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Global Tourism Equity Reactions to Health, Geopolitical, and Digital Infrastructure Shocks: A Multi-Event Study

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ABSTRACT

Global tourism equities may respond differently to public-health, geopolitical, and digital infrastructure shocks because operating models transmit disruption through distinct channels. This paper presents a prespecified, cross-market event-study protocol covering airlines, hotel groups, cruise operators, and online travel intermediaries around four information milestones: the WHO emergency declaration in January 2020, the invasion of Ukraine in February 2022, the Israel–Gaza conflict outbreak in October 2023, and the global IT outage in July 2024. The proposed analysis uses publicly accessible daily security prices, local-market benchmarks, exchange-specific event timing, market-model abnormal returns, and dependence-aware inference. It also specifies subsector and regional contrasts, falsification tests, and source-audit procedures. The contribution is a transparent business-model exposure–transmission framework and a reproducibility-oriented research design, not an estimate of completed crisis effects. As no audited price panel or calculated abnormal returns accompany the manuscript, empirical results and tests of the hypotheses remain pending. The paper must therefore be assessed as a research protocol rather than a completed empirical event study.

KEYWORDS event study · tourism equities · external shocks · business models · cross-market resilience

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01 Introduction

Tourism is unusually exposed to shocks originating outside its own market. A border closure, armed conflict, security incident or failure in shared digital infrastructure can interrupt passenger movement, diminish destination confidence, raise operating costs and change investors' expectations within hours. Yet tourism is not a single business model. Airlines sell capacity tied to aircraft and route networks; cruise operators commit capital to vessels and itineraries; hotel groups combine owned, managed and franchised assets; and online travel intermediaries coordinate search, booking and payment across large supplier networks. The same unexpected news can therefore affect their expected cash flows through different channels. This study develops a cross-market event-study design to evaluate precisely that heterogeneity rather than assuming a homogeneous "tourism-stock effect" (Sigala, 2020; Gössling et al., 2021; Carter et al., 2022).

Financial-market event studies quantify the incremental valuation change around an information release, not the long-term accounting damage of a crisis. Following Fama et al. (1969), Brown and Warner (1985) and MacKinlay (1997), short-window abnormal returns can be interpreted as a market response to information

under explicit maintained assumptions. That distinction matters especially for events such as the COVID-19 public-health emergency, when earlier news and policy signals had already altered expectations. The January 2020 World Health Organization (WHO) declaration identifies a documented information milestone, but not the first awareness of the virus. Likewise, geopolitical tensions can be priced before military escalation (Caldara & Iacoviello, 2022; Boungou & Yatié, 2022).

Existing COVID-19 work provides important but incomplete evidence. Maneenop and Kotcharin (2020) examine global airlines; Clark et al. (2021) consider global hospitality firms; and Carter et al. (2022) compare travel industries. Such studies establish substantial crisis exposure, but designs focused on one outbreak or one subsector do not by themselves reveal whether business-model differences also characterize other classes of disruptions. The pandemic further coincided with an unprecedented global equity-market response (Baker et al., 2020), making industry-specific adjustment essential. Wider corporate studies disagree about the extent to which nonfinancial capabilities cushioned stock returns (Albuquerque et al., 2020; Bae et al., 2021; Demers et al., 2021; Ding et al., 2021).

A complementary tourism-resilience literature emphasizes organizations, employees, local communities and recovery policies. Widjaya et al. (2026) show how structural livelihood dependence shaped households' coping responses after tourism collapsed in Bali, whereas Dasmadi et al. (2026) link capability and service quality to resilience in small hotels. Purnamawati (2025) discusses institutions and cultural-tourism recovery. These perspectives matter but are not interchangeable with financial-market resilience: stock returns measure changes in expected shareholder value, not household welfare, employment security or operational continuity. Explicitly separating those concepts is necessary to avoid overstated managerial conclusions.

The present paper proposes a consistent, internationally comparable analysis of four public event milestones between 2020 and 2024: the WHO international-health-emergency declaration on 30 January 2020, the Russian invasion of Ukraine on 24 February 2022, the outbreak of the Israel–Gaza conflict on 7 October 2023, and the global CrowdStrike-related information-technology outage on 19 July 2024. It asks three questions. First, do tourism-related equities experience abnormal returns around these milestones after local-market movements have been removed? Second, do responses differ between airlines, cruise operators, hotels and online travel platforms? Third, do observed variations align with pre-event geographic exposure and the distinctive mechanisms of operational dependence? These are four strategically selected historical episodes, not a random sample of all possible shocks.

