Tourism Management and Technology Economy (2026)
Clausius Scientific Press, Canada

DOI: 10.23977/tmte.2026.090113
ISSN 2616-2199 Vol. 9 Num. 1

Research on the Development of Red Tourism in Donglan County from the Perspective of Tourist Satisfaction

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Keywords: Tourist satisfaction; Red tourism; Importance–performance analysis; Donglan county

Abstract: From a tourist perspective, this paper reviews the resource endowment and development status of red tourism in Donglan County, Guangxi, and constructs an evaluation system of seven dimensions and 43 indicators. Based on 203 valid questionnaires, a questionnaire survey and importance–performance analysis (IPA) are used to assess the development of the area. Overall satisfaction reaches 90.7%, yet perceived importance exceeds perceived satisfaction for all 43 indicators, and the difference is statistically significant for 38 of them. Eleven indicators fall into the "concentrate here" quadrant of high importance and low satisfaction and cluster in accommodation, transport and infrastructure, tourism services and the consumption environment, and cultural integration, which constitute the main weaknesses. Emotional resonance and value formation dominate the "keep up the good work" quadrant, indicating that the educational function of the sites is well recognised, whereas cultural-creative products and smart tourism remain in the low-priority quadrant. Gender differences are significant in five dimensions, with female visitors rating reception-related services lower. Countermeasures are therefore proposed in four areas: consolidating strengths, maintaining performance, prioritising improvements and cultivating opportunities, which may serve as a reference for comparable red-resource-rich counties in China.

1. Introduction

In recent years, red tourism in China has continued to grow and has become an important segment of the tourism market as well as a vehicle through which party committees and governments at all levels carry forward red culture and conduct patriotic education. The 15th Five-Year Plan for Building a Tourism Power explicitly supports the development of red tourism and eco-tourism in old revolutionary base areas, incorporates the upgrading of red tourism into its programme for improving tourism products, and requires scenic areas to raise the standard of exhibitions, enrich cultural-creative and performance offerings and improve interpretation services [1]. Under this orientation, the competitiveness of a red tourism destination depends less on the grade of its resources and the scale of its memorial facilities than on whether visitors can obtain an

experience that is perceptible, participatory and consumable.

Donglan County is the birthplace of the Guangxi peasant movement, the cradle of the Baise Uprising and the heartland of the Youjiang revolutionary base area. The Donglan Red Tourism Area, which comprises the Donglan Martyrs' Cemetery, Lenin Rock, Kuixing Tower and the former residence of Wei Baqun, is a national 4A-level scenic area, and all four of its sub-areas are included in the national catalogue of classic red tourism sites. In recent years Donglan has invested more than RMB 1 billion in restoring memorial facilities, established the Guangxi Wei Baqun Cadre College, been designated a Guangxi all-for-one tourism demonstration zone, and advanced the spatial layout of "one core area, two corridors" together with the construction of red study-tour bases. Investment has not, however, been translated into a stable flow of visitors and expenditure. The scenic area received 1.3763 million, 0.9548 million and 1.1535 million visitors in 2023, 2024 and 2025 respectively, a marked year-on-year fluctuation; admission is free throughout the area, so that there is neither ticket nor operating revenue, and red cultural-creative products have not yet been independently developed or sold.

The gap between resource endowment and visitor experience indicates that additional investment alone cannot resolve structural problems; the key question is where scarce resources should be directed first. This paper therefore adopts a tourist perspective and a rigorous quantitative method to evaluate the development of red tourism in Donglan County, Hechi City, Guangxi, and to propose constructive countermeasures, so as to provide a theoretical basis and practical reference for the high-quality development of red tourism.

