

1 Navigating the uncharted: a crisis response mix to creeping 2 ‘unknowns’

3 4 5 Abstract

6 Creeping crises have received limited attention in crisis management. With a backdrop
7 of COVID-19, we explore how tourism organisations can address unprecedented
8 creeping crises. We propose and test a creeping crisis response matrix qualitatively and
9 quantitatively by analysing 108 earnings calls from 22 hotel groups covering the first 16
10 months of the pandemic. Some cannot detect creeping crises during the incubation
11 periods or the later re-emergence, whereas early exposure gives an advantage in crisis
12 response. Contrary to conventional wisdom, organisational responses to unknown crises
13 are not always reactive, with organisations deploying a varied mix of responses
14 (reactive, adaptive, protective and proactive) even in the early stages of a crisis. As the
15 framing of the crisis improves, crisis responses shift from survival to full-on
16 experimentation, to response by design and then to response by protocol. The proposed
17 matrix can be used as a response roadmap for navigating future, unknown, creeping
18 crises.

19
20 **Keywords: creeping crisis, crisis response, COVID-19, determinism, unknown-**
21 **unknowns, crisis management.**

22 1. Introduction

23
24 The advent of the COVID-19 pandemic triggered a large number of hospitality and
25 tourism studies of the phenomenon and its impact on the sector. Regardless of the
26 valuable contributions, some scholars contend that “theoretical advancements and
27 managerial implications of such research should not be sacrificed at the expense of
28 research opportunities that the context of COVID-19 presents” (Prayang 2020, p.183).
29 Others expect this research to underpin new theoretical and operational paradigms that
30 go “well beyond what is envisioned by traditional theories of crisis management,
31 communication and recovery” (Zopiatis et al., 2021, p.279). In light of these comments,
32 this study seeks to use the pandemic as the backdrop to explore crisis management from
33 an angle that meets the expectations of both these views.

34
35 Seen as a developmental process with root causes, an incubation phase, an acute phase,
36 and an aftermath, the COVID-19 pandemic can be classified as a transboundary
37 creeping crisis (Boin et al., 2021b). This crisis stretched over a long period of time and
38 exceeded the geographical, policy, cultural, public–private and legal boundaries that
39 would normally enable organisations to manage such a crisis. Creeping crises have not
40 received much attention in crisis management research although they present some
41 unique characteristics when compared to abrupt crises (Hwang & Lichtenthal, 2000).
42 Creeping crises are similar to the notion of a slow burning, python-type crisis (Pforr &
43 Hosie, 2008) in that they have a long incubation time, and their escalation is
44 unpredictable, yet are different from Python crises in that they may keep simmering
45 long after their acute phase is over. What seems like the acute phase in a creeping crisis
46 may only be a precursor either to further escalation or to a gradual resolution of the
47 crisis. Creeping crises do not have a clear beginning, or a clear end and they are

48 unprecedented or even ‘inconceivable’ (Dror et al., 2001). They may also remain
49 undetected for a while or be recognised as threatening but be insufficiently addressed
50 (Boin et al., 2021b). In contrast to creeping crises, abrupt crises are viewed as discreet
51 events, usually characterised as fast burning, cobra-type situations (Pforr & Hosie,
52 2008) and are clearly delineated with a beginning and an end (Boin et al., 2020a).
53 Conventional crisis management thinking expects proactive risk management measures
54 to prevent these crises before they manifest themselves and reactive crisis management
55 actions to contain them and limit their damage once they erupt and escalate (Paraskevas
56 & Quek, 2019; Ritchie, 2008). But while the ‘next pandemic’ generally features on
57 everybody’s risk register, COVID-19’s “creeping” characteristics posed novel and
58 complex challenges, even to those well-versed in the management of “acute” crises
59 (Boin et al., 2020b, p.190), which raises the question of “how prepared are we for an
60 ‘unknown unknown’?” (p.199).

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62 Bringing this question to the tourism industry context, how can tourism organisations
63 address a creeping crisis when: (a) they often cannot detect the crisis when it is in the
64 incubation phase because they don’t know it exists or cannot even imagine its existence;
65 (b) they cannot prevent the crisis from erupting using proactive risk management; and
66 (c) their crisis management plans will be insufficient if/when the crisis does escalate?
67 We attempt, empirically, to answer this question by analysing the COVID-19 responses
68 of 22 hotel groups (each listed in the NYSE and/or NASDAQ) as presented in 108
69 transcripts of their quarterly earnings calls to investors during the first 16 months of the
70 pandemic. By bringing together three well-established strategic frameworks (Rumsfeld
71 Matrix, Choice and Determinism Matrix and Cynefin framework), we developed a crisis
72 response matrix in which we plotted the crisis response choices made by the 22
73 organisations as their understandings of the crisis evolved with time. With this matrix,
74 we respond to Ritchie & Jiang (2019) who call for further development in conceptual
75 model building, testing and refinement through empirical studies and, in this case,
76 through more theoretically-informed COVID-19 research (Zenker & Kock, 2020). We
77 argue that our matrix can be used as a potential roadmap for tourism organisations to
78 develop or enhance the crisis management capabilities and repertoire of responses
79 necessary to address unknown creeping crises and other emerging crises in the future.

80

81 **2. Theoretical Background**

82 Boin et al. (2021a) argue that there is a need for a process-oriented focus on the
83 complexity of creeping crises, including their non-linear evolution and sudden
84 manifestations. The key characteristic of a creeping crisis is the absence of attention it
85 receives, which stems from a lack of understanding of the threat it poses when it is in
86 incubation, until its damage potential passes a tipping point that marks the threshold
87 where it is recognised. By this point in time, in almost every case, the crisis is in the
88 acute phase. But as Boin et al. (2020a, p.125) point out: “attention is one thing, but what
89 really counts is a response”. In the absence of verified knowledge, a planned crisis
90 response cannot work since the way in which the crisis will evolve is unpredictable and
91 uncontrollable. Consequently, organisations are subject to external environmental forces
92 (which cause the sudden manifestation of a creeping crisis) and have limited ability to
93 react. In strategic management language, this translates to high environmental
94 determinism and low strategic choice (Bourgeois, 1984). The extent of environmental
95 determinism, combined with an organisation’s crisis response choices, will define its
96 behaviours at the different phases of a creeping crisis. A useful framework for a

97 process-oriented analysis of a creeping crisis would be Hrebiniak and Joyce's (1985)
98 Adaptive Matrix in which they consider determinism and choice as orthogonal,
99 independent constructs instead of two ends of a unidimensional continuum. Their 2X2
100 matrix consists of four quadrants in which the organisation experiences the following
101 conditions: Quadrant I: High determinism and low strategic choice; Quadrant II: High
102 determinism and high strategic choice; Quadrant III: Low determinism and high
103 strategic choice and Quadrant IV: Low determinism and low strategic choice. In a crisis
104 situation, there is always a negotiation between the environment (the crisis) and the
105 crisis management team in the organisation (crisis response choice).

106
107 One factor that defines the level of environmental determinism in a crisis situation is the
108 knowledge the organisation has about the crisis it is responding to. Pandemics have
109 been on the radar of risk managers as low-probability, high-impact contingencies for a
110 few decades now and diseases like SARS (followed by Ebola, H1N1, Zika and others)
111 have been viewed as forerunners of things to come, with experts warning that the next
112 pandemic was overdue (e.g., Baekkeskov & Rubin, 2014). Yet, in the case of the
113 COVID-19 pandemic, all organisations, including the very institutions designated to
114 respond to such a risk, were initially found to be in a situation of non-response because
115 they could not imagine, nor predict, a crisis of such magnitude. Van der Heijden (2005,
116 p. 93), in his seminal work on scenario planning, talks about "unknowables, where we
117 cannot even imagine the event". This unknowable is a state of risk knowledge that
118 complements the three categories of threats described by the US Secretary of Defence,
119 Donald Rumsfeld, and referenced in the risk forecasting literature as the 'Rumsfeld
120 Matrix' (de Valk & Goldbach, 2021), namely: i) things we know we know (known-
121 knowns); ii) things we know we do not know (known-unknowns); and iii) things we do
122 not know we do not know (unknown-unknowns). An organisation's crisis response will
123 vary across the four quadrants of the Adaptive Matrix depending on its knowledge of
124 the threat, with unknowable-unknowns and unknown-unknowns implying lower
125 predictability and controllability and, therefore, high environmental determinism. In
126 situations with unknown-knowns and known-knowns, there is higher predictability and
127 controllability and, therefore, low environmental determinism.

128
129 Strategic choice is the organisational decision-making and available strategic options at
130 a given time (Hrebiniak and Joyce's, 1985). The types of strategic choice -what
131 organisations can control and affect- vary significantly between quadrants upon the
132 organisation-environment context dynamic. Environmental determinism refers to
133 factors that influence organisational decision-making. There are few viable strategic
134 choices available to organisations in Quadrant I. Autonomy is low due to powerful
135 external constraints delimiting choice toward organisational efforts to alter
136 dependencies on the environment. In Quadrant II, the number of strategic choices
137 available is medium, while is highest in Quadrant III, as the choice coexists with
138 externally generated constraints. The type of strategic choice varies significantly given
139 the distinct environmental conditions in Quadrant II and III, as organisations would
140 move to Quadrant III only when strategic choice reduces its vulnerabilities and enables
141 them to gain additional influence over the environment. In Quadrant IV, despite a lack
142 of threat in a relatively "placid" environment, there are few strategic choices available
143 due to internal constraints such as insufficient or inadequate capabilities that inhibit
144 decision-making and prevent the organisation from acting.

