sustainability

MDPI

Article

The Emergence of Unconventional Tourism Services Based on Autonomous Vehicles (AVs)—Attitude Analysis of Tourism Experts Using the Q Methodology

Katalin Ásványi *, Márk Miskolczi, Melinda Jászberényi, Zsófia Kenesei and László Kökény

Institute of Marketing, Corvinus University of Budapest, 1093 Budapest, Hungary; mark.miskolczi@uni-corvinus.hu (M.M.); jaszberenyi@uni-corvinus.hu (M.J.); zsofia.kenesei@uni-corvinus.hu (Z.K.); laszlo.kokeny2@uni-corvinus.hu (L.K.)
* Correspondence: katalin.asvanyi@uni-corvinus.hu

Abstract: The spread of autonomous vehicles (AVs) could fundamentally change tourism-related mobility in the near future. However, the empirical research on tourism impacts is still very limited. This research aims to systematize the expected tourism impacts of AVs and to explore how experts in different fields of tourism view the technological innovation ahead. The opinions of tourism experts (n = 21) involved in the research were analyzed using the Q methodology. Statements (n = 40) were formulated in topics derived from the literature. Based on the analysis, we distinguished four groups of opinions. An optimistic, technology-oriented group of experts suggested that AV-based sightseeing may emerge as a prominent unconventional service. An accessibility-focused group of experts predicting slow progress stressed that the spread of AVs could improve access to infrastructurally advanced destinations. A mobility-service-oriented group considered that the use of AVs is becoming conventional in terms of mobility, but its appearance remains unconventional for other tourism services. Due to the potential negative effects, a skeptical group of experts believes that AVs will not become conventional in tourism. The value of the research is the creation of groups based on tourism experts' attitudes, which can help prepare strategic tourism decisions in the future.

Keywords: autonomous vehicles (AVs); unconventional tourism services; tourism experts' perception; Q methodology; future of tourism

Citation: Ásványi, K.; Miskolczi, M.; Jászberényi, M.; Kenesei, Z.; Kökény, L. The Emergence of Unconventional Tourism Services Based on Autonomous Vehicles (AVs)—Attitude Analysis of Tourism Experts Using the Q Methodology. *Sustainability* **2022**, *14*, 3691. https://doi.org/10.3390/su14063691

Academic Editor: Fabio Carlucci

Received: 14 February 2022
Accepted: 15 March 2022
Published: 21 March 2022

1. Introduction

Innovative technologies and new mobility services of the fourth industrial revolution (Industry 4.0) are rapidly transforming the supply of tourism services. Although fully autonomous vehicles (AVs) have not yet entered the market, partial automation has already had an impact on tourism. It is, therefore, essential to be prepared for the spread and potential impacts of AVs [1]. In contrast, the literature on tourism does not focus much on the potential risks and benefits of AVs. This is supported by previous research [2] that addressed the impact of AVs on commuting travel. The exploration of this topic area was typically in the Global North, which highlights future research opportunities.

The relevance of this research is also supported by the fact that AVs are expected to be first adapted for long-distance trips, hence the need to explore the tourism side of the topic [2]. Furthermore, since COVID-19, the use of personal vehicles to get to and from a destination has also become even more valued [3].

To the best of our knowledge, except for one study [4], no research examines the attitudes of tourism service providers to the emergence of AVs, even though this technology may lead to the creation of new, unconventional tourism services in the future.

There are several approaches to unconventional (or non-conventional) tourism in the literature. It can refer to tourism solutions that primarily benefit local communities and not visitors to the destination. It can be called unconventional if it represents an alternative

route to capitalist tourism. It can also be unconventional if it goes against and criticizes mass tourism or traditional tourism. However, the approaches all represent something unique in tourism services [1].

With all these in mind, our research seeks to clarify the expected role of AVs in tourism and, in contrast to previous research, draws together the potential changes, including threats and opportunities for conventional tourism services. For this, the attitude of tourism experts to the impact of AVs on the tourism industry has been analyzed by applying the Q methodology. We completed our research with 21 Hungarian tourism experts from the subsectors of accommodation, hospitality, attraction management, and mobility fields. As global research assumes that we still need ten more years to reach a mainstream adoption of fully automated vehicles [4,5], our research is an exploratory study of the impact of AVs on the tourism sector.

Our results have both theoretical and practical contributions. On the one hand, the findings of our research (four groups of experts identified: mobility-service oriented, accessibility focused, skeptic, optimists) provide a new perspective on the study of AVs in the social sciences and thus provide important input for academics. In addition, our findings might help tourism stakeholders to prepare for the impact of the technological revolution ahead (e.g., transforming conventional tourism services with AVs to increase competitiveness).

2. Expected Impacts of AVs on Tourism and Mobility

Since automation is a quite complex and incremental innovation, the basic definition of the technology needs to be clarified. First, we explain the different levels of AVs and then introduce some current initiatives and the expected impacts of AVs on tourism.

2.1. The Incremental Nature of Automation (SAE Levels)

Automation is an innovation of the fourth industrial revolution (Industry 4.0), which is rooted in the acceleration of information and communication technologies (ICTs) in the second half of the 20th century. The questions around AVs are numerous and variable; therefore, the knowledge of industrial and consumer behavior is limited. Regarding AVs, we discuss the incremental technology that is not only free of human intervention but is able to transport by itself. The current technology described as self-driven still depends on decisions made by a human driver. The real self-driving experience is getting closer, however, with the help of intense development.

Based on international standards, we can distinguish five levels of automation as suggested by the Society of Automotive Engineers (SAE) [6]:

- Level 0: The only controller of the vehicle is the human driver; the phase is described as a complete lack of automation.
- Level 1: The only controller of the vehicle is still the human driver, but there are supporting functions (e.g., change in the direction or speed, occasional automated steering of the wheel).
- Level 2: The only controller of the vehicle is still the human driver, but the supporting functions can be applied simultaneously. Cars currently available for purchase belong to this category (e.g., Tesla Model 3).
- Level 3: The role of the human controller is necessary, but the continuous observation of the surroundings is not required; the car is able to handle the driving operations. Yet when the car notifies the driver, the driver must take control of the vehicle.
- Level 4: The car can control every task for the duration of the journey. The presence of the human driver is optional in this phase as the system does not require them to take control of the vehicle. Based on the predictions of top companies in the automotive industry (Tesla, BMW, Google Waymo), cars with a high level of automation can be expected in the mid-2020s.
- Level 5: All aspects of driving can be owned and sustained by the car. Whether steering wheels and pedals will be needed for manual control remains an open

question at this stage of development. How future road users will react to the complete removal of the driving experience is uncertain.