2. Literature review

Red tourism refers mainly to theme-based tourism activities in which the sites and landmarks commemorating the achievements of the Chinese people under the leadership of the Communist Party of China during the revolutionary and wartime periods serve as the carrier, and the revolutionary history, deeds and spirit embodied in them constitute the content, organised so that tourists may pay homage, study and visit [2]. Red tourism in China aims to transmit the "red gene" and performs a triple function of patriotic education, heritage protection and revitalisation of old revolutionary base areas [3]. Zhang and Jiao (2015) reviewed the evolution of red tourism in the Zuojiang–Youjiang old revolutionary base area and identified scattered resources and insufficient cross-regional integration [4]. Li (2019) proposed several paths for the innovative development of red tourism, including the integration of red culture with ecological resources and with folk culture, the construction and presentation of red culture museums, and the coupling of red tourism with red festival performances [5]. Zhang and Liu (2021) focused on red tourism destinations and, through an empirical study using fuzzy-set qualitative comparative analysis, examined how individual cognition, emotional experience and social interaction jointly shape tourists' national identity, thereby deepening understanding of the micro-mechanisms of the patriotic education function of red tourism [6]. Chen et al. (2014) found that tourists' overall evaluation of Jinggangshan was positive, but that perceived performance fell well short of expectations and satisfaction was low [7]. Xi and Hou (2023) applied IPA to four red memorial halls in Shanghai and found that the experience of revolutionary spirit and patriotic education required priority improvement [8]. He (2024), taking Hengnan County in Hunan as a case, identified county-level characteristics in which the evaluation of heritage displays was relatively high while the variety of souvenirs and the level of service were low [9]. Cui and Cui (2022) argued that, in addition to stronger promotion, the development and utilisation of red resources should be combined with local vernacular culture so as to create red tourism routes with local characteristics [10].

Research on red tourism in China started late but has developed rapidly: topics now cover

resource protection and development, the realisation of educational functions and the evaluation of tourist experience, and case sites have extended from well-known memorial halls such as Jinggangshan, Yan'an and Shanghai to county-level scenic areas. Nevertheless, two shortcomings remain. First, the distribution of case types is uneven: county-level old revolutionary base areas and free-admission high-grade scenic areas are mostly examined through single-case descriptions without cross-regional comparison, even though such areas are typically constrained by the absence of ticket revenue and by reliance on fiscal appropriations for operation and maintenance. Second, applications of IPA mostly stop at the ranking of means and are rarely combined with tests of differences between groups, while the countermeasures proposed tend to remain at the level of general principles.

Building on this literature, this paper applies importance–performance analysis (IPA) to evaluate the factors that shape red tourism development in terms of both importance and satisfaction, and combines it with tests of differences across tourist groups in order to derive more targeted recommendations.

3. Overview of red tourism resources in Donglan County

Donglan County lies in the north-west of Guangxi on the middle reaches of the Hongshui River and is the hometown of Wei Baqun. In the third national survey of revolutionary cultural relics, 45 revolutionary relic sites were registered in the county, including one site protected at the national level, five at the autonomous-region level and fifteen at the county level. The Donglan Red Tourism Area consists of four sub-areas — the Martyrs' Cemetery, Lenin Rock, Kuixing Tower and the former residence of Wei Baqun — whose protection status and basic conditions are summarised in Table 1. Donglan has established a spatial layout of "one core area leading, two corridors linking, county-wide coverage and red–green integration". The Wei Baqun Cadre College has passed the quality assessment of the Organisation Department of the CPC Central Committee and offers a standardised study-tour curriculum covering primary school pupils through to party cadres, with venues and interpretation services provided free of charge .

In addition, Donglan is known as the home of China's folk bronze-drum culture, the Hongshui River runs through the county for 115 km, and the county possesses ecological resources such as Pohao Lake National Wetland Park, forming a combination in which red and green elements overlap and red culture merges with folk customs.

Table 1. Main resources of the Donglan Red Tourism Area

Sub-area	Main carriers	Protection status and designation	Basic conditions
Martyrs' Cemetery	Donglan Martyrs' Cemetery; Wei Baqun Memorial Hall	National key protected site of martyrs' memorial buildings; national classic red tourism site	The memorial hall has a floor area of 11,700 m ²; eight thematic exhibition halls and more than 1,000 historical documents and objects
Lenin Rock	Former site of the Guangxi Peasant Movement Training Institute (Lenin Rock)	National key cultural relic protection unit; national classic red tourism site	Founded in 1925; 96 m ²of displays inside the cave, with the lecture platform and desks restored

Sub-area	Main carriers	Protection status and designation	Basic conditions
Kuixing Tower	Former site of the Front Committee of the Seventh Red Army (Kuixing Tower)	Autonomous-region-level key immovable revolutionary relic; national classic red tourism site	Site of the Front Committee meeting of 1930; four-storey in-situ display
Former residence of Wei Baqun	Former residence of Wei Baqun; family tombs; Dongli revolutionary exhibition room	Autonomous-region-level key cultural relic protection unit; national classic red tourism site	Dongli Common-Cultivation Cooperative study base built as a supporting facility

Source: compiled by the authors from materials provided by the Donglan County Culture, Radio, Television, Sports and Tourism Bureau.