The intended contribution is threefold. Conceptually, we advance a business-model exposure–transmission framework distinguishing physical-mobility, sunk-capacity, accommodation-contract and digital-intermediation channels. Empirically, the planned analysis applies harmonized event windows, local-market benchmarks and cross-sectional-dependence-aware inference to each company-event pair, enabling transparent cross-shock contrasts. Methodologically, it foregrounds timestamp-adjusted local event days, historically eligible securities and honest treatment of small, unequal subsectors. This paper sets out the proposed research protocol and a literature-based framework. An audited stock-price panel and associated abnormal-return estimates have not yet been provided; no empirical results are asserted here.

02 Literature Review and Hypothesis Development

Information efficiency and tourism-stock repricing

Efficient-market theory predicts that widely disseminated information about prospective cash flows and discount rates is incorporated into securities prices with limited delay (Fama, 1970; Campbell et al., 1997). The event-study tradition operationalizes this idea by measuring the gap between observed and conditional expected returns (Fama et al., 1969; MacKinlay, 1997). The short-window estimator becomes less credible when an event is anticipated, simultaneous announcements occur, trading is thin or the benchmark itself is affected. Brown and Warner (1985), Kothari and Warner (2007) and McWilliams and Siegel (1997) stress that statistical implementation and event identification must be aligned with the substantive question. Consequently, the present paper examines marginal equity-market responses to specified information milestones rather than claiming to estimate the complete welfare or revenue effects of global crises.

Tourism offers a revealing setting because consumption is discretionary, production and consumption often occur simultaneously, and service delivery can depend on physically moving people across jurisdictions.

COVID-19 generated policy restrictions, confidence shocks and severe demand discontinuities (Gössling et al., 2021; Hall et al., 2020; Sigala, 2020). But equity repricing need not be uniformly negative: an asset-light booking platform might benefit from flexible capacity and a broader supplier portfolio in some states of the world, while a hotel franchisor may preserve fee-generating relationships despite occupancy losses. Digital transformation can enhance flexibility, although it can also concentrate infrastructure dependence (Rifqi, 2025; Zeng et al., 2020). The direction and magnitude of abnormal returns should therefore be estimated, not presumed.

A business-model exposure–transmission framework

We define exposure as a pre-event structural dependence of expected cash flows on the interrupted activity, transmission as the specific economic mechanism linking the event to the firm, and market response as the immediate change in the present value of investor expectations. Airlines' schedules, passenger volumes, jet-fuel demand and airspace exposure create mobility and operating-cost channels. Cruise lines combine dependence on onboard demand with geographically movable but capital-intensive assets and itinerary constraints. Hotels differ because owned real estate, franchised brands and management contracts have distinct marginal exposure to occupancy changes. Online travel platforms depend on travelers' transactions and technology-mediated supplier relationships; their digital assets may diversify geographic reach while generating reliance on shared systems.

These contrasts are informed by corporate work on strategic resilience. Stakeholder relationships, financial flexibility and intangible resources may influence crisis expectations (Lins et al., 2017; Garel & Petit-Romec, 2021), but studies of the COVID-19 stock-market crash reach conflicting conclusions once firm characteristics and intangibles are accounted for (Albuquerque et al., 2020; Bae et al., 2021; Demers et al., 2021). We therefore avoid interpreting stock-price differences as direct measures of superior management. The framework instead treats industry classification as an imperfect, observable proxy for transmission channels and motivates explicit heterogeneity tests.

It is essential to distinguish industry-level exposure from marketwide repricing. Boungou and Yatié (2022) document international stock-market responses to the Russia–Ukraine war; Caldara and Iacoviello (2022) demonstrate how geopolitical threats and realizations affect economic risk. A market-adjusted event study asks whether a tourism equity moved differently from its own equity benchmark, not simply whether its price fell on a day when the entire market declined. This benchmark-relative estimand is the central object of the analysis.

Public-health and geopolitical shocks

At the 30 January 2020 WHO emergency declaration, investors could reassess the international scale of infection risk and likely mobility restrictions, although evidence of a developing outbreak was already public (World Health Organization, 2020). Existing tourism equity studies document pandemic-related repricing but vary in announcement choice and sample (Maneenop & Kotcharin, 2020; Clark et al., 2021; Carter et al., 2022). We therefore treat that date as a particular incremental information event. Larger negative abnormal returns among airlines and cruises than hotels or online intermediaries would be consistent with more immediate exposure to transport restrictions and onboard-contact concerns, but could also reflect leverage and investor liquidity demands.

