused on presenting alternative Human Machine Interface (HMI) to facilitate user experience and interaction with AVs, either inside [11–13] or outside [14–16] the vehicle (addressing conspicuity and traffic interaction issues). Moreover, issues related to the network capabilities and its optimal response to the needs generated by AV operation are another topic of research interest [17], tackling, among others, with the optimization of cloud networks for addressing AV performance and IoT needs in general. Other than that, workforce and training issues are of special focus, in terms of identifying not only the expected impacts on the transportation workforce [18] but also the knowledge and skills required for keeping up with progress in the field (including operating AVs) [19] and relevant tools and methods for professionals' and public training, aiming to help acquire experience, become accustomed and gain competence in using new mobility systems [20–22]. Finally, research on modelling—either of AVs in the network [23] and, most notably, including driving behavior [24]—should be mentioned, along with policy considerations on the AV introduction and its implications [25,26].

In Greece there have been some steps towards AV introduction, however there is no actual measurement of the readiness of the country or comparison with other countries using the same methodology and measurements. Relevant studies in Greece exist [27] however lacking the comparative view that could be achieved if the same methodology would be applied to other countries. Other studies have assessed parts of the country's readiness, either in terms of user attitudes [28] in some cases also in cross-country and cross-modal framework [29], or at legislative level [30]. However, an approach that would consider different parameters of consumer acceptance in Greece along with a cross-comparison with other countries—like the one of KPMG—has not yet been implemented.

As Greece is not included in any of the AVRI reports issued by KPMG, the authors tried to assess the country's readiness in a comparable way, in order to locate the position of Greece among the already considered countries, while identifying the strengths and weaknesses per variable. Thus, the primary research question to answer is "What is the level of readiness of Greece towards transport automation in relation also to other countries?". This research question is broken down to sub-questions per pillar theme and variable. To answer these questions, the same methodology and—where possible—same sources were used to calculate the related variables for the four defined pillars (Policy and Legislation, Technology and Innovation, Infrastructure and Consumer Acceptance), in order to derive the per-pillar and the overall AVRI for Greece, being thus able to perform relevant comparisons with the rest of the countries included in the KPMG report.

The aim of this paper is, upon presenting the methodology, to focus on the fourth pillar, i.e., Consumer Acceptance, with the aim to highlight the current tendencies of the public towards AVs, while identifying the differences with other countries. Moreover, calculations for the remaining three pillars are briefly outlined, and the position of Greece in the overall AVRI is presented. For the needs of the analysis, which was performed in mid-2020, the 2019 report was followed as the most recent at the time, so that values would be more comparable.

Overall, the contribution and innovation of the presented work lies in the fact that it is the first evaluation of Greece's readiness for automation in transport following the particular methodology, thus providing the possibility to directly compare with other countries' results, and identify the areas needing reinforced efforts and investment. Additionally, by monitoring the progress of countries (which have been included also in previous editions of the AVRI), good (and bad) practices can be extracted which can assist related stakeholders in planning ahead for fostering Greece's performance. Finally, by repeating this work in regular time intervals, the progress of Greece can be monitored and the effectiveness of measures, adopted in the meantime, assessed. The latter lie within the future extensions of the presented work.

2. Materials and Methods

In order to assess the AVRI per pillar and overall for the case of Greece, the same methodology as in the KPMG reports has been followed. As indicated above, the Index consists of four separate pillars, each of which measures a different element of AV preparedness—namely: policy and legislation, technology and innovation, infrastructure, consumer acceptance. For each pillar, a series of variables were calculated and combined, to result in an overall score per pillar. Each variable was given the same weighting factor and the data were normalized, using the min-max value method [31], primarily to being combined.

Calculating the overall AVRI, including all pillars, and in order to ensure that each pillar contributes equally to the final result (as the number of variables varies between pillars) the values of the pillars have been adjusted so that each pillar has the same maximum value. The following table shows the factors for this adjustment.

To calculate the values for Greece, for each Pillar, the respective values for each variable have been specified—using where possible the same reference as in the KPMG report, for the sake of comparability of results—and the AVRI per Pillar was calculated. Then, taking the AVRI values of each of the countries included in the KPMG report into consideration, the position of Greece was indicated among them. This has been performed per Pillar and overall (adjusting by the factors of Table 1), taking all Pillars' results into account. In the following sections, the calculation for Pillar 4 is presented in detail, explaining the methodology followed by the calculation of each of the variables, along with the overall assessment and comparison with the rest of the countries.

Table 1. Pillars' Adjustment factors [2].