4. Research methods

This section describes the questionnaire design and data collection, the reliability and validity tests, and the importance–performance analysis used in this study.

4.1 Questionnaire design and data collection

The questionnaire consists of three parts. The first records respondents' basic information, with five items: gender, age, education, political affiliation and occupation. The second records travel behaviour, including the number of visits, place of residence, mode of travel, information channels and composition of expenditure. The third is a measurement scale containing 43 observed indicators grouped into seven dimensions — red resources and educational experience, dining experience, accommodation experience, transport and infrastructure, tourism services and the consumption environment, tourism commodities and cultural-creative products, and cultural integration and overall atmosphere — each measured in terms of both importance and satisfaction (Table 2). A five-point Likert scale is used (1 = very dissatisfied or very unimportant, 5 = very satisfied or very important). The survey was administered online through the Wenjuanxing platform in September 2026; the link was distributed within the authors' personal and secondary social networks, and only visitors with experience of red tourism in Donglan County were retained as respondents, so as to confirm respondent identity and ensure the authenticity and reliability of the data. A total of 203 questionnaires were distributed and returned, all of which were valid.

Table 2. Evaluation index system of tourist experience in red tourism in Donglan County

First-level dimension	Content of second-level indicators
Red resources and educational experience (9 items)	A1–A9: integrity of site preservation, presentation of cultural relics, reconstruction of historical scenes, interpretation services, immersive programmes, study courses, knowledge of history, emotional resonance, influence on values
Dining experience (7 items)	B1–B7: dining hygiene, taste of dishes, reasonableness of prices, dining environment, variety of local cuisine, supply of red-themed dining, development of local cuisine
Accommodation experience (7 items)	C1–C7: accommodation hygiene, price, convenience, quality and grade, service responsiveness, supply of themed homestays,

First-level dimension	Content of second-level indicators
	creation of a red atmosphere
Transport and infrastructure (6 items)	D1–D6: external accessibility, inter-site connections, parking provision, public toilets, signage and wayfinding, smart tourism services
Tourism services and consumption environment (5 items)	E1–E5: visitor service centres, service attitude and professionalism, complaint handling, transparency of consumption prices, safety and security measures
Tourism commodities and cultural-creative products (5 items)	F1–F5: distinctiveness and creativity of cultural-creative products, variety of commodities, prices, commercialisation of agricultural specialities, bronze-drum and frog-deity themed products
Cultural integration and overall atmosphere (4 items)	G1–G4: integration of red and folk culture, themed events and festivals, overall red atmosphere, red–green integration and linkage

4.2 Reliability and validity tests

SPSS 27.0 was used for the reliability, validity and difference tests. Cronbach's α was 0.995 for the satisfaction scale and 0.996 for the importance scale, and exceeded 0.97 for all seven dimensions (Table 3). The KMO values of the two scales were 0.962 and 0.944 respectively, and Bartlett's tests of sphericity were highly significant ($p < 0.001$), indicating good reliability and construct validity.

Table 3. Results of the reliability test

Dimension	Cronbach's α, satisfaction scale	Cronbach's α, importance scale
Red resources and educational experience	0.982	0.988
Dining experience	0.981	0.982
Accommodation experience	0.984	0.982
Transport and infrastructure	0.977	0.986
Tourism services and consumption environment	0.982	0.981
Tourism commodities and cultural-creative products	0.978	0.978
Cultural integration and overall atmosphere	0.976	0.982
Overall scale (43 items)	0.995	0.996

4.3 Importance–performance analysis

IPA constructs a two-dimensional scatter plot with the importance of an indicator on the horizontal axis and its satisfaction on the vertical axis. The grand means of importance and satisfaction across all indicators define the dividing lines, which partition the plane into four quadrants: the "keep up the good work" quadrant (high importance, high satisfaction), where current performance should be maintained; the "possible overkill" quadrant (low importance, high satisfaction), where existing input is sufficient; the "concentrate here" quadrant (high importance, low satisfaction), where improvement should be prioritised; and the "low priority" quadrant (low importance, low satisfaction), which represents a medium- to long-term direction of cultivation (Martilla and James, 1977) [11].

5. Results

This section reports the characteristics of the sample and travel behaviour, the differences between perceived importance and perceived satisfaction, the IPA results, and the differences in experience across tourist groups.

