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## An Ounce of Prevention: What Promotes Crisis Readiness and How Does It Drive Firm Performance?

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### ABSTRACT

Organizations develop crisis readiness to avoid and mitigate crises. This study investigates several factors that influence crisis readiness, including market dynamism, perceived likelihood of a crisis (PLC), and firm size. It also evaluates the impact of crisis readiness on firm performance. Results from a PLS-SEM assessment of 301 managers in the United States suggest that market dynamism drives firm performance while heightening both PLC and crisis readiness. When compared to large organizations, managers in small- and medium-sized enterprises (SMEs) reported higher PLC but lower crisis readiness, underscoring the challenges faced by small firms regarding crisis preparation. Crisis readiness was also positively linked to both financial and non-financial performance. The model tested in this study supports the influence of external and organizational factors on crisis preparation, as well as subsequent links with firm performance.

### KEYWORDS

Market Dynamism, Crisis Management, Crisis Readiness, Firm Performance, SME, PLS-SEM

### INTRODUCTION

The list of companies filing for bankruptcy during the aftermath of the COVID-19 pandemic is extensive and includes such notables as Hertz, Stein Mart, Ruby Tuesday, Virgin Atlantic, and Chesapeake Energy. Their struggles can be attributed to numerous factors, including abrupt changes in buyer behavior, supply chain interruptions, and government health mandates (Clifford & Wahba, 2020; Shen, Fu, Pan, Yu, & Chen, 2020). But other firms avoided this fate, and some even prospered. Whether through strategic foresight or good luck, companies that survive and thrive during a crisis are better prepared (Bundy, Pfarrer, Short, & Coombs, 2017; Coombs & Holladay, 2006; Crandall, Parnell, & Spillan, 2020). However, navigating a crisis begins with developing readiness in the organization before a crisis occurs (Bhaduri, 2019; Bowers, Hall, & Srinivasan, 2017; Gallagher, 2017; Okoli & Watt, 2018).

Developing crisis readiness is more challenging for some organizations than for others, however. Factors that influence this process include a firm's external environment, idiosyncratic characteristics such as organizational size, and perceptions regarding potential threats from a crisis (Joon Mo, Mortara, & Minshall, 2018; Topaloglu, Koseoglu, & Ondracek, 2013). Understanding how such factors influence crisis readiness in organizations can help explain why gaps in crisis preparation exist across firms, and ultimately, what can be done to address them.

It is difficult to suggest how many companies that succumbed to a crisis would have survived if they had been better prepared. A maturing body of scholarship underscores the importance of crisis preparation (Bhaduri, 2019; Liu, Shankar, & Yun, 2017; Vouzas & Nizamidou, 2018). This paper focuses

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on two gaps in the literature. First, more research is needed on environmental and organizational factors that promote or hamper crisis readiness. Second, most published work examining the performance of firms before and after a crisis focus on profitability, revenues, share prices, and other financial measures (Dias, Rossi, Silva, de Camargos, & de-Carvalho, 2020; Osiyevskyy, Shirokova, & Ritala, 2020; Rababah, Al-Haddad, Sial, Chunmei, & Cherian, 2020; Ryu, Kim, & Ryu, 2019; Shen et al., 2020). Research addressing the non-financial dimension of performance is also needed (Bouslah, Kryzanowski, & M'Zali, 2018; Elbanna, Child, & Dayan, 2013; Parnell, 2015).

This study focuses on factors that drive crisis readiness, and ultimately, firm performance. It addresses two research questions: (1) How do market dynamism, perceived likelihood of a crisis, and firm size influence crisis readiness? (2) How does crisis readiness influence financial and non-financial firm performance? It contributes to the crisis management literature by examining how crisis readiness influences both financial and non-financial dimensions of firm performance. Presenting and evaluating an integrated model informs future work and provides practical suggestions for managers seeking to understand the extent to which crisis readiness drives financial and non-financial performance.