Based on SAE levels, we can see that lower automation (SAE Levels 2–3) does not change mobility patterns much, while higher automation (SAE Levels 4–5) might completely change tourists' travel preferences and conventional tourism services. Tourists are typically the first users of this new technology, while for commuters, higher driving frequency and experience result in lower AV level preferences [7].

There are already destinations where AVs have been introduced and are undergoing public trials. The Lake District National Park (UK) is planning to introduce AVs on SAE Level 3 as a sustainable transport solution [8]. Gatwick Airport (London, UK) offers the autonomous solution as a shuttle service for passengers [9]. In Beijing's Haidan Park (China), the Apollo minibus is operated on SAE Level 4 automation, where tourists can experience 700 m of autonomous driving, free of charge. Seven passengers are allowed to use the vehicle at a time, on a predetermined route, at a limited speed (15 km/h), and there is a supervisor on board [10]. In the city of Sion (Switzerland), AVs are being tested on public roads, carrying 11 passengers at 20 km/h. As these are SAE Level 4 vehicles, a safety supervisor is also on board [4]. The Dubai Roads and Transport Authority (RTA), the local roads and transport authority, is set to become the first taxi operator in the emirate to switch to pure electric and autonomous vehicles. The first vehicles are planned to be on the road in 2023, and the company "Cruise" will have exclusive service rights for autonomous taxis until 2029. Dubai will thus become the first non-US city in the world to operate electric autonomous vehicles. The fleet should reach the target of 4000 vehicles by 2030 [11].

2.2. Potential Benefits of AVs from the Tourist Perspective

Previous research has shown that AVs will primarily be used for leisure [2] rather than non-leisure activities [10]. Research on the topic [12–14] revealed that respondents would use autonomous taxis more as tourists than as residents, which also demonstrates the significant impact of AVs on tourism-related mobility.

While traveling, tourists can also engage in other activities [15–19]: watching TV, relaxing, sleeping, reading, taking photos, eating, playing games, and gathering information. On SAE Level 5, tourists are even able to travel alone [20,21], which will be a major opportunity for people with disabilities [22]. Importantly, it is also expected that tourists will travel more often and greater distances by AVs [21]. The proliferation of AVs might help overcome barriers in terms of unfamiliar traffic rules and environments [23], making car rental easier for international tourists solving the problem of jet lag or the anxiety that comes from unusual traffic rules or conditions [9]. It also provides freedom of travel for people without a driver's license [24], is a more convenient solution for people under stress [25], and reduces isolation by providing easier access to services [15].

2.3. Changes in Tourism-Related Mobility

In terms of tourist mobility, there are two main categories of changes expected from AVs: accessing a destination and intra-destination mobility.

2.3.1. Access to a Destination for Tourism Purposes

In infrastructurally developed destinations, AVs can compete primarily with short-distance mobility services (e.g., rail, bus, public transportation) [2] and become alternatives to taxis [16,26] as well. As AVs can be a viable alternative for tourists on short-haul trips, it is expected that low-cost airlines will switch to long-haul trips [9] to preserve their competition. Due to the rapid and early market growth of AVs [27], traditional taxis will have to fulfill a new function, i.e., they will have to provide additional services (e.g., tour guiding) to compete with AVs.

2.3.2. Intra-Destination Tourism Mobility

AVs could have both positive and negative impacts on urban traffic in the future. It is important to note that AVs are primarily suited to urban transport and will therefore spread first to urban areas and then to rural areas. Initially, they can only travel along a defined route. Adverse weather conditions can cause problems [4], which will make the service less accessible to areas with low infrastructure [26].

In urban areas, however, there are several transport benefits that can be gained from the spread of AVs. Through efficient route selection and more efficient use of traffic lanes [28], congestion can be reduced [29], leading to improved urban traffic flows [30]. However, scholars [9] predict this is for shared vehicle use. Individual vehicle use tends to increase traffic, and as the number of AVs increases, this may cause congestion around the must-see tourist attractions.

In response to this, there might be some car-free destinations where tourists can only park outside the center and access the city by shared AVs [4]. As AVs spread, the design of cities may also change. Research suggests that in urban spaces, fewer parking spaces will be needed [2,31]. By eliminating parking spaces, green spaces can be created [32], which can increase the livability of cities. Thus, the spread of AVs can also increase the sustainability of tourism, thus having a positive impact on the environment, which is a priority for the sector these days [33]. The freed-up areas can be used for pedestrian and cycling facilities [28] or urban parks. The development of check-in points will also transform shopping districts, as they drop shoppers off at the store and pick them up later [9].

2.4. Expected Changes in Conventional Tourism Services Due to AVs

2.4.1. The New Dimension of Car Use

With the spread of full automation (SAE Level 5), driving as an activity will disappear, transforming it into a unique experience [26]. Destinations, where AVs appear for the first time, can enhance their image and strengthen their attractiveness [4]. At the same time, the spread of AVs can also promote cooperation between operators and destinations. Due to the seasonality of tourist destinations, it may make sense to share AVs between destinations with different seasons, e.g., ski areas in winter and lakes in summer. This will require flexibility and that these areas are geographically close to each other [4].

2.4.2. Sightseeing and City Tours

AVs can transform many areas of conventional tourism services. One of the most likely changes relates to sightseeing tours. Several studies have discussed pre-planned, AV-based sightseeing tours [9,26] and the resultant expected decline in walking and hop-on-hop-off tours [26]. However, with the proliferation of AVs currently, conventional bikes, Segways, and walking tours may become niche products in the longer term [26]. The new types of sightseeing tours will be algorithm-based, favoring those operators who pay more to be included on the itinerary, i.e., multinational operators will be favored over local businesses [9]. However, the automation of hiking trails can also raise problems such as the possibility that some of the less attractive, but the real face of destinations may remain hidden from tourists.

2.4.3. Hotel Industry, Restaurants, and MICE Tourism

The use of AVs will not only affect tourism during the day. As AVs are also suitable for overnight travel [34] and can be used for sleeping, the significance of accommodation services might be decreased in the long run. In addition to hotels selling rooms for a couple of hours, AVs can provide a more convenient alternative to the airport's sleeping pods [26] and can be applied as mobile motels by both business and leisure travelers [9].