5.1 Sample and travel behaviour characteristics

The survey yielded 203 valid responses. Respondents were mainly male (56.7%), aged 31–45 (49.8%), educated to bachelor's degree level or above (76.9%), and employed as civil servants or in public institutions (44.3%) or as enterprise employees (30.5%) (Table 4).

Table 4. Basic characteristics of the sample (N = 203)

Characteristic	Category	Number	Percentage (%)
Gender	Male	115	56.7
	Female	88	43.3
Age	Under 18	2	1.0
	18–30	43	21.1
	31–45	101	49.8
	46–60	54	26.6
	Over 60	3	1.5
Education	Junior secondary or below	1	0.5
	Senior secondary, vocational or technical	7	3.4
	College diploma	39	19.2
	Bachelor's degree	111	54.7
	Master's degree or above	45	22.2
Political affiliation	CPC member (including probationary)	91	44.8
	Communist Youth League member	20	9.9
	Non-affiliated	92	45.3
Occupation	Civil servant or public institution staff	90	44.3
	Enterprise employee	62	30.5
	Teacher or researcher	12	6.0
	Student	15	7.4
	Self-employed	14	6.9
	Retired	7	3.4
	Other	3	1.5

In terms of travel behaviour, 50.7% of respondents were first-time visitors and 38.4% had visited three times or more. Most lived in other cities within Guangxi (54.2%) or in Donglan itself (21.6%), while visitors from outside Guangxi accounted for only 7.9%. Self-driving (44.8%) and independent travel (27.1%) predominated, and per-capita expenditure was concentrated in the range of RMB 200–500 (41.9%) and below RMB 200 (25.6%).

As for information channels, short-video platforms were mentioned most often (62.1%), followed by recommendations from relatives, friends or colleagues (51.7%), organisation by work units or schools (30.0%) and traditional media (28.6%); online travel agency platforms accounted for only 11.8%. Travel purposes were diverse, with revolutionary tradition education and party-building activities (63.1%) and leisure sightseeing (54.2%) at the top. Expenditure was concentrated

on rigid items such as dining (83.3%), transport (68.0%) and accommodation (68.0%), whereas cultural-creative products (25.1%) and experience programmes or study courses (10.8%) accounted for small shares, indicating that a secondary consumption chain has not yet formed.

With regard to perception and evaluation, 88.7% of respondents considered the historical stories of Wei Baqun and other revolutionary forerunners to be the most distinctive feature of red tourism in Donglan. Among the aspects most in need of improvement, better transport accessibility and inter-site connections were mentioned most frequently (68.0%), followed by improved dining quality (42.9%), a larger supply of high-quality accommodation (34.0%) and richer immersive experience programmes (33.0%). In terms of overall satisfaction, "very satisfied" and "satisfied" together accounted for 90.7%; 91.2% of visitors expressed a clear intention to revisit the area and 96.1% were willing to recommend it to relatives and friends.

The structure of the sample broadly matches the actual visitor base of the scenic area: group tours account for 42% of visitors, 44.8% of respondents were Party members and 44.3% were civil servants or public institution staff, and visitors from within Guangxi totalled 75.9%, consistent with the judgement that the source market is predominantly regional. Online distribution raised the shares of younger and better-educated respondents, so the representativeness of older and less-educated groups is limited.

5.2 Differences between importance and satisfaction

Across the seven dimensions, mean importance ranged from 4.56 to 4.60 and mean satisfaction from 4.30 to 4.47. Except for red resources and educational experience, where the mean difference was 0.09 ($t = 2.13$, $p = 0.034$), the differences for the remaining six dimensions were no less than 0.20 and highly significant ($p < 0.001$). The largest gap was in transport and infrastructure (0.29), followed in descending order by tourism commodities and cultural-creative products (0.25), accommodation experience (0.24), tourism services and the consumption environment and cultural integration and overall atmosphere (0.23 each) and dining experience (0.20) (Table 5). Because dimension means may conceal divergence among the constituent indicators, all 43 indicators were then examined individually.