## LITERATURE REVIEW

A crisis is an unpredictable event that can directly threaten an organization. Examples of crises are myriad and include natural disasters, cyber-crime, labor disputes, product recalls, and lawsuits emanating from discrimination, sexual harassment, and whistleblowers. Accelerated by increased technology and the increasingly global nature of business activity, the frequency and diversity of crises have increased in recent years (Boin, 2019; Bundy et al., 2017; Coleman, 2004; Greysier, 2009; Jakubanecs, Supphellen, & Helgeson, 2018; Lalonde, 2007; Robert & Lajtha, 2002). Many crisis events require quick, decisive action, the ramifications of which can dramatically affect a firm's reputation, financial performance, and even survival (Bundy et al., 2017; Coombs & Holladay, 2006).

Effective crisis management requires that action be taken before, during, and after a crisis event. Avoidable crises should be averted, and others should be managed to mitigate their adverse effects on the firm. Toward this end, organizations should develop crisis management capabilities and crisis management plans (CMPs) before a crisis occurs (Cirka & Corrigan, 2010; Hunter, Van Wassenhove, & Besiou, 2016; Jacques, 2010). Organizations with established crisis management teams (CMTs) and CMPs tend to exhibit a greater awareness of and concern for possible crises (Crandall et al., 2020). CMTs develop worst-case scenarios and standard operating procedures (SOPs) to anticipate crises and to provide guidance to organizational members when a crisis strikes. Moreover, all employees should be aware of their specific responsibilities and should be empowered appropriately to manage a crisis in their departments (Areiquit & Zamil, 2011).

Developing crisis readiness in a firm prepares its members to address a crisis proactively and navigate it effectively (Okoli & Watt, 2018). Examples underscoring the importance of crisis readiness are legion. The following scenario illustrates the link between strategic management and crisis management, as well as the specific challenges associated with crisis readiness and decision-making.

Overbooking has been widely successful in the airline industry, as fewer empty seats translate into higher revenues, lower per-seat costs, and lower fares (Klophaus & Pölt, 2006; Parnell & Crandall, 2017). The practice is readily justified because many ticketed passengers arrive in time to board their flights anyway (Carey, 2017). Between 2010 and 2019, the number of passengers denied boarding ranged from 352 to 746 annually, 0.079% of the total for the ten-year period. Most of the denials were *voluntary*. The number of passengers removed *involuntarily* ranged from 11 to 59 each year, only 0.006% of the total for the same period (U.S. Department of Transportation, 2020).

Overbooking might make strategic sense, but each boarding denial represents a stressful event with the potential to become a crisis. United Airlines experienced a worst-case scenario on April 9,

2017, when ticketed passenger Dr. David Dao was forcibly removed from a United flight. When Dr. Dao's removal was recorded on a smartphone and posted on social media, a boarding denial had rapidly become a significant and costly crisis for the firm (Carey, 2017). Crisis readiness reflects an organization's ability to evaluate the potential effects of a strategic decision such as overbooking and prepare for negative scenarios that can occur as a result. While United Airlines had established procedures to manage boarding denials, the level of crisis readiness in the organization—specifically, the training and preparation afforded the United employees who dealt with Dr. Dao directly—was insufficient.

The United Airlines example illustrates how a firm's approach to strategic planning can make an organization more or less susceptible to a crisis. However, firms must also proactively develop crisis readiness (Crandall et al., 2020). Managers can take important steps to help their organizations prepare for a crisis that cannot be avoided (Bhaduri, 2019; Spector, 2019).

Crisis readiness is a sub-area of the broader discipline of crisis management and includes both signal detection and preparation/prevention phases (Bundy et al., 2017; Pearson & Mitroff, 1993). An organization's crisis readiness defines its ability to address crisis events when they occur. Crisis readiness should be distinguished from a manager's perceptions about the likelihood of a crisis (PLC). Also referred to as crisis concern, PLC reflects the extent to which managers worry about the likelihood of crisis events and the potential impacts they might have on the organization (Pearson & Mitroff, 1993).