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146 Another useful concept in the exploration of the relationship between environmental
147 determinism and creeping crisis response is the nature of the environment during the
148 crisis's manifestation. The Cynefin Framework (Snowden and Boone, 2007)
149 distinguishes between unordered environments (with no clearly understandable links
150 between causes and effects) and ordered environments with clearly understandable
151 links. The framework further divides environments into chaotic, complex, complicated
152 and simple (or obvious), connecting each one with behavioural patterns and
153 recommendations for problem solving. Chaotic and complex contexts are unordered and
154 require responses based on emerging patterns, whereas complicated and obvious
155 contexts assume a better-informed understanding of the situation and allow for fact-
156 based responses (Snowden and Boone, 2007). A completely new and 'unknown' crisis
157 situation would be a 'complex' crisis but as more knowledge about the crisis is gained,
158 crisis responses would become better-informed, and the crisis would gradually become
159 'complicated' before entering the realm of 'obvious'. For example, in the face of a
160 cascading disaster situation (earthquake, tsunami, nuclear disaster) following the
161 Tohoku earthquake in 2011, individual Japanese ministries and agencies – including the
162 National Police Agency, the Ministry of Land, Infrastructure, Transport and Tourism,
163 the Fire and Disaster Management Agency, the Self Defence Force and the Coast Guard
164 – launched their own response efforts, operating mostly independently from each other
165 in the prefectural capitals of Fukushima, Miyagi, and Iwate thus increasing the
166 complexity of the crisis and the crisis response (Shimizu, 2012). Once a common
167 situational awareness was achieved, they were still facing a complicated crisis situation
168 of three disasters, but the response efforts were better coordinated by shared knowledge
169 and understanding with all actors moving to the same direction.

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171 Bringing these three frameworks together gives a starting point for analysis of a
172 creeping crisis response, as summarised in Figure 1.

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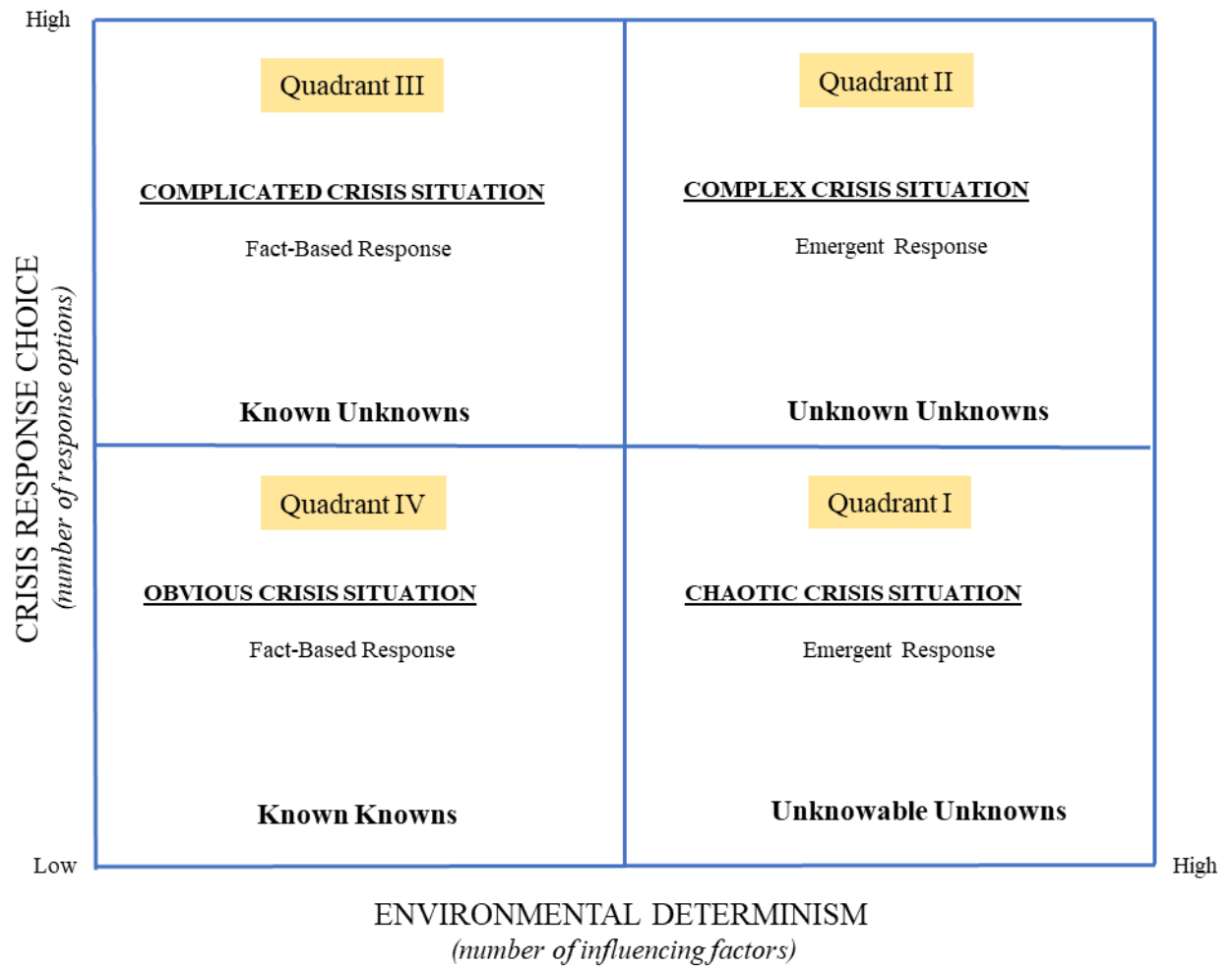
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Fig. 1: An analytical framework for creeping crisis response



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3. Research Design

182 This study adopted a mixed-method approach with qualitative content analysis of the
 183 earnings calls of 22 organisations, followed by quantitative analysis to confirm and
 184 enrich the proposed creeping crisis response framework. Earnings calls are widely
 185 recognized voluntary disclosures of organisations listed in the stock market providing
 186 investors with useful and relevant information (Matsumoto et al., 2011). They are
 187 divided in two parts. The first part is the corporate presentation that consists of the
 188 organisation’s quarterly financial and operational performance presentation by
 189 corporate executives to the investment community. In the second part, Questions &
 190 Answers, financial analysts have the opportunity to ask questions to the executives, who
 191 have to answer them immediately. In contrast to the ‘static’ and scripted nature of
 192 formal documents (annual reports, press releases and SEC filings), the earnings call is
 193 more ‘dynamic’ and less prescribed with executives’ views emerging more
 194 spontaneously (Blau et al., 2015). They were deemed, therefore, an appropriate and
 195 reliable source for our study. The study took a novel approach in terms of: (a) the data
 196 set selected: published accounts of crisis response strategies that remain underutilised in
 197 the crisis management literature (Ritchie & Jiang, 2019); and (b) methods of analysis:
 198 beyond the predominant quantitative research (Wut et al., 2021). A purposive, criterion-
 199 based approach was used to select 22 hotel organisations (hotel brands/casinos and hotel
 200 real estate investment trusts (REITs)) operating in diverse geographies (with and

201 without exposure to the Chinese market). The top 10 organisations were selected based
 202 on their market capitalisation data, which was drawn from the New York Stock
 203 Exchange (NYSE) and the National Association of Securities Dealers Automated
 204 Quotations (NASDAQ) company listings. GreenTree Hospitality and Melco were also
 205 selected to complement the Huazhu Group, which was already in the list, to gain a
 206 richer perspective from hotel organisations with sole exposure in the Chinese market
 207 (Table 1). For each of the 22 organisations, we reviewed five quarterly earnings calls
 208 used by the organisations’ senior management to communicate with investors, from Q4
 209 2019 (when COVID-19 was an ‘unknowable unknown’ crisis) to Q4-2020 (when the
 210 pandemic moved to a more ‘known’ realm).

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Table 1: Analysed hotel groups

Hotel Brands	Hotel REITs
<ul style="list-style-type: none"> • Accor • GreenTree Hospitality Group • Huazhu Group • Hilton Worldwide Holdings • Hyatt Hotels Corporation • InterContinental Hotels Group • Marriott International 	<ul style="list-style-type: none"> • Apple Hospitality • Diamondrock Hospitality • Host Hotels & Resorts • Park Hotels & Resorts • Pebblebrook Hotel Trust • RLJ Lodging Trust • Ryman Hospitality • Service Properties Trust • Sunstone Hotel Investors • Xenia Hotels & Resorts
Hotel Casino Groups	
<ul style="list-style-type: none"> • Caesars Entertainment • Las Vegas Sands • Melco Resorts & Entertainment • MGM Resorts International • Wynn Resorts 	

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Textual analysis of quarterly earnings calls is a novel research approach that has recently been used by researchers in the fields of management, accounting and finance (e.g., Bochkay et al., 2020; Mangalaraj et al., 2021). The analysis conducted by this study used the entire conference calls, including both the presentations and the question-and-answer sessions, and adapted the approach introduced by Hassan et al. (2019) by doing both a qualitative and quantitative analysis of the coded text segments. A total of 108 of the 110 earnings calls were analysed, distributed across five quarters; it was not possible to obtain two of the quarterly earnings calls from one of the organisations in the sample. In one of our robustness checks we dropped that organisation for the analysis, and we observed no significant change in the results. We can conclude that the lack of two quarters does not significantly differentiate the findings from the data collected from the remaining 108 transcripts. The analysis period (from Q4 2019 to Q4-

229 2020) was selected based on the timeline of events related with the spread of the virus
230 and the international response to it (Appendix 1).

231

232 *Qualitative analysis: understanding of crisis, perceived environmental determinism and*
233 *crisis response choice*

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235 The purpose of this analysis was to evaluate, from the way the hotel groups' C-suites
236 talked to their investment communities in the earnings calls, the levels of understanding
237 of the C-suites regarding COVID-19 as a crisis including how they perceived
238 environmental determinism at each period and the types of response strategies they
239 adopted. In this research, the strategic choice is framed under crisis response, and thus,
240 it refers to the number and type of strategic crisis response choices available to
241 organisations. We employed the text analytics software MAXQDA© to perform manual
242 qualitative content analysis and followed the Gioia methodology to ensure qualitative
243 rigour with a series of iterative stages of inductive and deductive reasoning (Gioia et al.,
244 2013). Following convention, independent coding on a sample of nine earnings calls
245 was initially performed, diverging opinions were discussed and consensus was achieved
246 and, then, independent coding continued. Researcher-centric initial data coding of first-
247 order terms was employed and codes were grouped into abstract second-order themes.
248 The researchers met several times to reach maximum consensual interpretation of the
249 overall results, distilling the results into overarching dimensions.

