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Configurational pathways to post-COVID-19 economic recovery in the high-end hotel sector of Shandong Province, China: evidence from csQCA

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Introduction: The COVID-19 pandemic severely impacted the global hotel industry. In early 2020, the occupancy rate of high-end hotels in China dropped by more than 50%. In Shandong Province, the revenue loss exceeded 60%, which raised urgent questions about post-pandemic recovery. This study explores how the combination of operations and financial conditions affects the survival or decline of hotels. Drawing on Lipset's theory of institutional collapse and economic recession.

Methodology: We conducted a study of 20 high-end hotels in Shandong Province using the clear set qualitative comparative analysis (csQCA) method. Four variables—average room rate index (ARI), contribution to operating profit (CTP), total operating profit margin (GOP), and revenue generation index (RGI)—were transformed into binary sets to determine causal relationship patterns.

Results: The research results reveal three empirical models for economic survival and five models for decline. No single factor is indispensable. Resilient hotels typically combine high operating profit margins with favorable pricing or revenue generation, while unbalanced financial structures increase the risk of decline.

Discussion: This study contributes to the research on crisis recovery. It depicts the path of resilience and demonstrates the value of the conditional qualitative analysis (csQCA) method in capturing the complex and interrelated operating conditions of hotels in extreme disruptions.

KEYWORDS

hotel industry, COVID-19, csQCA, conditional configuration, emergent major public health events

1 Introduction

The COVID-19 pandemic has triggered an unprecedented crisis in the global hotel industry. According to the World Tourism Organization ([United Nations World Tourism Organization, n.d.](#)), international tourist arrivals declined by 74% in 2020, with luxury hotels in China experiencing occupancy rates falling by more than 50%. In Shandong Province, revenue losses exceeded 60%, underscoring the urgent need to develop effective recovery strategies for the post-pandemic period. For regions dependent on tourism, the hotel sector's resilience is closely linked to overall economic stability, social cohesion, and preparedness for future crises. Comparative research across Europe, North America, and the Asia-Pacific reveals that the severity of the pandemic's impact and the recovery trajectories vary significantly depending on the context ([Han et al., 2020](#); [Jasanoff et al., 2021](#); [Tang et al., 2022](#)). These international findings suggest that China's experience reflects a broader global trend of uneven resilience within the hotel industry.

Previous research suggests that the impact of pandemics on hotels depends not only on the severity of the epidemic but also on factors such as governance quality, institutional robustness, and market conditions (Aydoğan et al., 2024). In Shandong, a province with a diverse hospitality industry and stringent pandemic measures, the COVID-19 pandemic exacerbated preexisting operational vulnerabilities. This highlights the importance of examining how hotels manage recovery amid complex challenges. Furthermore, studies from Europe and Latin America indicate that institutional actions and market flexibility played crucial roles in determining hotels' recovery capabilities (Alonso et al., 2020; Bianchi, 2024).

Based on Lipset and Man's (1960) theory of institutional breakdown and economic decline, this study argues that hotel economic performance results from the combined effects of multiple factors rather than from individual causes. This approach aligns with the principles of qualitative comparative analysis (QCA), which addresses causal complexity and equifinality—features commonly observed in hospitality crisis recovery but seldom examined in China's luxury hotel sector using configurational methods. Similar methodologies have been applied internationally to study resilience in the hotel industry, providing valuable insights for the Chinese context (Brown et al., 2017; Ritchie and Jiang, 2021; Schwaiger et al., 2022).

Recent studies on hotel recovery can be categorized into three main areas: (1) the economic impacts of the pandemic, highlighting varied declines in revenue and occupancy rates (Li et al., 2025); (2) crisis management and institutional responses, demonstrating how regulations and stakeholder collaboration influence recovery trajectories (Kuhlmann et al., 2024); and (3) methodological frameworks for resilience, emphasizing the need for tools capable of analyzing complex, multifactorial situations with limited case data (Beaumont and Coning, 2022). However, there remains a lack of research integrating these perspectives to identify specific conditions that lead to either economic survival or failure, particularly within the Chinese context.

To contextualize our study, we synthesize prior research into three main strands. First, studies on the economic shocks caused by the COVID-19 pandemic document heterogeneous declines in hotel revenue and occupancy, as well as the uneven pace of recovery across different segments and regions (Ozdemir et al., 2021; Yang et al., 2024). While these studies establish the scale of disruption, they rarely move beyond average effects to identify which performance factors co-occur when properties survive vs. decline. Second, research on crisis governance and institutional response demonstrates that regulatory strictness, stakeholder coordination, and institutional capacity shape recovery trajectories (Kuhlmann et al., 2024). Comparative analyses from Europe and North America indicate that governance effectiveness directly mediates hotel resilience (Shapoval et al., 2021; Wszendybył-Skulska et al., 2024). This work clarifies contextual constraints but often stops short of linking governance conditions to micro-level operational and financial combinations within hotels. Third, configurational approaches and QCA argue that hospitality resilience is characterized by conjunctural causation, equifinality, and causal asymmetry, thereby calling for small-*N*, multi-cause research designs (Wilden et al., 2016). While such approaches have

been applied to study resilience in the international hospitality sector (Dryglas et al., 2024; Eluwole et al., 2024), configurational evidence for China's upscale hotel segment remains scarce.

Summary and Identified Gaps: Two primary gaps emerge from this analysis: (1) a lack of comprehensive, configuration-based evidence linking market demand, pricing power, contribution quality, and profitability while accounting for contextual factors, and (2) the limited application of csQCA to identify specific combinations of Average Room Rate Index (ARI), Contribution to Operating Profit (CTP), Gross Operating Profit Margin (GOP), and Revenue Generation Index (RGI) associated with survival or decline in the Chinese context. Next, we outline the empirical method we developed to address these gaps directly.