Pillar	Number of Variables	Maximum Value	Adjustment Factor
Pillar 1	7	9	1.29
Pillar 2	7	9	1.29
Pillar 3	6	9	1.5
Pillar 4	5	9	1.8

In particular, regarding the variable addressing the consumers' opinion on AV, the measurement was based on the results of a survey conducted by the authors, where 100 participants answered the question "What is your general view of autonomous vehicles?". This was part of a broad Voice of Customers survey, performed within the framework of Drive2theFuture project [29]. The overall survey was conducted in 2020, addressing all four transport modes (road, rail, maritime and air) in which the participants were asked a series of questions per mode, aiming to measure their acceptance and expectations on AV. The questionnaire was available online, translated in 18 languages in order to facilitate the respondents to answer in their mother tongue or at least a language they are familiar with. In total, more than 15,000 answers were received, coming from more than 25 countries across Europe and beyond. There were no restrictions on the sample; the respondents could be of any age, gender, professional or academic background. For the needs of the present work, we used the responses of people coming from Greece (independent of the

language used to answer) to the question "What is your general view of autonomous vehicles?"—rated on a 1–5 scale—in the road transport section. Among these, a sample of 100 respondents was selected so as to capture responses of people with a variation of demographic characteristics, thus having an as representative as possible group of society.

Although the list of variables included in AVRI might not be thorough and others could be included as well, it was decided that for the sake of comparability with the rest of the countries and in order to place Greece in its respective place in the list, we will limit the research in the ones suggested by KPMG in the 2019 report.

3. Results

As discussed in the introduction section, the acceptance of the end users is a primary factor for the successful introduction of transport automation. This is the subject of Pillar IV of AVRI "Consumer acceptance". Without acceptance and willingness to use from the end users it will be virtually impossible for the relevant market to be developed and economically viable. To reflect the behaviour of the general population and the potential to adopt AVs when broadly available, AVRI includes the following variables:

- Consumer opinions of AVs;
- Percentage of the population living near AV test areas;
- KPMG Change Readiness people and civil society technology use sub indicator;
- GCI technology readiness score;
- Ridesharing Market Penetration.

The calculation of each variable is presented in detail in the following subsections. The results were normalized in order to be comparable with the ratings of the other countries. Thus, for each of the variables the position of Greece is compared with the rest of the countries included in the 2019 KPMG report.

3.1. Consumer Opinions of AVs

A survey of 100 people who answered the question: 'What is your general view of autonomous vehicles?' was carried out by KPMG to measure this variable. The answers were given on scale 1 (very negative)–5 (very positive). The values of the variable were calculated from the average of the responses given. This survey did not include Greece. For this reason, a similar survey was carried out by the authors in Greece, as described in Section 2. The average rating of responses given was 3.53/5.

This rating is quite high, positioning Greece at the 8th position among the 26 countries. The first countries in the list were India, Mexico and UAE, while at the bottom of the list we find Canada, USA and UK (Figure 1).

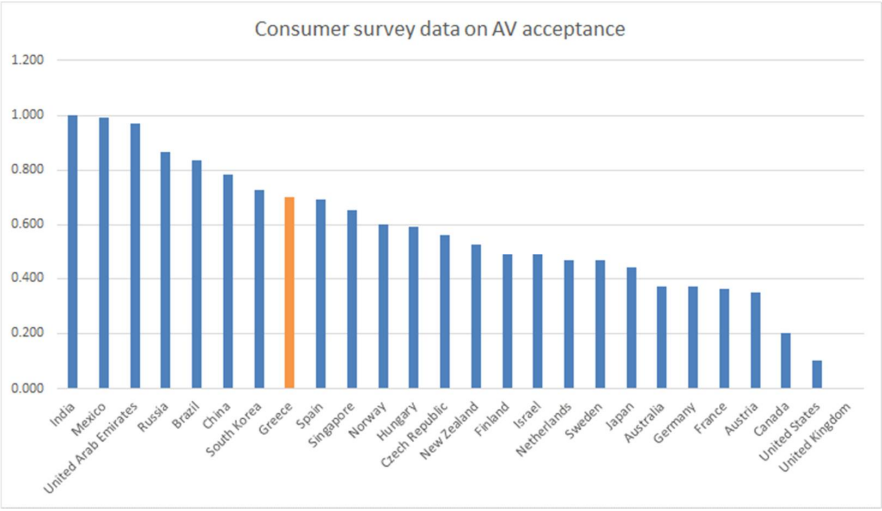

Figure 1. Greece's AVRI listing in Pillar IV—Consumer opinions.

3.2. Percentage of the Population Living near AV Test Areas

Getting accustomed to AVs is crucial for increasing acceptance and willingness to use. To calculate the number of people in a country coming into contact with AVs, the percentage of the population residing in cities where pilot tests with AVs currently take place was used. In Greece there were (at the time of the calculations) no relevant pilot tests going on, in which case the variable receives a value of 0. This places Greece at the bottom of the list, together with other countries also receiving 0 for this variable, such as Austria, Spain, Czech Republic, Mexico, Hungary, Russia and India. At the top of the list, we meet Singapore, Netherlands, and Canada (Figure 2).