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251 *Quantitative analysis: Perceived environmental determinism and crisis response choice*
252 *across time*

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254 Once the qualitative data was generated, with 6,544 text segments coded, all 1st-order
255 themes were transformed into binary quantitative data, based on whether each 1st-order
256 term was present (score of 1) or not present (score of 0) in each earnings call. If a 1st-
257 order theme was repeated in a transcript, it was counted only once. Unfavourable
258 environmental factors were given a positive sign as those increased environmental
259 determinism. Conversely, favourable factors were given a negative sign.

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261 Strategic choice was framed as crisis response strategies, and consequently, it refers to
262 the number and type of strategic crisis responses available to organisations. Response
263 strategies in each earnings call were coded inductively and deductively and then codes
264 were grouped into abstract second-order themes, initially labelled as 'reactive' and
265 'proactive'. The qualitative information was then translated into a binary score for each
266 1st-order and 2nd-order theme, based on whether each type of strategy was present
267 (score of 1) or not (score of 0) in each transcript, which enabled later the quantitative
268 analysis.

269

270 In the case of strategic choice, we calculate a "strategy mix" for each organisation and
271 period. We calculated the percentage of each strategic choice (reactive, adaptive,
272 protective, and proactive) out of the total number of strategies implemented. The
273 thresholds for environmental determinism (X-axis) and crisis response choice (Y-axis)
274 were then calculated on a 2x2 matrix (like Hrebiniak and Joyce's (1985) Adaptive
275 Matrix) based on the average scores of the two axes' factors across all 108 earnings
276 calls. The sample organisations were then plotted on the matrix and changes across
277 periods were monitored, to identify their aggregate movement across the quadrants per
278 period. Using Stata v.16A software, a simple linear regression analysis of these two

279 variables was performed to provide empirical confirmation of the movement of the
280 organisations across the matrix. Simple linear regressions were also applied to explore
281 how the type of an organisation (brand, casino or REIT) and its exposure to the Chinese
282 market affected its level of perceived environmental determinism (based on the number
283 of factors mentioned in its calls) and the number of crisis responses adopted.

284
285 To monitor the types of crisis responses the sample organisations chose to implement
286 while moving across the matrix, we calculated a crisis response mix for each period and
287 organisation type based on the percentage of crisis response type over the total number
288 of crisis responses. Multiple linear regression analysis with period fixed effects on the
289 crisis response mix enabled an evaluation of the evolution of crisis response over time
290 and per matrix quadrant. Both regressions were controlled by: i) organisation type; and
291 ii) exposure or non-exposure to the Chinese market. Multiple paired t-tests were also
292 performed to identify the predominant type of crisis response per period and per
293 quadrant.

294

295 **4. Results**

296

297 **4.1. Environmental determinism, strategic choice and understanding of risk**

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299 **4.1.1. Perceived environmental determinism**

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301 The analysis with regards to external factors shaping the degree of environmental
302 determinism in the period under investigation produced three aggregate dimensions of
303 determinism (Appendix 2, 1A):

- 304 1. Factors directly related to the COVID-19 virus and its spread (in 251 text
305 segments) with two second-order themes: infection levels and consecutive
306 waves.
- 307 2. Factors increasing uncertainty and determinism (1,307 segments), often labelled
308 as ‘headwinds’ by some C-suite executives, with five second-order themes:
309 imposition of restrictions, changing business / leisure demand, disrupted supply
310 chains, disrupted construction activity and liquidity drag.
- 311 3. Factors decreasing uncertainty and determinism (976 segments), labelled as
312 ‘tailwinds’ in many earnings calls, with five second-order themes: protection
313 and treatment advances, easing of restrictions, government support schemes,
314 return of consumer confidence and industry re-structure.

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316 **4.1.2. Choice of crisis response strategies**

317

318 The analysis initially looked at a pattern of proactive from the past – reactive to the
319 present – proactive for the future response strategies as supported by the generic crisis
320 management literature. It soon emerged, however, that there was a need for a different
321 and more elaborate classification of crisis response strategies (Appendix 2, 2B). This
322 shift from the binary reactive vs proactive classification of strategies has also been
323 implemented in the field of psychology and the Coping Theory in stress and crisis
324 management which offers a wider range of ‘coping strategies’ (Schwarzer and
325 Schwarzer, 1996; Schwarzer & Luszczynska, 2008) beyond proactive and reactive. In
326 this study, the first type was *reactive* crisis response strategies, referring to efforts to
327 deal with the ongoing unknown risk, and was classified in six second-order themes:
328 maintaining business revenues, cutting operational costs, managing capacity, securing

329 liquidity, supporting stakeholders and ensuring health and safety (47 first-order themes
330 in 2,316 segments). As the first wave of the pandemic started subsiding, still
331 constrained by the crisis, organisations adopted response strategies characterised as
332 *adaptive* because they aimed to prepare the organisations for an imminent second wave
333 and focused on living with the pandemic. These strategies were classified in three
334 second-order themes: re-engineering of operations; restructuring resources for
335 efficiency and re-shaping stakeholder relations (15 first-order themes in 280 segments).
336 Another set of crisis response strategies aimed for *protection* of the organisations by
337 building up general resilience resources that would result in operational process
338 flexibility and less strain from a crisis in the immediate term and the future. These
339 strategies were classified in four second-order themes: enhancing epidemic data-driven
340 decision making; adapting operations to new customer needs; revising business
341 practices; negotiating innovative business models (22 first order themes in 626
342 segments). A final set of strategies was geared towards building up longer-term general
343 resources that would facilitate movement toward the organisations' new strategic
344 visions. *Proactive* in nature, these strategies were focused on strengthening the
345 organisations' resilience to future crises and its ability to grow even under adverse
346 situations. This gave rise to four second-order themes: strategic business
347 transformation; securing financial resilience; cost structure re-engineering; and new
348 stakeholder agreements (18 first order themes, 788 segments).

349

350 4.1.3. Environmental Determinism and Strategic Choice by Period

351

352 Figure 2 depicts the results for each of the five periods. In the five matrices, the X-axis
353 shows the number of perceived factors of environmental determinism and the Y-Axis
354 the number of strategic choices (crisis response strategies) adopted by the hotel groups
355 in the sample. The blue lines are the thresholds that define the quadrants in the matrix
356 and are the sample averages of factors of environmental determinism and the number of
357 crisis response strategies for all the periods considered in the analysis. The dotted lines
358 indicate the sample averages in each period and the red dots represent the average
359 location in the matrix of all hotel groups in the sample. The hotel groups are depicted by
360 type (Brands, Casinos, REITs) and by their exposure to China, as this appeared to be a
361 significant factor affecting their initial reactions.

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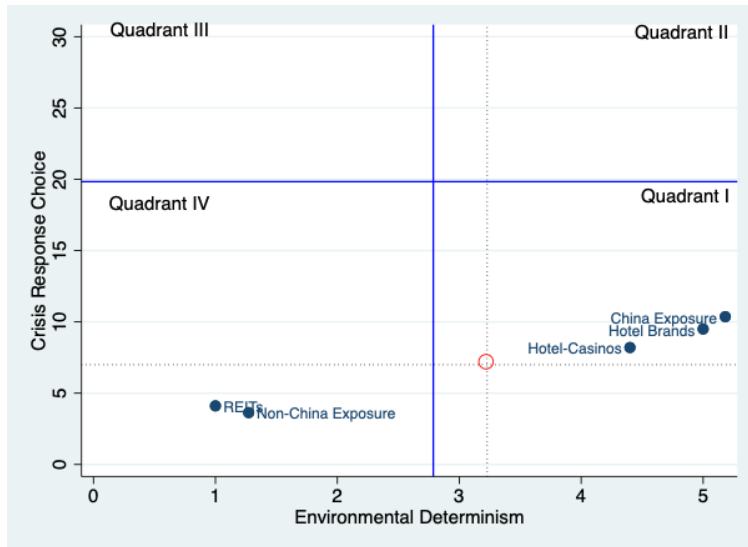
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366 **Fig. 2: Results by period**

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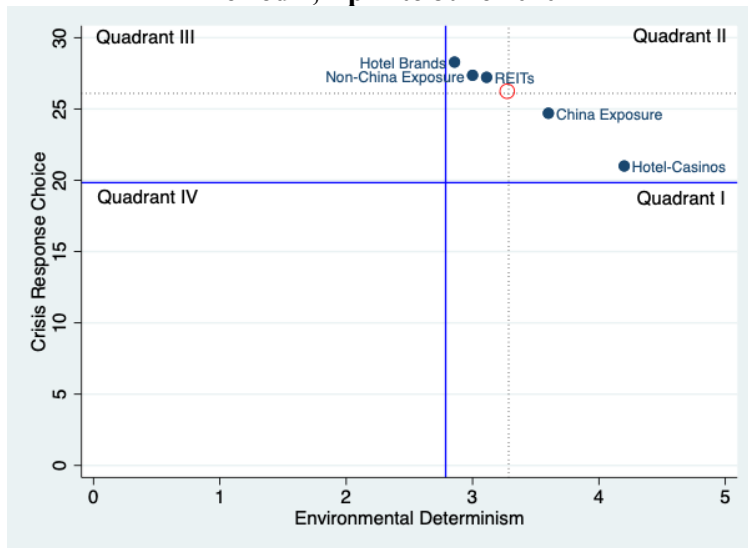
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Period 0, December 2019 to March 2020