To address this gap, we employ crisp-set Qualitative Comparative Analysis (csQCA) to examine 20 luxury hotels in Shandong Province. We evaluate four calibrated metrics—ARI, CTP, GOP, and RGI—to identify the combinations associated with either survival or decline following the pandemic. This approach offers detailed insights into diverse recovery patterns and contributes to both crisis management theory and practical strategies for enhancing resilience in the hospitality industry.

2 Study design

2.1 Research methods

QCA is the primary methodology employed throughout this research, shaping both the study's design and analytical framework. QCA is a comparative case study technique that originated in the social sciences and was developed by U.S. scholar Charles C. Ragin in the 1980s (Thiem, 2022). This approach integrates elements of both quantitative and qualitative methods. Grounded in set theory and Boolean logic, QCA analyzes issues by treating them as collections of cases, where causes correspond to different subsets within a set. Variables are coded dichotomously as either present (1) or absent (0), following Boolean algebra principles. Through Boolean minimization, QCA reduces complex combinations of condition variables to identify the primary influencing factors or their combinations. Variants of QCA include crisp set QCA (csQCA), multi-value set QCA (mvQCA), fuzzy set QCA (fsQCA), and temporal QCA. This research employs the csQCA approach.

The topic of this study is the sudden economic development and decline of the hotel industry during the COVID-19 pandemic, a complex economic issue influenced by multiple factors. The premise of the QCA method is that a combination of factors leads to a specific outcome (Hanckel et al., 2021). Therefore, following csQCA's requirements, this article focuses on the economic development and decline of the hotel industry during the COVID-19 pandemic. The top 20 hotels in Shandong compose the research case base, and the outcome variables are determined according to the research objectives. Explanatory variables are extracted based on the characteristics of existing research and the study topic. Dichotomous values are assigned to both explanatory and outcome variables according to csQCA guidelines and the dichotomy principle, where 1 represents a more positive state or favorable factor and indicates a more

negative state or adverse factor. Each case is then coded and summarized, a truth table is constructed, and further csQCA statistical analysis is conducted using Tosmana software, including univariate necessity analysis and conditional configuration analysis. Finally, the study summarizes the mechanisms influencing the economic development and decline of the hotel industry.

We use csQCA instead of fsQCA or mvQCA because our study has a small sample size ($n = 20$), our indicators can be clearly categorized into two groups based on theory and market standards, and our goal is to identify specific combinations of conditions associated with survival or decline. csQCA ensures that assumptions and calibration are fully transparent and allows us to present solution consistency and coverage through complex, intermediate, and parsimonious solutions. We set the frequency cutoff at 1 and the consistency threshold for sufficiency at 0.80, while necessity is tested using a threshold of 0.90.

2.2 Data selection

Based on the criteria of typicality, accuracy, and comprehensiveness, this study selected published data from online hotel booking platforms during the COVID-19 pandemic (January–December 2020; Li et al., 2021), including Meituan (Jiang and Tang, 2021), Ctrip (Gong, 2021), Tuniu Travel (Xu, 2021), and Love to Travel (Liu and Jin, 2021). Additionally, case sources were chosen from the comprehensive strength rankings of the top 20 high-end hotels in Shandong Province (Geng et al., 2021).

Regarding data validity and representativeness, online travel agency (OTA) platforms such as Meituan, Ctrip, and Tuniu offer extensive coverage of China's high-end hotel segment; however, they may be subject to channel bias (e.g., exclusion of direct corporate contracts), promotional distortions, and rate-parity policies. To address these issues, we (1) combined data from multiple platforms using aligned time frames and consistent definitions, (2) verified correlations between platforms at the hotel level, and (3) employed robust aggregation methods with winsorization to manage outliers. We treat OTA indices as proxies for economic performance while acknowledging the limitations of this approach. Future studies should validate these findings by comparing them with Smith Travel Research-type industry panels or audited financial reports.

2.3 Variable settings

Since the outbreak of COVID-19, various prevention and control measures have been implemented worldwide. During this process, the economic stability of the hotel industry has garnered significant attention from governments and academic circles globally. Using the COVID-19 pandemic as a case study, this research focuses on identifying the factors that contribute to the economic growth and decline of the hotel industry during the global outbreak. Lipset's highly influential study on the economic development and decline of the hotel industry proposed four explanatory variables to measure its growth and decline (Xu et al., 2024):

ARI: The weighted ratio of a specific hotel's average room price to the average room price in the market. It is calculated by dividing the hotel's average room rate by the market's average room rate. The market average room rate is determined by dividing the total room revenue of all competing hotels by the total number of rooms sold.

CTP: The calculation formula is total revenue of the hotel * contract ratio * GOP of the hotel * contract ratio.

GOP: The calculation formula is the total operating profit margin of all production and operating departments of the hotel – the total expenses of non-operating departments. The operating profit margin of each production and operating department = (revenue – direct cost – operating expenses)/revenue * 100%.

RGI: The formula is revenue per available room in the market * total revenue of all hotel rooms/total number of rooms.

A hotel development in the region and the attenuation is influenced by many factors, especially when facing sudden effects of the COVID-19 pandemic, all kinds of hotel industry economic development contradictions often become more acute, and many, such as war, terrorism, natural disasters, and other uncertain factors, will also aggravate the impact on the economy hotel industry. To explain the specific results of this study, why, when facing the global COVID-19 pandemic, some parts produced in the hotel industry the development of the economy and other areas gives birth to the decline of the hotel industry will be explained using QCA research variables, referred to as the “result.” Based on this, this article introduces “hotel industry development and decay (Survival)” as the outcome variable to reveal the development and decay of the hotel industry during the COVID-19 pandemic.

Based on the preceding configuration of explanatory and outcome variables, the variable scales are presented in Table 1, and the corresponding explanatory variable data during the 2020 COVID-19 pandemic period are shown in Table 2.

