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# Organizational resource and resilience in tourism

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## Organizational resource and resilience in tourism

While tourism crisis and disaster management has been actively discussed, most studies have paid more attention to how organizations respond to and recover from crises and disasters than how they build resilience in advance of crises and disasters (Ritchie & Jiang, 2019). Organizational resilience can be defined as an organization's capacity to survive, adapt, and grow in the face of disturbances (Fiksel, 2006). Research on tourism organizational resilience has mainly focused on the type of organizational resilience (e.g., planned and adaptive) and its influence on financial performance (Orchiston, Prayag, & Brown, 2016; Prayag, Chowdhury, Spector, & Orchiston, 2018), with limited discussions of the role of organizational resources in building the resilience to organizational crises. Although tourism organizations may learn to prevent future crises through prior crisis experience and knowledge (Cioccio & Michael, 2007), they tend to exhibit different resilience outcomes due to heterogeneous resources (Jiang, Ritchie, & Verreynne, 2019). To our knowledge, few studies empirically identify whether and how tourism organizations' resources enhance resilience to crises (internal events) rather than natural disasters (external events) (Ritchie & Jiang, 2019).

From a resource-based view, large tourism businesses have rich resources and the knowledge needed to develop crisis management procedures (Ritchie et al., 2011). Notably, tourism organizations can enhance their level of capabilities by utilizing slack resources – a cushion of unused resources that can be flexibly deployed (Bourgeois, 1981) – and managing operational routines to achieve resilience (Jiang et al., 2019). Although organizational resources can be measured from different perspectives, emphasis has been placed in the tourism literature on intangible elements such as social capital (Chowdbury, Prayag, Orchiston, & Spector, 2019) or firm size such as number of employees (Prayag et al., 2018),

which calls for studying the role of both tangible and intangible resources in adapting to unexpected crises (Ritchie & Jiang, 2019).

This research aims to empirically address the question of what types of organizational resources are likely to enhance resilience outcomes in the tourism industry. Based on Voss, Sirdeshmukh, and Voss (2008)'s resource characteristics of rarity (generic vs. rare) and absorption (deployable vs. absorbed), we define four types of organizational resources: physical (generic and deployable), operational (generic and absorbed), customer relational (rare and deployable), and intangible (rare and absorbed). The research argues that, under high threat, deployable resources, both generic and rare, lead to high adaptability (e.g., product exploration) whereas absorbed resources have no effect on adaptability (Voss et al., 2008). However, whether and how deployable and absorbed resources influence tourism organizational resilience is not clearly understood. Hence, this study contributes to the paucity of empirical studies on organizational resource-led resilience outcomes and, furthermore, provides guidance for preparing for future crises.

For empirical analysis, the airline industry is chosen for study because airplane accidents – often caused by mechanical failure, human error, and/or weather – belong to the corresponding airline's large-scale crises. We obtain a comprehensive dataset by combining the data mainly from two sources: business and financial data from Bloomberg and airplane accident data from the Bureau of Aircraft Accidents Archives. A total of 113 airplane accidents involving 32 organizations across 20 countries are identified between 1991 and 2020. As a dependent variable, organizational resilience outcome is measured by the stock market response to airplane accidents because organizations that better absorb shocks often experience less severe financial losses and reflect more stable systems (DesJardine, Bansal, & Yang, 2019). As independent variables, total assets are used as overall resources, fleet size as physical resources because they can be easily deployed during accidents, load factor spread

(airplane capacity utilization) as operational resources, yield (revenue per passenger kilometer) as customer relational resources, and intangible assets as intangible resources (Voss et al., 2008). Finally, airplane age, customer rating, number of fatalities, trading volume, and company location dummies (Asia, Europe, MENA, North America, Other) are controlled in the model.

The event study methodology is employed for the analysis. First, we observe the resilience outcome based on actual stock returns of airlines after airplane accidents. Second, we estimate what would have been the normal returns if accidents had not occurred, based on the association between the overall market movement and the company stock returns from 200 to 2 days before the accidents. Third, we standardize the differences between the actual and normal returns for each day after the accidents. Fourth, we accumulate them over 1, 3, and 7-day post-accident periods and obtain four cumulative standardized abnormal returns (CSARs) for an individual accident. Finally, we regress each CSAR on the abovementioned regressors to investigate their statistical significance. The final models have no multicollinearity problem with the highest variable inflation factor of 4.67, and the econometric issue of endogeneity in the models is tested with no presence.