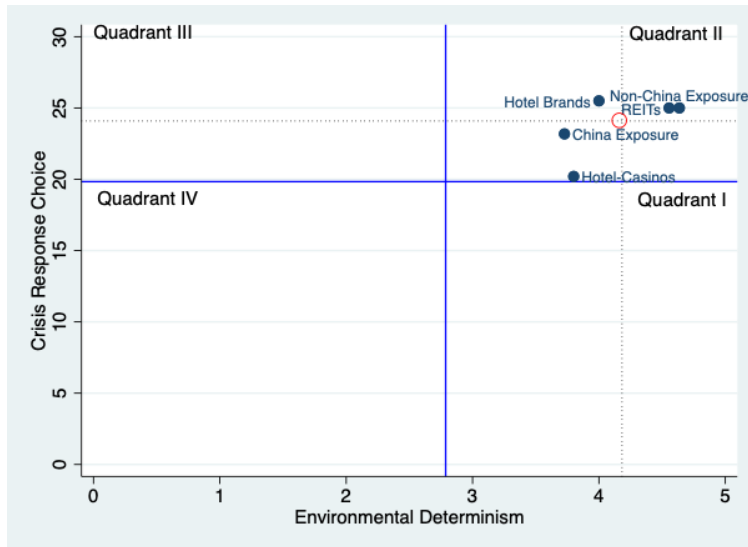
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Period 1, April to June 2020



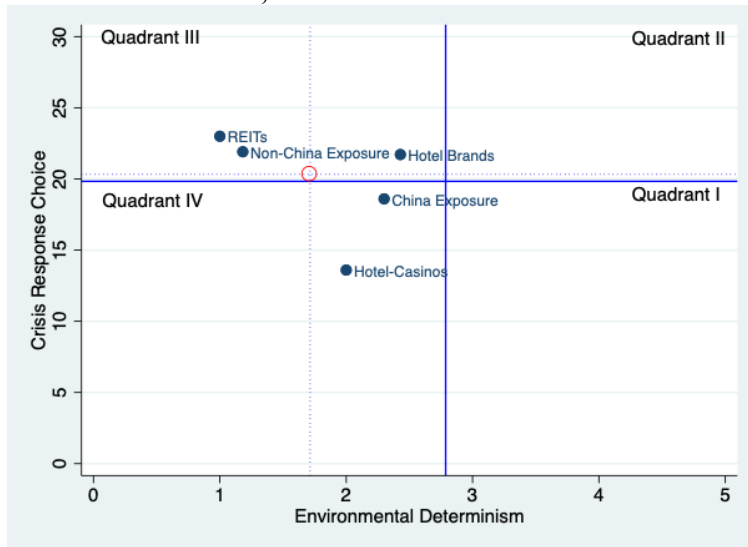
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Period 2, July to September 2020



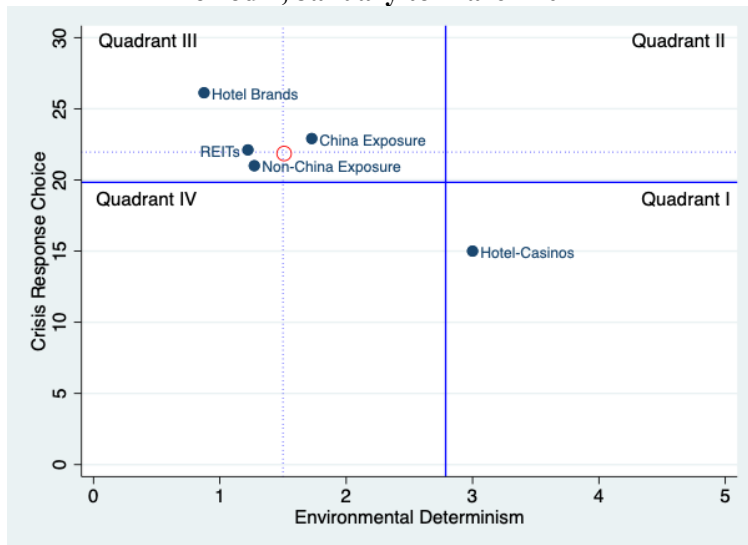
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Period 3, October to December 2020



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Period 4, January to March 2021



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399 Simple linear regression analysis showed that both perceived environmental
 400 determinism and the number of crisis response strategies adopted by the hotel groups in
 401 the samples changed during the first year of the pandemic and that the movement across
 402 the Adaptive Matrix's quadrants, in the different periods investigated, was as expected
 403 (Table 2).

404
 405 **Table 2: Simple linear regression model of environmental determinism and**
 406 **strategic choice (estimates OLS)**
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	Adaptive Matrix: Horizontal Axis		Adaptive Matrix: Vertical Axis	
	N° of Environmental Determinism factors		N° of Strategic Choices	
Period 0	-0.058 [0.793]	1.512 [0.793] ⁻	-19.095 [2.400] ^{***}	-13.333 [2.400] ^{***}
Period 1	[omitted]	1.571 [0.802] [*]	[omitted]	5.761 [2.428] ^{**}
Period 2	0.896 [0.793]	2.467 [0.793] ^{***}	-2.004 [2.400]	3.757 [2.400] ⁻
Period 3	-1.571 [0.802] [*]	[omitted]	-5.761 [2.428] ^{**}	[omitted]
Period 4	-1.785 [0.793] ^{**}	-0.214 [0.793]	-4.140 [2.400] [*]	1.621 [2.400]
N° of observations	108	108	108	108
R ²	0.1394	0.1394	0.4370	0.4370

408 Confidence level (two-tail test): 99% (***), 95% (**), 90% (*), 85% (-).

409
 410 Looking at Figure 2, in conjunction with Table 2, the number of perceived
 411 environmental determinism factors can be seen to change across the different periods
 412 (horizontal axis) as expected (low-high-high-low) with statistical significance. Hotel
 413 groups moved to the right of the threshold as the perceived environmental determinism
 414 increased in the first months of the crisis and then went back to the left side of the
 415 threshold when the perceived environmental determinism gradually decreased. More
 416 specifically, whilst it increased in periods 0, 1 and 2, the perceived environmental
 417 determinism was not significantly different between these periods. Hotel groups
 418 perceived statistically more environmental determinism in periods 1 and 2 than in
 419 periods 3 and 4, with those two periods not being statistically different from each other.

420
 421 The number of crisis response strategies adopted across the different periods (vertical
 422 axis) also changed, as expected, with statistical significance. Hotel groups in period 0
 423 adopted a significantly low number of strategies (below the threshold). The number of
 424 strategies then moved above the threshold in period 1, adopting a statistically higher
 425 number of responses than was observed in periods 2, 3 and 4, whereas the strategies in
 426 these last three periods did not show significant statistical difference between any of
 427 these three periods.

428
 429 Tables 3 and 4 present a simple linear regression model of perceived environmental
 430 determinism factors and choice of crisis response by type of hotel group and by
 431 exposure to China respectively.

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Table 3: Simple linear regression model of perceived environmental determinism factors and crisis response choices by type of hotel group (estimates OLS)

	Period 0	Period 1	Period 2	Period 3		Period 4	
Factors of Environmental determinism							
Brands	4 [1.227]***	-0.253 [1.495]	-0.555 [1.323]	1.428 [1.209]		-0.347 [0.894]	[omitted]
Casinos	3.4 [1.408] **	1.088 [1.655]	-0.755 [1.519]	1 [1.338]		1.777 [1.027]*	2.125 [1.049]*
REITs	[omitted]	[omitted]	[omitted]	[omitted]		[omitted]	0.3472 [0.894]
Earnings Calls Analysed ^a	22	21	22	21		22	22
R ²	0.3875	0.0349	0.0157	0.0763		0.1896	0.1896
Crisis response Choices							
Brands	5.388 [2.526]**	[omitted]	0.5 [4.852]	-1.285 [2.886]	[omitted]	4.013 [3.625]	[omitted]
Casinos	4.088 [2.900]	-7.285 [4.838]	-4.8 [5.570]	-9.4 [3.195]***	-8.114 [3.354]*	-7.111 [4.161]	-11.125 [4.253]**
REITs	[omitted]	-1.063 [4.164]	[omitted]	[omitted]	1.285 [2.886]	[omitted]	-4.013 [3.625]
Earnings Calls Analysed ^a	22	21	22	21	21	22	22
R ²	0.2048	0.1245	0.0497	0.3398	0.3398	0.2649	0.2649

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^a 2 Accor earnings calls missing

Confidence level (two-tail test): 99% (***), 95% (**), 90% (*), 85% (-).

Table 4: Simple linear regression model of perceived environmental determinism factors and crisis response choices by exposure to China (estimates OLS)

	Period 0	Period 1	Period 2	Period 3	Period 4
Factors of Environmental determinism					
Exposure	3.909 [1.017]***	0.6 [1.277]	-0.909 [1.123]	1.118 [1.030]	0.454 [0.844]
Earnings Calls Analysed ^a	22	21	22	21	22
R ²	0.4248	0.0115	0.0317	0.0583	0.0143
Crisis response Choices					
Exposure	6.727 [1.899]***	-2.663 [3.705]	-1.818 [4.237]	-3.309 [2.900]	1.909 [3.591]
Earnings Calls Analysed ^a	22	21	22	21	22
R ²	0.3853	0.0265	0.0091	0.0641	0.0139

444

^a 2 Accor earnings calls missing

445 Confidence level (two-tail test): 99% (***), 95% (**), 90% (*), 85% (-).
446

447 **4.2. Qualitative findings** 448

449 **4.2.1. Period 0 (December 2019 to March 2020): Denial and confusion at the edge** 450 **of chaos** 451

