Skill Demand and Wage Value in the Tourism Industry: An Empirical Analysis Based on Recruitment Texts

Chuyao Wen, Ying He

Zhuhai City Polytechnic, Zhuhai, Guangdong, China

Abstract: *This study systematically analyzes the relationship between skill demand structure and salary value, utilizing a five-dimensional employability framework based on 2,345 entry-level job postings in the tourism industry. The findings reveal that social/communication skills and personal attributes are the most commonly demanded competencies but show negligible or even negative marginal returns in terms of wages. In contrast, less frequently required competencies—such as learning ability and cognitive skills—demonstrate significantly higher wage premiums. The study identifies a "scarcity premium" pattern in the tourism labor market: the market value of a skill is not determined by its demand frequency, but rather by its scarcity, development difficulty, and transferability. These findings offer valuable implications for tourism talent cultivation, student career planning, and enterprise compensation design.*

Keywords: Tourism industry, Employability, Five-dimensional framework, Skill demand, Wage value, Scarcity premium.

1. Introduction

Amid China's transition toward high-quality development and industrial upgrading, the quality and structural alignment of tourism talent supply has become a growing policy concern. The Outline of the 15th Five-Year Plan (Central Committee of the CPC, 2025) explicitly calls for "building China into a leading tourism nation, expanding high-quality tourism product supply, and improving service quality." In tandem, national strategies emphasize promoting high-quality, full employment by improving labor supply-demand matching mechanisms and addressing structural mismatches in the labor market. The 14th Five-Year Plan for Tourism Development (State Council, 2021) further proposes establishing a modern tourism talent system by enhancing skill supply and occupational competence under new technologies and business models. Against this backdrop, clarifying the capability structure required for tourism graduates from an industry perspective has become a practical imperative for aligning education with labor market demands.

The tourism sector is experiencing notable skill mismatches and capability restructuring. While a large number of basic service positions continue to emerge, the supply of high-caliber, interdisciplinary talent remains insufficient. Enterprises increasingly favor "applied and hybrid" professionals with both specialized knowledge and general competencies—such as marketing, communication, service management, and data analytics (Pan, 2015; Zhang, 2014). With the acceleration of cultural-tourism integration and smart tourism development, digital operations, platform marketing, and social media strategy have become core functions. Accordingly, digital literacy, systems thinking, and cross-disciplinary abilities are emerging as key drivers of job competitiveness (Zhan & Wei, 2023; Zhao, 2025). However, industry attractiveness and talent supply remain misaligned. Li et al. (2024) reveal that many tourism students perceive entry-level positions as "low-skilled, low-paid, and low-status," which weakens job intentions and exacerbates talent outflow. From both supply and demand perspectives, the tourism labor market is undergoing a transition from "high expectations" to "low alignment," posing greater challenges to tourism education and talent development.

To date, research on the employability of tourism management graduates can be broadly categorized into three perspectives: student self-assessment, industry practice, and curriculum reform. First, many studies have used student surveys to evaluate self-perceived employability or applied models such as USEM to assess internship satisfaction and capability growth (Yang et al., 2024). Second, industry-based studies have drawn on practitioner experience to build skill frameworks—for example, Zhang and Liu (2015) constructed a five-dimensional competence model for hotel staff, while Wang et al. (2019) extracted employability traits from interviews with senior executives. Third, educational researchers have focused on redesigning curricula under the OBE (Outcome-Based Education) approach, highlighting practical orientation and modularized skill development (Li & Liu, 2024; Zhao, 2025). While these studies offer valuable insights into the concept of employability, they remain largely grounded in subjective perception or supply-side evaluations. Few have built objective portraits based on firm-level hiring data, and even fewer have systematically examined the relationship between skill configurations and market value (e.g., salary outcomes). This constitutes a critical research gap that must be addressed to enhance alignment between graduate profiles and labor market expectations.

In response to these gaps and guided by relevant policies, this study focuses on firm-side skill demand in the tourism sector. Drawing on recruitment text mining methods, we construct a five-dimensional employability framework—comprising professional skills, social communication skills, cognitive skills, learning ability, and personal attributes. Using 2,345 entry-level job postings, we identify and quantify both the demand frequency and wage premium of each skill dimension, thereby empirically revealing the "scarcity–value" mechanism underlying skill pricing in the tourism labor market. Compared to prior studies that emphasize demand distribution alone, this study links skill configurations with salary levels to uncover how labor supply-demand dynamics

influence market valuation. The findings contribute to refining tourism education models, guiding curriculum reform, and informing firm-level HR decision-making.