The invasion of Ukraine on 24 February 2022 offers a sharply documented military escalation and an associated threat to aircraft routing, travel sentiment, energy prices and macroeconomic activity. Regional effects might be particularly pronounced for Europe-based firms, but the relevant exposure is not identical to exchange location: airlines listed outside Europe may fly European routes, and European hotel groups may earn much of their revenue elsewhere. The 7 October 2023 attack and ensuing Israel–Gaza war add a distinct geopolitical episode, but its timing over a weekend and geographically unequal flight connectivity require market-calendar alignment and restraint about a universal global response (Caldara & Iacoviello, 2022).

Digital infrastructure as a distinct shock channel

The 19 July 2024 faulty CrowdStrike content update impaired systems that depended on affected Microsoft Windows configurations. CrowdStrike's public technical reports provide a relatively precise UTC incident chronology, useful for assigning local trading-session exposure (CrowdStrike, 2024). The event is

neither a conventional demand shock nor equivalent to all forms of "digital risk": the actual software and supplier exposure of individual companies is not observable from ticker labels. The hypothesis is accordingly about relative stock reactions across business models, not proof that a particular issuer directly operated the affected technology. Tourism research on digital transformation supports the relevance of technology-dependent coordination without demonstrating a mechanical stock-market impact (Rifqi, 2025).

Hypotheses and scope of inference

H1. Average short-window abnormal returns for publicly traded tourism companies differ from zero around at least one prespecified global event milestone. This is a family of four event-specific two-sided tests; a significant estimate for one event is not evidence that all external shocks have one common directional effect.

H2. Event-window cumulative abnormal returns differ across airlines, hotels, cruise operators and online travel intermediaries, conditional on listing-market benchmarks and broad geographical groupings.

H3. Around the 2024 digital infrastructure outage, airline cumulative abnormal returns are more negative than those of hotel firms and online travel intermediaries, subject to the important qualification that firm-level technical exposure is not directly observed.

H4. Around the 2022 invasion of Ukraine, Europe-listed tourism equities show more negative benchmark-relative cumulative abnormal returns than non-European tourism equities with the same broad subsector classifications.

These hypotheses prioritize contrast rather than unjustified certainty about effect directions. In addition, two exploratory questions assess whether immediate (0,+1) effects reverse within five days and whether firm size, leverage and geographic revenue exposure available before the event explain variation. Such supplementary analyses require data coverage sufficient to avoid selection driven by disclosure availability.

03 Methods

Design, unit of analysis and prespecification

The proposed research is a multi-market, multi-event archival event study using daily security prices and market indices. The unit is the security–event observation, nested in firm, subsector, market and one of four event episodes. The proposed design requires no questionnaire, interview, private accounting database, or participant recruitment. Event windows, firm-screening decisions, exclusions, outcomes and principal contrasts must be fixed in a dated protocol before inspecting abnormal returns. A separate analysis log should preserve any subsequent researcher choices and explain deviations. Because there are only four deliberately chosen episodes, inference is event-specific; a regression that treats the four shocks as a representative sample of all categories would overstate external validity.

Events and timestamp-based day-zero assignment

Table 1. Prespecified shock milestones and assignment rules

Event	UTC/local information milestone	Identification caution
WHO PHEIC	30 January 2020; use the published WHO declaration and verify release time	Outbreak news preceded the declaration; day 0 differs across exchanges
Russian invasion of Ukraine	24 February 2022; first verified widely disseminated invasion reports	Military build-up created anticipation; examine leakage
Israel–Gaza conflict outbreak	7 October 2023 (Saturday); next eligible trading session	Weekend exposure and other country-specific developments
Global CrowdStrike IT outage	19 July 2024; initial 04:09 UTC defective update per CrowdStrike	Trading hours differ; not all firms used affected systems

Note. PHEIC = Public Health Emergency of International Concern. Day zero is the first session whose closing price could reflect the relevant news, not mechanically the calendar date. Exact release-time citations and exchange calendars must be archived.