AVs will also be suitable for holding meetings [25,26], which might result in the displacement of smaller meeting and conference rooms from the market. AVs could function as mobile restaurants in the future, combining sightseeing and restaurant services

like dinner cruises [9]. The creation of mobile restaurants could also boost wine tourism, as the consumer does not have to drive the vehicle.

There are diverging views on what pricing can be expected for AVs. In the airport environment, they have emerged as a free service in the areas tested, but in the near future, it may also represent a price premium for users due to their benefits and novelty.

2.5. Research Gap

Based on the literature, we can see that the spread of AVs, especially at higher levels of automation (SAE Levels 4–5), could change the mobility and experience of tourists, passenger transport to and within the destination, and the content of traditional tourism services. The literature suggests three main categories of expected changes (Figure 1, [2–40]).

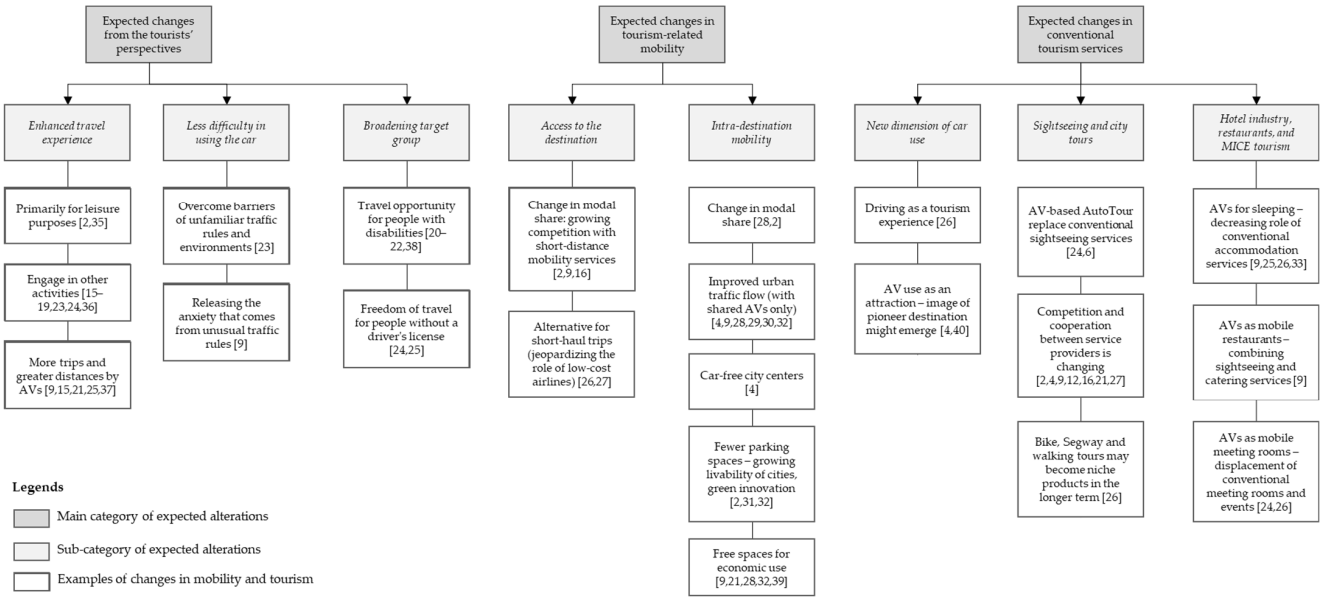

Figure 1. Expected alterations in tourism with the spread of autonomous vehicles (AVs). Source: Authors' own editing, based on the literature review [2–40].

Our analysis revealed that in previous research, attitudes toward expected changes have usually been examined from the perspective of potential consumers. In contrast, the views of experts working in specific sub-sectors of tourism are an under-explored topic. With this in mind, we have developed our primary research directions.

3. Methodology

3.1. Overview of Q Methodology

Since the main objective of our research is to identify the attitudes of tourism professionals, we applied the Q methodology. It is a useful method for identifying technological opportunities [41] and is also applicable to the field of transport [42]. The Q methodology was developed in the 1930s by William Stephenson. A distinctive feature of the methodology is its positioning between qualitative and quantitative methodologies. It is appropriate for exploring patterns along with the different preferences of respondents and reducing the complexity of opinions while also providing numerical results. Its advantage over the Likert scale is that it does not rate statements separately but ranks the respondent's preferences in relation to each other, which results in more sophisticated opinions [43]. While the methodology has been previously applied to exploring the field of AVs, it has been used to investigate user attitudes and adoption primarily [44], rather than in a tourism context [45]. Our research, therefore, is methodologically novel in the field of studying the impact of AVs on tourism from the experts' perspective.

3.2. Steps in Q Methodology

We implemented the Q methodology in six steps (Figure 2).