452 In Period 0, before the pandemic was declared, the C-Suites' levels of understanding of
453 COVID-19 were varied. The hotel brands and casino groups with exposure in China,
454 fully experienced the effects of the virus and directly combated it; their understanding
455 of the risk was more comprehensive and the language they used in the earnings calls
456 was much more crisis-response-oriented. These C-Suites focused on the measures taken
457 by their government and the industry, and expressed their "*sincere gratitude to the*
458 *Macau SAR government for their proactive and decisive response to contain the*
459 *spread*" (Melco, 20 February 2020) and the "*terrific job in front of battling against the*
460 *COVID-19*" (Huazhu, 27 March 2020). The international brands with properties in
461 China showed caution with the "*coronavirus situation*" as, from mid-January, they
462 started to experience occupancy declines that gradually spread from Wuhan to other
463 markets in the Asia Pacific region. Hotels with Chinese exposure were predicting it
464 would last "*around three to six months with an additional three to six month recovery*
465 *period*" (Hilton, 11 February 2020). They relied on their limited knowledge of prior
466 epidemics (SARS, Ebola, H1N1, Zika) and on the knowledge generated by their
467 properties in the frontline in China (IHG, 18 February 2020; Marriott 27 February 2020;
468 Hilton, 11 February 2020). These hotels had already moved into Quadrant I of the
469 Adaptive Matrix as they had already encountered the health crisis situation, but they
470 then started to realise that they were facing an 'unknowable unknown'. They took
471 measures informed by the crisis response in China "*to minimize the negative financial*
472 *impact on both our owners and on our financial results*" (Hyatt, 20 February 2020).
473 Their reactions can be described as "*carefully monitoring the situation*" (Hilton, 11
474 February 2020; Hyatt, 20 February 2020), although the common belief among the C-
475 suites of these hotel groups was "*we don't think it's going to be significant in these*
476 *markets outside of Asia-Pacific*" (Hyatt, 20 February 2020). This was a period of high
477 environmental determinism (since the hotel groups and casinos did not have control of
478 the external environment) and of very low strategic choice (since COVID-19 was still a
479 localised crisis in a region where the state dictated any courses of action). The REITs,
480 being more US-centric, talked about the crisis as something that was affecting only
481 China and their Chinese inbound customer base with minimal impact on their business
482 (Sunstone, 19 February 2020; Host, 20 February 2020). The REITs referred to the
483 situation as something "*hard to ignore as it continues to dominate the headlines*" but
484 that would "*not change the paybook for now*" (Park, 27 February 2020). Although the
485 REITs referred to the risk mostly as a "*health crisis*", their perceptions varied from
486 "*unknowable*", "*unpredictable*" and "*difficult to forecast*" (Pebblebrook, 21 February
487 2020) to just a "*hype*" and "*for want of a better word, paranoia*" (Ryman, 25 February
488 2020). REITs in this period remained 'blissfully ignorant' or in denial, positioned in
489 Quadrant IV (low environmental determinism - low crisis response choice) – "*our*
490 *international business is really only about 5% of our total business ... [business]*
491 *coming from China*" (Ryman, 25 February 2020).
492

493 Our analysis showed that, in this period, hotel brands and casinos perceived statistically
494 significantly higher environmental determinism than did the REITs (Table 3). Also, the

495 brands and casinos with exposure to China had a statistically significantly higher
496 perception of environmental determinism than did the REITs; the former were already
497 facing challenging, and even chaotic, circumstances in Quadrant I with a limited range
498 of response strategies (Table 4). Hotel brands adopted a statistically higher number of
499 crisis response strategies than did the REITs, while casinos did not apply a statistically
500 significantly different number of strategies than did the REITs (Table 3). Exposure to
501 the Chinese market statistically increased both the perceived negative environmental
502 determinism factors and the number of strategies implemented in Period 0 (Table 4),
503 while it had no significant effect on the perceived environment during the remaining
504 periods. The same occurred with the number of response strategies adopted, with the
505 organisations exposed to Chinese markets developing statistically more response
506 strategies than the ones that were not exposed.

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509 **4.2.2. Periods 1 & 2 (April to September 2020): The complexities of a global** 510 **pandemic**

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512 In Period 1, the hotel organisations' C-suites' views were aligned with one another.
513 They expressed a sense of being overwhelmed with the uncertainty of the
514 *"unprecedented", "dramatic", "extraordinary" and "challenging times"* and they
515 made comparisons with previous crises (SARS and other health crises, the 2007-2009
516 financial crisis and various terrorism events). The C-suites used weather metaphors to
517 illustrate their resolve (to *"navigate this morass"* and *"weather this unprecedented*
518 *storm"*) and referred to continuous changes in the environment and in the risk
519 (*"evolving", "dynamic", "fluid situation", "current dynamics"*). Notably, at the point
520 in time when the REITs were stating that *"we all find ourselves in uncharted territory*
521 *with an almost complete lack of clarity about the future"* (Pebblebrook, 9 May 2020),
522 the Chinese hotel groups, having gone through the learning curve earlier than the rest,
523 were starting to talk about control (*"the outbreak is coming under control in China"*,
524 GreenTree, 14 April 2020) and recovery (*"now we're in the initial recovery stage"*,
525 Huazhu, 27 March 2020), albeit slow (*"to encourage investors not to expect a V-shape*
526 *recovery in Macau"*, Melco, 14 May 2020). The crisis became an 'unknown unknown'
527 *"informed by the trends we are seeing now, our experience of previous downturns and*
528 *the insights we are getting from China"* (IHG, 7 May 2020), thus, still with a high
529 perceived environmental determinism. In the face of travel restrictions and lockdowns,
530 followed by re-openings and relaxation of measures, however, Chinese hotel groups
531 moved to Quadrant II increasing their crisis response strategies (higher choice) with the
532 spirit of *"Now is the time to experiment and try things. The risk of failing is more than*
533 *outweighed by the benefits of what we could learn"* (MGM, 30 July 2020). They
534 attempted everything they could to navigate the crisis with the limited information and
535 knowledge that they had. In Period 2, and as summer started, the number of COVID
536 cases subsided and all the C-suites appeared to know more about the risk. They were
537 more confident in dealing with the crisis and their communication focused on the
538 effectiveness of their response strategies, their preparations for new waves and the
539 changes they were making to withstand similar situations in the future. Words like
540 *"recovery", "pivot", "rebound"* and expressions such as *"back to normal", "new*
541 *normal", "win-win", "post-COVID"* and *"post-pandemic"* were used regularly in this
542 period. The pandemic was seen as a manageable risk and as *"an accelerator ... for*
543 *people to understand the necessity to readjust"* (Accor, 8 August 2020).
544

545 Tables 3 and 4 above show that, in both periods, all the organisations, regardless of their
546 type and exposure to China, behaved similarly with regards to perceived environmental
547 determinism and the number of response strategies they adopted with no significant
548 statistical differences in their behaviour.

549

550 **4.2.3. Period 3 (October to December 2020): Better but still complicated**

551

552 In Period 3, the relaxation of measures and the announcement of multiple vaccines had
553 brought a sense of “cautious” optimism among the hotel groups (Hyatt, 5 November
554 2020) for the gradual recovery of business and key metrics such as ADR and RevPAR
555 (Huazhu, 6 December 2020). They continued their efforts to adapt to the COVID world
556 and felt more confident about managing the crisis. Although the virus had become less
557 of an ‘unknown’ with only the new variants and their behaviour being ‘known
558 unknown’, but the uncertainty of business, the varying regulatory frameworks across the
559 globe, the possible vaccine production and distribution challenges, and the financial and
560 other consequences of the lockdown kept the crisis situation quite complicated.
561 Regardless, response systems were in place and the talk in the earnings calls was mostly
562 about recovery and dealing with the ‘pent-up demand’, reflecting lower levels of
563 environmental determinism. The hotel brands and REITs continued their crisis response
564 strategies at almost the same level as in the previous periods (thus, moving to Quadrant
565 III), selecting those strategies that had proven successful in periods 1 and 2 and were,
566 therefore, now considered more mainstream ‘good practice’, rather than ‘under duress’
567 responses. The crisis response strategies here were well-informed and the choice was
568 ‘by design’ following experience and analysis. Some REITs talked about “*the*
569 *opportunity to rethink and re-engineer our businesses*” (Ryman, 3 November 2020)
570 whereas others took advantage of the COVID-19 circumstances to undertake major
571 restructures of their portfolios. SVC, for example, announced “*the decision to terminate*
572 *agreements [with Marriott and IHG for 125 hotels] and to transition management and*
573 *branding of these hotels to Sonesta [of which 34% is owned by SVC]” (SVC, 9*
574 *November 2020). The casino groups moved to Quadrant IV, apparently confident about*
575 *the course the pandemic had taken and having experienced significant business recovery*
576 *in both Macao and Las Vegas. They talked about “meaningful recovery across the*
577 *different segments” and “50% recovery of the premium mass segment”. They were*
578 *encouraged by the “strong renminbi” and the fact that “the Chinese consumer is not*
579 *traveling to foreign countries” (LVS, 21 October 2020). US casinos had similar*
580 *optimism with efforts focused on proactive strategies to secure future growth. For*
581 *example, Caesars started monetising the Caesars Rewards database through brand*
582 *license agreements, proprietary i-Gaming and sports betting platforms (Caesars, 5*
583 *November 2020) and MGM was “aggressively working to introduce new customers to*
584 *BetMGM” (MGM, 29 October 2020). The confidence and optimism of casino C-suites*
585 *was also reflected in their failure to mention the second COVID-19 wave in any of the*
586 *earnings calls during this period. Hotel brands referred to a second wave and the*
587 *difficulty of forecasting its impact – possibly due to their exposure, or non-exposure, in*
588 *Europe. Organisations in this period felt more in control: “unless you're asleep, you'd*
589 *see the caseloads are increasing daily and to new records in a large number of states in*
590 *the United States and in Europe. So, we're just anticipating that, that progression,*
591 *which is upon us” (Hyatt, 5 November 2020).*

592

593 In this period, our analysis showed that there were no statistically significant differences
594 between types of hotel groups in their perceptions of environmental determinism (Table

595 3). Table 4 shows that the REITs and hotel brands behaved statistically similarly to one
596 another and adopted more crisis response strategies than: i) the casinos; and ii) hotel
597 groups with exposure in China (Table 4).