Table 5. Mean importance and satisfaction of each dimension and paired-samples t tests (N = 203)

Dimension	Mean importance	Mean satisfaction	Mean difference	p
Red resources and educational experience	4.56	4.47	0.09	0.034
Dining experience	4.57	4.37	0.20	0.000
Accommodation experience	4.57	4.33	0.24	0.000
Transport and infrastructure	4.59	4.30	0.29	0.000
Tourism services and consumption environment	4.60	4.37	0.23	0.000
Tourism commodities and cultural-creative products	4.58	4.33	0.25	0.000
Cultural integration and overall atmosphere	4.60	4.37	0.23	0.000

For the 43 indicators, mean importance ranged from 4.52 to 4.63 and mean satisfaction from 4.23 to 4.55. Importance exceeded satisfaction for every indicator, with differences of between 0.02 and 0.33, indicating that actual experience generally fell short of visitors' expectations. Paired-samples t tests showed significant differences at the 0.05 level for 38 indicators ($p < 0.05$); the five

non-significant indicators (A1, A2, A3, A8 and A9, $p > 0.05$) all belong to the dimension of red resources and educational experience, in which perceived importance and perceived satisfaction are essentially matched. The six largest mean differences were D6 smart tourism services (0.33), C1 hygiene conditions of accommodation (0.31), D1 external transport accessibility (0.30), D3 parking provision (0.30), D2 inter-site transport connections (0.29) and D4 number and hygiene of public toilets (0.29). Except for C1, all of these belong to transport and infrastructure, indicating that the reception service chain is where the shortfall is most concentrated (Table 6).

Table 6. Mean importance and satisfaction of the indicators and paired-samples t tests (N = 203)

Indicator	**Mean importance**	**Mean satisfaction**	**Mean difference**	**t**	**p**
A1 Integrity of preservation of revolutionary sites	4.57	4.54	0.02	0.52	0.601
A2 Presentation and attractiveness of cultural relics	4.56	4.47	0.09	1.94	0.053
A3 Authenticity of historical scene reconstruction	4.52	4.47	0.05	1.01	0.314
A4 Professionalism and vividness of interpretation	4.56	4.44	0.11	2.39	0.018
A5 Immersive experience programmes	4.54	4.39	0.15	2.83	0.005
A6 Study courses and educational activities	4.57	4.42	0.15	2.94	0.004
A7 Knowledge of Donglan's revolutionary history	4.56	4.46	0.09	2.13	0.034
A8 Degree of emotional resonance	4.60	4.52	0.07	1.67	0.096
A9 Influence on personal values	4.58	4.55	0.03	0.82	0.414
B1 Hygiene conditions of dining	4.56	4.36	0.19	4.11	0.000
B2 Taste and cooking quality of dishes	4.57	4.40	0.17	3.58	0.000
B3 Reasonableness of dining prices	4.58	4.36	0.22	4.10	0.000
B4 Dining environment and convenience	4.57	4.33	0.23	4.69	0.000
B5 Variety of local cuisine	4.59	4.37	0.22	4.47	0.000
B6 Supply and distinctiveness of red-themed dining	4.58	4.37	0.21	4.12	0.000
B7 Development and promotion of local cuisine	4.58	4.41	0.17	3.74	0.000
C1 Hygiene conditions of accommodation	4.58	4.28	0.31	6.34	0.000
C2 Reasonableness of accommodation prices	4.61	4.36	0.25	5.05	0.000
C3 Convenience of accommodation location	4.57	4.31	0.26	5.48	0.000
C4 Accommodation quality and grade	4.56	4.28	0.28	5.71	0.000

Indicator	Mean importance	Mean satisfaction	Mean difference	t	p
C5 Accommodation service and responsiveness	4.57	4.34	0.23	5.24	0.000
C6 Supply of red-themed homestays	4.56	4.39	0.16	3.64	0.000
C7 Creation of a red atmosphere in accommodation	4.56	4.34	0.22	4.47	0.000
D1 External transport accessibility	4.62	4.32	0.30	5.63	0.000
D2 Inter-site transport connections	4.60	4.31	0.29	5.34	0.000
D3 Parking provision	4.60	4.30	0.30	5.65	0.000
D4 Number and hygiene of public toilets	4.58	4.29	0.29	5.72	0.000
D5 Signage and wayfinding	4.57	4.33	0.23	5.17	0.000
D6 Smart tourism services	4.56	4.23	0.33	5.59	0.000
E1 Quality of visitor service centres	4.57	4.34	0.23	5.35	0.000
E2 Service attitude and professionalism	4.61	4.37	0.24	4.92	0.000
E3 Complaint and problem handling	4.61	4.36	0.25	5.21	0.000
E4 Transparency of consumption prices	4.61	4.38	0.23	5.21	0.000
E5 Safety and security measures	4.63	4.39	0.23	5.11	0.000
F1 Distinctiveness and creativity of cultural-creative products	4.56	4.33	0.23	4.39	0.000
F2 Variety of tourism commodities	4.57	4.31	0.26	5.16	0.000
F3 Reasonableness of prices of tourism commodities	4.58	4.32	0.26	5.48	0.000
F4 Commercialisation of agricultural specialities	4.61	4.37	0.23	4.94	0.000
F5 Bronze-drum and frog-deity themed cultural-creative products	4.58	4.33	0.25	4.98	0.000
G1 Integration of red and folk culture	4.61	4.36	0.24	5.24	0.000
G2 Themed events and festivals	4.60	4.37	0.23	4.80	0.000
G3 Overall red atmosphere	4.60	4.35	0.24	5.01	0.000
G4 Red–green integration and linkage	4.59	4.37	0.22	4.15	0.000