In the process of csQCA analysis, Boolean algebra should be applied (Hanckel et al., 2021). This approach assumes that a variable has only two possible values, such as a “true” or “false” proposition. Therefore, the data table is binarized so that the raw data for each variable is converted into a “0 or 1” format. Common methods for dichotomizing data include using the mean value, median value, clustering, and similar techniques. It is essential to ensure that the conditions are coded correctly, reflecting the theoretical expectation of their correlation with the outcomes. Based on the settings of explanatory and outcome variables in this study, and considering the consequential effect of the outcome variables, the QCA analysis software Tosmana V1.6.1 was used to assign dichotomous values of 0 and 1 to each variable. This was done using the observation method and by referencing the median value. Figure 1 illustrates the criteria for assigning values to the explanatory variables. Figure 1 summarizes the dichotomization criteria used for each variable. Using these criteria in Tosmana v1.6.1, Table 3 presents the binarized (0/1) values for ARI, CTP, GOP, RGI, and SURVIVAL across the 20 cases.

2.4 Truth table construction

After assigning variables, returning to the case for coding and summarizing when building the truth table is important. The purpose of the truth table is to examine the specific

TABLE 1 Variable settings table.

Variable name	Variable meaning	Variable categories
ARI (Average Room Rate Index)	Measure the value of a house	Explanatory variables
CTP (Contribution to Operating Profit)	Measure the operating profit of the hotel industry	Explanatory variables
GOP (Gross Operating Profit Margin)	Measure the economic revenue of the hotel industry	Explanatory variables
RGI (Revenue Generating Index)	Measure the revenue of the hotel industry	Explanatory variables
Survival (hotel industry development and decline)	Used to measure the economic growth and decline of the hotel industry during the COVID-19 pandemic	Results of variable

TABLE 2 Data table for 2020 corresponding to variables.

CASE ID	ARI	CTP	GOP	RGI	SURVIVAL ^a
A Luneng Guihe	63,051	82.70	99.90	61.40	0
B Kaiyue Qingdao	9,972	74.80	99.80	61.35	1
C Seaview Garden	10,839	61.40	99.80	67.46	1
D Sheraton	45,466	77.50	99.80	56.00	0
E Shangri-La	39,229	83.90	99	75.20	1
F JW Marriott	39,257	81	99.20	72.14	0
G Melia	39,048	91.80	99.30	62.20	1
H Wyndham	41,560	92.60	98.60	61.15	0
I in Asia	30,644	81.40	99.90	62.70	1
J Pullman	19,587	84.30	95	46.20	1
K Westin	42,080	81.60	99.80	64.90	1
L Hilton	81,867	73.90	99.20	68.00	0
M Ka Wah	1,877	46.10	91.70	40.60	0
N Nordic Memory	51,885	86.20	99.80	64.70	1
O The Wheat Youth	7,715	76.10	96.17	58	0
P Holiday Inn Express	30,657	71	99.90	49.20	0
Q Flora Hotel	52,751	99.20	93.46	87.04	1
R Holiday Inn	26,832	80.80	99.60	73.85	0
S Hyatt Regency	50,339	88	99.70	72.70	0
T Novotel	51,290	92.20	99.80	68.30	0

The names of hotels in the table are coded A–T. Survival: 0 means the SURVIVAL of the hotel industry is declining during the COVID-19 pandemic in 2020, and 1 means growth (Zhu, 2021). ARI, Average Room Rate Index; CTP, Contribution to Operating Profit; GOP, Gross Operating Profit Margin; RGI, Revenue Generation Index. ^aSURVIVAL denotes the outcome variable used in the csQCA; values are dichotomized (0 = decline, 1 = growth) (Zhu, 2021).

conditions under which a result occurs using Boolean algebra and determine how different combinations of conditions influence whether the result happens or not (Glaesser, 2024). A truth table is a configuration table that includes multiple configurations; each configuration relates directly to the outcome for a given combination of conditions. There are five types of Boolean configurations: a configuration with a [1] result, called “configuration 1”; a configuration with a [0] result, called “configuration 0”; a configuration with a [–] (independent) result, known as an “independent configuration,” indicating an indeterminate outcome; a configuration with [C] (Contradiction) results, referred to as “Contradiction,” where some observed cases

yield “0” and others “1,” representing a logical conflict that must be resolved before further csQCA analysis; and a configuration with [L or R] (logical remainder) results, which are combinations of conditions not observed in empirical cases but logically possible. In this study, ARI, CTP, GOP, and RGI were used as explanatory variables, with Survival as the outcome variable. The resulting truth table is presented in Figure 2.

The truth table displays the configurations corresponding to the 20 case studies, demonstrating alignment with Lipset’s theory. This approach allows us to effectively synthesize the evidence by reducing 20 cases into 13 configurations, thereby fully capturing the cases’ diversity. We present both complex and intermediate solutions side by side, distinguishing core from peripheral conditions by comparing parsimonious and intermediate solutions. For each configuration, we also provide measures of solution consistency and coverage.