Rousaki and Alcott (2007) developed scales to measure crisis readiness and the perceived likelihood of a crisis (PLC). Other scholars (e.g., Avery & Park, 2019; Elsubbaugh, Fildes, & Rose, 2004; Enander, Hede, & Lajksjö, 2015; Hilliard, Scott-Halsell, & Palakurthi, 2011; Jin, 2010; Labaš, 2017; Olofsson, 2011; Selart, Johansen, & Nesse, 2013) have used the term "crisis preparation" within a similar context. Crisis preparation and crisis readiness are related constructs. Indeed, preparing an organization for a crisis enhances its readiness, but other factors (e.g., access to financial resources) are also important. Nonetheless, scholarship on the merits of crisis preparation helps inform a broader understanding of crisis readiness. Hence, these terms are used interchangeably in this paper.

Crisis readiness can be viewed from an internal perspective (Bundy et al., 2017). Research on high-reliability organizations suggests that firms can modify culture, structure, and design to manage unexpected events by preventing breakdowns that can facilitate a crisis (Ashford & Anand, 2003; Greve, Palmer, & Pozner, 2010). A firm's culture can be tolerant of executive misconduct that can lay the groundwork for a crisis (Weick & Sutcliffe, 2006).

Crisis readiness can also be viewed from an external perspective (Bundy et al., 2017). Positive stakeholder relationships can increase information exchange and cooperation between managers across firms, helping firms avoid crises (Kahn, Barton, & Fellows, 2013; Ulmer, Sellnow, & Seeger, 2011). In a similar vein, negative stakeholder relationships can prompt members of an organization to engage in unethical or illegal behavior to meet stakeholder expectations or to take necessary action to retaliate against a stakeholder (Greve et al., 2010). Uncertainties associated with market dynamism—perceived instability and constant change in markets in which the firm competes (Rodrigo-Alarcón, García-Villaverde, Parra-Requena, & Ruiz-Ortega, 2017; Wu & Nguyen, 2019; Zehir & Balak, 2018)—can also impact perceptions about crisis risk (Coombs & Laufer, 2018; Watson, Finn, & Wadhwa, 2017).

## HYPOTHESES

This paper tests five sets of hypotheses, each of which is tested as part of a composite model linking environmental and organizational factors to crisis readiness, and ultimately to firm performance.

## MARKET DYNAMISM AND PERFORMANCE

Market dynamism reflects the degree of environmental volatility and unpredictability that organizations encounter (Wu & Nguyen, 2019; Zehir & Balak, 2018). It propagates market asymmetry and creates strategic opportunities for managers to distinguish their firms from rivals, thereby potentially increasing firm performance. (H. Liu & H. Wei, 2015; Zhang, 2008). Market dynamism can also be an essential precursor to organizational development by facilitating strategic change (Y. Liu & H. Wei, 2015). Indeed, firms can leverage the market uncertainty associated with dynamic markets by developing new products, entering new markets, integrating supply chains, or taking other strategic actions (Xu, Li, Sun, & Zhao, 2012). A broad link between market dynamism and firm performance is largely consistent with the resource-based view of the firm, as it underscores the notion of subjective value and the unique positions from which organizations address environment uncertainty (Barney, 2014; Parnell, 2018).

Increased market dynamism creates opportunities for innovation and high firm performance (Antoncic & Hisrich, 2001; Atuahene-Gima, Li, & De Luca, 2006; Rodrigo-Alarcón et al., 2017). Specifically, dynamic markets encourage innovation, which can increase returns in highly competitive markets (Tsai & Yang, 2013). Previous research supports a substantial nexus between dynamism and firm performance (Crandall et al., 2020; Zehir & Balak, 2018).