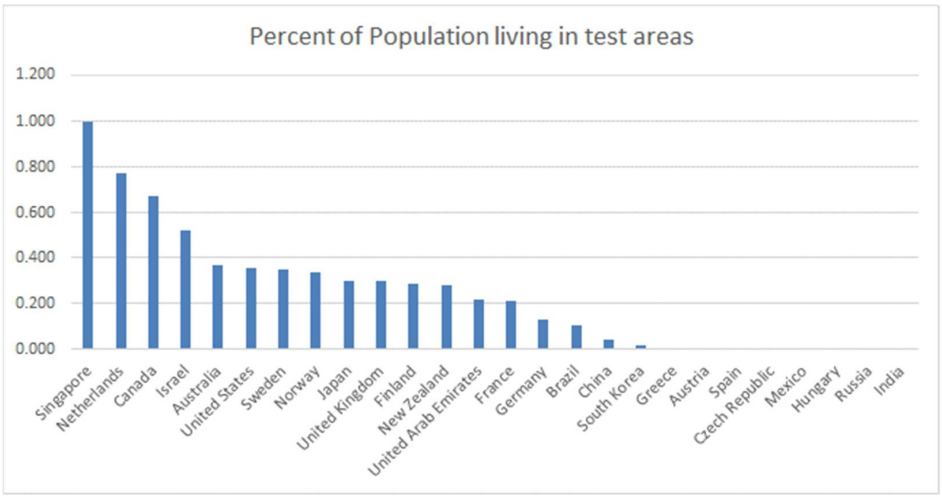

Figure 2. Greece's AVRI listing in Pillar IV—Percent of population in test areas.

3.3. KPMG Change Readiness People and Civil Society Technology Use Sub Indicator

The use of other technologies by consumers may provide a measure of consumers' ability to adopt new technologies, such as AVs. The KPMG Change Readiness people and civil society technology use sub indicator [32] provides an estimate of the use of technology by the consumers. According to this indicator, Greece receives a score of 0.4/1, listed almost at the bottom of the scale, only above India. The best scores in this indicator were received by Sweden, Netherlands and Norway (Figure 3).

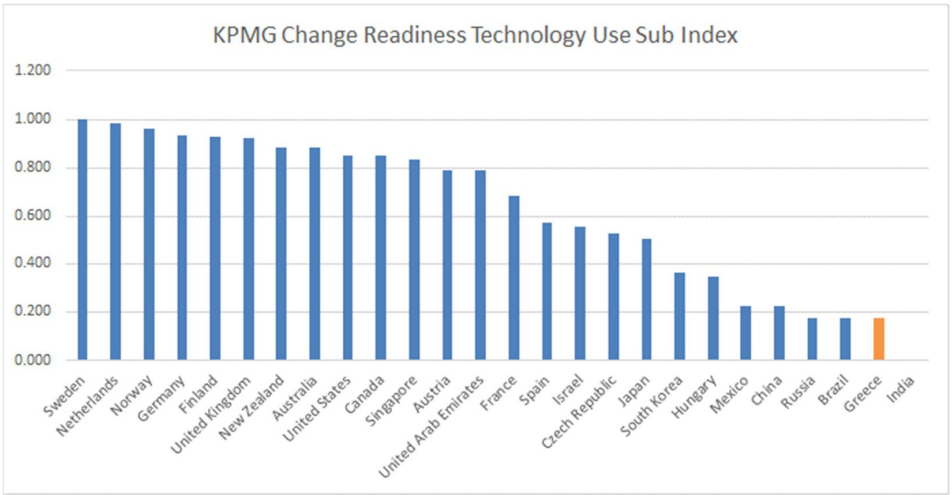

Figure 3. Greece's AVRI listing in Pillar IV—KPMG Change readiness technology use.

3.4. GCI Technology Readiness Score

The Global Competitiveness Index (GCI) technology readiness score [33] includes a number of variables that reflect consumers' use of technologies. For Greece, this score is 4.8/7. As can be seen in Figure 4, upon normalisation, with this score Greece is quite low in the list, with only four countries (Brazil, Russia, Mexico, China and India) having a lower score. The countries with top scores in this variable are Netherlands, UK and Sweden.