The descriptive results show that the general impact of airline accidents related to the 113 events examined was significantly negative over the event window (Fig. 1), and, different types and sizes of organizational resources led to different resilience outcomes after the accidents (Fig. 2). Table 1 reports that overall resources (total assets) were positively related to airline resilience outcome 3 to 7 days after the accident. Specifically, resilience outcomes were driven positively by physical (fleet size, 1 to 7 days), operational (load factor spread, 7 days), and intangible (assets, 1 to 3 days) resources, but negatively by customer relational (yield, 3 days). This finding implies that both deployable (physical) and absorbed (intangible) resources enable firms to quickly respond to unexpected crises. Interestingly, operational

(generic and absorbed) resources with high capacity utilization outperform customer relational (rare and deployable) resources in the face of crises.

This research offers several conclusions and future research agenda in the area of resource-led organizational resilience for the tourism industry. The study demonstrates that although overall resources enhance organizational resilience, their influences differ according to the resource characteristics, which adds value to the management and tourism literatures. Specifically, this study suggests that tourism organizations should invest in long-term capital expenditure on both deployable (e.g., servicing capacity) and intangible resources to quickly adapt to organizational crises. Our findings are consistent with Voss et al. (2008)'s research in terms of deployable resources, but not in terms of absorbed resources. Future research needs to examine what specific deployable (e.g., cash) and absorbed (e.g., intellectual property) can be prepared and allocated optimally for providing the extra capacity during crises as well as operating business-as-usual.

Contrary to Voss et al. (2008) showing no effect of operational and customer relational resources during environmental threats, we demonstrate that operational resources enhance organizational resilience, but rich customer relational resources lower resilience. This finding implies that tourism organizations with absorbed operational resources quickly adapt to organizational crises, whereas organizations with rare customer relational resources show low adaptability to crises. However, this study focuses on the relatively short-term (7-day) effect of organizational resources on resilience, thereby lacking knowledge about the long-term effect. Hence, future research should examine whether organizational resources and activities (e.g., corporate social responsibility) can build resilience over a much longer horizon (DesJardine et al., 2019). Finally, although both deployable and absorbed resources are associated with organizational resilience, researchers need to examine how organizations must bundle their portfolio of available resources into capabilities that can enhance resilience

(Ritchie & Jiang, 2019).

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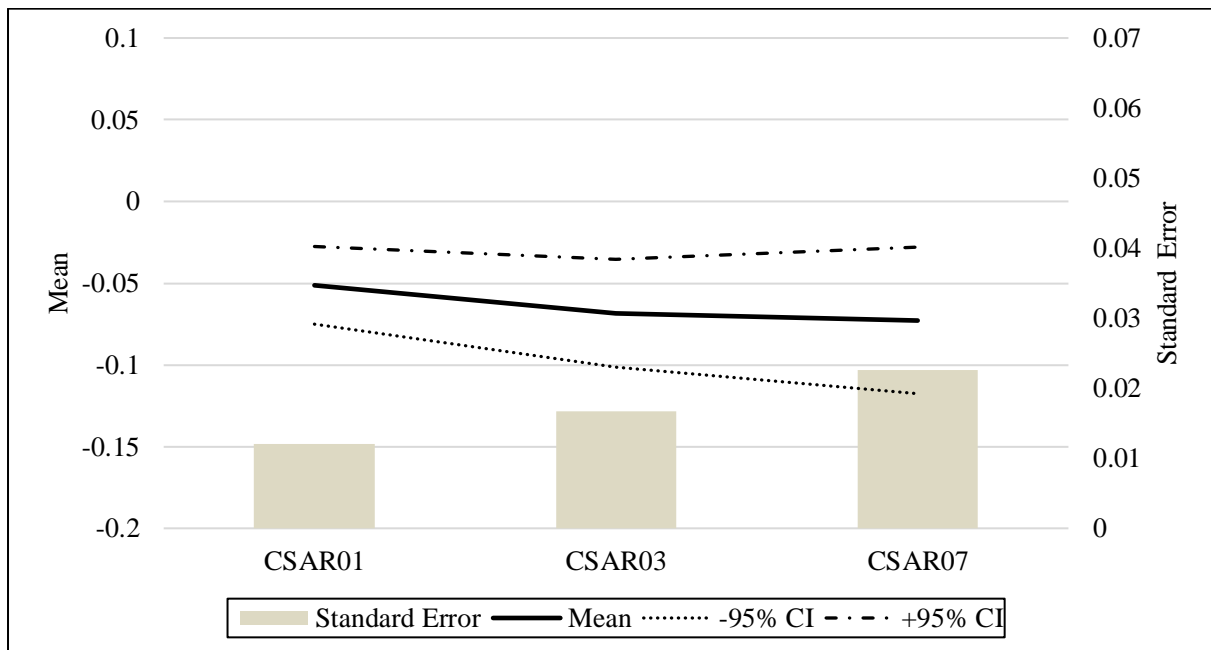
**Table 1. Regression results.**

