




## Developing a core competency model for hospitality management education: An innovation-driven approach in China

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### ABSTRACT

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This study aims to develop a core competency model for hospitality management education in China, emphasizing an innovation-driven approach to align vocational curricula with the hospitality industry's evolving demands, driven by technological advancements and cultural tourism growth. A literature review identified 47 indicators, refined to 30 through a Delphi process involving 10 experts, including academics and industry professionals. Data from 300 people, including students, teachers, and hotel managers from six different vocational colleges across Jiangsu, Anhui, and Henan. An exploratory factor analysis (EFA) was used revealing six key dimensions: career foundation skills, digital technology application, operations management and leadership, professional ethics and compliance, cultural service capabilities, and lifelong learning and career development. This model integrates technical, managerial, and cultural competencies, adapts to industry innovation trends, and serves as a reference framework for Chinese hospitality management education explaining 88.096% of the variance. It informs curriculum reforms, incorporating digital tools and cross-cultural training, enhancing graduate employability and vocational education quality. The model fosters workforce resilience and economic growth by bridging the education-industry gap applicable across Asia-Pacific vocational contexts.

**Contribution/Originality:** This study pioneers an innovation-driven core competency model for Chinese hospitality management education. Unlike prior service-focused frameworks, it integrates innovation-driven productivity into a validated competency model, integrating technical, managerial, and cultural dimensions. Thus, it provides an expandable reference for vocational curriculum reform in the Asia-Pacific region.

### 1. INTRODUCTION

The hospitality industry is important for China's economy, especially with more tourists visiting and people's tastes changing over time (Zeng & Ryan, 2012). Advancements in technology, like online booking systems, and increasing demand for personalized service are changing what skills professionals need to succeed (Buhalis & Law, 2008). Vocational education should focus on helping students develop skills that go beyond simple tasks. It should encourage innovation so that graduates are ready for today's industry needs and can help move society forward. This change emphasizes how important it is to have a strong educational system built on fresh and innovative ideas.

There is not much research out there on competency models for hospitality management education in China. Existing studies often focus on generic skills, such as communication and leadership (Tesone & Ricci, 2006). They rarely address how innovation drives social and industry progress or empirically validate models for specific educational contexts. For instance, Suh, West, and Shin (2012) identified service-oriented competencies, their

framework lacks an innovation focus, limiting its relevance to modern demands. This gap makes it harder to match what students learn with what the industry needs as it keeps changing.

This study seeks to address this shortfall by developing and validating a core competency model for hospitality management education in China. It explores the question: What key dimensions define core competencies in this field from an innovation-driven educational perspective? We used a mix of a literature review, the Delphi method, and exploratory factor analysis (EFA) on data from 300 stakeholders to develop a model that's focused on vocational needs.

By identifying six dimensions—career foundation skills, digital technology application, operations management and leadership, professional ethics and compliance, cultural service capabilities, and lifelong learning and career development—this research bridges educational and industry gaps. This approach connects education more closely with what industries need. It helps improve the curriculum and makes sure graduates are ready for a changing global job market. It could also lead to bigger changes in vocational training across the Asia-Pacific area.

## 2. LITERATURE REVIEW

The shift toward innovation-driven productivity signals a departure from traditional resource-centric models (Harvey, 2018) to ones prioritizing technology, creativity, and human capital (Zhou & Xu, 2023). In the hospitality industry, this change is through tools like AI that help automate service and big data that predicts customer demand. These advances are raising the skills needed for workers in the field (Li, 2021). These advancements push firms to enhance competitiveness through technological adoption and managerial innovation, repositioning professionals as active contributors to innovation rather than mere service providers (Xu & Deng, 2024). Porter (1990) connects a country's competitiveness to having a skilled and talented workforce. Meanwhile, Romer's (1990) growth theory shows how technological advances and developing talent go hand in hand in driving growth. For hospitality education, this implies a need for curricula that cultivate digital proficiency (e.g., property management systems), innovative thinking (e.g., service personalization), and adaptability—beyond conventional operational skills. European studies reinforce this, noting digital skills as critical for service quality (Baum & Kokkranikal, 2021).