These gaps can be explained by expectancy disconfirmation theory. Visitors' expectations derive not only from promotion but also from the value presuppositions formed by revolutionary history education: for free-admission sites with an explicit public-welfare character, visitors tend to regard hygiene, transport and interpretation as public services that "ought to be provided" and to hold them to high standards, so that any shortfall in actual provision becomes conspicuous. Conversely, where the resource itself is irreplaceable, visitors evaluate the preservation of sites and the reconstruction of historical scenes in terms of authenticity rather than refinement, and expectations are therefore easily matched by perceptions; this is the deeper reason why the differences for A1–A3, A8 and A9 are not significant.

5.3 IPA of tourist experience factors

Taking the mean importance of the 43 indicators as the horizontal axis and mean satisfaction as the vertical axis, an IPA model was constructed. The grand means were 4.58 for importance and 4.37 for satisfaction, and the indicators were accordingly assigned to four quadrants (Figure 1): 8 in the keep-up quadrant, 9 in the possible-overkill quadrant, 11 in the concentrate-here quadrant and 15 in the low-priority quadrant.

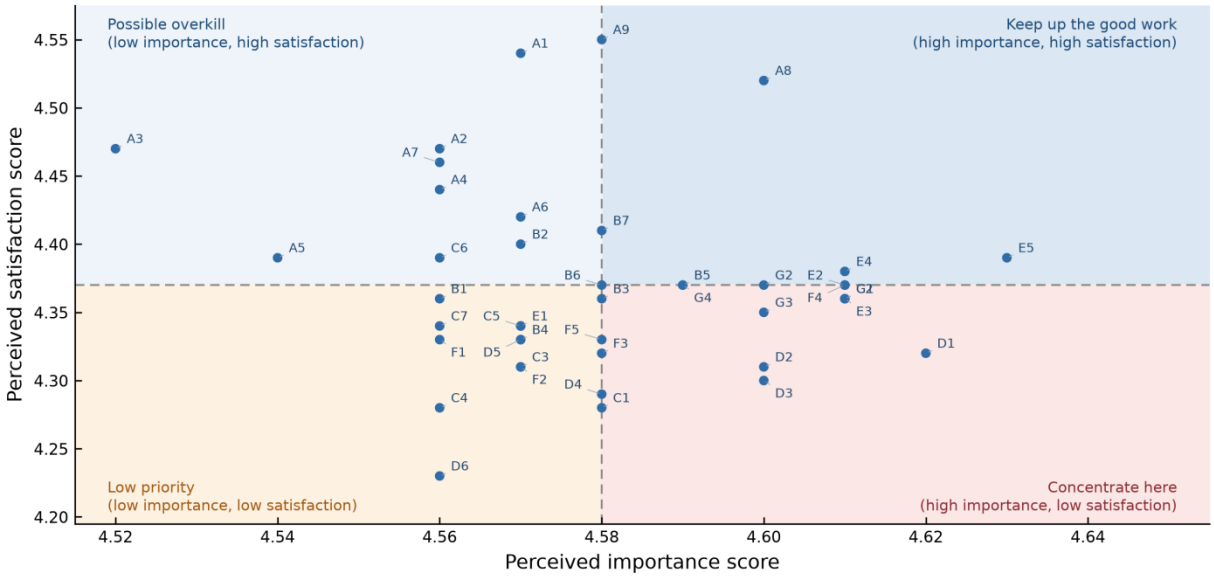

Figure 1. IPA quadrant diagram of tourist experience factors

Eight indicators fall in the keep-up quadrant: A8 emotional resonance, A9 influence on values, B6 supply and distinctiveness of red-themed dining, B7 development and promotion of local cuisine, E4 transparency of consumption prices, E5 safety and security measures, F4 commercialisation of agricultural specialities and G2 themed events and festivals. Satisfaction with emotional resonance and with influence on values reached 4.52 and 4.55 respectively, indicating that the educational experience has already become a recognised area of strength.