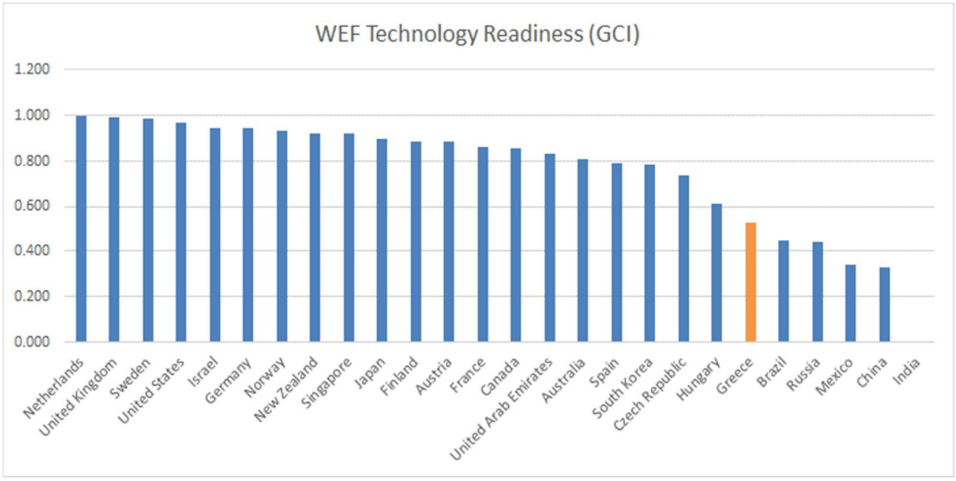

Figure 4. Greece's AVRI listing in Pillar IV—World Economic Forum (WEF) technology readiness.

3.5. Ridesharing Market Penetration

Data from Statista [34] were used for this variable, which measures the percentage of people who use a ridesharing application in each of the reference countries (including taxis). For Greece the value of the variable is 17.2% of the population. This places Greece almost in the middle of the list (13th), with China, USA and UK being the top countries and Hungary, Japan and India at the bottom places (Figure 5)

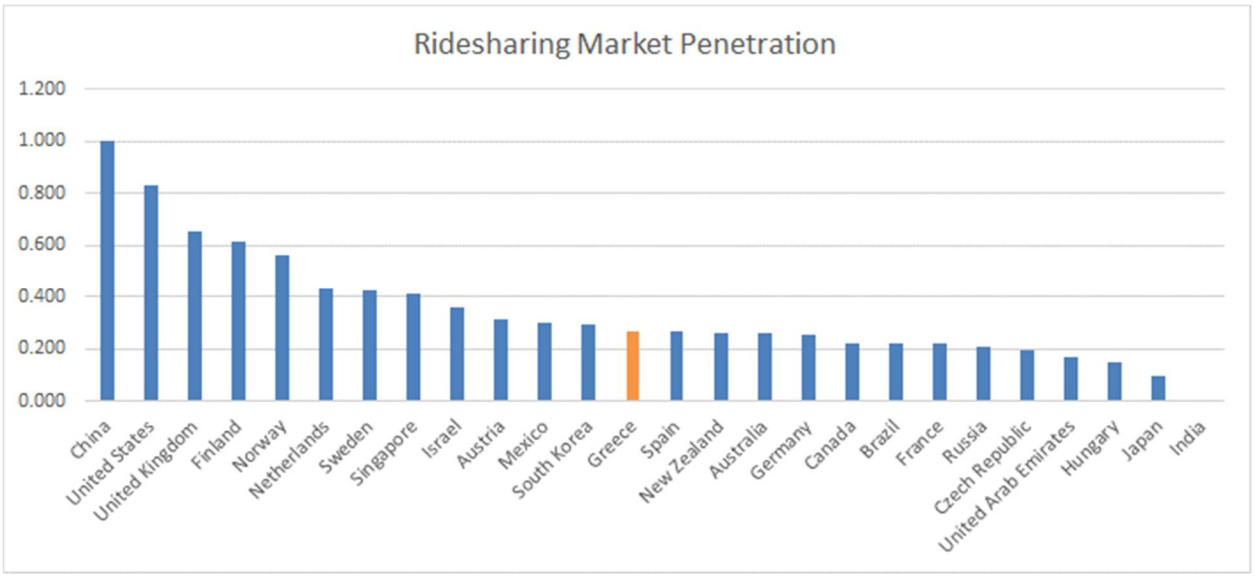

Figure 5. Greece's AVRI listing in Pillar IV—Ridesharing market penetration.

Summarizing the above, the calculation of scores for all variables in Pillar IV, as defined in the KPMG AVRI methodology, and upon normalization, results in the following Table 2.

Table 2. Scores of Greece in Pillar IV variables.

Variable	Score
Consumer opinion of AVs	0.701
Percentage of the population living near AV test areas	0
KPMG Change Readiness people and civil society technology use sub indicator	0.173
GCI technology readiness score	0.531
Ridesharing Market Penetration	0.268

It can be seen that the highest score is achieved in the variable on Consumer opinion of AV, followed by the GCI technology readiness score, while the lowest scores are noted for the KPMG Change readiness and civil society technology use sub indicator and Percentage of the population living near AV test areas.

Following these results, the place of Greece among all of the countries included in the 2019 AVRI report for Pillar IV is on the 25th position, only one before last (above India), while the leading countries in Pillar IV are Singapore, Netherlands Norway and Sweden (Figure 6).