Core competency in education means the key skills and qualities that help people learn throughout their lives and stay involved in society (DeSeCo, 2005; Organisation for Economic Co-operation and Development, 1997). This approach encourages overall growth to handle both tech challenges and social needs unlike training that just focuses on one specific skill. Competency-based education (CBE), a widely adopted vocational framework emphasizes measurable outcomes aligned with industry needs (Sullivan & McIntosh, 1996). In hospitality management education, this approach requires integrating digital literacy, information processing, and professional alignment (Kim & Jeong, 2018). Cedefop (2016) documents Europe's success in embedding digital skills and lifelong learning into vocational programs, enhancing workforce adaptability. Similarly, Lin (2017) outlines Chinese student competencies—cultural awareness, autonomy, and social participation but notes the rising importance of technological and innovative capacities in vocational contexts. The P21 framework (Voogt & Roblin, 2012) talks about how important skills like critical thinking, teamwork, and digital know how are for getting ready for careers. It encourages teachers to do more than teach basic skills—they should also help students prepare for fast-changing work environments.

Despite these insights, hospitality education struggles to keep pace with innovation-driven demands, exposing gaps in both research and practice. In China, Raybould and Wilkins (2006) prioritizes service skill reforms, sidelining digital integration while Ning (2023) focuses on language skills' career impact, neglecting technical literacy. Li (2021) looks into what managers need to be good at but it doesn't really talk about how innovation fits into learning or education. Bharwani and Talib (2017) point out that worldwide, curricula often don't focus enough on digital skills. Meanwhile, Shin and Perdue (2022) note that in the U.S., many programs don't do a good job

covering data analysis or smart systems. Law, Buhalis, and Cobanoglu (2014) argue that technology adoption outstrips educational adaptation, widening the divide between classroom learning and industry expectations. Li, Hu, Huang, and Duan (2017) emphasize that smart tourism requires interdisciplinary talent, a need unmet by current frameworks. These problems show that there has been a missed opportunity to blend technical skills, management, and cultural understanding into a clear, well-rounded training plan.

Learning transfer theory offers a lens to address this gap, suggesting that skills acquired in education must effectively translate to workplace performance (Baldwin & Ford, 1988). In hospitality training, it's important for courses to help students learn how to use digital tools and new ideas in real-world situations. This approach is also supported by vocational policies in the Asia-Pacific region (UNESCO, 2018). Regional studies are still scattered and not many look into how innovation affects vocational education or tests out competency models specifically for hospitality. This study hypothesizes that an effective core competency model for hospitality management education in China must span technical proficiency, managerial capability, and cultural adaptability, aligned with innovation-driven demands. It builds a framework integrating these dimensions—career foundation skills, digital technology application, operations management and leadership, professional ethics and compliance, cultural service capabilities, and lifelong learning and career development—offering a comprehensive foundation for curriculum reform and vocational advancement in the Asia-Pacific region through empirical analysis.

### 3. METHODOLOGY

This study employs a mixed-methods approach, integrating qualitative and quantitative techniques, to develop a core competency model for hospitality management majors aligned with innovation-driven productivity requirements. The research process is detailed across four subsections: indicator development, questionnaire design, data collection, and data analysis.

#### 3.1. Indicator Development

We wanted to make sure the core competence model is both solidly based and useful in real-life situations. Therefore, we did a thorough review of existing research and looked at many trusted sources. We identified 47 key indicators to get us started. On the global stage, the 2005 OECD report called "Definition and Selection of Key Competencies: Executive Summary" sets out a basic framework focusing on what people know, what they can do, and their attitudes. Meanwhile, Cedefop's (2016) European Skills Panorama looks at current trends and points out that digital skills are becoming important in vocational education. Domestically, the Chinese student competency framework proposed by Lin (2017) which focuses on cultural foundations, autonomy, and social participation provides valuable insights into cultural adaptation. Relevant research on the hospitality industry also provides important references for this process. Raybould and Wilkins (2006) proposed indicators related to service skills. Li (2021) focused on management capabilities and Kim and Jeong (2018) emphasized digital talent needs, proposing indicators such as customer service skills, data analysis, and innovative thinking.