600 **4.2.4. Period 4 (January to March 2021): Coexisting with COVID-19**

601
602 Period 4 was characterised by the impact of the second wave and the lockdowns
603 imposed in several countries from November 2020 onwards. The hotel brands and
604 REITs remained in Quadrant III because they were still dealing with a ‘known
605 unknown’ (variant Delta) but they were optimistic for a recovery: *“the combination of*
606 *the rapid decline in cases over the last six weeks and the increasing pace of*
607 *vaccinations will lead to an easing of governmental restrictions and the untethering of*
608 *pent-up travel demand”* (DiamondRock, 28 February 2021). During this period, the
609 crisis was complicated to manage, with difficulties to overcome, but not as complex as
610 it had been in the earlier periods. This optimism indicated low environmental
611 determinism and, consequently, a reasonable choice of response strategies. However,
612 for the casinos, environmental determinism became much stronger in this period
613 pushing them from Quadrant IV of the matrix back to Quadrant I. A major contributing
614 factor was the travel restrictions in Southeast Asia. More specifically, in *“Singapore,*
615 *the government is eager to open the doors, but it necessitates airlift, which means*
616 *counterparty trading with other governments and other airlines. So, we don't see it*
617 *coming back in the short-term”* (LVS, 27 January 2021). A second contributing factor
618 was the delay in the announcement of the operator licences renewal process for casinos
619 in Macao, *“We only have about 17 months left before the concession expires. And we*
620 *only know that the government is adopting a process, which includes public*
621 *consultation on the performance of the concession”* (LVS, 27 January 2021). A third
622 and equally concerning factor was a series of *“property closures and incremental*
623 *COVID-19 restrictions”* (Caesars, 25 February 2021) in the US and internationally. A
624 fourth threat that emerged was that, *“Macao cannot afford a single case because it was*
625 *a public announcement by the government that if there is even one case, Macao would*
626 *be locked down again”* (LVS, 27 January 2021).

627
628 Table 3 shows that casinos perceived statistically more environmental determinism than
629 did the hotel brands and REITs, thus, explaining their move back to Quadrant I. They
630 continued to implement a lower (and statistically significant) number of response
631 strategies than both the hotel brands and the REITs. Otherwise, in Period 4, the hotel
632 brands and the REITs had no statistically significant difference in perceived
633 environmental determinism.

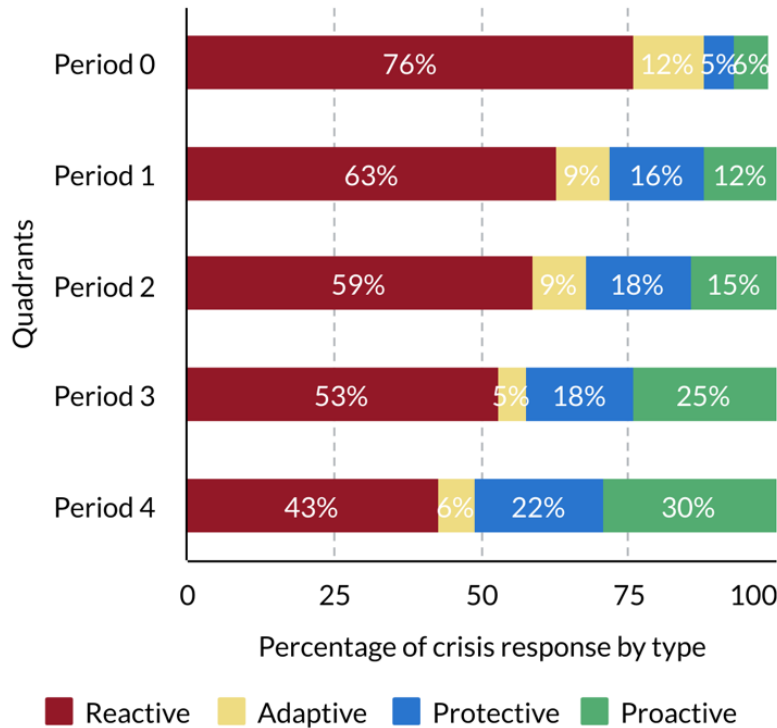
635 **4.3. Crisis strategy mix**

637 **4.3.1. Crisis response strategies by period**

638
639 As discussed earlier, the crisis response strategies in this study were classified as
640 reactive, adaptive, protective and proactive. Figure 3 presents the mix of response
641 strategies by period and shows that the reactive strategies were dominant throughout the
642 first year of the pandemic. However, the more that knowledge and understanding of the
643 coronavirus increased (and environmental determinism decreased) the more the
644 responses shifted to protective and proactive strategies. Adaptive strategies were used

645 predominantly in Period 0, when the risk was still relatively unknown, but adaptation
 646 was also demonstrated to a reasonable extent in the periods that followed. This is also
 647 confirmed by the density charts in Appendix 3.
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650 **Fig. 3: Crisis strategy mix by period**



651 Linear regression analysis with Period fix effects between periods was also used to
 652 explore, statistically, the types of strategies that were used most in each period in
 653 comparison to the others (Table 5) and a paired t-test identified the differences in use of
 654 strategies within each period (Appendix 4).
 655
 656

657 **Table 5: Multiple linear regression model with Period fix effects between periods**
 658 **(estimates OLS)**
 659

	Reactive Response	Adaptive Response	Protective Response	Proactive Response
Period 0	0.137 [0.038]***	0.069 [0.022]***	-0.164 [0.030]***	-0.235 [0.024]***
Period 1	[omitted]	0.044 [0.022]*	-0.059 [0.030]*	-0.178 [0.024]***
Period 2	-0.037 [0.037]	0.037 [0.022]*	-0.042 [0.030]	-0.150 [0.023]***
Period 3	-0.101 [0.038]***	[omitted]	-0.039 [0.030]	-0.051 [0.024]**
Period 4	-0.201 [0.037]***	0.008 [0.022]	[omitted]	[omitted]
Exposure	-0.074 [0.043]**	0.037 [0.025]-	-0.009 [0.034]	0.045 [0.027]*
Brands	0.013 [0.032]	-0.043 [0.019]**	0.042 [0.026]-	-0.012 [0.020]
Casinos	[omitted]	[omitted]	[omitted]	[omitted]

REITS	-0.008 [0.046]	-0.013 [0.027]	-0.005 [0.037]	0.027 [0.029]
N° observations	107	107	107	107
R ²	0.4857	0.1750	0.2644	0.5648

Confidence level (two-tail test): 99% (***), 95% (**), 90% (*), 85% (·).

Reactive Strategies: immediate reactions to the event

Reactive strategies, such as operational cost control measures, capacity management or securing a strong liquidity position were used throughout. Comparisons between periods (Table 5) showed that, under the chaotic situation in Period 0, the organisations adopted statistically more reactive responses than they did in any of the other periods. Reactive responses were used statistically less in periods 3 and 4 compared to Period 1, but were not different to Period 2.

Adaptive Strategies: short-term, quasi-informed actions

Short-term, adaptive strategies, such as increasing customer confidence in health and safety, streamlining resources to achieve efficiency and maintaining stakeholder relations, were used throughout but were used statistically more in periods 0, 1 and 2, when the risk was less known, and statistically less in periods 3 and 4.

Protective Strategies: medium and longer-term, informed, crisis-focused actions

Longer-term, protective strategies to safeguard the organisations from similar crises in the future by, for example, moving them towards healthier and more efficient operational models and by reviewing their provision based on customer changing needs (e.g., hybrid conferences) and increasing sanitation standards were deployed statistically more in Period 4 than in the earliest stages of the pandemic (periods 0 and 1), but without statistically significant difference with periods 2 and 3.

Proactive Strategies: longer-term, informed actions for broader resilience, recovery and growth

Finally, proactive response strategies to safeguard longer-term growth, such as strategic business transformations, securing stronger financial resilience and cost structure re-engineering, were statistically more dominant in Period 4 than in the rest of the periods. The deployment of proactive responses grew over time, being statistically more adopted in Period 4 than in Period 3, more in Period 3 than in Period 2, equally used in Periods 2 and 1, but more deployed in Period 1 than in Period 0.

Exposure to the Chinese market led to statistically less reactive and more adaptive and proactive *strategies* (with low statistical significance), while there was no statistically significant effect of Chinese exposure on the deployment of protective responses.

The crisis mix varied slightly upon the type of organisation. The hotel brands employed statistically less adaptive responses than the casino groups but the formers' responses were not statistically different from those of the REITs. The brands used more protective responses than the casinos.

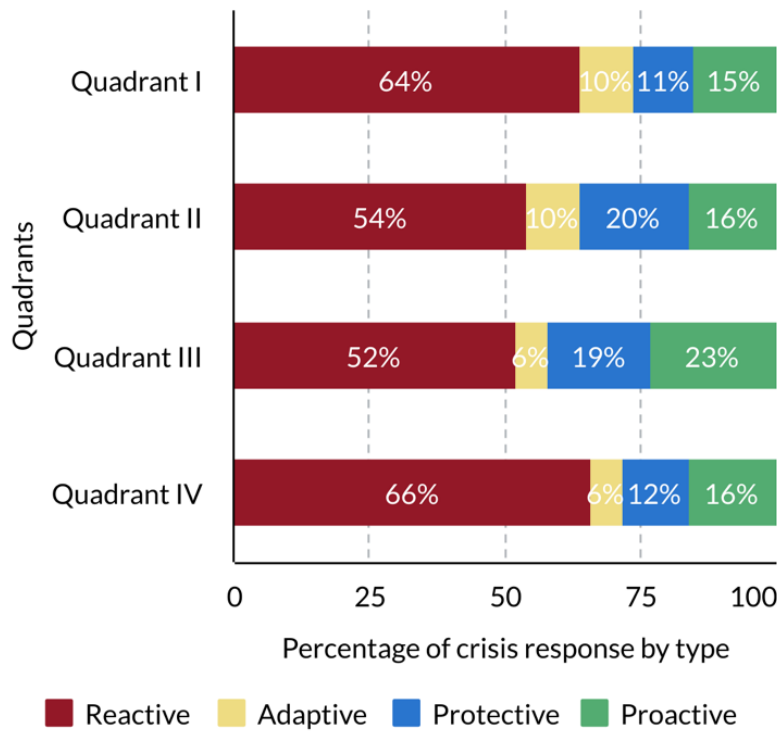
Further analysis with paired t-tests (Appendix 4) confirmed that while reactive responses dominated across all periods, the strategy mix composition evolved over time, with more non-reactive responses being used as the organisations' levels of understanding of the crisis improved.

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4.3.2. Crisis response strategies by quadrant

This study sought to look at the ways in which crisis response strategies (reactive, adaptive, protective and proactive) were used across the proposed matrix, i.e., under different levels of environmental determinism and crisis strategy choice. Figure 4 depicts the crisis strategy mix per quadrant while Appendix 5 provides a visual representation of the distribution of strategies.