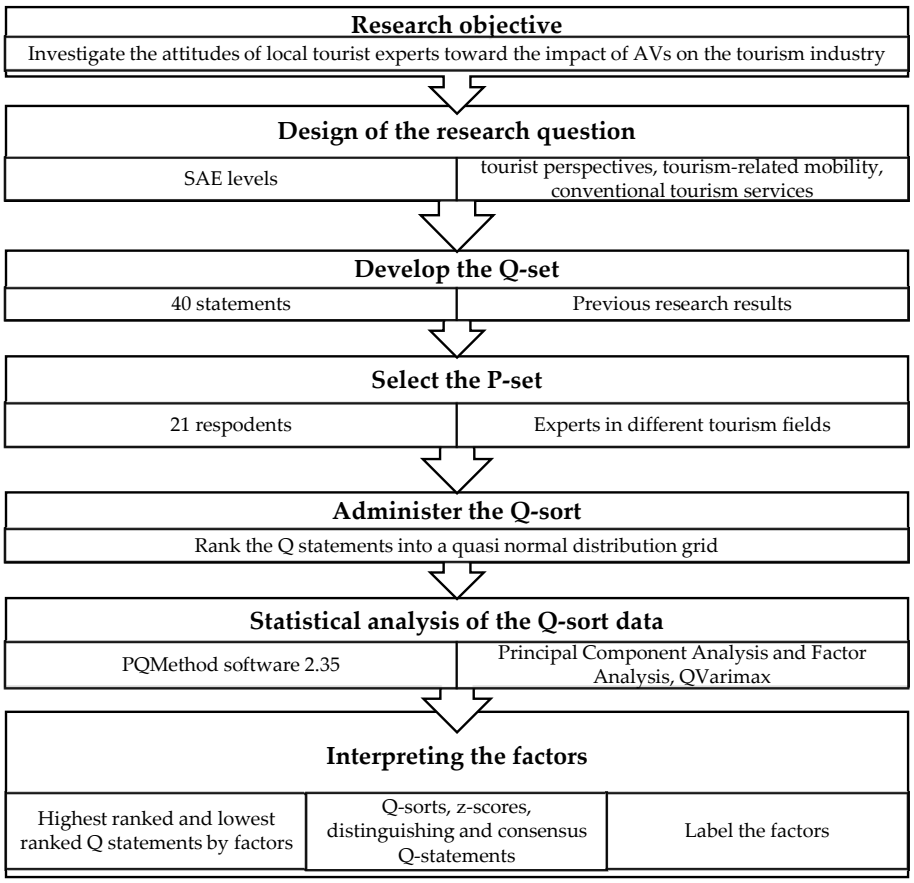

Figure 2. Steps of Q methodology. Source: Authors' own editing.

As a first step, we defined our research objective, which was formulated along the gap identified in the literature review, namely, to explore the impact of AVs on tourism not from the tourists' point of view but to analyze the views of tourism professionals. In the second step, we analyzed the peer-reviewed sources on the subject [45–47] and interpreted them along with a novel structure. However, previous articles on the topic conducted their research and drew their conclusions assuming SAE Levels 4–5, and therefore there were fewer results for SAE Levels 2–3. The effects identified in the various sources are therefore grouped according to Figure 1. For the three themes (changes from the tourists' perspectives, in tourism-related mobility, and in conventional tourism services), we formulated a total of 98 claims. We stopped at this number of statements because the content of the remaining statements had become repetitive. To make the layout of the method meaningful to respondents, it was necessary to reduce the number of statements [48], which previous research has shown to be satisfactory at between 40 and 50 [42] and 30 and 60 [49]. The number of statements was eventually reduced to 40 (see in attachments: 8.1); those with similar content were grouped together. To check comprehensibility, statements were pre-tested and, where appropriate, shortened or supplemented with illustrative examples (Appendix A).

To learn more about the tourism experts' attitudes to the potential impacts of AVs, the Q method statements were completed by key figures from the Hungarian tourism sector, from different areas of tourism (accommodation, hospitality, attraction management, and mobility fields), including market, non-profit, and public actors.

The tourism experts were limited to the domestic destination (Hungary, which is a growing car market in Europe [7]), representing a wide range of opinions and all major tourism service and expert groups. No knowledge of AVs was required. A particular

feature of the Q methodology is that the participants themselves are the variables; they are not selected randomly but according to their theoretical knowledge [46]. Typically, 10–40 participants are asked to arrange the set of statements [50] since, with this number of participants, the factors are comparable. In our case, a total of 21 people participated in the study. When completing the questionnaire, respondents were asked to place the statements in a quasi-normally distributed table (Table 1), which forced them to rank them in relative order of preference. Quantitative analysis and qualitative interpretation of the responses are presented in the next section.

Table 1. Sorting distribution.

	Most Disagree			**Neutral**			**Most Agree**
Value	−3	−2	−1	0	+1	+2	+3
Frequency	4	5	7	8	7	5	4

Source: Own construction.

4. Results

The ratings by respondents are called Q-scores; we analyzed them using PQMethod version 2.35 software [51]. We performed principal component analysis, followed by varimax rotation, and then designed four factors along with the following criteria: an eigenvalue above 1 [47], minimum of two opinions per factor [49], variance level above 50%, each factor should account for at least 10% of the total variance [52], and low correlation between factors (below 0.5).

The distribution of the number of opinions varied between the factors, with five in Factor 1 and Factor 3, three in Factor 2, and eight in Factor 4 (Table 2). The factors were characterized according to the highest- and lowest-rated statements, considering separately those with significantly different opinions from the other factors.

Table 2. Rotated factor score matrix and explained variance.

Respondents	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**
SZCE	0.0567	0.7638X	−0.0982	0.0917
FZS	0.6259X	−0.0139	0.2900	0.1151
NK	0.6469X	0.0741	0.0002	0.2116
GP	0.2218	−0.3163	0.1423	0.7275X
HG	0.9237X	−0.0523	0.1112	0.0658
HD	0.9237X	−0.0523	0.1112	0.0658
BA	−0.2495	0.7940X	0.1610	−0.1005
MAJ	0.2007	0.0230	−0.0639	0.7002X
MZ	0.1718	0.3105	0.3071	0.5223X
LP	0.1749	0.5869X	0.2865	0.1498
NJS	0.4381	0.2867	0.5907X	0.0727
RB	−0.0474	0.0093	0.1781	0.4678X
KN	0.1169	0.1120	0.1201	0.5504X
FD	−0.0741	0.2574	0.1209	0.5618X
HH	0.1785	0.0286	0.6882X	0.2507
BE	0.2267	0.4655	−0.4729	0.5440X
HD	0.1132	0.1744	0.4850X	0.1076
VE	0.2465	−0.1234	0.4883X	0.3670
OA	−0.0113	−0.0031	0.8016X	0.1107
AA	0.2939	−0.0718	0.2117	0.5930X
FM	0.4237X	0.1396	0.1180	0.3742
Number of respondents	5	3	5	8
% Explained Variance	16	11	13	15
Name of factor	Mobility-service oriented	Accessibility focused	Skeptics	Optimist, technology-oriented

Source: Own edition.

4.1. Mobility-Service Oriented Group

The first factor sees the impacts of AVs on tourism primarily in terms of mobility. They see the need for door-to-door mobility coming to the fore as opposed to public transport, but they also see SAE Levels 4–5 vehicles as a substitute for airport transfers and taxis. These experts predict a strong preference of tourists for individual travel; they think that lower demand for shared AVs can be expected. As they see the rapid spread of AVs, they no longer consider driving in a foreign environment as an obstacle. They also agree that the potential for the development of wine tourism as a designated driver will no longer be needed. They agree the most that conventional driving will become a tourist experience. However, it is interesting that they only see the changes in terms of mobility but do not agree that AVs could replace hotels, restaurants, or event venues. In sum, AVs can appear as an unconventional mobility service for tourists. Therefore, we named this factor mobility-service oriented.