Nine indicators fall in the possible-overkill quadrant, concentrated in the red resources themselves (A1–A7) together with B2 taste and cooking quality of dishes and C6 supply of red-themed homestays. Importance in this quadrant is slightly below the mean while satisfaction is relatively high, reflecting the fact that resource protection, exhibition upgrading and the standardised interpretation system are already recognised and that current management and maintenance effort should be sustained.

Eleven indicators fall in the concentrate-here quadrant and constitute the most prominent weaknesses: two in accommodation experience (C1, C2), three in transport and infrastructure (D1, D2, D3), two in tourism services and the consumption environment (E2, E3), three in cultural integration and overall atmosphere (G1, G3, G4) and one in dining experience (B5). These indicators are highly valued by visitors but poorly rated, with mean differences of between 0.22 and 0.31, which is consistent with the descriptive results showing the strongest demand for transport improvement (68.0%) and with a pattern of expenditure dominated by rigid items and little spending on cultural-creative experiences.

Fifteen indicators fall in the low-priority quadrant: hygiene, prices and the environment of dining; convenience, quality, service responsiveness and red atmosphere in accommodation; public toilets, signage, smart tourism and visitor service centres; and all cultural-creative indicators other than

agricultural specialities (F1, F2, F3 and F5). Although smart tourism (D6, mean difference 0.33) and red cultural-creative products (F1) are not current core demands, they record the lowest satisfaction and are likely to become latent weaknesses as the visitor base becomes younger, so they warrant medium- to long-term cultivation.

It should be noted that the mean importance of the 43 indicators varies only slightly, so that quadrant assignment is sensitive to the position of the dividing lines; paired tests at the dimension level are therefore used here for cross-validation.

5.4 Differences in experience across tourist groups

Independent-samples t tests showed that male visitors rated satisfaction significantly higher than female visitors in five dimensions: red resources and educational experience ($t = 2.77$, $p = 0.006$), dining experience ($t = 2.39$, $p = 0.018$), accommodation experience ($t = 2.04$, $p = 0.043$), transport and infrastructure ($t = 2.14$, $p = 0.033$) and cultural integration and overall atmosphere ($t = 2.18$, $p = 0.031$); no significant gender differences were found for tourism services and the consumption environment or for tourism commodities and cultural-creative products. Importance ratings did not differ significantly by gender in any of the seven dimensions. Analysis of variance showed no significant differences across the seven dimensions by age, education or political affiliation. Occupation had a significant effect only on satisfaction with cultural integration and overall atmosphere ($F = 2.496$, $p = 0.024$), but the subgroups of teachers and students were small (7–15 respondents) and the result should therefore be interpreted with caution. Perceptions of the importance of the various elements were highly consistent across groups, which allows provision to be planned uniformly; however, women's systematically lower evaluation of reception-related services deserves attention in service improvement.

Women's lower ratings may relate to greater sensitivity to reception details: female visitors travel mainly by car or independently and hold more detailed expectations of hygiene, service attitude and a sense of safety, which are precisely the aspects in which accommodation, dining and toilets are currently weak. Because no information on the interaction between gender and touchpoints was collected, this explanation remains conjectural. Occupational differences are also affected by sample structure and should not be treated as a conclusion.

6. Conclusions and recommendations

This section summarises the main findings of the survey and the IPA model; targeted countermeasures are then proposed in Section 6.2.

6.1 Conclusions

This paper applied IPA to an empirical analysis of 43 indicators of red tourism in Donglan County and reached the following conclusions.

Overall satisfaction reached 90.7%, and intentions to revisit and to recommend the area were 91.2% and 96.1% respectively, indicating a sound market base. However, mean importance exceeded mean satisfaction for all 43 indicators, with significant differences for 38 of them: supply has not yet met expectations. The most highly rated aspects concern the red educational experience: 88.7% of visitors regarded the historical stories of Wei Baqun and other forerunners as the most distinctive feature of Donglan, and 79.8% attributed this to the inspirational power of these figures.