*H1a: Market dynamism will be positively associated with financial performance.*

*H1b: Market dynamism will be positively associated with non-financial performance.*

## MARKET DYNAMISM, PERCEIVED LIKELIHOOD OF A CRISIS AND CRISIS READINESS

Crisis decision-making is complex and challenging because leaders must make quick decisions amidst environments of stress, high uncertainty, and turbulence (de Waard, Volberda, & Soeters, 2012; Kantur & Iseri-Say, 2012). Indeed, uncertainty often stokes anxiety (Gottlieb, Weiss, & Chapman, 2007; Swamidass & Newell, 1987). In this respect, perceived environmental uncertainty can heighten awareness of and concern about potential adverse events (Coombs & Laufer, 2018; Jauch & Kraft, 1986; Milliken, 1987; Parnell, 2018; Watson et al., 2017). Indeed, environmental change is inherent in dynamic markets (Antonacopoulou & Sheaffer, 2014; Hunter et al., 2016; Stern, 2013). Higher levels of uncertainty characterize such markets. Scholars have highlighted the role of external influences such as environmental uncertainty on managerial decision-making (Elbanna et al., 2013; Parnell, 2018). Hence, one would expect managers in such environments to report higher levels of both crisis concern and crisis readiness.

*H2: Market dynamism will be positively associated with a manager's perceived likelihood of a crisis.*

*H3: Market dynamism will be positively associated with crisis readiness.*

## PERCEIVED LIKELIHOOD OF A CRISIS AND CRISIS READINESS

Crisis concern tends to spark preparation and readiness, as managers aware of current or prospective organizational problems are more likely to take appropriate measures to address them. Such a link is intuitive, as some level of knowledge about a potential problem is generally required before individuals act. Although awareness does not guarantee a positive response, research supports the notion that management action tends to increase when the awareness of a crisis or another concern also rises (Bruce & Nowlin, 2011; Chew Abdullah & Khairuddin, 2013; Tanifuji, 2000; Wong, 2019).

There are instances when crisis concern might not enhance crisis readiness or where crisis readiness could drive crisis concern (Parnell, Koseoglu, & Spillan, 2010; Rousaki & Alcott, 2007). For example, managers could report high crisis concern after considerable crisis preparation has already occurred because preparation can raise crisis awareness, particularly among managers who would otherwise not be concerned. Nonetheless, previous work suggests a strong link between crisis concern and action designed to enhance crisis response (Bundy et al., 2017; Crandall et al., 2020; Liu et al., 2017). Hence, a positive link between PLC and crisis readiness is anticipated in this study.

**H4:** *The perceived likelihood of a crisis will be positively associated with crisis readiness.*

### **FIRM SIZE AND CRISIS READINESS**

Effective crisis planning requires that organizations commit the appropriate time, energy, and other resources (Parnell, 2015). Many large organizations employ individuals assigned to specific crisis management activities and work with consultants to integrate advanced crisis assessment and training (Bhaduri, 2019; Nicolau, 2015; Watson et al., 2017). Because of inadequate planning and resource constraints, smaller organizations often struggle to survive when a crisis strikes. There is less scholarly work on crisis planning in SMEs, with exceptions in crisis-prone industries such as hospitality and tourism (Herbane, 2013; Morakabati, Page, & Fletcher, 2017; Racherla & Clark, 2009; Sawalha, Jraisat, & Al-Quduh, 2013).

In addition, SMEs often lack the information necessary to anticipate and preclude a crisis, as well as the resources required to manage one. Limited economies of scale place SMEs at a relative disadvantage because they must spread the costs associated with crisis readiness over fewer units of production (Doern, 2016; Kurschus, Sarapovas, & Pilinkiene, 2017; Nicolau, 2015; Vargo & Seville, 2011; Vouzas & Nizamidou, 2018). Hence, managers with a general awareness of crisis challenges associated with smaller firms will likely report both a greater concern about prospective crises in their organizations and a reduced level of crisis readiness.