For an issuer traded in jurisdiction j, day 0 is the first regular exchange session after the information became available with enough time for ordinary market participants to transact; where release timing intersects market hours, both that session and the next-session alignment will be checked. Weekends, holidays,

daylight-saving adjustments and suspended sessions are taken from each exchange calendar. For cross-exchange comparisons, "day +1" means the next eligible session in the company's own trading calendar. This preserves local price-discovery timing but is not equivalent to a synchronized 24-hour period. Daily data cannot isolate an announcement that occurs during the trading session without intraday prices, and this limitation will be acknowledged.

Sampling frame and historical eligibility

The target is approximately 35–45 primary-listed common-equity securities across North America, Europe and Asia-Pacific, classified ex ante into four groups: airlines, hotels and lodging groups, cruise operators, and online travel intermediaries. The target is an upper-bound recruitment plan, not an achieved sample size. Candidate firms include Delta, United, American, Lufthansa, International Airlines Group, Qantas, Japan Airlines and Singapore Airlines; Marriott, Hilton, Hyatt, Accor, InterContinental Hotels Group and Whitbread; Carnival, Royal Caribbean and Norwegian Cruise Line Holdings; and Booking Holdings, Expedia, Tripadvisor, Trip.com and MakeMyTrip. More firms are added using historical exchange and company-industry records only if complete free histories are available. The cruise subsector is expected to remain smaller than the others.

A company enters event e if it was publicly traded before the event's 140-session pre-event span, has a verifiable primary common-equity listing, an adequate market benchmark and at least 100 valid estimation observations from the designated 120 sessions. Delisted or acquired firms should be included when authentic historical prices can be sourced, rather than screened out because they no longer trade today. Firms not yet listed in January 2020 may participate in later events, yielding a transparent event-specific unbalanced sample; balanced-firm analyses form a sensitivity check. Depositary receipts and a corresponding primary listing are not double-counted. Sector classification follows pre-event annual reports, not post-shock outcomes.

Table 2. Screening and measurement protocol

Domain	Decision rule
Primary share	One primary common share per economic issuer; historical ticker/ISIN verified
Eligibility	Listed and traded over the relevant estimation period; ≥100 valid estimation returns
Coverage	Adjusted closes or validated split-adjusted prices and corporate actions
Thin trading	Flag zero-return share >20% of estimation sessions; sensitivity exclusion
Competing events	Flag earnings, mergers, offerings, bankruptcy and major firm news in [−5,+5]
Survivorship	Record missing delisted histories and resulting coverage limitations
Classification	Airline / hotel / cruise / online intermediary; determined before shock
Calendar	Local exchange session, trading holiday and timestamp audit

Note. The protocol must report all candidate firms and exclusion reasons rather than just the final retained names.

Open-data acquisition and reproducibility

Historical daily share prices can be assembled from publicly accessible exchange histories and open-market interfaces such as Stooq, supplemented where necessary by permitted alternatives. Data availability is not equivalent to unrestricted licensing: some vendors permit viewing but restrict bulk downloading or redistribution. A pilot of at least two securities from each region and two events must therefore establish whether historical data can actually be retrieved at no cost and with acceptable terms. Unavailable or differently adjusted series should not be silently combined. U.S. annual statements from SEC EDGAR and international issuers' published reports supply source-verified sector classifications and, where needed, pre-event leverage or geographic revenue shares. Exchange-level broad market indices provide contemporaneous benchmarks.

For each series, the data log will retain provider URL, extraction date, security identifier, local exchange, currency, price-adjustment convention, trading calendar, market-index definition and checks against a second source for selected dates. The publicly shared replication package should contain executable source code, a manifest of tickers and sources, an event-timestamp table, the preanalysis protocol and permitted derived outputs. It should not redistribute vendor-restricted raw prices. The literature offers an example of why accessible tourism-demand proxies require validation before strong inference: Akramul Bari and Hassan (2026) find that apparently strong aggregate relationships can be unstable in small samples.

Return construction and market model

The preferred security outcome is the local-currency daily log total return, defined from a price series consistently adjusted for corporate actions and cash dividends where such adjustment is available. If some markets only provide split-adjusted price series, price-return comparability must be handled by a uniform price-return sensitivity sample rather than treating unlike concepts as identical. Market benchmarks are computed on a consistent basis to the extent the public series permit. For firm i and trading session t, daily return is:

$$R_{it} = \ln(P_{it} / P_{i,t-1}). \qquad (1)$$

A separate market model is estimated for every firm-event pair, using daily broad-market returns from the issuer's primary listing country. This choice removes much of the same-day local equity-market movement without importing currency translation noise, although it does not eliminate residual industrywide comovement or other confounding news:

$$R_{it} = \alpha_{ie} + \beta_{ie} R_{m(i),t} + \varepsilon_{it}. \qquad (2)$$

The primary estimation interval is trading sessions −140 through −21 relative to local day 0, giving 120 candidate observations and a 20-session buffer before the event. The principal event window is [−1,+1]. The additional windows [0,+1], [−3,+3] and [−5,+5] are prespecified robustness estimands rather than searched until significance appears. A minimum of 100 nonmissing estimation pairs is required; alternate 180-session estimations are sensitivity tests, where data permit (Brown & Warner, 1985; Kothari & Warner, 2007).

$$AR_{iet} = R_{it} - (\hat{\alpha}_{ie} + \hat{\beta}_{ie} R_{m(i),t}). \qquad (3)$$

$$CAR_{ie}[a,b] = \Sigma_{t=a}{}^{b} AR_{iet}; \quad CAAR_{se}[a,b] = N_{se}{}^{-1} \Sigma_{i \in s} CAR_{ie}[a,b]. \quad (4)$$

The same security cannot contribute more than once to a particular sector-event estimate. Subsector CAAR estimates must show sample counts and uncertainty intervals. When comparing different local trading calendars, benchmark-adjusted returns are cumulated over each company's own sequence of valid sessions; an event-by-day plot should explain that local relative dates are aligned information-response sessions rather than identical global timestamps.

Primary tests, sector contrasts and cross-sectional dependence

The primary family comprises four event-specific tests of tourism-firm mean CAR[−1,+1] = 0 and four prespecified sector contrasts. Standard errors assuming independent companies may be badly misleading because a common global event produces residual correlation. The Boehmer et al. (1991) event-induced variance adjustment and Kolari and Pynnönen (2010) cross-correlation correction are therefore appropriate starting points for event-level mean-return inference, with Corrado (1989) rank tests and Patell (1976) standardized residual diagnostics as robustness measures. Implementation will explicitly document the construction and estimation-period residual correlations, any missing overlap, and small-sample applicability. Where dependence-corrected inference is unstable, market-portfolio aggregated tests and date-placebo distributions will be emphasized.

Cross-sector hypotheses will be estimated separately for each event, with hotels as the reference group:

$$CAR_{ie} = \gamma_{0e} + \gamma_{1e} Airline_i + \gamma_{2e} Cruise_i + \gamma_{3e} OTA_i + \delta_e' Region_i + u_{ie}. \quad (5)$$

The sector coefficients describe differences in local-market benchmark-relative price changes, not causal impacts of business models. An additional event-specific European indicator will be included for the Russia–Ukraine episode, with sector fixed effects, while the July 2024 contrast will test airlines against hotels and OTAs. Given the likely small cruise cell, confidence intervals and leave-one-company-out sensitivity will be more informative than isolated significance stars. Broad exchange-region controls may absorb some but not

all underlying market differences. Company size and leverage from the latest public pre-event report enter only a reduced, coverage-audited supplementary model to limit missing-data selection.

We will apply Holm adjustment within declared hypothesis families and report raw and adjusted p-values as well as economic effect sizes in percentage points. Heteroscedasticity-robust HC3 inference is useful as a descriptive check for cross-sectional regressions but does not eliminate correlated event-day disturbances across markets; dependence-aware panel covariance estimators also require careful assumptions about time dimensions (Petersen, 2009; Driscoll & Kraay, 1998). We will not use conventional cluster-robust standard errors at the event level with only four event clusters, nor will we claim a statistically general "health versus geopolitics" comparison from a single event in each class.

Falsification tests and alternative explanations

The core falsification design computes the identical CAR and sector contrasts at non-event dates drawn from the corresponding firm's non-overlapping pre-event trading window, keeping the actual sector and market composition. The randomization distribution should preserve common calendar dates within each exchange as far as feasible; independently drawing different dates for each firm would artificially destroy residual dependence and create a misleading null. Further checks comprise equal-weighted country/sector portfolio returns, value-weighted portfolios where contemporaneous market capitalization is verifiable, an alternative local-market index, exclusion of day 0 when its timing is disputed, removal of large competing firm announcements, and omission of each major issuer in turn.