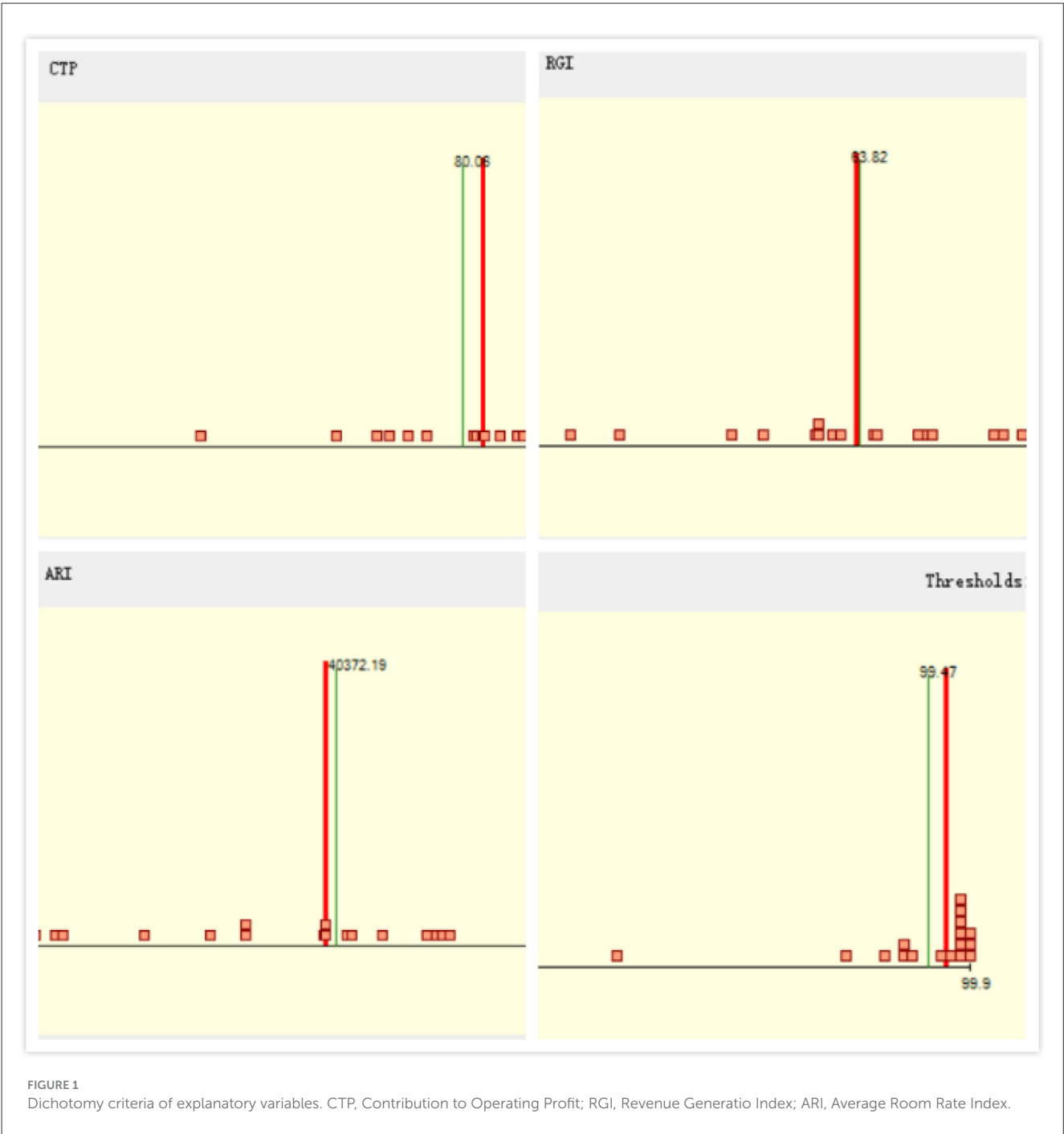
3 Research results and analysis

3.1 Univariate necessity analysis

In csQCA, the consistency index is commonly used to assess the necessity and sufficiency of individual variables (Skaaning, 2011; Huang et al., 2023). Consistency measures the extent to which the cases under analysis exhibit the conditions or configurations required for a particular outcome to occur. Generally, if a single condition or combination of conditions is sufficient for the outcome, the corresponding consistency index should exceed 0.8. Similarly, if the consistency index is greater than 0.9, the condition or combination of conditions can be considered necessary for the outcome (Rasoolimanesh et al., 2021). In this article, using Ragin’s fsQCA 3.0 method, the necessity of individual variables for economic development in the hotel industry is analyzed. Each individual variable’s consistency is less than 0.9, indicating that single variables alone are insufficient to constitute necessary conditions for hotel economic development. Moreover, the low consistency values suggest that individual variables cannot effectively explain hotel development or decline. Therefore, the development and decline of hotels are influenced by multiple factors.

3.2 Conditional configuration analysis

Based on a univariate analysis, the necessity for further economic development in response to the sudden impact of the



COVID-19 pandemic on the hotel industry was examined. To address this, attenuation configurations were analyzed, focusing on the potential adjustments needed for industry recovery. The conditions for applying the minimization principle to achieve optimal results were carefully examined, leading to the development of a formula that is more comprehensive than the original. A logic minimization formula was subsequently applied and compared to assess its efficacy in providing more accurate predictions for the hotel industry's recovery.

The final results are presented in Table 4, the configuration table. In this table, the symbol "1" represents survival,

reflecting positive recovery in the hotel industry, while "a" represents economic decline, indicating areas affected negatively by the pandemic. Table 4 presents survival (1) and decline (0) according to three no-remainder configurations (1–3) for survival, and five configurations (7–11) for decline. These configurations illustrate the complex, observed-case solution. Additionally, remainder-based sets (survival: 4–6; decline: 12–16) form a potential case pool for Boolean minimization, which can be simplified into a solution representing logically possible, yet unobserved patterns.

TABLE 3 Binary data table of each variable.

CASE ID	ARI	CTP	GOP	RGI	SURVIVAL
A	1	1	1	0	0
B	0	0	1	0	1
C	0	0	1	1	1
D	1	0	1	0	0
E	0	1	0	1	1
F	0	1	0	1	0
G	0	1	0	0	1
H	1	1	0	0	0
I	0	1	1	0	1
J	0	1	0	0	1
K	1	1	1	1	1
L	1	0	0	1	0
M	0	0	0	0	0
N	1	1	1	1	1
O	0	0	0	0	0
P	0	0	1	0	0
Q	1	1	0	1	1
R	0	1	1	1	0
S	1	1	1	1	0
T	1	1	1	1	0

ARI, Average Room Rate Index; CTP, Contribution to Operating Profit; GOP, Gross Operating Profit Margin; RGI, Revenue Generation Index.