Specifically, we address two core research questions:

RQ1: Which skills are most frequently required in tourism job postings?

RQ2: Which skills yield the highest wage premiums?

2. Literature Review

Employability, defined as the essential competence enabling graduates to adapt to the labor market, has evolved from the early triadic model of "knowledge–skills–attitudes" into a multi-dimensional framework encompassing professional expertise, transferable skills, learning capability, and personal attributes (Knight & Yorke, 2004; Dacre Pool & Sewell, 2007). Building upon classical models and incorporating the job characteristics of the tourism sector, this study utilizes a five-dimensional capability structure for its analysis.

2.1 Construction of the Five-Dimensional Employability Framework

Employability research primarily focuses on the sustainable competitiveness of graduates in a dynamic labor environment. Theoretical models have expanded beyond traditional constructs to include emotional intelligence, social capital, and metacognitive skills. The USEM model proposed by Knight and Yorke (2004) highlights the interaction among Subject Understanding, Skilful Practices, Efficacy Beliefs, and Metacognition. Similarly, the CareerEDGE model developed by Dacre Pool and Sewell (2007) integrates academic knowledge, generic skills, emotional intelligence, work-based learning, and career development, centering on the core constructs of self-efficacy, self-esteem, and self-confidence.

In the Chinese context, Wang and Lu (2023) established a five-dimensional employability structure—professional competence, social ability, cognitive skills, learning ability, and personal traits—based on a corpus of over 12,000 recruitment postings, and validated its applicability among higher vocational graduates.

Sector-specific studies in tourism further demonstrate the contextual relevance of this five-dimensional model. Wang et al. (2019), through interviews with senior managers in tourism and hospitality enterprises, distilled four key competencies: learning ability, professional ethics, personal traits, and adaptability. Zhang and Liu (2015), using survey data from five star-rated hotels, developed a competency framework comprising job-related emotions, service skills, and self-development. Yang et al. (2024) applied the USEM model to evaluate internship satisfaction among tourism students and found that metacognitive awareness and skill alignment significantly influenced perceived outcomes. Meanwhile, Li and Liu (2024), drawing on Outcome-Based Education (OBE) principles, proposed a backward design of tourism curricula rooted in job task analysis and capability modules.

In summary, this study adopts a five-dimensional analytical structure — professional skills, social communication skills, cognitive skills, learning ability, and personal attributes — grounded in both theoretical models and empirical evidence from the tourism industry, providing a robust foundation for the subsequent empirical investigation (Wang and Lu, 2023).

2.2 Research on Employability in the Tourism Industry

Existing studies on the employability of tourism management graduates mainly adopt two perspectives: educational supply and student perception, with limited attention given to employer-oriented competency structures. This asymmetry has led to evaluations that remain largely subjective and insufficiently aligned with actual job requirements.

On the one hand, research from the student and educator perspective focuses on perceived employability structures and curriculum alignment. Wang et al. (2019), through interviews with senior executives in the industry, highlighted the importance of learning ability, professional ethics, personality traits, and adaptability. Yang et al. (2024) applied the USEM model and Importance–Performance Analysis (IPA) to identify gaps between students' internship expectations and perceived gains. Li and Liu (2024) restructured the curriculum framework under the OBE approach, emphasizing the integration of competency chains with outcome orientation.

Recent research has also turned to the structural mismatch between education and industry needs. Yu (2023) noted that vocational programs often fail to align with actual job competencies, particularly in the cultivation of practical and service-related skills. Jin (2023) further revealed discontinuities in articulation between secondary and tertiary tourism programs, especially in core competencies such as product design and general skills. From the perspective of student psychology, Li et al. (2023) identified a pathway of "low social recognition — declining job attractiveness — weakened career intention," reflecting a misalignment between educational output and occupational expectations.

On the other hand, studies from the employer perspective remain scarce. Zhao (2025) proposed a "knowledge–skills–disposition" model grounded in the OBE philosophy, aligning curriculum objectives with industry demands, yet without assessing the market value of these competencies.