**H5a:** *Managers in SMEs will report a higher PLC than will managers in large firms.*

**H5b:** *Managers in SMEs will report a lower level of crisis readiness than will managers in large firms.*

### **CRISIS READINESS AND FIRM PERFORMANCE**

Crisis readiness can enhance financial performance in two primary ways. First, when a firm's managers anticipate and prepare for crisis events, they can reduce the likelihood that one will occur, thereby eliminating the loss a crisis can bring to bear. Second, even when a crisis cannot be avoided, CMTs and CMPs can help a firm manage it and reduce the negative financial impact on the organization. Extant research supports a broad link between crisis preparation and financial outcomes across industries (Antonacopoulou & Sheaffer, 2014; Crandall et al., 2020; Elsubbaugh et al., 2004).

Intuitively, the positive link between crisis readiness and financial performance could extend to the non-financial arena (Bouslah et al., 2018). Conceptual support for such a link emanates from stakeholder theory, which emphasizes the impacts of firm action on various outcomes (Hillman & Keim, 2001). A stakeholder perspective highlights non-financial performance measures alongside the traditional concerns of profitability, firm growth, and financial returns to owners. Moreover, some crisis events affect non-financial performance directly. For example, a social media crisis can immediately damage a firm's reputation and customer goodwill, even if the financial implications are minimized or cannot be readily calculated (Cheng, 2018; Greyser, 2009; Watson & Rodrigues, 2018;

Zhang & Borden, 2017). Hence, crisis readiness should drive both financial and non-financial performance.

**H6a:** *Crisis readiness will be positively associated with financial performance.*

**H6b:** *Crisis readiness will be positively associated with non-financial performance.*

## METHODOLOGY

Data were collected via a survey administered online through Cint's online insight exchange platform. Surveys were sent to and completed by full-time, practicing managers in the United States; part-time managers and non-managers were excluded. From an initial population of approximately 1,400 qualified potential respondents, 442 surveys were completed. Multiple management levels, experiential backgrounds, industry affiliations, and organization sizes were represented, including individuals with a wide range of organizational and management experience (see table 1). Lower level and middle managers were included in the analysis, as they have played a more significant role in recent years in both strategy formulation and execution (Balogun & Johnson, 2004; Raes, Heijltjes, Glunk, & Roe, 2011).

Small- and medium-sized enterprises (SMEs) were defined as organizations with at least ten but no more than 250 employees. Micro-businesses—organizations with fewer than ten employees—were excluded from the analysis. Hence, non-SMEs in the study included only organizations with more than 250 employees. SME status was measured by a dichotomous dummy variable.

Previously validated scales were employed to the extent feasible. The crisis readiness scale was adapted from Rousaki and Alcott (2007), who developed the only existing published scale available to measure the construct. The PLC scale was based on their work but modified for the current study.

The market dynamism scale was adopted from Junghan and Lakshmanan (2015). This scale was utilized because of its emphasis on customers (e.g., interest in new products and price sensitivity) and its ease of application to firms in various manufacturing and service industries.

Firm performance was measured via eight items adapted from prior studies (Hult, Hurley, & Knight, 2004; Tang, Tang, Marino, Zhang, & Li, 2008; Tsai & Yang, 2013; Zahra & Garvis, 2000) and dissected into financial and non-financial dimensions. Self-reported performance measures were used because of the limited access to financial data for privately held firms, the positive correlation between perceived and objective performance measures (Lau & Ngo, 2001; Menguc & Auh, 2006), and the preference for relative performance measures when assessing organizations across industries. Seven-point Likert scales (e.g., 1=strongly disagree, 4=neither disagree nor agree, 7=strongly agree) were employed.

Each response was scrutinized for evidence of straightlining, excessive missing data, and other concerns. Individuals completing the survey in less than 2.5 seconds per question were eliminated. This conservative approach to cleaning the data eliminated 141 cases, resulting in 301 usable responses.