4.2. Accessibility Focused

Factor 2 sees the main impact of AVs on tourism as the change in accessibility. They agree that geographically the opportunities are widening; more distant and less-known destinations can be included in tourism, which can be understood on two levels: tourists prefer to visit a destination farther from their home when traveling to a tourist attraction, and they prefer shorter distances within the destination, giving greater visibility and accessibility to attractions. At the same time, there is a risk that areas that are difficult to reach and less developed in terms of infrastructure could be at a disadvantage because they are less accessible to AVs. Factor 2 believes that closer cooperation between destinations sharing AVs is feasible. Based on the responses, AVs will not undermine the role of public transport and will rather be used for longer-distance (inter-destination) transport. Factor 2 alone disagrees with the emergence of car-free destinations and does not believe that traffic would be less or cities more livable because of the advent of AVs. These experts think that wine tourism and barrier-free tourism will develop, which could result in increased over-tourism. In terms of tourism services, this factor is not in favor of the development of AutoTour services. Their order of preference reflects the fact that traveling to more remote places by AVs would become conventional, but they see it less so within cities, where the emergence of AVs would remain unconventional. Therefore, we call this factor accessibility-focused.

4.3. Skeptics

The opinion of Factor 3 reflects the negative impact of AVs as a safety issue from a transport, privacy, or data point of view. Tourists are reluctant to use shared AVs because they do not want to travel with strangers. As it is not safer for pedestrians to use AVs, they do not agree with the increase in the number of walking tours. Factor 3 considers AVs to be suitable for both shorter and longer distance trips, and these experts also believe that they will be used more for leisure and visiting friends and relatives (VFR) by tourists. They agree that new AutoTour services could be created but also emphasize the risk that small local businesses will be at a disadvantage compared to multinationals. Factor 3 also rejects the idea of destinations cooperating and sharing AVs. They also see an opportunity for taxis to survive if they develop additional services (e.g., tour guide service). This factor is therefore labeled skeptics, as they are less likely to believe that the uptake of AVs can become conventional in tourism due to the threats listed.

4.4. Optimist, Technology-Oriented Group

Factor 4 is optimistic about the emergence of AVs and positive about their impact on tourism. They think that AVs will be a viable alternative to public transport, taxis, and airport transfers. This factor is the most likely to see AVs as meeting rooms or mobile motels but does not feel that this threatens conventional hotel services. They see a potential for the development of wine tourism because of the elimination of driving, which could

increase demand, but they do not fear the emergence of over-tourism. Factor 4 agrees that AVs will also have a positive impact on passenger transport and that the transformation of urban spaces will make cities more livable, making them even more attractive to tourists. Experts in this group believe that AVs can be suitable in both the short and long term and can therefore influence destination choices. However, they agree that, for the time being, AVs can offer an unconventional tourist experience, which can also translate into a price premium. Based on these opinions, this factor has been labeled an optimist, technology-oriented group.

5. Discussion

To obtain a complete picture of respondents' views, we have highlighted the distinguishing, consensus, and neutral statements for each factor, which helps us draw conclusions and make recommendations.

5.1. Distinguishing Statements

As we have seen in the literature review, there was no common understanding and approach in all areas of previous research on the impact of AVs on tourism. In the present research, we also found areas where tourism experts have quite different views. There is no uniform picture as to whether shared AVs can be as successful with tourists as individual AVs, i.e., whether both can become conventional. Factors 1 and 3, supporting the previous results [2,11] that tourists prefer individual travel for leisure trips, while contrary to other findings [16], Factors 2 and 4 do not see sharing with strangers as a problem. There are experts who say that the issue of data security will be a problem (Factor 3), while others do not consider it a matter of concern (Factors 1 and 4), so this will not prevent the use of AVs from becoming conventional. The transformation of urban spaces can have several consequences, as it depends on whether the freed-up parking areas are used for civic or business purposes. According to Factors 3 and 4, creating green spaces and parks would not only make a city more attractive but also more livable, a view also expressed in previous research [9]. Although previous research predicts AV use for longer distances [21], respondents are also divided on this issue. While some believe that removing barriers, such as traveling in unfamiliar environments [23], will increase demand, fueled by expanding accessibility [2,21], there is no consensus on whether this will lead to over-tourism. However, accessibility could be a key factor in making AVs increasingly part of conventional tourism in terms of mobility.

5.2. Consensus Statements

On certain issues, tourism experts think very much alike. They consider AVs a less flexible mobility service since they can only travel along a predefined path, which takes away access to destinations with poorer infrastructure, as pointed out previously [24]. It would therefore be important to prepare these destinations for the roll-out of AVs so they can meet the required conditions as soon as possible and take advantage of the opportunities offered by AVs (e.g., 5G network extension). At the same time, AVs will broaden the range of destinations available [2], bringing tourists to parts of the destination that may have been less frequented or even considered undesirable due to inappropriate surroundings [4]. All four factors agree that, since there is no need for a driver in SAE Level 4–5 AVs, this represents an opportunity for the development of wine tourism. While there was not complete agreement on the use of parking spaces, as mentioned in the distinguishing statements, there was consensus on the idea that these spaces are less used for economic purposes; previous research [9,21,28] highlighted many utilization options that would be worthwhile for tourism experts to rethink. By becoming a place for rest and sleep [9], AVs could replace the function of some hotels, which is questioned by our domestic experts. Factors 2 and 4 are more concerned with the expansion of available destinations, and all four factors reject the conventionalization of AVs as mobile motels.

Thus, not only are central hotels part of conventional tourism, but the use and booking of the peripheral areas also become conventional.

5.3. Neutral Statements

While several previous studies confirm that tourists will benefit more from the emergence of AVs [2], domestic tourism practitioners have paid less attention to the issue of inequality between locals and tourists [8]. All factors put these claims in the neutral category. However, the involvement of locals plays a key role in the acceptance of AVs; AVs may even provide an opportunity to connect locals and tourists [8], a demand that is becoming increasingly conventional nowadays. From the perspective of locals, technology will have an impact not only at the residential level but also at the entrepreneurial level [8]. Except for Factor 3, our experts consider competition between small local services and multinational services in tour planning to be less of an issue. The issue of growth in demand for overnight experiences is also neutral across all factors, implying that overnight experiences will become less conventional, not affecting changes in demand for tourism services to the same extent, contradicting previous findings [26]. In terms of service change, factors were neutral regarding the replacement of the restaurant, suggesting that they do not see the mobile restaurant function of AVs as unimaginable but that it will not become conventional in the near future (2030).