Fig. 4: Crisis strategy mix by quadrant



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As before, linear regression analysis with Period fix effects between quadrants was also used to explore, statistically, the types of responses most used under different levels of environmental determinism and crisis strategy choice (Table 6), and a paired t-test identified the differences in use of strategies within each quadrant (Appendix 6).

Table 6: Multiple linear regression model with Quadrant fix effects between quadrants (estimates OLS)

	Reactive Strategies	Adaptive Strategies	Protective Strategies	Proactive Strategies
Quadrant I	[omitted]	-0.016 [0.022]	-0.091 [0.032]***	-0.095 [0.034]***
Quadrant II	-0.151 [0.044]***	[omitted]	0.011 [0.028]	-0.064 [0.030]**
Quadrant III	-0.173 [0.047]***	-0.031 [0.020]	[omitted]	[omitted]
Quadrant IV	-0.019 [0.046]	-0.039 [0.020]*	-0.071 [0.030]**	-0.074 [0.032]**
Exposure	-0.101 [0.053]*	0.040 [0.026]	0.008 [0.037]	0.052 [0.039]
Brands	0.083 [0.043]*	-0.043 [0.021]**	[omitted]	[omitted]

Casinos	[omitted]	[omitted]	0.000 [0.030]	0.040 [0.032]
REITs	0.028 [0.058]	-0.010 [0.029]	-0.026 [0.040]	0.048 [0.042]
N° observations	107	107	107	107
R²	0.2106	0.1116	0.1601	0.0957

Confidence level (two-tail test): 99% (***), 95% (**), 90% (*), 85% (-).

Overall, the study revealed that all four types of crisis strategies were present in all quadrants at any time. Reactive strategies were deployed in all quadrants more than any other strategy type. Yet, the statistical comparison between quadrants showed that although they were deployed more under chaotic crisis conditions (Quadrant I) and under more obvious crisis conditions (Quadrant IV) they were statistically less deployed in quadrants II and III. This showed that when there was limited strategic choice, the crisis response strategy was predominantly reactive. In complex crisis conditions (Quadrant II), adaptive strategies were statistically more used than in the other quadrants and with high significance in quadrants III and IV. In Quadrant III, organisations facing a still complex, but under more control, (complicated) situation deployed significantly more informed, longer-term, protective and proactive strategies compared to quadrants I and IV, but with no statistically significant difference from Quadrant II.

5. Discussion

The extended timeframe of the COVID-19 creeping crisis allowed a ‘slow motion’ analysis of organisational responses to a crisis that no one seemed to be prepared for, in spite of their planning. Pandemic plans did not stand up effectively to the crisis scenario that was unfolding and were more what Clarke (1999) termed ‘fantasy documents’ rather than crisis management plans. This study confirms that a lack of knowledge and understanding of the root causes of a crisis decreases its controllability and, consequently, increases environmental determinism. The 2x2 matrix we used as an analytical framework shows that crisis response choices depend on perceived environmental determinism and on knowledge and understanding of the crisis’s root causes.

Responding to unknowable unknowns (Quadrant I)

Although all crises are characterised by ambiguity, uncertainty and a lack of information (Pearson and Clair, 1998), this study confirms that, when confronted with a completely unknown crisis that organisations’ management teams could never have imagined in advance (an unknowable unknown), some organisations are, at first, unable to recognise it as such (Boin et al., 2020a) and continue to operate in a non-crisis mode. Creeping crises present two challenges in their incubation stage: signal recognition and correct signal interpretation (Paraskevas and Altinay, 2013). There is wide consensus among crisis scholars that the timely detection of crises often presents challenges because of the inconceivability of certain unknown events but, most importantly, because many organisations are not designed to look for crises (Boin et al., 2020a). Even when they look out for crises, they do so for anticipated threats (in this case, a regionally confined epidemic) whereas undefined threats pass through organisational detection and crisis sense-making filters. Organisations with the appropriate crisis-

769 sensing capabilities are able to make correct inferences about the nature, scope and
770 escalation potential of the crisis they are facing, , and those without these fail to do so
771 (as per certain of the REITs and casino groups studied here). In the case of unknown
772 crises, the mere ability to detect abnormal patterns would suffice to trigger a crisis
773 sense-making process, even if the cues from the trigger event were novel, fast-paced,
774 overwhelming, and unpredictable (Christianson and Barton, 2021). Those organisations
775 that recognise the crisis situation, soon realise that their crisis response plans are
776 inadequate and navigate an environment that can be described as chaotic without any
777 control of the situation (high perceived environmental determinism). Early exposure to
778 the threat (e.g., exposure in China during the COVID-19 pandemic) gives an advantage
779 over other organisations on the ability to understand and frame the crisis, thus
780 facilitating advanced crisis response choice. Their initial response was to deploy a
781 limited range of quick-fix, reactive crisis strategies aimed primarily at survival, damage
782 limitation and business continuity, in the hope to re-establish a degree of order and
783 stability in the short term. Although such actions were in line with the widely accepted
784 ‘reactive mindset’ to crisis response (Ritchie, 2008), our analysis shows that reactive
785 response does not preclude organisations from also deploying strategies that are more
786 adaptive in nature and, at a smaller scale, from deploying longer-term, protective or
787 proactive actions, based on previous similar experiences or emerging knowledge of the
788 crisis they face.

789 *Responding to unknown unknowns (Quadrant II)*

790 Having secured short-term survival, organisations in the face of continuing low control
791 of their environment (high perceived environmental determinism) and high
792 unpredictability and flux, deployed a larger repertoire of strategies to deal with the
793 crisis. The situation was complex, with a multitude of variables shaping the crisis and
794 with no right answers and solutions for most of them. The novel nature of the creeping
795 crisis necessitated improvisation and trial-and-error experimentation to determine the
796 most effective crisis strategies and methods of deployment (Moynihan, 2008) as well as
797 a process of crisis knowledge generation (turn the unknowns into knowns) and
798 codification (Paraskevas et al, 2013). The responses were quasi-informed and based on
799 limited knowledge and information about the root causes of the crisis, and decisions
800 were heuristic-guided (Schmidt and Berrell, 2007), usually constrained by governmental
801 and other regulatory restrictions. The organisations monitored the impact (or lack
802 thereof) of their crisis strategies and adapted them as necessary. It is therefore
803 important for organisations in this situation to have strong information-monitoring
804 capabilities, alongside rapid feedback networks and adequate adaptive capacity that will
805 allow them to take a ‘probe and learn’ approach to crisis response allowing them to treat
806 responses as experiments (Ansell & Boin, 2019). Boin et al. (2021a) admit that this is
807 an extreme form of crisis management where a ‘null hypothesis’ is formulated, intended
808 and unintended results are carefully monitored, and the response is modified to optimise
809 the outcome. Adaptive strategies continued to be implemented in this quadrant to
810 wrestle down the ongoing uncertainty; however, the portfolio of crisis strategies now
811 included longer-term protective actions to safeguard the organisation from the crisis and
812 proactively establish foundations for future resilience and growth.

813 *Responding to known unknowns (Quadrant III)*

814 As knowledge about the root causes of the crisis was generated, the crisis became better
815 framed and more controllable, the perceived environmental determinism decreased and
816 organisations selected the crisis strategies that had proven most effective in the earlier
817 periods. The crisis situation was still shaped by a multitude of variables, but it was just
818 complicated and not as complex as before since now there were ‘right’ answers
819 available for most of the environmental determinism factors. In quadrant III, decisions
820 were made rationally and by choice following a criteria-informed, problem-solving
821 process (Varma, 2019) as opposed to the experimentation of Quadrant II and the
822 improvisation of Quadrant I. Any new response strategies were designed in anticipation
823 of what was expected to come (‘known unknowns’, e.g., new waves and variants).
824 Consequently, the chosen crisis strategies were still aiming for business continuity but
825 were less adaptive in nature and more forward looking to strengthen the organisation
826 (protective) and to plan for its post-crisis growth (proactive). Towards that end,
827 organisations decided to look for new ways to navigate the post-pandemic landscape by
828 redefining their operating processes, introducing new or reconfigured products and
829 services, and redesigning their internal structures. The new knowledge about the
830 pandemic created opportunity contexts that led to rapid changes in what was considered
831 standard hospitality provision (e.g., emphasis on hygiene rather than cleanliness, multi-
832 venue socially-distanced conventions and mega-events, hybrid conferences and
833 meetings) and challenged the role of fast vs. slow players in an industry-level
834 transformation caused by the aggregation of multiple individual organisations’ changes
835 and innovations. The winners in this race were the organisations that possessed the
836 agility and the ability for a rapid change of their long-established approaches to
837 business.

