

Development Trends and Opportunities in China's Accessible Tourism Market

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Abstract. Accessible tourism is an emerging market full of potential and opportunities. This thesis aims to analyse the development trend of the accessible tourism market and explore the opportunities and challenges it brings. Through comprehensive literature research and field research, we find that the accessible tourism market is gaining attention, promoting the development of related industries and providing more travelling options for people with disabilities. However, there are still some problems in the market that need to be solved, such as improvements in facility construction and service quality. Therefore, the government, enterprises and society should join hands to promote the sustainable development of the accessible tourism market.

Keywords: Accessible Tourism; Market Development; Persons with Disabilities.

1. Introduction

Accessible tourism refers to the provision of convenient tourism services and a friendly tourism environment for the elderly, persons with disabilities and other individuals with limited mobility [1]. As the global population ages and awareness of the rights and interests of people with disabilities increases, the accessible tourism market has unprecedented opportunities for development [2].

2. Trends in the accessible tourism market

2.1 Ageing population and growing demand for accessible tourism

When exploring the development trend of the accessible tourism market, it is important not to overlook the analysis and forecast of the number of people with disabilities. As the main audience of the accessible tourism market, changes in the number of people with disabilities and the elderly will profoundly affect the demand and development trend of the accessible tourism market [3].

At present, on the one hand, the number of people over 65 years old in China has reached 19,059,0127, and through the grey correlation prediction model, China's aging problem will be further aggravated in the next three years, and the construction of a complete service for the vulnerable groups is quite important; on the other hand, the number of people with disabilities in China has reached 85 million people, and the number of disabled people who hold a certificate each year is still less than the total number, though it is increasing year by year [4]. On the other hand, the number of disabled people in China has already reached 85 million, and the number of licensed disabled people per year, although increasing year by year, is still less than half of the total number. Improving barrier-free facilities and understanding the real demands of disabled people are of great practical significance to accelerate the development of China.

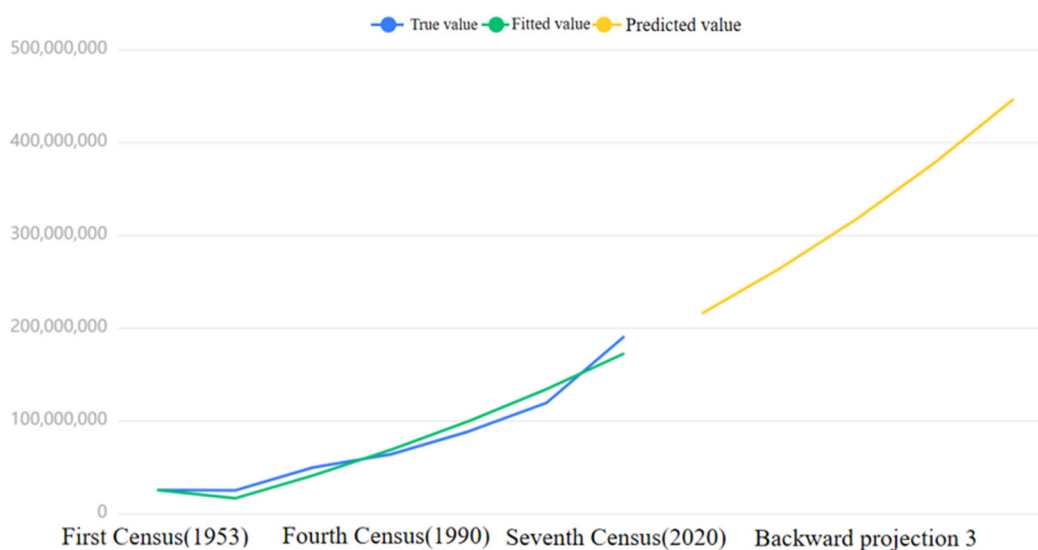


Figure 1. Number of people aged 65 and over and projections

Through the grey correlation degree prediction analysis, the a posteriori difference ratio value is 0.04, and the average relative error of the model is 13.476%. The model accuracy is high, and the model simulation is good. Through the above data, it can be obtained that the number of the elderly continues to rise in the next three years, and the rate of increase is large.