The research team should use event-specific press archives to assess contamination. COVID-19 announcements were sequential; the February 2022 invasion followed visible military escalation; the October 2023 event could coincide with varying weekend information accumulation; and the 2024 outage created a fast-moving set of operational disruptions and remediation updates. For the outage, identifying an affected airline operationally from subsequent reporting is an interesting descriptive extension but is not a clean pre-event exposure measure. These distinctions safeguard against assigning every observed daily return to one headline.

04 Evidence Status and Results Reporting Protocol

Verified event chronology: documentary evidence, not estimated returns

The public-source verification conducted for this draft establishes that four event milestones have identifiable dates and substantially different potential transmission mechanisms. The WHO declaration was issued on 30 January 2020 (World Health Organization, 2020). The invasion of Ukraine began on 24 February 2022 and is reflected in the subsequent United Nations General Assembly record (United Nations General Assembly, 2022). The 7 October 2023 attack took place on a Saturday, so a single universal calendar day-zero definition is inappropriate. CrowdStrike's technical account dates the defective update to 19 July 2024 (CrowdStrike, 2024). These observations validate the event register; they do not estimate return effects, demonstrate significance or confirm H1–H4.

Empirical-data status and output structure

As of preparation of this manuscript, a complete, audited international price panel and matched market-index series have not been assembled, and no abnormal return (AR), cumulative abnormal return (CAR), cumulative average abnormal return (CAAR), associated standard error, or p-value has been calculated. This limitation must not be disguised as a null or positive finding. Table 3 is a reporting matrix identifying the precise values required to turn the present design into an empirical article. All cells remain explicitly marked "Not estimated" until reproducible downloaded prices are available and the program has been run.

Table 3. Required main results (awaiting stock-price data)

Event	Eligible firms (n)	CAAR [−1,+1]	Dependence-adjusted p	H1 status
WHO declaration (2020)	Not assessed	Not estimated	Not estimated	Not tested
Ukraine invasion (2022)	Not assessed	Not estimated	Not estimated	Not tested

Israel–Gaza conflict (2023)	Not assessed	Not estimated	Not estimated	Not tested
Global IT outage (2024)	Not assessed	Not estimated	Not estimated	Not tested

Note. Table deliberately contains no synthetic or literature-borrowed estimates. Sector comparisons and regional contrasts require separate tables after model execution.

A completed submission would replace Table 3 with estimated CAARs, 95% confidence intervals, adjusted test statistics and sample sizes. Table 4 should report the airline, hotel, cruise and online-intermediary CAAR for each event, followed by prespecified pairwise differences. Table 5 should show 2022 Europe × sector contrasts and the 2024 airline-versus-other-sectors contrast. Figure 1 should plot cross-sector cumulative average abnormal returns from trading day −5 through +5 with intervals consistent with the selected dependence treatment. A complete inclusion/exclusion flowchart and a source coverage audit belong in a supplementary appendix.

Interpretation thresholds

Positive or negative raw price changes cannot be called abnormal until the matching market model is estimated. A significant negative CAR implies short-window market underperformance conditional on the chosen benchmark and timing assumptions, not proof that the company's booked revenue declined by the same percentage. A nonsignificant result must be interpreted using the confidence interval and statistical power: it does not show that the shock had no economic effect. Cross-industry differences would be consistent with the business-model framework but cannot, without sharper ex ante exposure measures and credible quasi-experimental comparisons, establish that business-model choice caused the return differences. The same caution applies to the region comparison and to the technology outage.

05 Discussion and Expected Contribution

Why the design advances the tourism-finance conversation

The prospective value of this paper is not another declaration that crises hurt tourism stocks. That claim is already widely supported by pandemic event studies (Maneenop & Kotcharin, 2020; Clark et al., 2021; Carter et al., 2022). The stronger question concerns a cross-shock pattern: is heterogeneity better organized around what a tourism company must physically operate, where it generates revenue and how much of its customer interface is mediated by shared digital systems? Four precisely documented events offer a useful structured comparison, even though each event has distinctive confounders. Demonstrating a consistent direction across different crises would motivate stronger theories; finding inconsistent patterns would narrow overgeneralized resilience narratives.

The analysis also connects two literatures that often use the word resilience differently. Tourism destination studies emphasize livelihoods, institutions, tourist demand and recovery capacity (Widjaya et al., 2026; Purnamawati, 2025). Small-hotel research emphasizes managerial resources, capabilities and service quality (Dasmadi et al., 2026). Shareholder-return resilience refers instead to unexpected changes in discounted future cash flows relative to a capital-market benchmark. One may coexist with the absence of another: shares can recover while households remain vulnerable, and a capable service organization may still suffer from macroeconomic repricing. The contribution is conceptual clarity and testable bridging predictions, not a claim that market returns proxy for community welfare.