We use the Delphi method to further improve these preliminary indexes. The Delphi method is a structured iterative process designed to achieve expert consensus (Okoli & Pawlowski, 2004). We assembled a team of 10 experts, including three hospitality management professors (average of 15 years of teaching experience), three internship directors (average of 8 years of experience), and four hospitality HR managers (average of 10 years of industry experience) to ensure a mix of academic and industry perspectives. The Delphi process is divided into two rounds:

Round 1: We provided experts with a preliminary list of 47 indicators and asked them to rate them on a 5-level Likert scale (1 = not important and 5 = very important) based on their relevance to innovation-driven productivity and hospitality education. In addition, we encourage experts to provide qualitative feedback and suggest additions, deletions, or changes to the indicators. Experts' responses are anonymously collected through an online survey

platform to minimize bias. The results of the first round of analysis showed that 12 indicators (such as standard deviation greater than 1.5) failed to reach consensus and experts suggested some changes, such as combining cultural confidence and cultural adaptability into a single indicator, cross-cultural adaptability, and adding smart device maintenance to reflect industry trends.

Round 2: We incorporated the feedback collected in the first round into a revised list of 35 indicators which were then redistributed to the same panel of experts. Each indicator was re-evaluated by the experts on the same 5-point scale, and the first round of aggregated statistics (average scores and comments) was provided to promote consensus among the experts. A consensus was reached when at least 80% of each indicator fell within the 4-5 point range, and five redundant or poorly rated items were removed accordingly. For example, "basic computer skills" was deemed too general. In the end, we picked 30 key indicators based on how innovation and productivity drive industries along with education aims. These include skills like digital operational competence, lifelong learning, and cross-cultural adaptability.

Using the Delphi method carefully makes sure these indicators are built on solid data and backed up by experts. This makes the model more trustworthy and useful for the hospitality industry.

### 3.2. Questionnaire Design

We designed a structured questionnaire using a 5-point Likert scale (1 = not important and 5 = very important) to assess the importance of 30 optimization measures. The questionnaire is divided into two parts: one is the demographic information (such as role, experience, etc.) for hierarchical analysis; the other section covers 30 entries in six potential dimensions (e.g., customer service and relationship maintenance for vocational skills, digital operational competence for technology application, and cross-cultural adaptability for cultural literacy). Each indicator comes with a simple explanation. For example, digital operational capability means being good at using smart devices and systems in hotel work.

We conducted a pre-test with 20 participants (10 students and 10 faculty) from the target university to verify the reliability and clarity of the questionnaire. Adjustments were made to the questionnaire based on the feedback (for example, innovative exploration was amended to innovative ability to solve career problems). The Cronbach's alpha value for the pretest was 0.85 indicating high internal consistency (Nunnally, 1978). These adjustments ensure the validity and reliability of the questionnaire content and make it suitable for conducting a comprehensive survey.

### 3.3. Data Collection

This study examines the stakeholders in the vocational education system of hotel management in China, namely students, teachers, and industry practitioners to comprehensively understand the ability requirements. From March to May 2024, a questionnaire survey was conducted among six vocational colleges and six hotels with school-enterprise cooperation. The six vocational colleges are Suzhou Vocational College of Industry and Jiangsu Vocational College of Agriculture and Forestry (Jiangsu Province), Anhui Vocational and Technical College and Fuyang Vocational and Technical College (Anhui Province), Henan Vocational and Technical College and Zhengzhou Vocational and Technical College (Henan Province), these six schools are the "Double High" institutions or provincial key institutions in these three provinces. It can represent the vocational education level of the province. The six hotels are those with which these schools have good cooperative relationships. They are Shangri-La Hotel Suzhou, Suzhou International Conference Hotel, Crowne Plaza Hefei, Wanda Reign Fuyang, Baishun International Hotel Zhengzhou, and Marriott Hotel Zhengzhou.

308 questionnaires were distributed by the stratified convenient sampling method, and 300 valid questionnaires were finally recovered with a recovery rate of 97.4%. The sample consisted of 208 students (60 first-year students, 85 second-year students, and 63 third-year students), 47 teachers (1-10 years of teaching experience), and 45

partner hotel managers. We use a combination of online platforms (such as "WenJuanXing") and on-site monitoring for questionnaire distribution and recovery to ensure data quality. The high recovery rate is due to the active cooperation of various institutions and the active cooperation of participants.

3.4. Data Analysis

We performed an exploratory factor analysis (EFA) using SPSS 26.0 to determine the capability dimension and validate the model structure. We started by making sure the data was solid enough for EFA. The KMO was 0.915, which is really good (well above 0.6), and Bartlett’s test came back highly major with a p-value of 0.000 (Hair, Black, Babin, & Anderson, 2019). Cronbach’s alpha was 0.798, which shows the measure is pretty reliable (see Table 1).