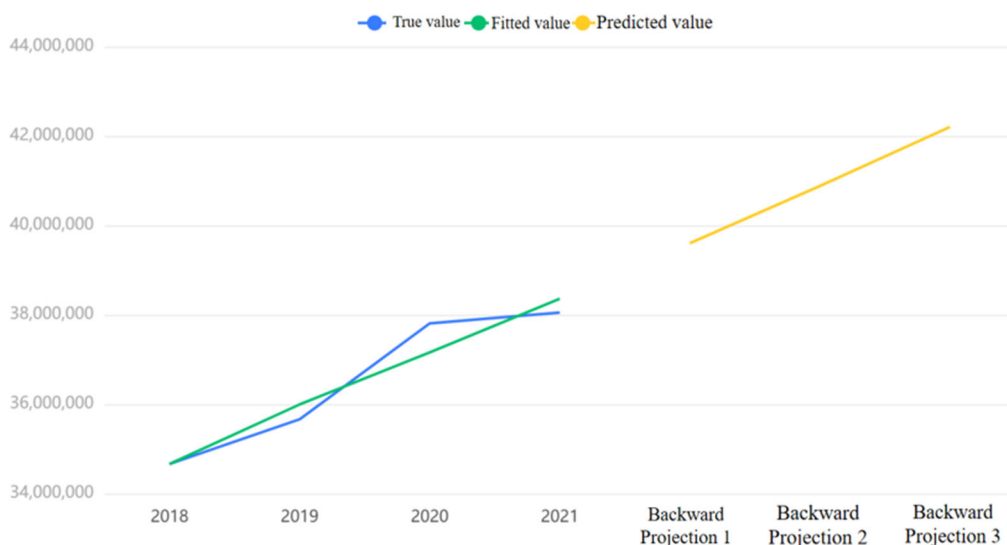


Figure 2. The number of people who currently have a disabled person's card and prediction

Through the grey correlation degree prediction analysis, the a posteriori difference ratio value is 0.077, and the average relative error of the model is 0.865%. The model accuracy is high, and the model simulation is good. Through the above data, it can be obtained that the number of people with a disability card continues to rise in the next three years [5].

The questionnaire survey shows that people with disabilities have a strong willingness to travel basically, and the proportion of people who are very willing to travel reaches 62.9 per cent, but it is found that many people with disabilities have fewer actual travels due to psychological, economic, environmental barriers, communication barriers and other factors, and we have obtained the following Table 1 based on the results of the survey.

Table 1. Summary of reasons why people with disabilities do not want to go travelling

Type of obstacle	Description
Psychological barriers	● Disabled people are psychologically sensitive, afraid of being looked at differently and sensitive to outsiders' attitudes
	● Feelings of inferiority, loneliness and depression leading to loss of interest in tourism
	● Rejection of tourism activities
Economic barriers	● Persons with disabilities have lower incomes and cannot afford the high cost of travelling
	● Need to pay extra for travelling companions, special facilities
	● Lack of accessibility at transport stops
Environmental barriers	● No barrier-free facilities in hotels
	● Neglect of disabled people at the early stage of scenic spot planning
	● Little investment in the tourism market for people with disabilities, high costs and low returns of tours for people with disabilities
Communication barriers	● Psychological disorders of persons with disabilities lead to communication barriers
	● Fear of being looked down upon and belittled by others
	● Information asymmetry leading to inability to obtain accurate travelling letters

To sum up, persons with disabilities generally believe that the barrier-free facilities are not perfect, the phenomenon of being discriminated against is serious, and the departments do not pay enough attention to it, and in the suggestions, they highlight "I hope that all departments will formulate corresponding measures to help persons with disabilities in travelling". The main hope is that scenic spots will offer preferential prices and improve barrier-free facilities.

2.2 Improvement of Laws and Regulations on the Protection of Rights and Interests of People with Disabilities

The development of laws and regulations on the rights and interests of people with disabilities in China has witnessed the continuous improvement and progress in the protection of people with disabilities in China. The protection of the rights and interests of persons with disabilities in China has been clearly guaranteed by law, providing a solid legal foundation for the promotion of the full integration of persons with disabilities into society and their enjoyment of equal rights and development. However, as society continues to change and develop, the protection of the rights and interests of persons with disabilities still faces a number of challenges and problems, requiring the joint efforts of all sectors of society to continuously improve and strengthen the implementation of the relevant laws and regulations, and to create a more favourable environment and conditions for the comprehensive development of persons with disabilities.

2.3 Tourism Industry's Attention to Barrier-Free Tourism

The importance that the Chinese tourism industry attaches to barrier-free tourism is reflected in a number of aspects. The government has issued a series of relevant policies and plans to encourage tourism enterprises and scenic spots to upgrade barrier-free facilities and promote the development of barrier-free tourism. Meanwhile, the needs of people with disabilities are increasingly taken into account in city and scenic spot planning, and barrier-free facilities are planned and constructed to provide a more friendly tourism environment.