The hypotheses were tested via SmartPLS (version 3) software. SmartPLS employs a partial least squares (PLS) algorithm to structural equation modeling (SEM). Whereas covariance-based SEM seeks to minimize unexplained variance, PLS-SEM seeks to maximize explained variance. SmartPLS was used because of its ability to predict target variables (e.g., crisis readiness and firm performance) (Hair, Risher, Sarstedt, & Ringle, 2019; Hair, Sarstedt, Ringle, & Gudergan, 2018).

**Table 1.** Sample Demographics

	<b>n</b>	<b>%</b>
<b><u>Management Level</u></b>		
Lower	26	8.6
Middle	175	58.1
Upper	100	33.2
<b><u>Functional Background</u></b>		
Accounting/Finance	57	18.9
General Management/HR	80	26.6
Law	9	3.0
Marketing/Sales	30	10.0
Production/Engineering	73	24.3
Information Technology	25	8.3
Other	26	8.0
(missing)	2	0.7
<b><u>Gender</u></b>		
Male	155	51.5
Female	143	47.5
(missing)	3	1.0
<b><u>Industry</u></b>		
Manufacturing	82	27.2
Hospitality	22	7.3
Healthcare	30	10.0
Services	104	34.6
Other	62	20.6
(missing)	1	0.3
<b><u>Firm Size</u></b>		
Micro (-10 employees)	0	0.0
Small (11-50 employees)	55	18.3
Medium (51-250 employees)	104	34.6
Large (251+ employees)	142	47.2

## FINDINGS

The hypotheses and model were assessed systematically (Hair et al., 2019). Scales were evaluated for reliability and validity with the consistent partial least squares (PLSc) algorithm (see tables 2 & 3). Three of the market dynamism items produced loadings below 0.700 and were eliminated in a stepwise fashion. All eight of the crisis readiness items loaded above 0.700 and were retained. The third item in the PLC scale produced a loading of 0.676, slightly below the target minimum of 0.700. It was retained because latent constructs should include at least three measures and loadings tend to be lower in three-item scales. Factor-level variance inflation factor (VIF) scores were less than 3.3 in all instances (see table 4), suggesting that the model is free from common method bias (Kock, 2015).

The first and second items in the financial performance scale produced loadings of 0.695 and 0.614, respectively. The first item in the non-financial performance scale (i.e., customer satisfaction and loyalty) produced a loading of 0.534. It is not uncommon for correlations among performance



measures to fall short of established thresholds, so these items were retained (Chow & Van Der Stede, 2006; Venkatraman & Ramanujam, 1986).

**Table 2.** Factor Loadings and Collinearity Statistics

<b>Variable</b>	<b>Factor Loading</b>	<b>VIF</b>	<b>Item Wording</b>
<b><u>Crisis Readiness</u></b>			
CR1	0.745	1.830	Accessibility to crisis management resources
CR2	0.709	2.270	Adequate budget to manage a crisis
CR3	0.712	2.311	Adequate crisis management plan (CMP)
CR4	0.759	2.170	I am well informed about crisis response resource/tools
CR5	0.770	2.028	Crisis management viewed as an organizational goal
CR6	0.773	2.287	Training to manage a crisis
CR7	0.714	1.802	Rewards employees for detecting and reporting crisis signs
CR8	0.783	2.195	Key employees well informed about crisis response resource and tools
<b><u>Financial Performance</u></b>			
FP1	0.695	1.642	Return on assets (ROA)
FP2	0.614	2.079	Growth in revenue/sales
FP3	0.869	2.089	Growth in market share
FP4	0.814	1.820	Growth in stock price and investor returns
<b><u>Market Dynamism</u></b>			
MD1	0.764	1.942	Our customers look for new products all the time
MD2	0.780	1.984	Sometimes customers are price-sensitive, other times not
MD3	0.837	1.932	We see demand for our products and services from customers who have never bought them before
<b><u>Non-financial Performance</u></b>			
NFP1	0.534	1.687	Customer satisfaction and loyalty
NFP2	0.817	2.162	Employee satisfaction and loyalty
NFP3	0.856	1.564	Development of capabilities critical to firm success
<b><u>Perceived Likelihood of a Crisis</u></b>			
PLC1	0.789	1.770	High likelihood of a crisis associated with customers
PLC2	0.856	1.950	High likelihood of a crisis associated with employees
PLC3	0.676	1.774	High likelihood of a crisis associated with facilities