6. Conclusions

The research has shown how experts in different areas of tourism perceive the changes that we are facing as a result of the spread of AVs. An important result of our research is that we have explored the role of conventional tourism services from an expert perspective, thus improving the accuracy of previous predictions. Based on the four groups of opinions generated, we can see that the role of AV-based mobility and AV-based sightseeing is likely to increase in the near future, which could greatly improve the tourism experience offered by destinations with well-developed infrastructure.

An important question is whether tourism experts want to play a leader or a follower role in the emergence of AVs. The academic sphere of tourism has a responsibility to help tourism service providers understand the possible changes that may affect them. Policymakers and investors should also place greater emphasis on assessing the impacts on tourism, as leisure travel can be the first area using AVs.

The opinion groups generated by the Q methodology can be useful to quickly identify different opinions and to develop different communication strategies based on them to increase the acceptance of AVs among tourism experts. For the skeptics (Factor 3), it is worth emphasizing the safety of the technology, providing evidence that the lack of a human factor does not reduce confidence or even offer them the opportunity to try the technology.

A limitation of our research along the Q methodology is that we must limit the number of statements (30–60) to be transparent to respondents, so some topics must be combined or even omitted. The sample is also a limitation, as we only asked tourism experts in Hungary; cultural differences may influence the formation of opinion groups. Another limitation of the research is that new developments may emerge in the coming years, leading to new insights and opinions.

For further research, there is a need to explore opportunities for cooperation between tour companies (e.g., Hop-on Hop-off) and automotive companies to develop the details of an AutoTour service based on self-driving vehicles. It should also be a great contribution to the current findings to conduct a consumer attitude analysis based on real experiences (e.g., participation in living lab surveys) to verify the validity of the variables I have identified that influence the technology acceptance of autonomous vehicles.

Author Contributions: Conceptualization, K.Á., M.M. and M.J.; methodology, K.Á.; validation, K.Á. and M.M.; formal analysis, K.Á., M.M. and M.J.; writing—original draft preparation, K.Á., M.M. and M.J.; writing—review and editing, Z.K. and L.K.; supervision, M.J.; funding acquisition, M.J. All authors have read and agreed to the published version of the manuscript.

Funding: Project no. NKFIH-869-10/2019 has been implemented with support provided by the National Research, Development, and Innovation Fund of Hungary, financed under the Tématerületi Kiválósági Programme Funding Scheme.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

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

Appendix A

Table A1. Q statements.

N	Q Statements
1.	Tourists prefer fully autonomous vehicles to public transport.
2.	The spread of autonomous vehicles could lead to over-tourism.
3.	Autonomous vehicles will be used more for recreation and VFR (visiting friends and relatives) tourism.
4.	Tourists will be less open to the use of autonomous vehicles because they are concerned about their personal data.
5.	Autonomous vehicles will improve urban transport and reduce congestion.
6.	It will be more difficult for autonomous vehicles to travel on unimproved roads, making it harder to reach destinations with less developed infrastructure.
7.	It is predicted that autonomous vehicles could replace the role of traditional shuttle buses and taxi services, completely redefining urban passenger transport. The role of airport shuttles and taxis will also be reduced.
8.	Autonomous vehicles will be used as mobile motels, replacing hotel rooms rented for only a few hours.
9.	Autonomous vehicles will make door-to-door mobility more in demand than public transport (e.g., between rail and accommodation).
10.	Shared and autonomous vehicles will be less used by tourists than individually owned vehicles, as they are more sensitive to the presence of strangers on a leisure trip.
11.	With the spread of autonomous vehicles, there will be more interest in leisure and recreational services than in shopping and administration.
12.	The availability of autonomous vehicles will not be a determining factor in the choice of destination.
13.	Autonomous vehicles will be free of charge during the test period.
14.	Shared and autonomous vehicles will reduce costs, so only those will be allowed into cities, and other vehicles will have to park outside the city. Car-free tourist destinations could be created.
15.	Shared and autonomous vehicles can create a new type of sightseeing, called AutoTour services, which are more flexible and fully customizable, thus replacing conventional walking and bus tours.
16.	Local businesses are marginalized by the funding of multinational companies (disadvantage of smaller attractions).
17.	Tourists will travel to more distant destinations as the partially/fully autonomous system makes longer distance travel more comfortable.
18.	Autonomous vehicles offer the possibility to reach new destinations and attractions, allowing tourists to use hotel or restaurant services in more and more places.
19.	Urban spaces transformed by autonomous vehicles will be less attractive to tourists.
20.	There is no sense of security towards autonomous vehicles; it is like a tourist traveling in a driverless „box," the possibility of crime is more likely to arise.
21.	Testing fully autonomous vehicles could increase travel motivation and be a stand-alone tourist experience in places where the technology is not yet widespread.
22.	Solving parking problems will create more liveable urban centers with more green spaces.
23.	Autonomous vehicles can be used as mobile offices/meeting rooms.
24.	Sightseeing tours with autonomous vehicles will easily hide the negative side of the urban environment, masking the reality.

Table A1. *Cont.*

N	Q Statements
25.	The demand for accessible tourism will increase, as more people will be able to travel alone (due to the rise of autonomous vehicles, tourists without a driving license and with health problems can now travel alone).
26.	The number of evening sightseeing/night-time tourist experiences is increasing.
27.	Autonomous vehicles will be used by tourists for longer distances rather than short commutes.
28.	Autonomous vehicles will make travel safer.
29.	For tourists, driving a conventional vehicle will become a tourist experience as autonomous vehicles become more common.
30.	Less parking places will be needed, their space will be used for economic purposes (e.g., hotel to expand the number of rooms, event venue, bicycle paths).
31.	Restaurants will be in competition with mobile restaurants or vehicles combining sightseeing with dining, such as dinner boats.
32.	The spread of autonomous vehicles will benefit wine tourism as there is no problem with driving after drinking alcohol.
33.	The unfamiliar surroundings will no longer be a limiting factor; autonomous vehicles help by eliminating the barriers that international tourists face when traveling in unfamiliar surroundings.
34.	The number of walking tours may increase because there are fewer pedestrian accidents.
35.	Autonomous vehicles can create inequalities in urban transport if the interests of tourists take precedence over residents. Self-driving taxis will be used more by tourists than by residents.
36.	Tour management will become easier as the route becomes more flexible.
37.	Shared and autonomous vehicles operate only on pre-defined routes and under strictly controlled conditions (e.g., as airport shuttles, connecting airports or train stations to city centers, on urban sightseeing routes, or in off-road locations such as zoos), and therefore the system is not flexible.
38.	Traditional taxis and city bus tours can be maintained if they provide an additional service (guided tours), as a different type of staff will be needed.
39.	Hotels on the motorway will disappear because passengers will be able to sleep in the autonomous vehicle and will not have to stop for a rest during a long journey.
40.	Depending on seasonality, destinations can share their fleet of autonomous vehicles, reducing environmental pollution and congestion (e.g., making autonomous vehicles available in ski resorts in winter and in beach destinations in summer).