In summary, current research on employability in tourism covers perceived evaluation, curriculum reform, and preliminary competency modeling, but still centers on subjective perspectives from the educational side. There is a notable lack of objective, recruitment-based data analyses, especially regarding the linkage between job skills and wage returns. This study addresses that gap by using real recruitment data to systematically identify the skill requirements of tourism jobs and explore their relationship with compensation outcomes.

2.3 Skill Structure and Wage Returns

Human Capital Theory posits that workers' knowledge and skills are core determinants of productivity and wage levels

(Hanushek et al., 2015). Skills encompass not only cognitive abilities and vocational qualifications but also non-cognitive traits such as communication and teamwork, all of which can translate into higher labor returns by improving work efficiency (Edin et al., 2022). Recent international studies have emphasized three main themes: the skill premium driven by technological change (Hanushek et al., 2015), the rising return to non-cognitive skills (Edin et al., 2022), and the wage effects of education–job matching (Cnossen et al., 2023).

Chinese studies likewise show an increasing market value of skills. Liu and Li (2022) found that between 1995 and 2013, the wage ratio between highly educated and less educated workers rose from 1.29 to 1.76, indicating a growing premium for high-skill labor. Du et al. (2017) further argued that even after controlling for education, variations in job tasks significantly affect earnings, highlighting the need for a human capital system aligned with skill demand. Other research has shown that digitalization and artificial intelligence are widening the wage gap between high- and low-skilled workers (Zhu & Li, 2018; Chao & Zhou, 2021).

The tourism and service industries are typically characterized as "low-wage sectors" due to their labor-intensive nature and low skill thresholds. Dogru et al. (2019) noted that employees in the hospitality and leisure industries represent some of the lowest-paid groups in the U.S. Conversely, Lin (2025) found that upgrading the tourism sector can enhance both income and social status. Which skills within the tourism sector yield higher wage returns remains an open question warranting systematic empirical investigation.

3. Research Methodology

3.1 Data Sources and Sample Characteristics

The data for this study were collected from major Chinese online recruitment platforms, including Zhaopin.com, 51job.com, and Boss Zhipin. Using Python-based web scraping techniques, job postings were retrieved based on keywords such as "tour guide," "interpreter/docent," "study tour mentor," "tourism interpretation," "cultural explanation," "tourism itinerary planner," "tourism route designer," "tourism ground handling," "tourism pricing," "ticketing management," "scenic spot operation," "tourist center," "tourism e-commerce," and "tourism OTA operation." The initial dataset contained 4,521 job records. After data cleaning and screening, a final sample of 2,345 valid postings was retained. The selection criteria included: (1) job descriptions containing more than 50 characters; (2) clearly stated monthly salary information; (3) work experience requirement of three years or less (entry-level positions); and (4) The job category must be clearly classifiable as tour guiding, operations, management, customer service, or itinerary planning within the tourism sector.

The sample covered first-tier cities (Beijing, Shanghai, Guangzhou, Shenzhen), new first-tier cities (e.g., Chengdu, Hangzhou, Xi'an), and selected second-tier cities. Employer sizes ranged from micro-enterprises with fewer than 20 employees to large firms with over 500 staff. Monthly salaries ranged from CNY 3,000 to CNY 15,000, with an average of CNY 8,051 (SD = 2,347) and a median of CNY 7,000. In terms of job categories, tour guide positions were the most prevalent (53.9%, N = 1,264), followed by operations (24.8%, N = 581), management (17.4%, N = 407), customer service (2.5%, N = 58), and itinerary planning (1.5%, N = 35).

3.2 Skill Identification and Five-Dimension Classification

This study adopts a mixed method of text mining and content analysis to extract skill-related keywords from job descriptions. First, Chinese word segmentation and word frequency analysis were conducted across all job descriptions to identify high-frequency capability terms. Second, referencing the five-dimensional model by Wang et al. (2023) and relevant research in the tourism sector, a manual screening and synonym consolidation process was performed on the raw data. This ultimately resulted in a five-dimensional skill lexicon comprising 105 distinct skill terms.