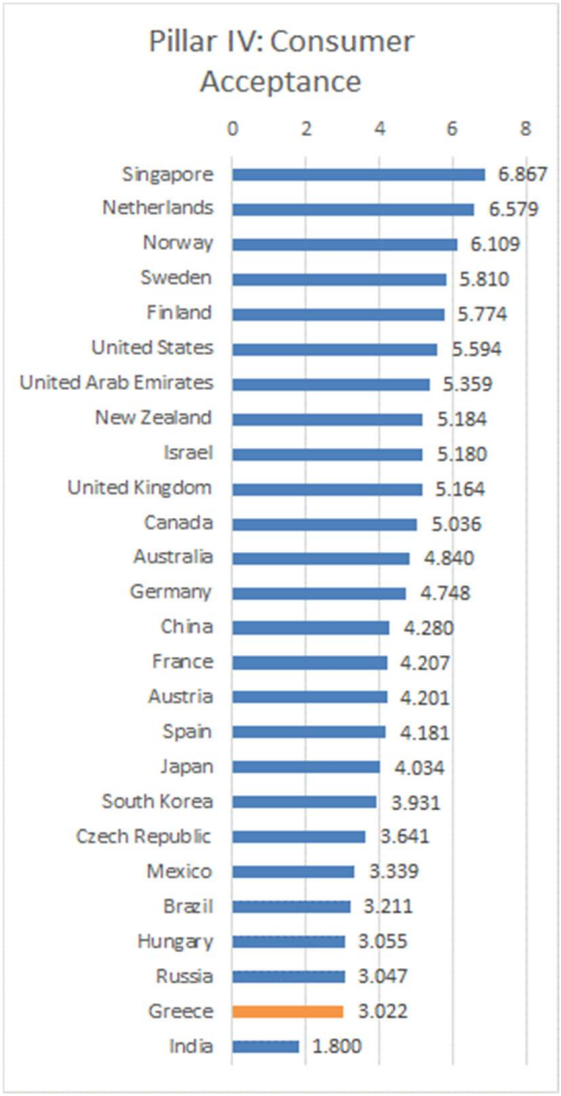

Figure 6. Greece's AVRI listing in Pillar IV.

3.6. Pillars I, II and III

The same approach has been followed for the calculation of all other pillars, resulting to a value for each pillar.

In particular, for Pillar I, seven equally weighted variables, which are rated from 1 to 7, have been calculated, namely: AV Regulations; AV Department within Government Transportation Department; Change Readiness Government Capability; Effectiveness of Law-Making Bodies; Efficiency of the Legal System in Challenging Regulations; Number of government funded AV pilots and Assessment of the Data-Sharing Environment. For each of the variables, as in the case of Pillar IV, the same source as in the KPMG report was used (where possible) for the sake of comparability. In particular:

- *AV Regulations*: The variable for AV regulations is determined by the activities of each country in the field of AV operation and testing. In Greece, legislation exists since December 2014, allowing pilot trials to be carried out for research purposes up to a level of autonomy 5 (according to SAE [35]). As there is no specific experimental framework that would include relevant restrictions (the relevant legislation is under review), the restrictions are considered small-scale. In order to determine the score, a comparative review of the legislative frameworks of other countries included in the 25 KPMG reference countries was performed, in terms of consistency. The value assigned to Greece is 6.5/7.
- *AV Department within Government Transportation Department*: This variable reflects whether a country has a specific government body responsible for coordinating AV activities and initiatives. Assessment was made on a scale of 0–7 on the basis of a media research. In Greece, the relevant responsibility falls within an existing agency of the Ministry of Transport, so it is one body but that body is not dedicated to AVs nor was it been established for this purpose. In this context, the score awarded is 5/7.
- *Change Readiness Government Capability*: The Change Readiness Index (CRI) as defined by KPMG [32] identifies the ability of a country—its government, private and public enterprises, citizens and society—to prepare, manage and respond to a wide range of changes, such as those arising by AVs. With regard to policy and legislation, the most relevant aspect is that of the preparedness of the government. The index value for state readiness for Greece is 0.48/1.0
- *Effectiveness of Law-Making Bodies*: This variable is determined on the basis of the Networked Readiness Index (NRI) of the World Economic Forum of 2018 [36], which is compiled after consultation with business executives in each country, about the efficiency of the legislative process in their country. This variable was included to measure a country's ability to pass arrangements on the development of AVs. From the index values, Greece receives a score of 3.48/7.0.
- *Efficiency of the Legal System in Challenging Regulations*: In measuring the above NRI index, business executives were also asked about the extent to which both citizens and businesses can ensure justice through the judicial system against state decisions. This variable was included in order to measure the ability of AV manufacturers and others to challenge any state regulations against them. From the index values Greece receives a score of 3.12/7.0.
- *Number of government-funded AV pilots*: Like the degree of funding for AV infrastructure, the number of government-sponsored pilot trials provides an indication of a country's commitment to AVs. In Greece the only pilot tests with AV that have been carried out (by the time of the calculations) were within the framework of the EC funded CityMobil2 project in the city of Trikala [37]. This pilot was only indirectly funded by the government, thus, taking also into account the scores of countries with similar status, the score assigned to this variable for Greece was 3.5/7.
- *Assessment of the Data-Sharing Environment*: Sharing data and open data ensure greater cooperation between state and private enterprises to encourage the development of AVs. For the values of the countries in the relevant variable, the Open Data Barometer [38] was used, in which, Greece has a score of 38.94/100