838 *Responding to known knowns (Quadrant IV)*

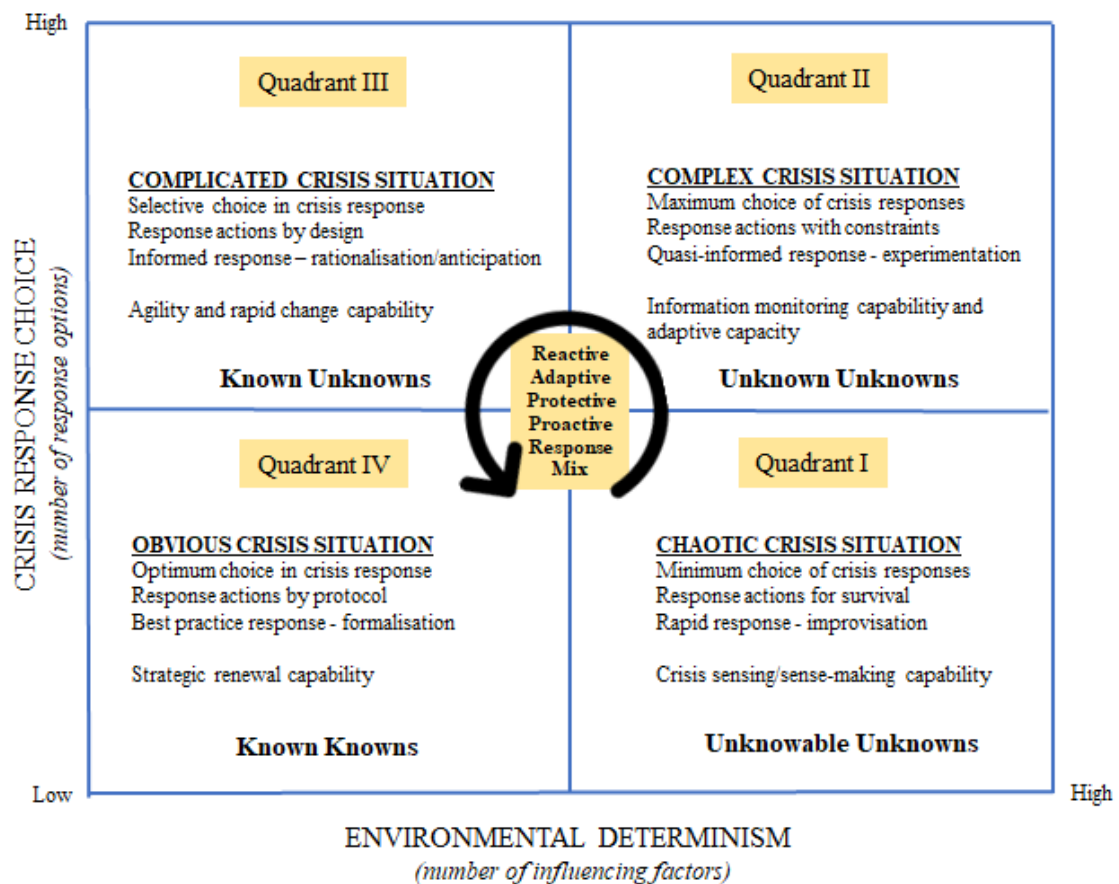
839 When dealing with a known crisis, the organisations have already institutionalised the
840 knowledge of the crisis (Paraskevas et al, 2013) and developed crisis management plans
841 based on ‘formalised’ best practice (as opposed to good practice in Quadrant III). Crisis
842 strategies employed in this Quadrant were still predominantly reactive but, having a
843 clear understanding of the crisis, the strategies followed the protocols and procedures
844 prescribed in a formal crisis management plan. Adaptive strategies continued here but
845 the crisis strategy mix included a set of prescribed protective and proactive strategies
846 aimed at the recovery and resilience of the organisation in the future that was notably
847 smaller than in Quadrant III. The focus of those strategies was more future-looking to
848 enable organisations to cope with changes in the external environment and crises as they
849 take shape, and thereby reduce the need for a much larger and more difficult adaptations
850 and changes later on, what Agarwal and Helfat (2009) call incremental strategic
851 renewal. This strategic renewal requires organisations to be able to refresh or replace
852 organisational attributes “that have the potential to substantially affect its long-term
853 prospects” (p.282) such as strategic portfolio changes (replacing assets to alter the
854 resort:urban properties’ ratio), refreshing debt position by extending maturities,
855 replacing existing decision support systems with advanced AI systems, etc. The study
856 also showed that it is possible for organisations dealing with a creeping ‘known known’
857 to get a false sense of closure, only to be pushed back to Quadrant I due to new
858 deterministic forces (e.g., new regulatory framework, like in Macau). When this
859 occurred, however, they were dealing with ‘knowable unknowns’ and, therefore, their

860 crisis strategies were more geared towards the protective/proactive type rather than the
 861 reactive/survival type that characterises Quadrant I.

862 Organisational crisis responses, under different levels of environmental determinism
 863 and crisis knowledge, are summarised in Figure 5.

864

865 **Fig. 5: Creeping crisis response matrix**



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6. Conclusion

870
 871 In response to the call for further development in conceptual and theoretical model
 872 building, testing and refinement through empirical studies (Berbekova et al., 2021;
 873 Ritchie & Jiang, 2019), this study set out to explore, empirically, how tourism
 874 organisations addressed the creeping crisis of the COVID-19 pandemic. This was a
 875 crisis that the organisations could not detect as a crisis while it was in incubation and
 876 could not prevent with proactive risk management before it erupted. Moreover, when it
 877 escalated, the organisations’ crisis management plans were insufficient. Creeping crises
 878 are a type of crisis that have received little attention from crisis scholars (Boin et al.,
 879 2020a) to date. In recognition of this gap, we propose a creeping crisis response matrix
 880 for ‘unknown unknowns’ by integrating elements from Hrebiniak and Joyce’s (1985)
 881 Adaptive Matrix with Rumsfeld’s Matrix (de Valk & Goldbach, 2021) and Snowden
 882 and Boone’s (2007) Cynefin framework on crisis response-environment fit. This study
 883 has tested and confirmed the proposed matrix both qualitatively and quantitatively.

884
885 Being one of the few longitudinal studies on crisis management research in general,
886 (Ritchie & Jiang, 2019; Wut et al., 2021) and on creeping crises in particular (Maier et
887 al., 2022), the theoretical contributions of this study are threefold. The first is that it
888 showed that when dealing with a creeping, unprecedented crisis, organisational crisis
889 response is directly influenced by the perceived environmental determinism and the
890 unpredictability of the unknown root cause of the crisis. The study statistically
891 confirmed the basic Hrebiniak and Joyce (1985) principles on the dynamic relationship
892 between environmental determinism and strategic choice in the context of creeping
893 crisis management. The organisations in our sample responded to the crisis, moving
894 across the matrix, by deploying variable crisis response mixes (in terms of numbers of
895 strategies and type) that depended on the levels of knowledge the organisations
896 garnered about the crisis.
897
898 The predominant crisis responses, throughout the creeping crisis lifecycle tended to be
899 reactive. However, we showed that these reactive response strategies went through a
900 ‘filtering’ process, starting with a small number of rapid survival responses when the
901 crisis was not yet well-framed, moving then to multiple quasi -informed crisis strategies
902 being tested, , then to response by design (selecting good practice) once the crisis was
903 better framed and, eventually, evolving to response by protocol once the crisis was fully
904 framed and understood. The second theoretical contribution, therefore, of this study is
905 that when dealing with unknown creeping crises, organisational responses follow a
906 cycle of improvisation-experimentation-rationalisation-formalisation. The third
907 theoretical contribution is that, contrary to the widely accepted conventional and almost
908 linear ‘proactive pre-crisis / reactive during crisis’ response model (Pforr & Hosie,
909 2008; Ritchie, 2008), the organisations in this study were proven to deploy a mix of
910 response strategies at all stages of the crisis, even during the early ones. These strategies
911 included a small, but consistent, set of adaptive, short-term responses and a larger mix
912 of medium and longer-term, protective and proactive strategies, which varied depending
913 on the levels of crisis knowledge and perceived environmental determinism.
914
915 From a practical perspective, in many respects, creeping crises magnify the challenges
916 normally associated with managing crises (Boin et al., 2021b) and cast into question
917 both governments’ and organisations’ ability to manage them. It is evident though that
918 risk and crisis managers need a new thinking in the way they should deal with them.
919 This is the first study that proposes a theoretically founded and empirically tested
920 roadmap for organisations to navigate a creeping crisis at different levels of
921 environmental determinism. They can prepare a small number of potential rapid
922 survival strategies that can be implemented in any situation of high uncertainty and
923 ambiguity when having to deal with an unknowable unknown – i.e., when entering
924 Quadrant I in our proposed matrix. From that point on, organisations need to have, well
925 in advance, the appropriate structures and capabilities (sensing, information monitoring,
926 adaptive capacity, agility for change and strategic renewal) in place that will enable
927 them to develop an appropriate crisis response and a suitable crisis strategy mix as they
928 move across the other quadrants within the matrix and their crisis response shifts from
929 improvisation to experimentation and from rationalisation to formalisation. We can
930 safely assume that the same approach may be taken when faced with a sudden,
931 unknown crisis although the movement through the quadrants would be swifter. Future
932 research may consider introducing Teece et al. (2017) dynamic capabilities theory and
933 Jiang et al. (2022) typology view in the creeping crisis response matrix.

934
935 From a research perspective, our findings raise a number of questions about the
936 management of creeping crises. Why did some organisations' C-suites (e.g., the REITs)
937 miss the crisis signals in the COVID-19 incubation period and how can this be rectified
938 in the future? How can organisations improve their ability to 'sense' an emerging
939 creeping crisis, and what tools are appropriate for that purpose? A more in-depth
940 analysis of feedback loops between crisis evolution, attention and response might unveil
941 the challenges and opportunities in the C-suite crisis sense-making processes. Then,
942 when moving from experimentation to rationalisation, what would be the criteria that
943 would deem a crisis response strategy as 'optimal' and 'best practice'? Would sub-
944 optimal solutions suffice? Further to that, during low determinism stage, when the crisis
945 started to be relatively well-framed, some C-suites (e.g., casino groups) developed a
946 false sense of closure and disregarded the threat of further waves that were unfolding.
947 McConnell & 't Hart (2019) posit that inaction in the face of clear crisis signals is not
948 just a result of the crisis' inadvertence. Further research could explore the factors behind
949 this behaviour and if there is something about the nature of creeping crises that causes
950 this inaction. Finally, longitudinal studies of specific patterns of crisis response during
951 the various tipping points of the crisis would shed some more light on the non-linear
952 nature of creeping crisis development.

953
954 The study has some limitations. The first limitation is the selected sample of tourism
955 organisations, which were all from the hotel sector and arguably extends to the tourism
956 sub-sector that received the most attention in the crisis literature (Ritchie & Jiang,
957 2019). A similar study looking at airlines or cruise companies might have yielded
958 similar behaviours in terms of response and crisis strategy types but a different crisis
959 strategy mix, given that they did not face the same operational restrictions. Research
960 with different samples might unveil different approaches to managing a creeping crisis.
961 A second limitation is that the study is based entirely on information presented by the
962 C-suites of the selected organisations during their quarterly earnings calls with
963 investors, which, as published accounts, may be follow a corporate narrative, and
964 include strategies with impression management tactics, as has happened with CEO
965 letters (Im et al., 2021). A wider range of information sources might generate- different
966 sets of responses and can be a direction for future research.

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8. References

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