The five dimensions are as follows: Professional Skills (23 terms, e.g., "tourism product," "tour guide license," "client resources"); Social/Communication Skills (20 terms, e.g., "communication ability," "teamwork," "service awareness"); Cognitive/Analytical Skills (24 terms, e.g., "data analysis," "office software," "operations management"); Learning Ability (13 terms, e.g., "learning ability," "adaptability," "self-motivation"); Personal Attributes (25 terms, e.g., "sense of responsibility," "enthusiasm," "stress tolerance")

Each job posting was then annotated for its skill demand structure based on keyword matching. If at least one skill term from a given dimension appeared in the job description, the position was considered to have a demand for that dimension. Additionally, the study recorded the frequency and proportion of each skill term across all job postings to quantify their market prevalence.

3.3 Data Analysis Methods

This study conducts analysis from two perspectives: skill demand frequency and salary value. For the demand frequency analysis, the prevalence of the five capability dimensions in entry-level positions was calculated. Descriptive statistics and cross-tabulations were used to examine differences in skill emphasis across job categories.

For the salary value analysis, independent sample t-tests were employed to compare the average salaries between two groups—positions that require a specific capability and those that do not—in order to assess the marginal contribution of each dimension and specific skill to salary. All analyses were conducted using Python (utilizing packages such as pandas and scipy). The level of significance was set at a=0.05.

4. Analysis Results

4.1 Five-Dimensional Skill Demand Structure in Entry-Level Tourism Positions

Table 1 presents the distribution of the five skill dimensions across 2,345 entry-level tourism job postings. The results show that social/communication skills are the most frequently required, explicitly mentioned in 71.5% of the positions (N = 1,676), followed by personal attributes (57.8%, N = 1,355),

cognitive/analytical skills (42.1%, N = 988), professional skills (30.4%, N = 712), and learning ability (16.8%, N = 393). This descending order of demand—social, personal, cognitive, professional, and learning—closely aligns with the high-contact, service-oriented nature of the tourism industry.

Table 1: Distribution of Skill Demand Across the Five Dimensions

Dimension	Job Demand (N)	Demand Rate (%)	Mean Number of Skills	Rank
Social and Communication Skills	1,676	71.5	2.4	1
personal attributes	1,355	57.8	2.2	2
cognitive/analytical skills	988	42.1	1.8	3
professional skills	712	30.4	1.4	4
Learning Ability	393	16.8	1.2	5

A further breakdown of high-frequency skills within each dimension reveals that, under social/communication skills, "communication ability" (27.4%), "service awareness" (19.8%), and "verbal expression" (19.5%) are the top three, highlighting employers' strong emphasis on front-line interaction and customer relationship management. For personal attributes, "sense of responsibility" (25.3%), "enthusiasm for the job" (22.4%), and "passion" (11.6%) are most prominent, reflecting the industry's high expectations for professional attitude and emotional stability. In the cognitive/analytical dimension, "data analysis" (16.4%), "office software proficiency" (13.0%), and "operations management" (9.2%) rank highest, indicating a growing demand for higher-order thinking skills in response to digital transformation in the industry. It is worth noting that professional and learning skills appear less frequently and show greater internal variation, suggesting that entry-level roles may place relatively lower emphasis on these two dimensions compared to soft skills.

Across job categories, tour guide positions show significantly higher demand for social/communication skills (74.8%) and

personal attributes (57.2%) than other roles, while operations positions stand out in requiring cognitive/analytical skills (74.2%). Customer service roles place the greatest emphasis on social/communication skills (89.7%), whereas itinerary planning roles show strong demand for both professional skills (51.4%) and personal attributes (94.3%). These variations suggest that while the tourism sector overall prioritizes service and interpersonal communication, different job types exhibit distinct competency profiles across the five dimensions.

4.2 Wage Value of the Five-Dimension Skill Framework

Although social/communication skills and personal attributes dominate in terms of demand frequency, their contributions to wage outcomes present a strikingly different picture. Table 2 shows the marginal effects of the five skill dimensions on salary levels. Results indicate that learning ability is associated with the highest positive wage premium: positions requiring learning skills offer an average monthly salary 547 CNY higher than those without such requirements (CNY 8,505 vs. CNY 7,958), although this difference did not reach the level of statistical significance (t=1.72, p>0.05). Similarly, cognitive/analytical skills demonstrated a positive, albeit modest, contribution (+178 CNY), which was also not significant (t=0.74, p>0.05).