For Pillar II (Technology and Innovation) the considered variables are: Industry Partnerships; Number of AV Firms with Headquarters in the Country; Number of AV Related Patents; Number of Investments in AV Related Firms; Availability of the Latest Technology; Capacity for innovation and Market Share of Electric Cars. The values for Greece have been calculated as follows:

- *Industry Partnerships*: To foster the deployment of AV technology, partnerships are necessary between equipment manufacturers and technology providers. The calculation of this variable was based on review of local and international media, consulting firms and blogs by AV industry leaders, from which information on relevant business partnerships was collected. Each country was rated on the 0–7 scale (highest score in the countries with more partnerships). No relevant partnership was found in Greece, so the resulting grade is 0.
- *Number of AV Firms with Headquarters in the Country*: Data from Crunch Base [39], Vision Systems [40] and Comet Labs [41] were used to locate the headquarters of AV companies. AV companies based in Greece have not been identified, so the value of this variable is set at 0.
- *Number of AV Related Patents*: The number of patents filed in each country can provide a measure of the development of the AV technological ecosystem in the country. PatSeer [42,43] was used to identify them. According to the above research, 2 relevant patents were found in Greece.
- *Number of Investments in AV Related Firms*: Along with the development and upcoming broad deployment of AVs, investment in this sector by equipment manufacturers and technology companies has increased significantly in recent years. For each investment, the country in which the company or body has its head office was determined and the result was normalized with regard to the population of the country. As identified in the 2nd Pillar II variable, there are no relevant companies based in Greece, in which case this variable will be set to 0.
- *Availability of the Latest Technology*: From the Networking Readiness Index (NRI) [36] to the question of the extent to which the latest technology is available in each country, the business executives surveyed scored on a scale of 1 (not at all)–7 (largely). This variable is included to measure whether businesses and consumers in each country have access to the latest technological breakthroughs. For Greece, the corresponding NRI value is 5.18/7.
- *Capacity for innovation*: Looking again at the Networking Readiness Index (NRI), one of the questions asked to business executives concerns the extent to which companies located in each country have the potential to innovate. The values are given on the scale 1 (not at all)–7 (largely). The continued development of AVs will require continuous innovation, so this variable is included to determine whether companies in each country have the potential for innovation. For Greece, the corresponding NRI value is 2.54/7.
- *Market Share of Electric Cars*: For most countries the data was available from the International Energy Agency's Global EV Outlook 2018 [44]. For Greece, the corresponding data were obtained from the European Alternative Fuel Observatory [45], according to which the market share held by Electric Vehicles for 2018 in Greece was 0.2%.

Finally, for Pillar III (Infrastructure) six variables have been considered (Number of Electric Vehicle Charging Stations; GSMA Global Connectivity Index Infrastructure Score; 4G Coverage; CGI Road Quality Score; LPI Infrastructure Score; Change Readiness Technology Infrastructure Score) which have been calculated as follows:

- *Number of Electric Vehicle Charging Stations*: Most AVs will probably also be electric, so large-scale adoption of AVs will also require availability of electric vehicle charging stations. Data from the International Energy Agency (IEA) were used for the scores of this variable. To eliminate differences in numbers due to the different size of each country, the number of charging stations was normalized based on the size of each country's road network [46]. For Greece we used data from the European Alternative

Fuel Observatory [45] according to which in 2019 there were 52 charging stations in our country, while the total length of the road network amounts to 117,000 km. Thus, the value for Greece is 0.000444.