CASE ID	ARI	CTP	GOP	RGI	SURVIVAL
M, O	0	0	0	0	0
B(1), P(0)	0	0	1	0	C
C	0	0	1	1	1
G, J	0	1	0	0	1
E(1), F(0)	0	1	0	1	C
I	0	1	1	0	1
R	0	1	1	1	0
L	1	0	0	1	0
D	1	0	1	0	0
H	1	1	0	0	0
Q	1	1	0	1	1
A	1	1	1	0	0
K(1), N(1), S(0), T(0)	1	1	1	1	C

FIGURE 2
Truth table. ARI, Average Room Rate Index; CTP, Contribution to Operating Profit; GOP, Gross Operating Profit Margin; RGI, Revenue Generation Index; C, Contradiction.

3.2.1 Contextual interpretation of core configurations (empirical paths)

Empirical survival paths (no logical remainders) are as follows:

S1: $ariCTPrgi \rightarrow SURVIVAL$ (G, I, J). Low ARI combined with high CTP and low RGI indicates a margin-discipline strategy: despite weak pricing power and muted demand, hotels

preserved survival by protecting contribution margins (Resource-Based View: operational capabilities) and reallocating to higher-margin segments.

S2: $ariCTPGOP \rightarrow SURVIVAL$ (C). With high GOP and high RGI under low ARI/CTP, survival was driven by demand-side recovery (strong RGI) coupled with lean operations (high GOP), consistent with a contingency fit to domestic leisure substitution in Shandong.

S3: $ARICTPrgop \rightarrow SURVIVAL$ (Q). Strong pricing (ARI), revenue generation (RGI), and contribution (CTP) can secure survival even when GOP is depressed, suggesting top-line protection under cost shocks—in line with institutional constraints (compliance costs) during lockdown phases.

Empirical decline paths (no logical remainders) are as follows:

D1: $ARIGOPrgi \rightarrow DECLINE$ (A, D). High ARI and GOP but low RGI reflect overpricing amid demand collapse—efficiency could not compensate for insufficient volume.

D2: $ARICTPrgi \rightarrow DECLINE$ (A, H). Pricing and contribution without demand yield margin without scale, risking decline.

D3: $ariCTPrgop \rightarrow DECLINE$ (M, O). A “quadruple deficit” (pricing, contribution, profit, demand all weak) straightforwardly leads to decline.

3.2.2 Practical significance of empirical vs. hypothetical paths

Empirical paths (no remainders) provide actionable templates for immediate recovery planning. Hypothetical paths (with remainders) form a policy sandbox for scenario testing (e.g., stimulating RGI when ARI and CTP are already high).

According to the conditional configuration, we can identify the causes of changes in hotel economic development or decline during the COVID-19 pandemic for each case hotel. We can also determine the most significant influencing factors and their commonalities across different hotels experiencing economic growth or decline. However, some conclusions from the conditional configuration appear to contradict conventional expectations, such as the findings in configuration number 3. Generally, in the context of COVID-19, a higher ASRI (Assumed Risk Index) for a hotel is expected to correlate with better economic performance. However, Case 3 demonstrates that a high ARI alone does not necessarily lead to hotel development. This study attempts to better understand these varying factors by using Venn diagrams to analyze the hotel industry, economic development, and patterns of decline. Due to the large number of variables involved, traditional four- or five-set Venn diagrams are insufficient. Therefore, we used the UpSet tool to create an advanced Venn diagram, as shown in Figure 3. In this figure, the x-axis represents the Venn diagram and the number of intersections for each configuration. Below the x-axis, the specific intersections are indicated, and in the lower left corner of each group, the original sample size is displayed.

According to the Venn diagram in Figure 3, there is no isolated impact of the hotel industry on economic development or attenuation of explanatory variables. Each variable intersects with others, indicating that no single variable alone can fully assess the impact on economic development within the hotel

TABLE 4 Conditional configuration table.

Serial number	Conditions for configuration	On behalf of the case	Attribution	Type
1	ari*CTP*rgi	G, J + I	1 configuration	No logical remainder
2	ari*ctp*GOP*RGI	C	1 configuration	No logical remainder
3	ARI*CTP*gop*RGI	Q	1 configuration	No logical remainder
4	ari*ctp*GOP	C	1 configuration	Contains logical remainder
5	CTP*gop*RGI	Q	1 configuration	Contains logical remainder
6	ari*CTP*rgi	G, J + I	1 configuration	Contains logical remainder
7	ARI*GOP*rgi	A + D	0 configuration	No logical remainder
8	ARI*CTP*rgi	A + H	0 configuration	No logical remainder
9	ARI*ctp*gop*RGI	L	0 configuration	No logical remainder
10	ari*ctp*gop*rgi	M, O	0 configuration	No logical remainder
11	ari*CTP*GOP*RGI	R	0 configuration	No logical remainder
12	ARI*GOP*rgi	A + D	0 configuration	Contains logical remainder
13	ARI*CTP*rgi	A + H	0 configuration	Contains logical remainder
14	ari*ctp*rgi	M, O	0 configuration	Contains logical remainder
15	ari*CTP*RGI	R	0 configuration	Contains logical remainder
16	ARI*ctp*gop*RGI	L	0 configuration	Contains logical remainder

ARI, Average Room Rate Index; CTP, Contribution to Operating Profit; GOP, Gross Operating Profit Margin; RGI, Revenue Generation Index. Uppercase and lowercase letters are used to distinguish the presence or absence of each condition in the configuration. Specifically, uppercase letters (e.g., ARI, CTP, GOP, RGI) indicate the presence of a condition, while lowercase letters (e.g., ari, ctp, gop, rgi) indicate the absence of that condition in the configuration. This convention follows the standard notation in csQCA (crisp-set Qualitative Comparative Analysis) to represent causal conditions within Boolean algebra expressions.