Model (X)	Total assets			Fleet size			Load factor spread			Yield			Intangible assets		
	(0,1)	(0,3)	(0,7)	(0,1)	(0,3)	(0,7)	(0,1)	(0,3)	(0,7)	(0,1)	(0,3)	(0,7)	(0,1)	(0,3)	(0,7)
X	0.025 (0.015)	0.044** (0.020)	0.109*** (0.031)	0.066** (0.031)	0.090*** (0.029)	0.130** (0.056)	0.000 (0.002)	0.003 (0.003)	0.009** (0.004)	-0.030 (0.075)	-0.125* (0.072)	-0.253 (0.187)	0.018* (0.010)	0.032*** (0.011)	0.033 (0.020)
Airplane age	0.003** (0.001)	0.005* (0.002)	0.009*** (0.003)	-0.003 (0.005)	0.004 (0.003)	0.012* (0.006)	0.002 (0.003)	0.005 (0.003)	0.013** (0.006)	0.001 (0.003)	0.004 (0.003)	0.011* (0.005)	0.002 (0.002)	0.006** (0.002)	0.012*** (0.004)
Customer rating	-0.027** (0.012)	-0.023 (0.020)	-0.047 (0.030)	0.007 (0.030)	0.007 (0.031)	-0.035 (0.061)	-0.027 (0.025)	-0.019 (0.031)	-0.087 (0.067)	-0.018 (0.023)	-0.004 (0.030)	-0.048 (0.061)	-0.047*** (0.015)	-0.049** (0.021)	-0.073* (0.036)
Fatalities	-0.008 (0.009)	0.002 (0.012)	-0.017 (0.018)	-0.011 (0.018)	0.000 (0.010)	0.004 (0.022)	-0.025 (0.021)	-0.001 (0.019)	-0.009 (0.033)	-0.011 (0.019)	-0.002 (0.016)	-0.023 (0.030)	-0.019 (0.017)	0.003 (0.011)	-0.006 (0.022)
Trading volume	-0.020*** (0.004)	-0.034*** (0.007)	-0.053*** (0.010)	-0.011 (0.010)	-0.035*** (0.006)	-0.045*** (0.016)	-0.011 (0.013)	-0.021 (0.013)	-0.040** (0.018)	-0.005 (0.013)	-0.019 (0.011)	-0.035** (0.015)	-0.020*** (0.006)	-0.034*** (0.010)	-0.035** (0.014)
Europe	0.026 (0.043)	0.040 (0.059)	0.006 (0.094)	-0.093 (0.089)	-0.038 (0.054)	-0.042 (0.115)	-0.088 (0.110)	0.047 (0.077)	0.198 (0.158)	-0.079 (0.126)	0.105 (0.071)	0.305 (0.207)	0.000 (0.063)	0.101 (0.060)	0.166 (0.121)
MENA	0.062 (0.038)	0.105 (0.069)	0.137 (0.089)	0.067 (0.067)	0.036 (0.062)	-0.011 (0.099)	0.005 (0.066)	-0.043 (0.081)	-0.164 (0.131)	-0.016 (0.070)	0.002 (0.075)	0.018 (0.133)	0.080* (0.042)	0.150* (0.078)	0.144 (0.119)
North America	0.011 (0.043)	0.116 (0.068)	0.117 (0.113)	-0.038 (0.068)	0.020 (0.065)	-0.036 (0.131)	-0.020 (0.067)	0.045 (0.087)	-0.023 (0.168)	-0.033 (0.087)	0.132 (0.088)	0.235 (0.188)	-0.028 (0.064)	0.025 (0.075)	0.049 (0.125)
Other	-0.004 (0.045)	0.072 (0.056)	0.117 (0.072)	0.040 (0.059)	0.076 (0.056)	0.086 (0.095)	-0.006 (0.057)	0.039 (0.077)	-0.012 (0.109)	-0.014 (0.054)	0.078 (0.060)	0.124 (0.119)	0.008 (0.038)	0.099 (0.060)	0.165 (0.100)
Constant	0.013 (0.077)	-0.121 (0.119)	-0.067 (0.184)	-0.033 (0.134)	-0.176 (0.146)	-0.042 (0.290)	0.071 (0.114)	-0.102 (0.148)	0.134 (0.323)	0.037 (0.129)	-0.204 (0.153)	-0.142 (0.309)	0.135 (0.096)	-0.008 (0.137)	-0.007 (0.240)
N	38	38	38	31	31	31	31	31	31	33	33	33	37	37	37
R <sup>2</sup>	0.441	0.445	0.432	0.225	0.547	0.336	0.239	0.266	0.306	0.142	0.314	0.262	0.303	0.500	0.358

Note: Numbers in parentheses are standard errors. Due to the high correlation among five resource variables ( $r > 0.90$ ), five models are estimated by using five variables separately.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ .

**Fig. 1.** Cumulative standardized abnormal return (CSAR) for the airplane accidents.



**Fig. 2.** CSAR by different organizational resources.