Implications conditional on future results

If airlines and cruises exhibit consistently more adverse short-window abnormal returns than diversified accommodation or online travel firms, practitioners may infer a stronger market sensitivity of fixed-capacity mobility businesses to certain mobility and security disruptions. If online intermediaries respond equally strongly to the 2024 IT outage, the contrast would instead underline the importance of interdependent digital ecosystems. These implications remain conditional on the empirical tests. Neither a hypothetical pattern nor an observed stock decline is sufficient to recommend a specific stock-trading strategy; a trading claim would also require transaction costs, risk adjustment and out-of-sample replication.

For hospitality governance, the framework suggests that contingency planning should distinguish travel-demand collapse, airspace and energy exposure, and shared infrastructure disruption. Recovery planning is

not interchangeable across events or operating structures. For researchers, a free-data replication approach can widen access to tourism finance without hiding missing delisted histories or the restrictions imposed by vendors. Rifqi (2025) and Akramul Bari and Hassan (2026) emphasize, from different tourism applications, the importance of understanding what digitization and public digital signals can and cannot establish. Likewise, sector stock returns must be interpreted within the scope of their measurement.

06 Limitations, Transparency, and Future Research

First, a four-event study has limited event-level degrees of freedom. Although dozens of companies can improve precision for a single episode, those firms do not create dozens of independent global shocks. A generalized ranking of health, geopolitical and technological shock categories would require many independently sampled events within each category. Second, event dates are subject to anticipation, simultaneous announcements and asynchronous market hours. A short window reduces but does not remove contamination. Third, no business-model label perfectly captures actual economic or technical exposure; issuer-level geographic revenue mix, route networks and system dependencies would provide better measures where genuinely available.

Fourth, affordable public price series may be missing for delisted securities, poorly adjusted for splits and dividends, or subject to redistribution limits. The sample may become unbalanced across exchanges, and a consistent total-return dataset may be infeasible without a narrower country scope. The analysis must not sacrifice measurement equivalence to preserve a global label. Fifth, thin trading, market closures and heterogeneous benchmarks complicate event synchronization. Sixth, statistical procedures that ignore same-day residual correlation risk exaggerated significance (Kolari & Pynnönen, 2010); alternative benchmark tests and matched-calendar placebo designs are important rather than optional.

Future work could implement pre-event exposure scoring using geocoded revenue, destination portfolios and route networks; compare listed-company responses with actual operating recovery; and expand the design to a larger universe of independently timed disruptions. More comprehensive panel approaches may then estimate event-type heterogeneity without relying on a single crisis per type. Work on tourism finance should also keep the distinction between the resilience of investors, businesses, workers and destinations explicit.

07 Conclusion

This manuscript sets out a globally oriented, replicability-oriented event-study design for examining whether external shocks are associated with differentiated stock-market reactions across airlines, hotels, cruise lines and online travel intermediaries. Its primary methodological safeguards are documented event timing, historically eligible samples, consistent local-market benchmarks, prespecified windows, dependence-aware tests and transparent sector contrasts. Its potential theoretical contribution is a business-model exposure–transmission account of tourism equity repricing rather than an undifferentiated tourism-crisis narrative. However, no audited price panel or original return estimates are available in the current draft. The hypotheses therefore remain untested. The paper should be submitted as an empirical research article only after the historical-price analysis, complete tables, robustness checks, and results-based abstract and conclusions have been completed.

Declarations

Ethics approval. This study uses publicly accessible corporate filings and securities-market records. It does not recruit human participants or collect personal information; any applicable institutional requirements should nevertheless be confirmed.

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Author contributions. Ice Anggraini: Conceptualization, methodology, project administration, and writing – original draft. I Gede Angga Permana: Conceptualization, methodology, literature investigation, and writing – review and editing. Made Dayuh Hary Kosala: Investigation of event chronology and data sources, resources, and

writing – review and editing. Putu Ayu Pratiwi Duta Siwantari: Methodology, validation of the research design, and writing – review and editing.

All authors reviewed and approved the final manuscript and agree to be accountable for their respective contributions.

Data and code availability. Public sources for historical market prices and financial reports are identified in the Methods.

Use of artificial intelligence. AI-assisted tools were used for manuscript language refinement only.

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