The distribution of indicators across the IPA quadrants shows a clear polarisation of strengths and weaknesses. The keep-up quadrant is dominated by emotional resonance, price transparency, safety and security, themed dining and festival events; the possible-overkill quadrant covers

resource-related aspects such as site preservation, exhibitions and interpretation; the 11 indicators in the concentrate-here quadrant are concentrated in reception links — accommodation, transport, services and red–green integration — and are the direct cause of the weaker overall experience; and the 15 indicators in the low-priority quadrant are mainly cultural-creative products and smart tourism, which have medium- to long-term value.

The findings echo and extend previous studies of tourist satisfaction in red tourism. Consistent with Chen et al. (2014) [7] and Xi and Hou (2023) [8], perceived performance again falls short of visitor expectations, and the educational experience is confirmed as the core strength of a red tourism destination. Different from these site-level studies, however, this paper evaluates an entire county-level scenic area composed of four sub-areas, combines IPA with tests of differences across tourist groups, and shows that in a free-admission area financed mainly by fiscal appropriations the weakest links lie in reception services rather than in the red resources themselves. Theoretically, the results support the applicability of expectancy disconfirmation theory to public-welfare red tourism; practically, the four-quadrant division offers the local government a basis for phasing investment and allocating scarce fiscal resources.

Several limitations should be acknowledged. The questionnaire was distributed online through convenience sampling, so older and less-educated visitors are under-represented and the results should be generalised with care; the cross-sectional design records expectations and evaluations at a single point in time; and the interpretation of gender differences remains conjectural because interactions between gender and specific touchpoints were not measured. Future research could combine on-site intercept surveys with longitudinal tracking, introduce qualitative interviews to explain the mechanisms behind the IPA quadrants, and conduct comparative studies across counties with similar resource endowments.

6.2 Recommendations

In line with the IPA results, recommendations are put forward in four areas, moving from consolidating existing strengths to maintaining current performance, targeting reception weaknesses and cultivating future opportunities.

6.2.1 Consolidating advantageous experiences and amplifying educational appeal

The immersive educational experience centred on the spirit of Wei Baqun should be further strengthened, and the supply of emotional resonance and value-related elements maintained. Elements that have already won recognition — red-themed dining, local cuisine and bronze-drum and frog-deity folk festivals — should be put to good use, with prices and safety and security kept stable, and agricultural specialities such as black glutinous rice, chestnuts and camellia oil should be linked to tourism commodities. Using the Wei Baqun Cadre College and its study courses as a pivot, the share of the party spirit education and study-tour market can be expanded, so that red education becomes the most distinctive cultural and tourism brand of Donglan.

6.2.2 Maintaining management effort and optimising the input structure

For elements that are already rated satisfactorily — site preservation, the attractiveness of exhibitions, the reconstruction of historical scenes and interpretation services — routine management and maintenance should remain the main approach, without blind additional large-scale funding. The achievements of the memorial hall in upgrading its exhibitions should be consolidated and the training mechanism for interpreters maintained, so that the fiscal resources thus saved can be redirected to the indicators in the concentrate-here quadrant.

6.2.3 Targeting reception weaknesses and concentrating on the improvement quadrant

The 11 indicators in the concentrate-here quadrant should be the focus of effort at the present stage. First, the upgrading of tourism roads and the construction of connecting routes between sub-areas should be accelerated and parking facilities improved, in response to the transport demands of 68.0% of visitors. Second, shortcomings in the hygiene, price and quality of accommodation should be addressed in conjunction with the study-tour bases, and red-themed homestays developed. Third, training for service staff and the building of a volunteer interpretation team should be strengthened, and complaint channels kept open. Fourth, the integration of red with green resources and with folk culture should be deepened, embedding bronze-drum culture, frog-deity folk customs and ecological landscapes in the visitor route. These measures connect with the "one core area, two corridors" layout and can be implemented in phases within fiscal constraints.

6.2.4 Cultivating emerging business forms and expanding value-added space

Cultural-creative products and smart tourism should be cultivated over the medium and long term. Cultural-creative development should be launched on the basis of bronze-drum and frog-deity folk culture and the Wei Baqun intellectual property, with exhibition and sales channels established so as to close the gap in cultural-creative revenue. Smart services such as online booking, audio guides and virtual exhibition halls should be improved and connected to the "one-click tour of Guangxi" platform, and details such as public toilets and signage upgraded. As the visitor base becomes younger, the importance of these elements will rise, and provision should therefore be made in advance.

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