Source: Own edition.

References

1. Chatterton, P.; Pickerill, J. Everyday activism and transitions towards post-capitalist worlds. *Trans. Inst. Br. Geogr.* **2010**, *35*, 475–490.
2. Kimber, S.; Siegel, L.; Cohen, S.; Thomopoulos, N. The wider use of autonomous vehicles in non-commuting journeys. *Adv. Transp. Policy Plan.* **2020**, *5*, 125–148.
3. Ribeiro, M.A.; Gursoy, D.; Chi, O.H. Customer Acceptance of Autonomous Vehicles in Travel and Tourism. *J. Travel Res.* **2022**, *61*, 620–636.
4. Grèzes-Bürcher, S.; Grèzes, V.; Fux, M.; Ramseyer, R.; Wilk, R. The Potential of Public Autonomous Vehicles in Alpine Tourism Destinations. *Téoros* **2021**, *40*, 2.
5. Miskolczi, M.; Földes, D.; Munkácsy, A.; Jászberényi, M. Urban mobility scenarios until the 2030s. *Sustain. Cities Soc.* **2021**, *72*, 103029. [CrossRef]
6. SAE. SAE International Releases Updated Visual Chart for Its "Levels of Driving Automation" Standard for Self-Driving Vehicles. 2021. Available online: https://www.sae.org/news/press-room/2018/12/sae-international-releases-updated-visual-chart-for-its-%E2%80%9Clevels-of-driving-automation%E2%80%9D-standard-for-self-drivingvehicles (accessed on 21 January 2022).
7. Syahrivar, J.; Gyulavári, T.; Jászberényi, M.; Ásványi, K.; Kökény, L.; Chairy, C. Surrendering personal control to automation: Appalling or appealing? *Transp. Res. Part F Traffic Psychol. Behav.* **2021**, *80*, 90–103.
8. Mogg, T. Driverless Pods Could Be Used to Ferry Tourists around a U.K. National Park. Digital Trends: Energing Technologies. 2018. Available online: https://www.digitaltrends.com/cool-tech/driverless-pods-lake-district/ (accessed on 21 January 2022).
9. Cohen, S.A.; Hopkins, D. Autonomous vehicles and the future of urban tourism. *Ann. Tour. Res.* **2019**, *74*, 33–42.

10. Dai, J.; Li, R.; Liu, Z. Does Initial Experience Affect Consumers' Intention to Use Autonomous Vehicles? Evidence from a Field Experiment in Beijing. *Accid. Anal. Prev.* **2021**, *149*, 105778. [CrossRef]
11. Roads and Transport Authority (RTA). About SDT. 2022. Available online: https://www.rta.ae/links/sdt/en/index.html (accessed on 21 January 2022).
12. Tussyadiah, I.P.; Zach, F.K.; Wang, J. Attitudes Toward Autonomous on Demand Mobility System: The Case of Self-Driving Taxi. In *Information and Communication Technologies in Tourism*; Springer: Rome, Italy, 2017; pp. 755–766.
13. Laidlaw, K.; Sweet, M.N. Estimating consumer demand for autonomous vehicles in the greater Toronto-Hamilton Area: 2016 survey and model results. In Proceedings of the Transportation Research Board 97th Annual Meeting, Washington, DC, USA, 7–11 January 2018.
14. Miskolczi, M.; Kökény, L.; Ásványi, K.; Jászberényi, M.; Gyulavári, T.; Syahrivar, J. Impacts and potential of autonomous vehicles in tourism. *Deturope* **2021**, *13*, 34–51.
15. IFMO Autonomous Driving—The Impact of Vehicle Automation on Mobility Behaviour. 2016. Available online: https://elib.dlr.de/110337/ (accessed on 21 January 2022).
16. Krueger, R.; Rashidi, T.H.; Rose, J.M. Preferences for Shared Autonomous Vehicles. *Transp. Res. Part C Emerg. Technol.* **2016**, *69*, 343–355.
17. Kyriakidis, M.; Happee, R.; de Winter, J.C.F. Public opinion on automated driving: Results of an international questionnaire among 5000 respondents. *Transp. Res. Part F* **2015**, *32*, 127–140. [CrossRef]
18. Platt, M. *Drivers Cautious but Curious over Automated Cars: First Canadian Study Shows*; University of Calgary: Calgary, AB, Canada, 2017.
19. Pudane, B.; Molin, E.J.E.; Arentze, T.A.; Maknoon, Y.; Chorus, C.G. A Time-Use Model for the Automated Vehicle Era. *Transp. Res. Part C Emerg. Technol.* **2018**, *93*, 102–114. [CrossRef]
20. Haboucha, C.J.; Ishaq, R.; Shiftan, Y. User preferences regarding autonomous vehicles. *Transp. Res. Part C Emerg. Technol.* **2017**, *78*, 37–49. [CrossRef]
21. Kellett, J.; Barreto, R.; Van Den Hengel, A.; Vogiatzis, N. How Might Autonomous Vehicles Impact the City? The Case of Commuting to Central Adelaide. *Urban Policy Res.* **2019**, *37*, 442–457. [CrossRef]
22. Carr, N.K. As the Role of the Driver Changes with Autonomous Vehicle Technology, so, Too, Must the Law Change. *St. Mary's Law J.* **2020**, *51*, 817–843.
23. Prideaux, B.; Ping, Y. The disruptive potential of autonomous vehicles (AVs) on future low-carbon tourism mobility. *Asia Pac. J. Tour. Res.* **2019**, *24*, 459–467. [CrossRef]
24. Anderson, J.M.; Kalra, N.; Stanley, K.D.; Sorensen, P.; Samaras, C.; Oluwatola, O. *Autonomous Vehicle Technology—A Guide for Policymakers*; Rand Corporation: Santa Monica, CA, USA, 2016.
25. Maleki, M.; Chan, Y.; Arani, M. Impact of Autonomous Vehicle Technology on Long Distance Travel. *arXiv*. 2021. Available online: http://arxiv.org/abs/2101.06097 (accessed on 21 January 2022).
26. Bainbridge, A. Autonomous Vehicles & Auto-Tours: What Is an Auto-Tour and How Will Autonomous Vehicles Impact Tours, Attractions & Cities? 2018. Available online: https://www.destinationcto.com/docs/AutoTour.pdf (accessed on 21 January 2022).
27. Greenblatt, J.B.; Saxena, S. Autonomous taxis could greatly reduce greenhouse-gas emissions of US light-duty vehicles. *Nat. Clim. Change* **2015**, *5*, 860–863. [CrossRef]
28. Alessandrini, A.; Campagna, A.; Delle Site, P.; Flilippi, F.; Persia, L. Automated vehicles and the rethinking of mobility and cities. *Transp. Res. Procedia* **2015**, *5*, 145–160. [CrossRef]
29. Alam, M.J.; Habib, M.A. Investigation of the impacts of shared autonomous vehicle operation in halifax, canada using a dynamic traffic microsimulation model. *Procedia Comput. Sci.* **2018**, *130*, 496–503. [CrossRef]
30. Freudendal-Pedersen, M.; Kesselring, S.; Servou, E. What is smart for the future city? Mobilities and automation. *Sustainability* **2019**, *11*, 221. [CrossRef]
31. Faisal, A.; Yigitcanlar, T.; Kamruzzaman, M.; Currie, G. Understanding autonomous vehicles: A systematic literature review on capability, impact, planning and policy. *J. Transp. Land Use* **2019**, *12*, 45–72. [CrossRef]
32. Cavoli, C.; Phillips, B.; Cohen, T.; Jones, P. *Social and Behavioural Questions Associated with Automated Vehicles. A Literature Review*; Department for Transport: London, UK, 2017.
33. Zhakanova, I.A.; Isiksal, H.; Shynar Zhakanovna, R.; Armanay Sagatbayevna, S. Ecological development impact on tourism in Pavlodar region. *Econ.—Innov. Econ. Res.* **2018**, *6*, 113–124.
34. Pudāne, B.; Rataj, M.; Molin, J.E.; Mouter, N.; van Cranenburgh, S.; Chorus, C.G. How will automated vehicles shape users' daily activities? Insights from focus groups with commuters in the Netherlands. *Transp. Res. Part D Transp. Environ.* **2019**, *71*, 222–235. [CrossRef]
35. Ashkrof, P.; Homem de Almeida Correia, G.; Cats, O.; van Arem, B. Impact of Automated Vehicles on Travel Mode Preference for Different Trip Purposes and Distances. *Transp. Res. Rec.* **2019**, *2673*, 607–616. [CrossRef]
36. Wadud, Z.; Huda, F.Y. Fully automated vehicles: The use of travel time and its association with intention to use. *Proc. Inst. Civ. Eng. Transp.* **2021**. [CrossRef]
37. Dannemiller, K.A.; Mondal, A.; Asmussen, K.E.; Bhat, C.R. Investigating autonomous vehicle impacts on individual activity-travel behavior. *Transp. Res. Part A* **2021**, *148*, 402–422. [CrossRef]