In terms of facility modifications, tourist attractions, hotels and transport stops have undergone barrier-free modifications, with additional facilities such as barrier-free access routes, barrier-free toilets, ramps and handrails being installed to make it easier for persons with disabilities to travel and use the services and facilities. Barrier-free information services have also been upgraded, with barrier-free tourism apps and websites providing more comprehensive and accurate tourism information, making it easier for persons with disabilities to plan their trips.

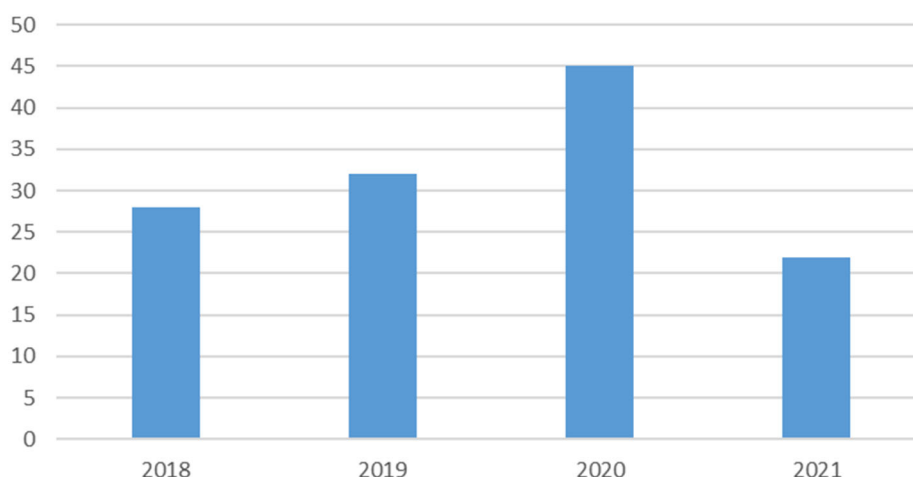


Figure 3. Increase in the number of barrier-free integrated service facility projects per year

In terms of publicity and promotion, barrier-free tourism is promoted through the media, raising public awareness of barrier-free tourism and encouraging more people to participate in and support it. Cooperation and exchanges are also manifestations of the Chinese tourism industry's concern for barrier-free tourism. The China Tourism Research Institute has set up the Barrier-Free Tourism Research Centre, which cooperates and exchanges with domestic and foreign experts and institutions in barrier-free tourism, conducts research and training activities on barrier-free tourism, actively draws on the successful experiences of other regions and publishes reports related to barrier-free tourism, and provides the government and enterprises with consultancy and support for the development of barrier-free tourism.

In terms of social responsibility and cultural popularisation, tourism enterprises regard barrier-free tourism as their social responsibility, and popularise the knowledge and concept of barrier-free tourism through public welfare activities and volunteer services, among which the more famous enterprises are Sichuan One, Two, Three Dreams Technology Co. As one of the largest online travel service providers in China, Ctrip.com has also been committed to promoting the concept of barrier-free travel. They have set up a barrier-free travel zone on their official website to provide barrier-free travel routes and related information. At the same time, Ctrip.com also actively participates in public welfare activities of barrier-free tourism, such as organising public welfare lectures on the theme of barrier-free tourism to popularise the knowledge of barrier-free tourism and enhance the public's awareness of barrier-free tourism.

To sum up, the importance China's tourism industry attaches to accessible tourism is reflected in many aspects, such as policy support, facility renovation, accessible information services, construction of demonstration zones, personnel training, product development, publicity and promotion, co-operation and exchanges, social responsibility, and accessibility assessment. These efforts have not only improved the travelling experience of people with disabilities, but also promoted the sustainable development of the tourism industry. In the future, China's tourism industry will continue to increase its investment in barrier-free tourism, provide a more friendly and convenient tourism environment for people with disabilities, and realise a more comprehensive and inclusive development of barrier-free tourism!

2.4 Application of Technology and Innovation in Accessible Tourism

Technology often plays an important role in accessible tourism, which not only provides a more convenient and safe travelling experience for people with disabilities, but also promotes the development of accessible tourism. Among them, the development of accessible tourism apps and websites provides customised tourism information and services for people with disabilities, with applications in first-tier cities such as Shanghai, Beijing and Guangzhou, as well as in famous attractions such as the Forbidden City and the Great Wall. Such apps can provide real-time accessible

route planning, attraction introductions, transport guides, information on accessible facilities, etc., helping tourists with disabilities to visit attractions more conveniently.