Table 1. KMO and Bartlett’s test.

Measure	Indicators	Value
Kaiser-Meyer-Olkin measure of sampling adequacy		0.915
	Approximate chi-square	11127.927
Bartlett’s test of sphericity	Df	435
	Sig.	0.000

Exploratory factor analysis (EFA) uses principal component analysis and variance maximum rotation method to extract factors with eigenvalues greater than 1 while eliminating items with load values less than 0.4 or with cross-loads (Hair et al., 2019). Exploratory factor analysis (EFA) identified six dimensions accounting for 88.096% of the variance: career foundation skills, digital technology application, operations management and leadership, professional ethics and compliance, cultural service capabilities, and lifelong learning and career development. Factor loadings were between 0.896 and 0.937 which shows the indicators are pretty solid (see Table 2) which fully confirms the robustness of the determined indicators. The results of descriptive statistics and the factor load table lay a solid foundation for further in-depth analysis and provide strong support for further research. This study uses data from China, but the way it’s set up is meant to be checked out in other countries too. We’re planning to gather data from different places later on to see how well it works worldwide.

Table 2. Total variance explained

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotated sums of squared loadings		
	Total	Variance%	Cumulative %	Total	Variance%	Cumulative %	Total	Variance%	Cumulative %
1	8.587	28.623	28.623	8.587	28.623	28.623	5.278	17.594	17.594
2	4.994	16.645	45.268	4.994	16.645	45.268	4.422	14.741	32.336
3	3.823	12.744	58.011	3.823	12.744	58.011	4.409	14.697	47.033
4	3.351	11.171	69.182	3.351	11.171	69.182	4.379	14.597	61.630
5	3.082	10.272	79.454	3.082	10.272	79.454	4.359	14.529	76.159
6	2.593	8.642	88.096	2.593	8.642	88.096	3.581	11.937	88.096

#### 4. RESULTS

Exploratory factor analysis (EFA) identified six dimensions of the hospitality management competency model: career foundation skills, digital technology application, operations management and leadership, professional ethics and compliance, cultural service capabilities, and lifelong learning and career development (see Table 3). Below is the detailed breakdown, including factor loadings and rationale for each dimension's naming.

**Table 3.** Rotated factor loadings for core competency indicators

Core competency indicators	Components					
	1	2	3	4	5	6
Customer service and relationship maintenance	0.936					
Written communication	0.936					
Safety and crisis management	0.933					
Foreign language proficiency	0.927					
Oral communication	0.913					
Information literacy		0.937				
Professional interest		0.932				
Smart equipment maintenance		0.923				
Digital operational capability		0.917				
Data-driven decision-making		0.916				
Hotel operational management			0.930			
Cultural tourism project planning			0.928			
Collaborative communication and team management			0.926			
Leadership			0.920			
Social responsibility				0.918		
Integrity and friendliness				0.913		
Duty fulfillment				0.908		
Honest labor				0.907		
Regulatory compliance				0.898		
Service orientation					0.916	
Cultural inheritance					0.909	
Humanistic care					0.907	
Scientific thinking					0.900	
Cross-cultural adaptability					0.896	
Time management						0.933
Exploration and innovation						0.924
Reflection and synthesis						0.918
Occupational health management						0.915
Career orientation and self-development						0.903
Lifelong learning						0.903

##### 4.1. Career Foundation Skills (5 indicators)

This dimension focuses on the basic competencies required for entry-level hospitality management positions, including customer service and relationship maintenance (factor load 0.936), written communication (factor load 0.936), safety and crisis management (factor load 0.933), foreign language proficiency (factor load 0.927), and oral communication (factor load 0.913).

These indicators show the essential skills needed for everyday hotel management. Among them, good customer service can promote customer trust and improve service quality (Raybould & Wilkins, 2006). Effective communication skills, both written and spoken contribute to smooth interaction in multilingual environments. Improved foreign language skills can better serve global customers (Ning, 2023) while security and crisis management capabilities can ensure the stability of hotel operations during times of crisis. This dimension is called "Career Foundation Skills" because it reflects the entry threshold and foundation for a career in hospitality management.