In contrast, social/communication skills and professional skills were negatively associated with salary (-206 CNY and -217CNY, respectively), meaning that positions requiring these skills offered, on average, lower pay than those that did not. However, these differences were also not statistically significant. Notably, the only dimension with a statistically significant effect was personal attributes: positions that specified personal attributes as a requirement offered an average monthly salary 597 CNY lower than those that did not (CNY 7,806 vs. CNY 8,404, t=-2.46$, p<0.05$).

Table 2: Marginal Wage Contributions of the Five Skill Dimensions

Value Rank	Dimension	Salary (Dimension Required)	Salary (Dimension Not Required)	Wage Differential	t value	p value	Significance
1	Learning Ability	8,505	7,958	547	1.72	0.086	n.s.
2	Cognitive/Analytical Skills	8,154	7,975	178	0.74	0.459	n.s.
3	Social and Communication Skills	7,994	8,200	-206	-0.77	0.441	n.s.
4	Professional Skills	7,900	8,118	-217	-0.84	0.401	n.s.
5	Personal Attributes	7,806	8,404	-597	-2.46	0.014	*

Notes: ***p < 0.001, **p < 0.01, *p < 0.05. n.s.=not significant.

This result highlights a key phenomenon in the tourism labor market: the most frequently demanded capabilities (social/communication skills and personal attributes) do not correspond to higher wage returns, whereas the less frequently required capabilities (learning ability and cognitive/analytical skills) demonstrate the potential for greater salary increments. We refer to this pattern as the "scarcity premium": the wage value of a skill is not determined by its market demand frequency, but rather by its relative scarcity and substitutability. Although social/communication skills and personal attributes are widely requested, their high prevalence and low entry barriers limit their marginal contribution to wage determination. Conversely, learning ability and cognitive/analytical skills, despite their lower demand rate, command a higher premium

in the labor market due to their greater cultivation difficulty and strong transferability.

4.3 Ranking of Skills by Salary Premium

To further validate the "scarcity premium" pattern, Table 3 presents the top 30 skills with the highest salary increments (Top 10 shown). The top five skills are: project management (+4,450 RMB), client resources (+3,690 RMB), customer relationship (+2,597 RMB), operations management (+2,475 RMB), and integrity (+2,328 RMB). These skills are relatively rare in job postings (appearing in only 1% to 10% of listings), yet they yield significantly higher salary premiums compared to high-frequency skills.

Table 3: Top 10 High-Value Skills

Rank	Skill Term	Wage Increment (CNY)	Frequency (N)	Proportion (%)	Dimension
1	Project Management	4,450	45	1.9	Cognitive/Analytical Skills
2	Client Resources	3,690	119	5.1	Professional Skills
3	Customer Relationships	2,597	188	8	Social and Communication Skills
4	Operations Management	2,475	215	9.2	Cognitive/Analytical Skills
5	Integrity	2,328	42	1.8	Personal Attributes
6	Relationship Maintenance	2,178	51	2.2	Social and Communication Skills
7	Optimism and Positivity	1,875	38	1.6	Personal Attributes
8	Channel Resources	1,781	14	0.6	Professional Skills
9	Proactiveness	1,708	27	1.2	Personal Attributes
10	Visa Processing	1,532	37	1.6	Professional Skills

Taking project management as an example, only 1.9% of positions (N=45) explicitly required this skill; yet, the average salary for roles demanding project management reached CNY 12,433, which was CNY 4,450 higher than those not requiring it. In contrast, the frequency of communication skills was high at 27.4% (N=643), but its salary increment was only +CNY 856. Sense of responsibility, with an occurrence frequency of 25.3% (N=594), was associated with a negative salary effect (–CNY 312), meaning that the average salary for positions requiring this trait was actually lower.
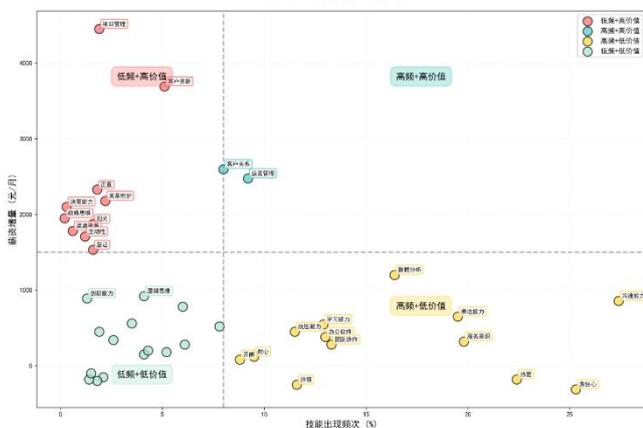