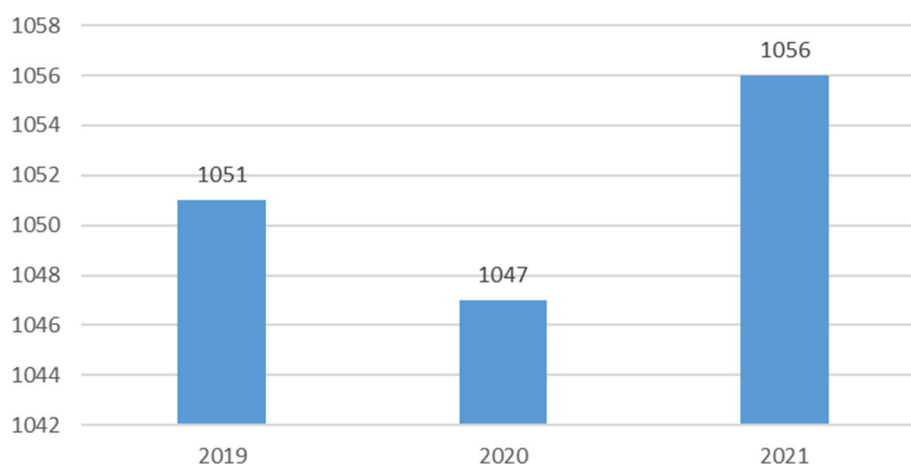


Figure 4. Number of accessibility-related website additions per year

In addition, the application of intelligent guide system is mainly to provide orientation guide service for the visually impaired in scenic spots, through sound guide, touch screen and other technologies, so that they can better understand the attractions and history and culture. Some scenic spots such as the Forbidden City Museum in Beijing, West Lake Scenic Spot in Hangzhou and Shanghai Disneyland will provide wearable devices such as smart bracelets and smart glasses to provide real-time health monitoring and location tracking for disabled visitors to ensure their safety. For example, smart bracelets can monitor visitors' physical conditions, and in the event of an emergency, the system will automatically alarm visitors and send location information to staff to provide timely assistance.

The application of Virtual Reality (VR) and Augmented Reality (AR) technology provides more opportunities for disabled people to experience tourism. Through VR technology, people with disabilities can experience panoramic tourist attractions, while visually impaired people can get assisted guided tours and better understand their surroundings through AR technology that uses sound and touch to convey information. Such as Dunhuang Mogao Grottoes, Putuo Mountain, and Guangzhou Tower, most scenic spots in China have now begun to apply VR and AR technologies, providing not only a more diverse travel experience for ordinary tourists, but also more travel experience opportunities for people with disabilities.

Technological innovation also plays a role in accessible voice recognition and communication technologies. With the development of artificial intelligence and voice recognition technologies, voice recognition systems and voice assistants have become more accurate and intelligent, which allows people with disabilities to communicate with the devices through simple voice commands or dialogues without having to rely on traditional input methods such as keyboards or touchscreens. Voice-assisted tour guide systems are being used in tourist attractions, museums, exhibitions and other venues, where visitors can access relevant information and explanations to learn about the surrounding environment and cultural history through voice-assisted tour guide systems. Intelligent barrier-free communication devices have also been developed to provide customised communication tools for people with disabilities. These devices can be adapted to different disability conditions, including hearing impairment, speech impairment, etc., to meet the needs of users with different needs.

In addition, technological innovations have been devoted to the development of accessible games and cultural experience activities to provide tourists with disabilities with a more diversified and interesting travelling experience. These innovations play a key role in promoting the development of the accessible tourism industry, providing a wider range of higher-quality tourism options for people with disabilities, and driving the cause of accessible tourism towards greater popularity and

improvement. In the future, as technology continues to advance, we can look forward to the further development and popularisation of accessible tourism globally, creating a better travel experience for all tourists.

3. Opportunities in the Accessible Tourism Market

3.1 Expansion of Market Size and Profit Growth

3.1.1 Data Analysis of Barrier-Free Tourism Market Size

The data on the number of barrier-free construction, the number of barrier-free training trips, and the number of trips of fuel subsidy for motorised wheelchair vehicles for persons with disabilities in the municipal, county, and district systems from 2009 to 2021 are explored in depth in order to analyse the trends in the market size of the accessible tourism market and the influencing factors behind them.