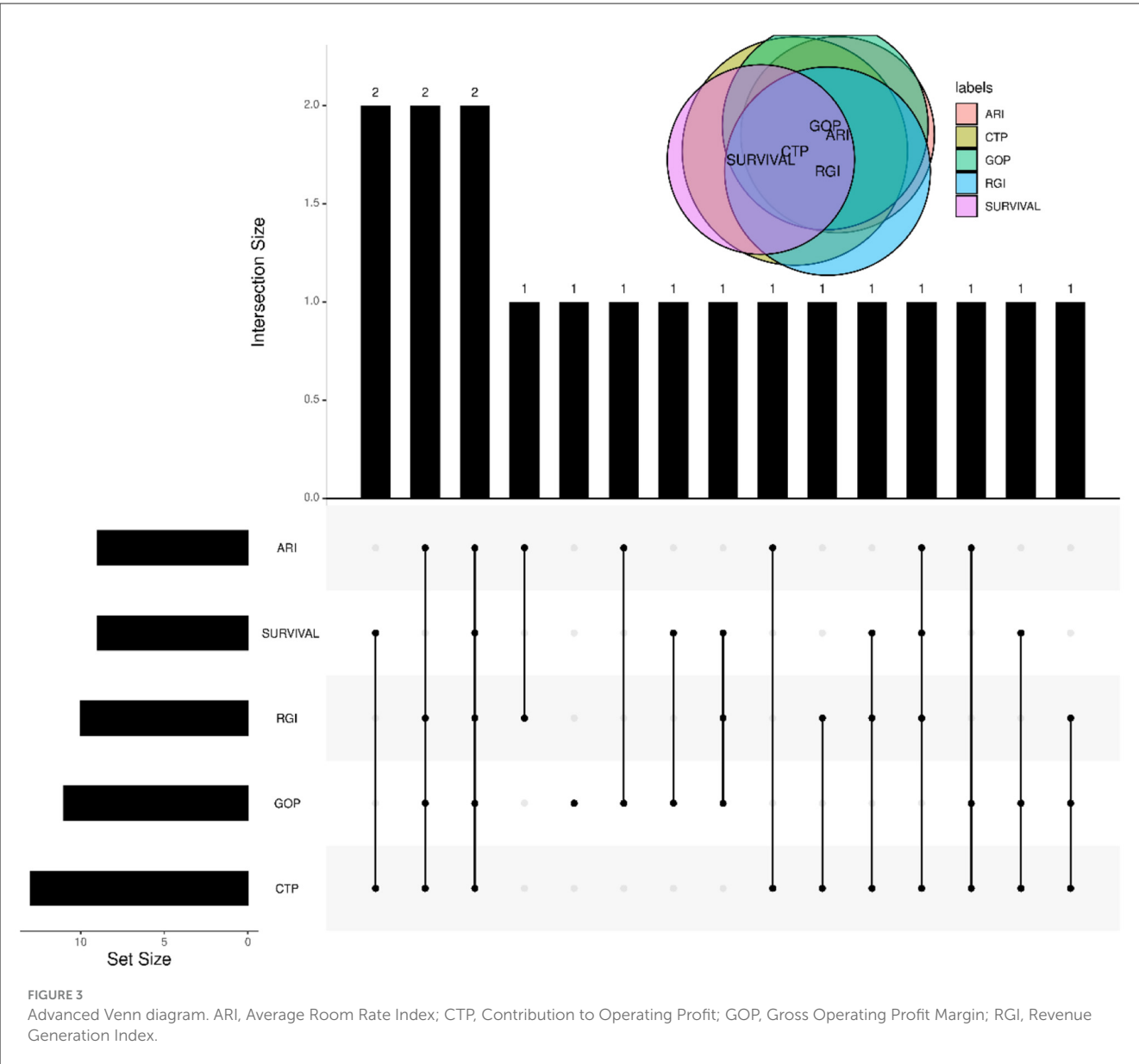
sector. For example, in case 3Q, the ARI, COP, and income are higher; however, the total operating profit remains a limiting factor. By analyzing the configuration of conditions alongside the Venn diagram, we can accurately identify the factors influencing both the economic development and decline of the hotel industry during the sudden onset of the COVID-19 pandemic, as well as clarifying the pathway for post-pandemic economic recovery.

4 Discussion

The findings of this study provide a more comprehensive and balanced understanding of the economic recovery pathways of hotels facing major public health emergencies. They reveal the heterogeneous effects of different combinations of financial and operational conditions on survival or decline. Hotels with robust financial structures and flexible operational strategies—characterized by a synergy between high GOP and a strong RGI—can enhance resilience against demand fluctuations and cost shocks. This resilience is significantly influenced by management’s crisis response capacity and the constraints imposed by the institutional environment. In contrast, hotels with high ARI but insufficient demand support, even when maintaining a high CTP, may experience decline due to inadequate economies of scale. The recovery trajectory of such hotels often depends on the pace of external demand recovery, a relationship largely constrained by market structure and the degree of consumer confidence restoration.

This theoretical framework represents a significant refinement and extension of both [Lipset and Man’s \(1960\)](#) theory of institutional breakdown and economic decline, as well as the hotel crisis recovery resilience theory. Supplementing existing research—which has predominantly examined hotel industry crisis recovery from a single-factor or equilibrium perspective—this study uniquely adopts a configurational approach to explore how the interaction of multiple factors jointly shapes the survival or decline pathways of hotels and examines their potential implications for long-term sustainability. By employing this innovative perspective, the study not only clarifies the critical role played by the balance between financial profitability and market demand but also develops a conditional configuration model that determines hotels’ economic recovery trajectories. This contributes a more robust and dynamic theoretical foundation for understanding the complexity of hotel performance under crisis conditions.

Moreover, hotel survival pathways exhibit distinct patterns from both internal operational capacity and external market condition perspectives. The QCA-based configurational analysis framework enables us to clarify how, internally, hotels’ cost control capabilities, product structure optimization, and profit distribution mechanisms jointly influence profit quality and, externally, how the pace of market demand recovery, competitive structure, and policy environment shape revenue-generating potential. Integrating these two dimensions provides a more comprehensive understanding of the mechanisms driving hotel economic recovery. By revealing the interaction between internal capabilities and external conditions, this approach emphasizes the critical importance of balancing the



two to enhance overall resilience. This cross-dimensional analytical lens, by highlighting the interplay between resource allocation efficiency and market adaptability, strengthens the explanatory power regarding differentiated recovery pathways, thereby offering more nuanced guidance for industry managers to formulate targeted recovery strategies in uncertain environments.