- *GSMA Global Connectivity Index Infrastructure Score*: It is estimated that AVs will generate approximately 4000 gigabytes of data each day; some of this data will remain in the vehicle but a significant amount will be shared to be used for vehicle diagnostics, constantly updated maps, in-vehicle entertainment and other uses. Data for this factor were retrieved from the GSMA Mobile Connectivity Index [47], which measures availability in high-performance mobile data coverage. For Greece the value of the index is 70/100.
- *4G Coverage*: The size of the data generated by autonomous vehicles and needing to be shared outside the vehicle will require extensive coverage of a high-speed wireless network. While all of the countries included in the AVRI are in the process of developing 5G networks, for most, the extensive use of these networks is several years away. OpenSignal [48] data were used for the values of this coefficient. For Greece the corresponding value is 76.04%.
- *CGI Road Quality Score*: The use of AVs requires high quality road network for their adoption. As part of the World Economic Forum's Global Competitiveness Index (CGI), business executives in each country were asked about the quality of road infrastructure in terms of their size and condition and were asked to rate them on a scale of 1 (extremely poor quality)–7 (excellent quality) [33]. Based on these data, Greece receives a score of 4.7/7.
- *LPI Infrastructure Score*: When determining the World Bank's Logistic Performance Index (LPI), survey participants were asked to rate the quality of infrastructure in general and road infrastructure in particular on a scale of 1 (very low)–5 (very high). The indicator targets the quality of road infrastructure in terms of supply chain and freight transport, as opposed to the GCI index which targets the overall quality of road infrastructure. For Greece, the value of LPI [49] for infrastructure is 3.17/5.
- *Change Readiness Technology Infrastructure Score*: The KPMG Technology Infrastructure Readiness Index measures the quality of each country's technological infrastructure. Based on the values of the Index [32], Greece receives a score of 0.6.

The final scores per pillar (adjusted according to Table 1) are listed in Table 3, according to which the total AVRI for Greece adds up to 10.52.

Table 3. All Pillars values for Greece.

Pillar	**I**	**II**	**III**	**IV**	**Total**
Value	3.61	0.553	3.340	3.022	**10.52**

Consecutively, the place of Greece among the other 25 countries considered in the 2019 KPMG AVRI report is depicted in Figure 7.

As we can see, Greece is listed 22nd among the 26 countries included, above Russia, Mexico, India and Brazil.

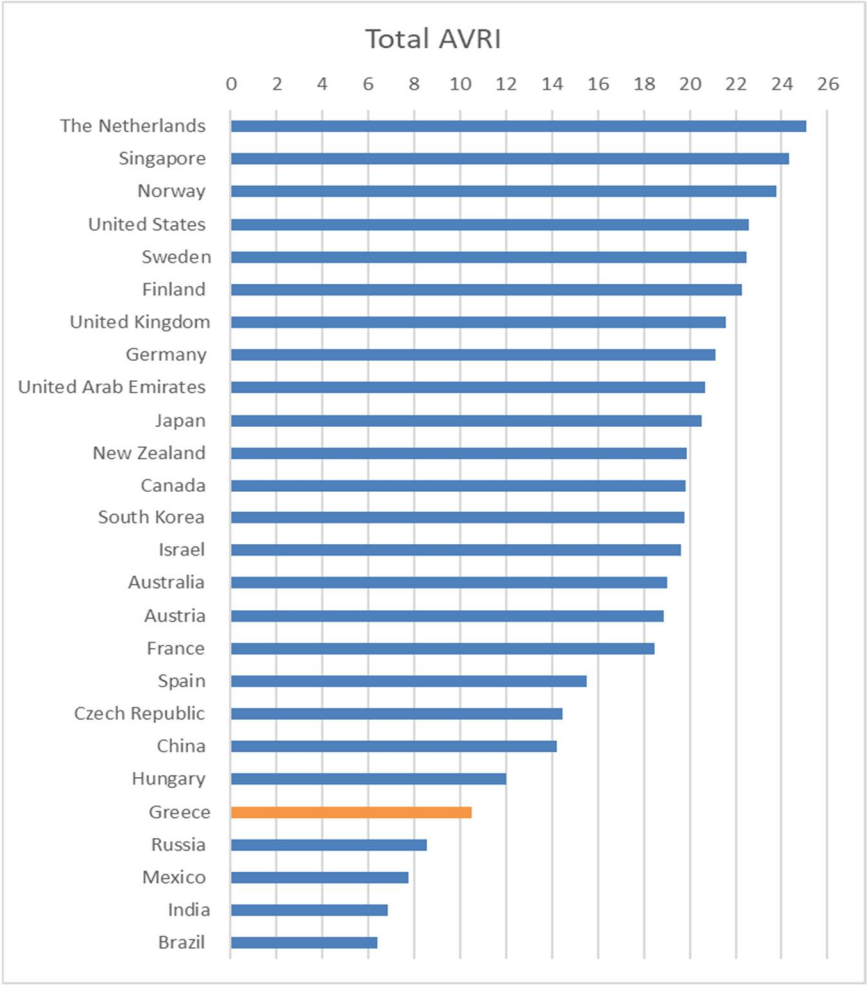

Figure 7. Greece's AVRI overall listing.