The data on the number of barrier-free training trips and the number of trips of fuel subsidies for motorised wheelchair vehicles for persons with disabilities can be visualised in the following charts:

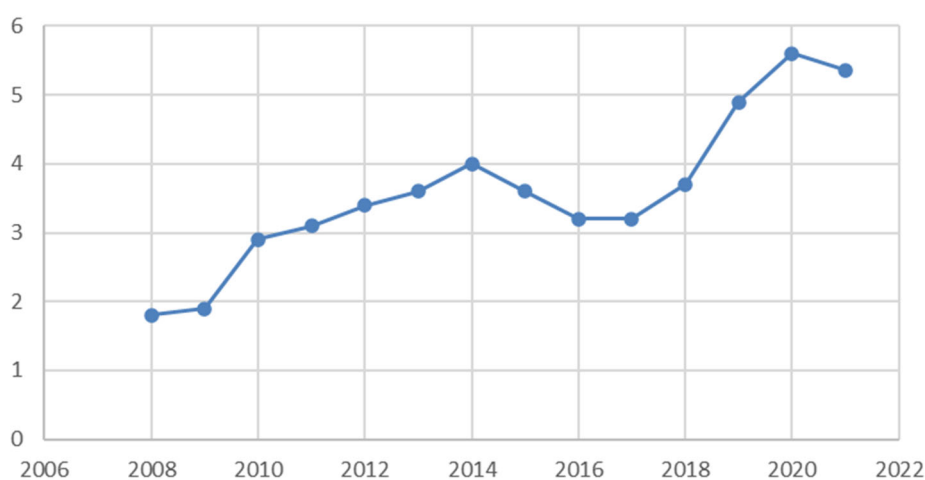


Figure 5. Accessibility Training Attendance

Between 2016 and 2020, the number of trainings increased every year; however, after 2020, due to other factors such as the epidemic, the number of participants started to decrease, but the overall number of trainings was still higher compared to 2018.

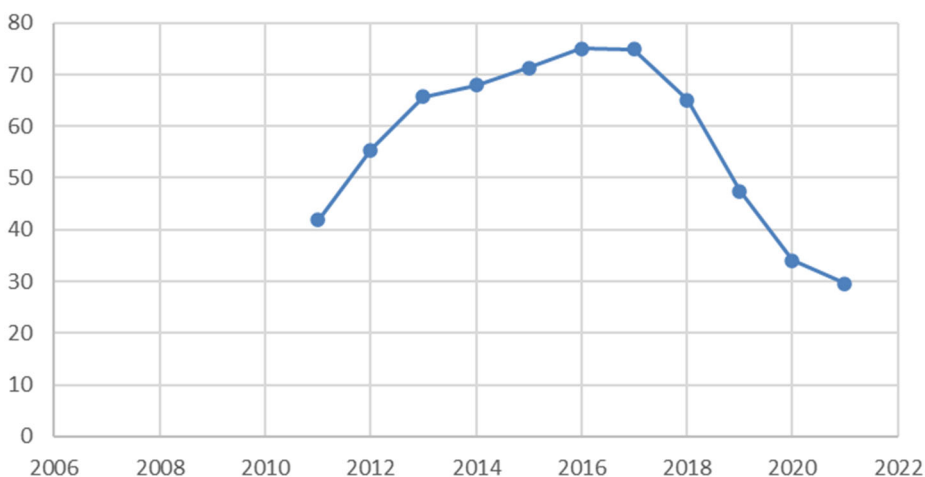


Figure 6. Fuel subsidies for motorised wheelchair vehicles for people with disabilities

Between 2016 and 2018, the number of subsidised trips increased year on year; however, after 2018, due to factors such as epidemics, the service life of wheelchair vans, and the impact on the environment, the frequency of disabled people going out of their homes may be lower overall and the state is actively advocating for a home-based lifestyle. This leads to a sharp drop in numbers after 2018.

In addition, for the time trend of the number of barrier-free construction in cities, counties and districts that will be analysed by visualisation, as well as ARIMA prediction of the data, the following results can be obtained:

Table 2. ARIMA model (0,1,0) test table

Item	Symbol	Value
	Df Residuals	12
Sample size	N	14
Q-Statistic	Q6(P-value)	0.013(0.910)
	Q12(P-value)	1.106(0.981)
Information criterion	AIC	168.03
	BIC	169.16
Goodness of fit	R ²	0.881

The above analysis can be concluded: Q6 does not present significance at the level and cannot reject the hypothesis that the residuals of the model are white noise series, while the model's goodness-of-fit R² is 0.881, the model performs excellently, and the model basically meets the requirements.