Figure 1: Skill Value Matrix

As shown in Figure 1, the "Skill Value Matrix" plots 105 skills by frequency (x-axis) and salary premium (y-axis), forming four quadrants: the top-right contains "high-demand, high-value" skills (e.g., client resources, operations management); the top-left includes "scarce but valuable" skills (e.g., project management, integrity); the bottom-right comprises "basic threshold" skills (e.g., communication, responsibility); and the bottom-left reflects "low-demand, low-value" skills (mainly niche technical abilities). This matrix illustrates a clear pattern in skill pricing logic within the tourism labor market: market value is driven more by scarcity than by prevalence. High-frequency skills serve as essential entry-level qualifications but offer limited salary returns due to abundant supply, whereas low-frequency, high-value skills act as key drivers of wage growth due to

their scarcity and higher acquisition barriers.

5. Discussion and Conclusion

5.1 Key Findings

This study analyzed 2,345 entry-level job postings in the tourism industry using a five-dimensional employability framework to examine the structure of skill demands and their relationship with salary levels. Findings indicate that social/communication skills and personal attributes are the most frequently required capabilities in tourism positions; however, their marginal impact on salary is either negative or statistically insignificant. In contrast, learning ability and cognitive/analytical skills—though less frequently demanded — demonstrate significantly higher salary premiums. This "scarcity premium" pattern suggests that the market value of a skill is not determined by its demand frequency but is closely associated with its acquisition difficulty, substitutability, and transferability.

Further analysis reveals that specific skills such as project management, client resources, and data analysis, despite their low occurrence rate in recruitment texts, are associated with salaries significantly above the industry average, reflecting a "high-value, low-prevalence" skill structure. Conversely, high-frequency soft skills like communication ability and sense of responsibility serve as entry-level thresholds but offer limited wage premium due to sufficient supply and low differentiation. The Skill Value Matrix further confirms the structural divergence in the skill valuation of tourism positions.

5.2 Theoretical Contributions

This study introduces the concept of "scarcity premium" within the context of tourism recruitment, expanding the value dimension in employability research. By leveraging real-world recruitment data rather than subjective evaluations from the education sector, it empirically identifies the skill composition demanded by employers and reveals how this structure relates to salary setting—addressing the long-standing question of "which skills matter most" and "which are most valued."

Additionally, this paper validates the applicability of the five-dimensional employability model (Wang et al., 2023) within the tourism industry. It proposes transferability, cultivation difficulty, and market supply-demand dynamics as key mechanisms for explaining skill value differentials, thereby offering new empirical evidence and analytical frameworks to human capital theory and vocational education research.

5.3 Practical Implications

For higher education institutions, there is a need to move beyond the traditional focus on communication and service training and instead integrate modules that develop cognitive and learning capabilities, such as data analysis, project management, and operational planning. Collaborative training and industry partnerships should be expanded to help students transition from basic employment to high-quality

employment.

For job seekers, while soft skills remain necessary entry qualifications, emphasis should be placed on acquiring scarce and high-value competencies—such as operations management, cross-functional collaboration, and data tool proficiency—to improve their bargaining power and upward mobility in the labor market.

For tourism enterprises, the findings call for a restructuring of recruitment criteria and compensation systems. Firms should incorporate both "skill breadth" and "skill depth" into job valuation models and optimize their hiring content and evaluation mechanisms to better identify and attract high-potential talent.

5.4 Limitations and Future Research

This study has several limitations. First, the sample is limited to entry-level positions and does not reflect the skill structures of mid- or senior-level roles, which may present different demand patterns. Second, job postings were collected from only three mainstream recruitment platforms over a limited timeframe, which constrains the representativeness of the data. Additionally, while keyword analysis can capture explicit demand signals, it falls short in interpreting implicit competencies or contextual meaning.

Future studies should expand data collection across multiple job levels, platforms, and time periods. Incorporating semantic analysis and deep learning approaches could also enhance the precision and depth of skill recognition in recruitment data.

Funding

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