38. Fagnant, D.J.; Kockelman, K.M. Preparing a nation for autonomous vehicles: Opportunities, barriers and policy recommendations for capitalizing on Self-Driven vehicles. *Transp. Res. Part A Policy Pract.* **2015**, *77*, 167–181. [CrossRef]
39. Henderson, J.; Spencer, J. Autonomous vehicles and commercial real estate. *Cornell Real Estate Rev.* **2016**, *14*, 44–54.
40. Rong, H.H.; Tu, W.; Duarte, F.; Ratti, C. Employing waterborne autonomous vehicles for museum visits: A case study in Amsterdam. *Eur. Transp. Res. Rev.* **2020**, *12*, 1–13. [CrossRef]
41. Irawan, N.; Geisler, S.; Pawlowski, J.M. Why Should the QMethod Be Integrated into the Design Science Research? A Systematic Mapping Study. 2019. Available online: https://aisel.aisnet.org/scis2019/9/ (accessed on 21 January 2022).
42. Van Exel, J.; de Graaf, G. Q Methodology: A Sneak Preview. 2005. Available online: http://qmethod.org/articles/vanExel.pdf (accessed on 21 January 2022).
43. Zabala, A.; Sandbrook, C.; Mukherjee, N. When and how to use q methodology to understand perspectives in conservation research. *Conserv. Biol.* **2018**, *32*, 1185–1194. [CrossRef]
44. Detjen, H.; Irawan, N.; Geisler, S. Attitudes towards autonomous public transportation. In Proceedings of the 13th International Conference on Automotive User Interfaces and Interactive Vehicular Applications (AutomotiveUI '21 Adjunct), Leeds, UK, 9–14 September 2021; ACM: New York, NY, USA, 2021.
45. Rodak, A.; Jamson, S.; Kruszewski, M.; Pedzierska, M. User requirements for autonomous vehicles—A comparative analysis of expert and non-expert-based approach. In Proceedings of the AEIT International Conference of Electrical and Electronic Technologies for Automotive (AEIT AUTOMOTIVE), Turin, Italy, 18–20 November 2020.
46. Brown, S.R. *Political Subjectivity: Applications of Q Methodology in Political Science*; Yale University Press: London, UK, 1980.
47. McKeown, B.; Thomas, D. *Q-Methodology*; Sage Publisher: London, UK, 2013.
48. Webler, T.; Danielson, S.; Tuler, S. *Using Q Method to Reveal Social Perspectives in Environmental Research*; Social and Environmental Research Institute: Greenfield, MA, USA, 2009.
49. Watts, S.; Stenner, P. Doing Q methodology: Theory, method and interpretation. *Qual. Res. Psychol.* **2005**, *2*, 67–91. [CrossRef]
50. Dryzek, J.S. Handle with care: The deadly hermeneutics of deliberative instrumentation. *Acta. Polit.* **2005**, *40*, 197–211. [CrossRef]
51. Schmolck, P.; Atkinson, J. PQMethod Software, Version 2.35. 2014. Available online: http://schmolck.userweb.mwn.de/qmethod (accessed on 21 January 2022).
52. Sneegas, G.; Beckner, S.; Brannstrom, C.; Jepson, W.; Lee, K.; Seghezzo, L. Using Q-methodology in environmental sustainability research: A bibliometric analysis and systematic review. *Ecol. Econ.* **2021**, *180*, 106864. [CrossRef]