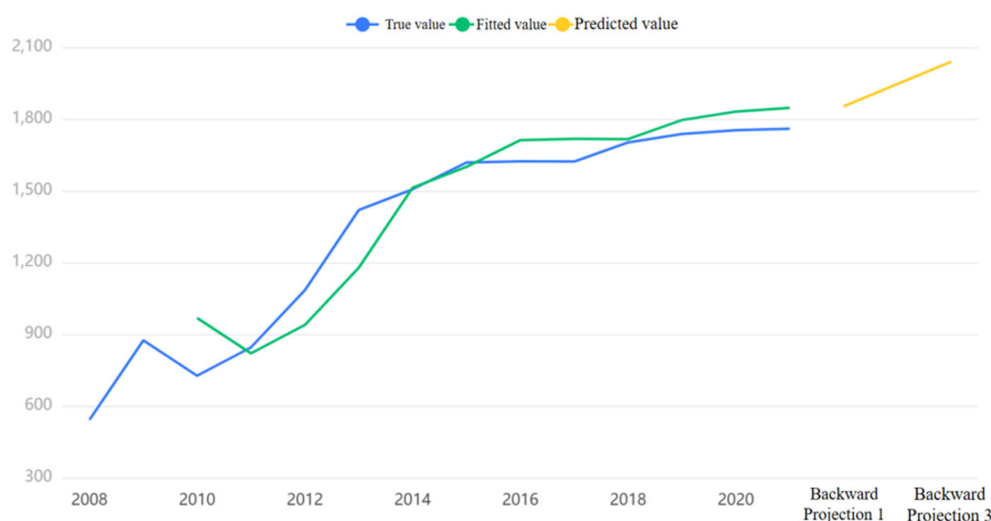


Figure 7. ARIMA model prediction results

The ARIMA prediction of the above data leads to the conclusion that the market for accessible tourism is gradually expanding and that more and more cities, counties and districts will carry out accessible construction over time.

3.1.2 Forecast and trend analysis of profit growth

By collating and analysing the data from the 2020 China Statistical Yearbook, the 2020 China Tourism Statistical Yearbook, and the 2020 National Disabled Persons Population Base Database Main Data published by the China Disabled Persons' Federation, the data analysis will finally be conducted on the number of disabled persons' certificates that have been applied for, the number of tours organised by travel agencies, the number of tours received by travel agencies, the basic situation of travel agencies in each region in 2019, the 2019 data of star-rated hotel institutions in each region in 2019, per capita consumption expenditure of residents in sub-regions, and leading organisations for barrier-free construction were analysed.

Based on the above data, first of all, the above data were tested for normality, and it was found that none of the data satisfied the normal distribution, as shown in the figure below:

Table 3. Analysis of data results

Variable name	Mean	Skewness	Kurtosis	S-W test	K-S test
Region	16.5	0	-1.2	0.957(0.229)	0.069(0.9951103537281757)
Number of disability certificates applied for	2225637.906	5.546	31.137	0.26(0.000***)	0.435(0.000005139037290151205)
Number of tours organised by travel agents	11037323.66	5.311	29.246	0.32(0.000***)	0.361(0.00029876887583130726)
Number of trips received by travel agents	11533523.25	5.356	29.597	0.309(0.000***)	0.366(0.00024058245878065003)
Basic situation of travel agencies by region in 2019	2428.875	5.522	30.937	0.263(0.000***)	0.418(0.000013791546919237931)
Star-rated Hotel Organisations by Region in 2019	555.812	5.593	31.502	0.238(0.000***)	0.461(9.67486383723045e-7)
Leading Organisations for Barrier-Free Construction	83.812	5.499	30.752	0.273(0.000***)	0.397(0.00004548488541626561)
Per capita consumption expenditure of residents by region	21560.025	1.974	3.884	0.771(0.000***)	0.25(0.030422540836828715)

Based on the above analysis, the data did not satisfy the assumption of normal distribution or the presence of outliers, so we used SpearMan correlation analysis to obtain the correlation coefficient heatmap shown below:

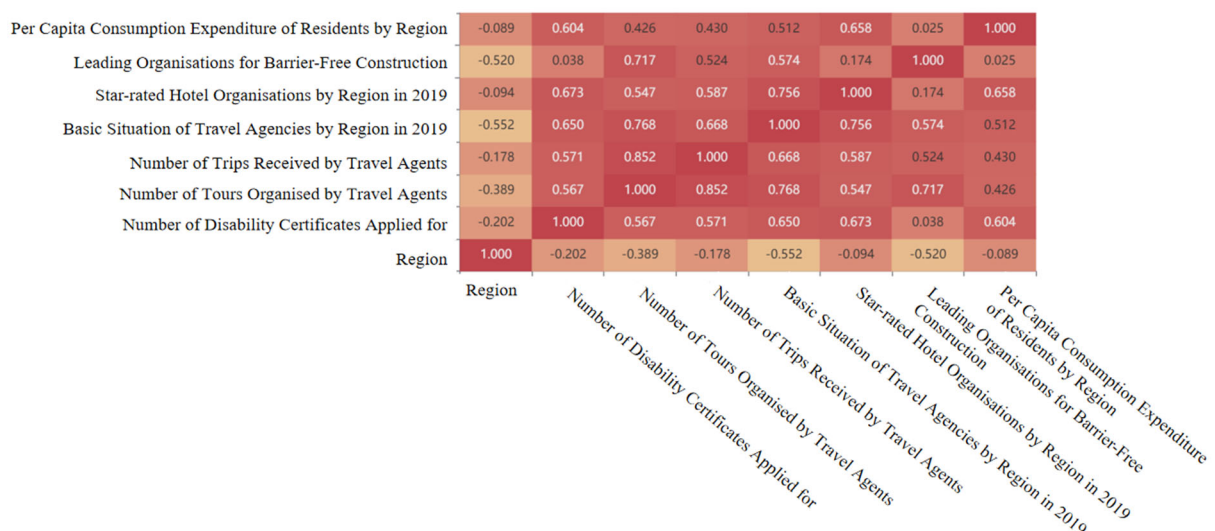


Figure 8. Correlation Coefficient Heat Map

Through the analysis of the above data and the heat map, based on the results of the analysis, it is obtained that the number of disabled persons' cards that have been applied for has a high correlation with the accessibility construction organisation, which is 0.604.

Based on the results of the above analysis, with the number of certificates for people with disabilities already applied as the dependent variable and the rest of the variables as the independent variables, the algorithm of step-by-step regression was used to obtain the three factors that mainly affect the dependent variable as follows: the situation of star-rated hotel organisations in each region,

the per capita consumer expenditure of residents in sub-regions, and regions in 2019. The table of model results is shown below:

Table 4. Table of model results

	Unstandardised coefficient		Standardised coefficient		t	P	VIF	R ²	Adjustment of R ²	F
	B	standard error	Beta							
Constants	1404225.93	442258.668	0	3.175	0.004***	-				
Star-rated hotel establishments by region in 2019	3948.268	62.389	0.985	63.285	0.000***	1.124				
Per capita consumption expenditure of residents by region	-44.211	13.738	-0.054	-3.218	0.003***	1.313	0.994	0.993		F=1536.682, P=0.000***
Region	-25447.671	11545.77	-0.039	-2.204	0.036**	1.443				

Dependent variable: number of persons with disabilities who have obtained a disability card

From the analysis of the results of the F-test, it can be obtained that the significance p-value is 0.000*** and the level presents significance, rejecting the original hypothesis that the regression coefficient is zero. For the covariate covariance performance, VIF is all less than 10, so the model has no multicollinearity problem and the model is well constructed.

Considering the above analysis and the phenomenon that some variables may be lost in the regression process due to the order of stepwise regression, the data of barrier-free construction organisations is added. Using the above variables as independent variables and the number of disabled people's certificates that have been applied for as dependent variables, a ridge regression algorithm was used to simulate the data for prediction. According to the variance expansion factor method to determine $K = 0.16$, based on the above analysis, it can be obtained based on the F-test significance P-value of 0.000***, the level of the level of significance, indicating that there is a regression relationship between the independent variable and the dependent variable. Meanwhile, the model's goodness of fit R^2 is 0.987, and the model performs as more excellent.