#### *4.2. Digital Technology Application (5 Indicators)*

This dimension mostly covers the skills needed to run a hotel smoothly in today's digital world. It includes information literacy (factor load 0.937), professional interest (factor load 0.932), smart equipment maintenance (factor load 0.923), digital operations capability (factor load 0.917), and data-driven decision-making (factor load 0.916). These indicators show how important technology has become in today's hotel business. Information literacy helps employees deal with all kinds of data efficiently (Kim & Jeong, 2018) and professional interest is the internal driving force to promote the application of technology. Keeping equipment well-maintained helps everything runs smoothly and makes work more efficient. Using digital tools, like cloud-based property management systems, can make managing operations easier and more effective. When hotels base decisions on data, it gives them a better edge in a competitive market. It is named "Digital Technology Applications" in line with the requirements of innovation-driven productivity development and the trend of digital transformation in the industry.

#### *4.3. Operations Management and Leadership (4 Indicators)*

This dimension mainly covers middle-management competencies, including hotel operations management (factor load 0.930), cultural tourism project planning (factor load 0.928), collaborative communication and team management (factor load 0.926), and leadership (factor load 0.920).

Managing a hotel well is important to make sure it runs smoothly (Li, 2021). Planning a cultural tourism project helps you understand what's popular in the market and stand out from the competition. Collaborative communication and team management can enhance team cohesion. Leadership is an important factor in promoting team performance. The dimension, named "Operations Management and Leadership" reflects the importance of execution and leadership for a hotel's success in an innovation-driven environment where the two work together.

#### *4.4. Professional Ethics and Compliance (5 Indicators)*

This dimension focuses on ethical and legal standards in the hospitality industry, including social responsibility (factor load 0.918), integrity and friendliness (factor load 0.913), duty fulfillment (factor load 0.908), honest labor (factor load 0.907), and regulatory compliance (factor load 0.898).

Active implementation of social responsibilities helps to enhance the social reputation of the hotel. An honest and friendly working attitude can build good relationships with customers and colleagues. The performance of duty and honest work is the basis of ensuring the quality of service and compliance with regulations can effectively reduce the risk of hotel operations. The name "Professional Ethics and Compliance" shows how important it is for the hospitality industry to stick to ethical and legal rules, especially with technology changing so fast.

#### *4.5. Cultural Service Capabilities (5 Indicators)*

This dimension focuses on the integration of culture and hotel services, including service orientation (factor load 0.916), cultural inheritance (factor load 0.909), humanistic care (factor load 0.907), scientific thinking (factor load 0.900), and cross-cultural adaptability (factor load 0.896). Service-oriented is the core to better meet customer needs. Cultural inheritance can enrich the connotation of the hotel's service products and enhance the cultural value. Humanistic care contributes to customer satisfaction, scientific thinking can optimize service processes and cross-cultural adaptability can meet the needs of customers with different cultural backgrounds (Jones, 2021). This one-dimensional order is named "cultural service capability", which conforms to the development trend of cultural tourism and emphasizes the key role of culture in improving the hotel service quality.

#### *4.6. Lifelong Learning and Career Development (6 Indicators)*

This dimension is designed to promote continuous personal growth. It includes time management (factor load 0.933), exploration and innovation (factor load 0.924), reflection and synthesis (factor load 0.918), occupational



health management (factor load 0.915), career orientation and self-development (factor load 0.903), and lifelong learning (factor load 0.903).

Effective time management can improve productivity, and exploration and innovation can drive problem-solving and service upgrading. Reflecting and pulling everything together helps people understand what they've learned and do better next time. Lifelong learning enables employees to constantly update their skills and adapt to changes in the industry (Cedefop, 2016). Occupational health management pays attention to the physical and mental health of employees, guarantees the sustainability of work and helps employees clarify their career goals and realize their values. The piece is called "Lifelong Learning and Career Development," talks about how important it is for people in hospitality to keep learning and growing throughout their careers. It emphasizes that staying curious and developing new skills is key to keeping up with the fast pace of innovation and improving productivity.

## 5. DISCUSSION

This study uses a modern and innovation-focused method to develop a main skill set for hospitality management education. We checked and confirmed it with solid data using exploratory factor analysis (EFA). The next parts go over what we found, what it means for vocational education, how you might use these ideas in creating courses and also point out some limitations and where future research could go. This model isn't just about meeting what industries need. It also changes how we teach students so they're ready for a fast-changing world.