4. Discussion

In Pillar IV, which refers to consumer acceptance, Greece's position is only 25th. However, in several of the individual variables the performance is significantly better. In particular, Greece holds the 8th place in the consumer opinion on AVs variable and 13th in the passenger penetration rate (including taxis for all countries). On the other hand, since no relevant pilot projects were carried out in Greece at the time of the study, the percentage of the population residing in test areas is zero (ranking Greece in last place along with several other countries such as Austria, Spain, Czech Republic, Mexico, Hungary, Russia and India). The country's technological readiness (#21) is relatively better, while in terms of preparedness for changes in people and society for the use of technology, Greece ranks one before last (above India), according to the relevant KPMG index.

These results imply that, although consumers have a positive opinion for AVs and the technology readiness in the country is quite good, it seems that the society is not ready to change their common practice and easily adopt the use of new technology. This may be explained also by the low rating of the indicator for the people living in testing areas, implying that it may come as a result of the low actual experience with the new technologies and (most notably) the lack of "hands-on" experience, meeting these technologies as part of the everyday life. Moreover, as indicated also by relevant studies [50] this may be also due to the fact that the "humanity" of AV behaviour is not yet convincing enough, thus implying that further technological improvement is necessary.

In the overall ranking we note that the lead in readiness for autonomous vehicles belongs to countries such as the Netherlands, Singapore and Norway while the last countries

in the ranking are Mexico, India, and Brazil. Greece is ranked 22nd in the overall ranking, among the 26 countries included.

It is thus shown that there is still much to be carried out in order to catch up with the worldwide developments and establish an appropriate ecosystem for the deployment of AVs in Greece. Still, there are significant steps forward made and more planned, which are expected to improve the position of Greece in the ranking. As such we can mention the transnational agreement that has been signed between Greece, Bulgaria and Serbia since 2018 [51] for the creation of a 5G cross-border corridor, which will contribute in increasing the testing activities in the area. This is actually already happening, as at the moment there are at least five pilot sites operating in Greece [52]. Moreover, within the context of several EC funded projects, more related testing applications are planned for the next years, which are expected to raise the awareness and acceptance of the citizens. Also, the broad introduction of 5G networks in the country is considered as a key facilitating factor for AV deployment, providing a basic prerequisite for their effective operation, especially to what regards vehicle connectivity which is essential for AV operation [53]. In terms of infrastructure, significant improvement is noted in the last years—and is expected to be intensified—regarding the adoption of electromobility. The location and installation of a significant number of electric vehicles charging stations [54] is already planned (as electrification is vitally linked with higher level automation [55–57], while incentives are provided from the Government for the acquisition and use of electric vehicles since 2020. Additionally, since 2020 Greece implements a EuroRAP National Programme [58] (officially launched January 2021 [59]) aiming to apply the EuroRAP methodology on safety assessment and ranking of road transport infrastructure, thus leading to an improvement in the quality and safety of road infrastructure. Lately, it has also been announced that shared mobility (in terms of both carpooling and car sharing applications) is going to be encouraged and incentivized, within the overall framework of reaching the 2030 targets for sustainability in transport, as set by the EC Green Deal [60].

As for other measures and actions that would foster the position of Greece in the global ranking, it is very important to provide the legislative framework for AV operation, through adequate adaptations of the relevant laws. Some progress is already there (with original framework legislation in 2015 providing the possibility for testing in the country and recent update in 2021), however it is necessary to carefully foresee also issues of liability and personal data protection, especially in the case of broad deployment. Moreover, awareness and training activities for both stakeholders and citizens would significantly contribute to the acceptance of AVs, not only as a concept but also as a reality. We see in the previous sections, that the acceptance surveys gave lower rating in countries that are placed high the overall ranking. This is a very interesting finding, showing that upon getting in closer contact with the technologies, more uncertainty may raise. This is also the case in relevant studies [5,6]. For this reason, it is necessary that all users are well aware of the benefits and risks of AVs, as well as be trained to optimally use them, following of course the emerging technologies continuous improvement.

5. Conclusions

In conclusion, from the above calculations, Greece presents a still rather immature level of preparedness in terms of autonomous vehicles deployment. However, in most areas progress has been made and, in the meantime (since 2019 that is the reference year for the sake of comparability) more are underway, especially towards connectivity (with the launch of 5G network) and electrification (by providing incentives for shift and upgrading infrastructure). Efforts are of course still required in technological, organizational, legislative and social levels, in order to improve the country's position and, consequently achieve a smooth and effective shift towards the future of autonomous mobility. Given the release of the 2020 AVRI, with the inclusion of more countries and differentiation of certain variables in each Pillar, an update of the calculations (currently ongoing by the authors) is expected show an intermediate progress that the recently implemented initiatives could

have caused, illustrated by a better ranking of Greece among the considered countries. Moreover, there is a plan to perform this assessment at regular intervals, in order not only to compare Greece to other countries position in the ranking, but (and most notably) to perform a comparative assessment of the Greek results per indicator, thus evaluating the progress (or not) in each sector and highlight strengths, weaknesses and ways to improve the country's readiness towards AV deployment.

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