Finally, economic and socio-contextual factors—such as the stringency of regional pandemic control policies, fluctuations in consumer confidence, the pace of tourism recovery, and shifts in competitive dynamics—significantly influence the speed and sustainability of hotel recovery. Appropriate policy support (e.g., tax reductions, market promotion subsidies) and industry collaboration (e.g., price alliances, joint marketing) can accelerate the recovery process; conversely, ineffective implementation may delay recovery or even result in further market share loss. Integrating internal conditions with external contextual analysis enables a more nuanced and comprehensive understanding of

the factors affecting hotel recovery and long-term performance. This approach not only enriches hotel crisis recovery theory by emphasizing the importance of contextual factors but also demonstrates that recovery pathways are shaped by the combined influence of institutional environments, market signals, and the level of operational capability coordination. This context-configuration interaction perspective holds important implications for both theoretical development and practical application.

5 Conclusion

5.1 Main findings

Identifying post-pandemic recovery pathways for hotels is a core topic in marketing and operations management, particularly for service industries such as tourism and hospitality that face highly volatile demand and rigid fixed costs (Vanegas-López et al.,

2024). Prior studies have largely examined the pandemic's effects on hotel revenues and occupancy from three angles—macroeconomic shocks, governance responses, and methodological approaches (Anguera-Torrell et al., 2021; Ozdemir et al., 2021; Sharma et al., 2021). However, much of this literature emphasizes single-factor, linear effects or overall average impacts and rarely uncovers, in the context of China's upscale hotel segment, the equifinality and contingency fit produced by the joint action of multiple conditions. In contrast, this study analyzes 20 upscale hotels in Shandong Province using csQCA and probes the configurations of four conditions—ARI, CTP, GOP, and RGI—to explicate multiple pathways to survival (recovery) and decline, along with their boundary conditions. Beyond searching for any single necessary factor, we foreground differences between core and peripheral conditions and contrast empirical vs. remainder (hypothetical) pathways. Centered on “resilience pathways,” we emphasize how operational and financial conditions couple through distinct configurations to shape outcomes, and we systematically assess the necessity of individual variables and the sufficiency of configurations, thereby addressing gaps in domestic recovery research concerning configurational perspectives and small-*N* causal complexity. The main findings follow.

We clarify a recovery mechanism characterized by “no single necessary condition, multiple sufficient pathways”: Survival does not hinge on any single indicator (e.g., higher prices or higher profit margins) but emerges from the co-occurrence of several conditions within specific contexts. Our results challenge the linear hypothesis that either high pricing power (ARI) or high efficiency (GOP) alone ensures recovery; for example, when demand generation is weak (low RGI), hotels may still fall into decline even if pricing and efficiency (ARI and GOP) are elevated. Rather than short-term price hikes or isolated cost cutting, the evidence underscores the importance of a long-run balance among finance, demand, and efficiency—and their sustained contribution to market value. We identify three empirical survival pathways and five empirical decline pathways, delineating the practical limits of equifinality: (1) a “profit-contribution moat” (S1), where survival is supported by maintaining a high CTP when pricing and demand are under pressure; (2) a “demand-driven and lean-operations” pathway (S2), where robust RGI coupled with higher GOP drives recovery; and (3) a “top-line protection” pathway (S3), where strong pricing and demand secure outcomes even when GOP is constrained; corresponding decline archetypes include the “high-price/low-volume trap” (D1), “contribution without scale” (D2), and a “quadruple deficit” (D3).

These findings extend crisis-recovery evidence on multiple routes to the same outcome, showing that different hotels may recover—or decline—through distinct combinations of conditions and highlighting the decisive roles of configuration fit and condition co-occurrence structures. From a price–demand–contribution–efficiency coupling perspective, we delineate key relationships and managerial implications: (1) the price–demand trade-off—as ARI rises without a commensurate increase in RGI (ineffective demand activation), the risk of decline grows markedly; conversely, bolstering RGI can partially hedge the downward pressure on GOP from cost shocks; (2) the contribution–profit

complementarity—higher CTP provides a “floor” under weak demand or constrained pricing, increasing the probability of survival; when CTP and GOP improve jointly, resilience strengthens and the likelihood of decline decreases further; and (3) role differentiation—across pathways, CTP and RGI more frequently function as core stabilizers, while ARI and GOP often act as peripheral complements. Collectively, the results move beyond prior emphases on price or efficiency in isolation and support a strategy that prioritizes raising RGI and strengthening CTP, complemented by ARI and GOP, to achieve sustainable recovery pathways.

5.2 Theoretical contributions

This study examines how combinations of operational and financial conditions shape the survival or decline of high-end hotels during major public health emergencies, offering a fresh perspective on hotel economic development and decline in crisis contexts. Drawing on Lipset's theory of institutional breakdown and economic decline (Lipset, 1959; Van Witteloostuijn, 1998), we employ a configurational analysis incorporating ARI, CTP, GOP, and RGI to identify multiple survival pathways. The findings show that outcomes depend not on single indicators but on the interaction of multiple conditions, underscoring that resilience is a multidimensional process requiring an integrated understanding of pricing strategy, profit structure, and demand recovery. We introduce the concept of configurational resilience pathways, highlighting the complementary and substitutive effects of conditions under uncertainty. Unlike linear causal models, this approach reveals equifinality and causal asymmetry, explaining why similar resources can lead to different outcomes. By uncovering distinct patterns for survival and decline, the study enriches crisis management and resilience theory and offers a framework that integrates financial, operational, and environmental factors. It also addresses a major gap in the literature by showing how multi-condition configurations exert asymmetric effects, extending research on crisis recovery pathways in the hotel sector and advancing the early application of configurational methods in tourism. Finally, by shifting from single-variable to multi-condition analysis, we provide a robust framework for understanding how interacting factors jointly influence engagement, performance, and survival in crisis situations.