The regression expression obtained is: the number of certificates of persons with disabilities have been applied for = 1264146.509 - 27125.021 x region - 28.692 x sub-regional per capita consumption expenditure of the population + 1888.136 x the situation of star-rated hotel establishments in each region in 2019 + 11671.313 x the leading organisations of the construction of accessibility. Meanwhile the path diagram of the ridge regression is:

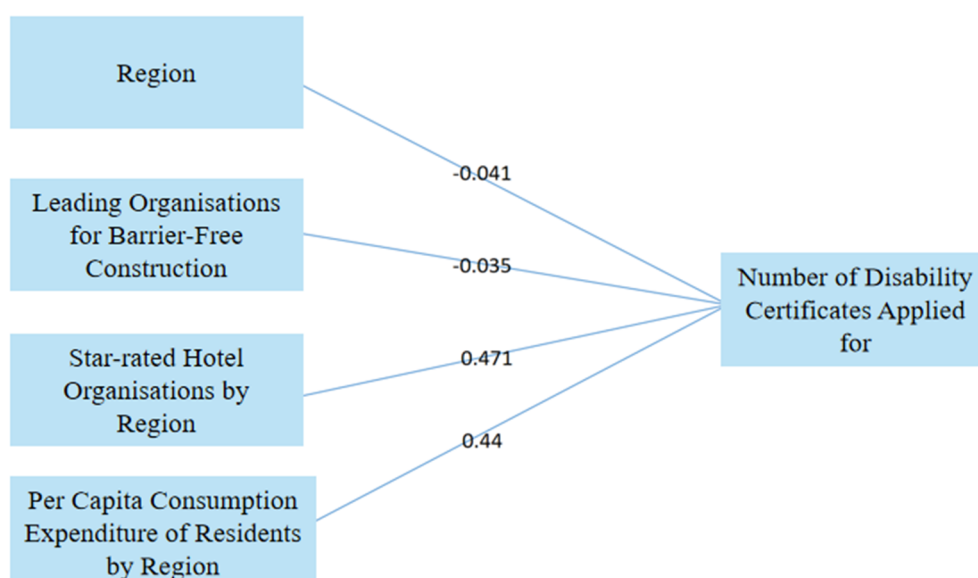


Figure 9. Regression path diagram

The model results are plotted in the following figure:

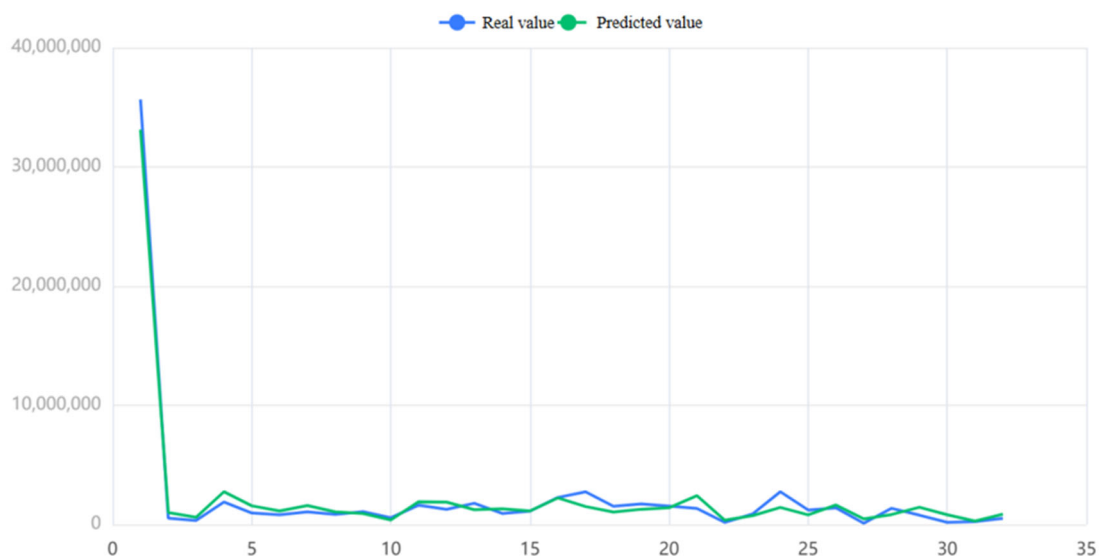


Figure 10. Comparison of real and projected values

4. Conclusions

In summary, the accessible tourism market presents unprecedented opportunities and challenges for business development. By grasping the opportunities of expanding market scale and profit growth, establishing a positive image of social responsibility, exploring new customer groups and actively participating in the development of local economy, enterprises will not only be able to achieve sustained growth and prosperity, but also be able to provide warmer and more considerate travelling experiences and services for people with disabilities, achieving a win-win situation, and creating a better future together. While continuously expanding their business, enterprises should also actively fulfil their social responsibilities, pass on positive energy, become the leader and bearer of responsibility in the accessible tourism market, and jointly promote the sustainable development of the accessible tourism industry.

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