### 5.1. Result Analysis

The proposed model delineates six dimensions—career foundation skills, digital technology application, operations management and leadership, professional ethics and compliance, cultural service capabilities and lifelong learning and career development covering 30 indicators. These dimensions, explaining 88.096% of variance align with the demands of an innovation-driven hospitality sector in Asia. The focus on digital skills, like "digital operational capability" (0.917) shows how much China has invested in smart technologies (China Hotel Association, 2023). Cultural skills like "cross-cultural adaptability" (0.896) are becoming essential because of the increase in cultural tourism in the area (United Nations World Tourism Organization, 2022). Unlike prior studies focusing narrowly on service skills (Raybould & Wilkins, 2006) or language proficiency (Ning, 2023) this model integrates technical, managerial, and cultural elements, addressing the education-industry disconnect noted by Law et al. (2014). Its importance goes beyond China and can be used as a flexible model for vocational training across the Asia-Pacific region.

### 5.2. Practical Significance

This competency model is a practical guide to improve hospitality management training, especially when it comes to designing the curriculum. It aligns with the P21 Framework's focus on 21st-century skills—critical thinking, collaboration, and digital literacy (Voogt & Roblin, 2012) by embedding these into vocational training. For instance, the "digital technology application" dimension suggests integrating courses on tools like property management systems (e.g., Opera PMS) or data analytics platforms (e.g., Tableau) into curricula (Fan et al., 2024). "Cultural service capabilities" involve holding workshops on intercultural communication and designing services rooted in heritage, helping people develop skills that work well in different markets. Such educational reforms can produce graduates ready for roles like digital concierges or cultural event planners, enhancing employability—a core aim of vocational education (Bharwani & Talib, 2017).

Outside of classrooms, the model encourages industry training by emphasizing the importance of continuous learning and growing in your career. Vocational institutions could partner with hotels to offer micro-credentials or on-the-job modules, ensuring continuous skill updates in areas like AI-driven service delivery (Cedefop, 2016). This collaborative approach narrows the gap between education and practice, a persistent challenge in Asia-Pacific

hospitality training (Kim & Jeong, 2018). The model supports broader societal goals, such as workforce resilience and economic growth, aligning with vocational education's mission in the region by grounding curricula in innovation and adaptability.

### 5.3. Limitations and Future Research

This study gives a good starting point but it doesn't cover everything. The sample drawn from 300 respondents across six Chinese vocational colleges offers a strong starting point but lacks broader regional diversity. Hospitality education varies across Asia-Pacific—Japan prioritizes technology integration while Indonesia focuses on cost-effective training (Baum & Kokkranikal, 2021). The EFA's explanatory power (88.096%) is promising, yet confirmatory factor analysis (CFA) is needed to ensure long-term validity (Hair et al., 2019). Relying on questionnaire responses can be tricky because people might not always give accurate answers. In addition, it doesn't provide clear, hard facts like how many graduates find jobs afterwards.

Future research should expand this model's reach by testing it in diverse Asia-Pacific settings, such as Japan or Thailand, to refine its applicability. Following students over time to see how their careers turn out could show how much it affects their chances of finding a job. Integrating educational experiments, such as pilot courses based on these dimensions would further test its practical utility. Shin and Perdue (2022) suggest that balancing technical and human-centric skills remains key. This model provides a foundation but regional adaptations will enhance its educational value.

## 6. CONCLUSION

This study pushes forward hospitality management education by creating a core competency model built on innovation and practical methods. We used a mix of approaches, including reviewing existing research, the Delphi method, and exploratory factor analysis (EFA). Data from 300 people across six vocational colleges in Jiangsu, Anhui, and Henan helped us confirm the model. It emphasizes six key areas: career foundation skills, digital technology application, operations management and leadership, professional ethics and compliance, cultural service capabilities, and lifelong learning and career development. With 30 specific indicators, this framework explains about 88.096% of the variation, offering a solid tool to help update vocational programs to meet the needs of Asia's technology-rich hospitality scene. The model prepares teachers to get students ready for changing industry demands while also supporting employment and resilience by combining technical skills, management know-how, and cultural sensitivity.

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**Transparency:** The author states that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

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