This study examines how combinations of operational and financial conditions shape the survival or decline of high-end hotels during major public health emergencies, offering a fresh perspective on hotel economic development and decline in crisis contexts. Beyond drawing on Lipset's theory of institutional breakdown and economic decline (Lipset, 1959), our analysis explicitly engages with three relevant theoretical domains.

First, resilience theory emphasizes the capacity of organizations to absorb shocks and reconfigure resources under uncertainty (Hepfer and Lawrence, 2022; Bartuseviciene et al., 2023). The configurational survival pathways identified here—particularly those balancing demand recovery (RGI) with financial contribution

(CTP)—demonstrate how resilience emerges from complementary rather than singular factors.

Second, resource dependence theory (Jiang et al., 2023) highlights how organizations buffer themselves against environmental volatility by managing critical dependencies. Our findings show that hotels relying excessively on high ARI without securing demand (RGI) risk decline, echoing resource-dependence dynamics, where concentration on a single leverage point increases vulnerability.

Third, the hotel crisis recovery model (Promnil and Polnyotee, 2023) suggests that recovery requires integrated financial, operational, and marketing responses. Our evidence-based configurational approach provides a systematic lens to operationalize this model, revealing how alternative bundles of conditions (e.g., S1 profit-contribution moat; S2 demand-driven lean operations) can operationalize recovery strategies.

By introducing the concept of configurational resilience pathways, we integrate these theoretical perspectives and extend prior crisis management research. The results enrich hospitality crisis studies by showing that resilience is not only a process of resource accumulation but also of structural fit across multiple conditions, thereby bridging configurational analysis with established resilience and crisis recovery literatures.

5.3 Practical implications

Based on Lipset's theory of economic development and decline and using csQCA to analyze operational and financial data from high-end hotels in Shandong Province during the COVID-19 pandemic, this study reveals that economic survival is shaped by diverse, context-dependent combinations of factors rather than any single necessary condition. While indicators like the ARI are often viewed as key drivers, a high ARI without sufficient demand generation (RGI) or profitability (GOP) can create overpricing risks. Recovery strategies should therefore balance multiple indicators: hotels with low ARI-high CTP should target high-margin market segments, whereas those with high ARI-high CTP-low RGI should strengthen customer engagement through localized branding, loyalty programs, and integration with regional tourism. Flexible pricing and differentiated guest experiences are vital for boosting RGI, while lean cost management and cross-department resource sharing can improve profitability for hotels with low GOP. Furthermore, regional hotel alliances that pursue joint marketing and integrated distribution can foster cross-brand customer complementarity, reduce dependence on single markets, and enhance overall resilience. Building on these theoretical insights, we derive actionable implications for managers, policymakers, and tourism authorities.

For hotel managers, the results suggest that resilience is strengthened by diversifying recovery strategies rather than relying excessively on pricing power. For example, hotels with low ARI and high CTP should target premium niches by offering value-added services, while those facing high-ARI and low-RGI scenarios should prioritize localized branding, digital marketing, and loyalty programs to stimulate effective demand. Additionally, lean cost

management and cross-departmental resource sharing further enhance recovery when profitability (GOP) is weak.

For policymakers, the evidence underscores the importance of creating enabling environments that reduce dependence on single market segments. Regional hotel alliances and joint marketing platforms can help diffuse risks, reflecting resilience theory's emphasis on distributed capabilities. Subsidies that encourage operational efficiency upgrades (e.g., digital platforms, energy-saving systems) can enhance the resilience benefits of improvements in GOP. For tourism authorities, configurational pathways highlight the value of coordinated destination branding and integrated distribution channels. By aligning hotel-level recovery efforts with regional tourism campaigns, authorities can mitigate the "high-price/low-volume trap" and foster collective resilience across the hospitality ecosystem. In summary, these implications translate configurational evidence into practical strategies: balance financial and demand-side levers, reduce dependence on single-market structures, and promote interorganizational cooperation as a resilience buffer during crises.

5.4 Limitations and future studies

First, this study primarily focuses on the combined effects of operational and financial conditions on economic development and decline in high-end hotels under the shock of the COVID-19 pandemic. However, other potential factors—such as human resource management, customer loyalty, the level of digital transformation, and brand reputation—may also play important roles in crisis recovery. Future research is encouraged to explore additional mechanisms, including organizational cultural resilience, cross-departmental coordination efficiency, and market diversification strategies, to provide a more comprehensive theoretical framework.

Second, the sample in this study is drawn mainly from the top 20 high-end hotels in Shandong Province, which may limit the generalizability of the findings to other regions or different types of hotels (e.g., budget hotels, boutique accommodations). Future studies should aim to validate these conclusions within broader national and even international contexts and compare recovery pathways under varying pandemic control policies, market structures, and consumer behavior patterns across regions.

Third, although the study employs csQCA for configurational analysis, the reliance on operational and financial proxy indicators from OTA platforms (Meituan, Ctrip, Tuniu, etc.) may not fully capture the perspectives and financial realities of all stakeholders. For example, data from direct sales channels, corporate group contracts, and detailed internal management costs were not included in the analysis. Future research could explore multisource data integration—such as industry association statistics, government reports, and audited hotel financial statements—to provide a more holistic assessment of value creation during crisis recovery and its broader economic and social impacts.

Finally, while this study examines the configurational effects of operational and financial conditions, other contextual factors—such as policy and regulatory frameworks, public health governance

capacity, and regional tourism dependency—may also play significant roles in shaping hotel recovery pathways. Future research should further investigate the influence of these macro-level and institutional factors, as well as their interaction with firm-level conditions, to inform the development of more targeted industry policies and crisis management strategies.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

YW: Data curation, Conceptualization, Writing – review & editing, Writing – original draft. XZ: Conceptualization, Writing – review & editing, Supervision, Validation. SW: Formal analysis, Project administration, Writing – original draft, Writing – review & editing.

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