**Table 3.** Scale Properties

Construct	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Explained
Crisis Readiness	0.909	0.910	0.909	0.557
Financial Performance	0.841	0.853	0.839	0.569
Market Dynamism	0.837	0.838	0.837	0.631
Non-Financial Performance	0.787	0.821	0.787	0.562
PLC	0.818	0.829	0.819	0.604

**Table 4.** Factor-Level VIF Scores

Variable	Crisis Readiness	Financial Perf.	Market Dynamism	Non-Fin. Perf.	PLC
Market Dynamism		1.576	1.687	1.712	1.668
Crisis Readiness	1.819		1.664	1.969	1.909
PLC	1.458	1.246		1.482	1.484
Financial Performance	2.422	2.534	2.239		1.390
Non-Financial Performance	2.648	2.699	2.435	1.553	
SME	1.054	1.034	1.005	1.055	1.056

**Table 5.** Fornell-Larcker Matrix

Variable	Crisis Readiness	Financial Perf.	Market Dynamism	Non-Fin. Perf.	PLC	SME
Crisis Readiness	0.746					
Financial Performance	0.460	0.755				
Market Dynamism	0.574	0.498	0.794			
Non-Financial Performance	0.528	0.771	0.536	0.750		
PLC	0.531	0.256	0.406	0.290	0.777	
SME	-0.060	-0.032	-0.013	-0.015	0.156	1.000

**Table 6.** Heterotrait-Monotrait (HTMT) Ratio

Variable	Crisis Readiness	Financial Perf.	Market Dynamism	Non-Fin. Perf.	PLC
Crisis Readiness					
Financial Performance	0.460				
Market Dynamism	0.574	0.491			
Non-Financial Performance	0.522	0.792	0.531		
PLC	0.528	0.252	0.409	0.283	
SME	0.070	0.033	0.013	0.048	0.156

**Table 7.** Tests of Hypotheses

Hypothesis	Original Sample	Sample Mean	Std. Dev.	t-stat.	p-value	Support	f <sup>2</sup> value
H1a: Market Dyn. > Fin. Perf.	0.349	0.348	0.098	3.543	0.000*	yes	0.116
H1b: Market Dyn. > Non-Fin. Perf.	0.347	0.345	0.098	3.540	0.000*	yes	0.113
H2: Market Dyn. > PLC	0.409	0.411	0.078	5.261	0.000*	yes	0.207
H3: Market Dyn. > Crisis Readiness	0.419	0.419	0.084	4.984	0.000*	yes	0.263
H4: PLC > Crisis Readiness	0.379	0.381	0.083	4.559	0.000*	yes	0.210
H5a: SME > PLC	0.161	0.160	0.058	2.786	0.005*	yes	0.032
H5b: SME > Crisis Readiness	-0.113	-0.111	0.049	2.305	0.021*	yes	0.023
H6a: Crisis Read. > Fin. Perf.	0.260	0.266	0.081	3.215	0.001*	yes	0.064
H6b: Crisis Read. > Non-Fin. Perf.	0.329	0.334	0.095	3.452	0.001*	yes	0.113

\* significant at .05 level

**Table 8.** Hypothesized Model Indirect Effects

Indirect Effect	Sample	Mean	Dev.	t-stat.	p-value
Mkt. Dyn. > Crisis Read. > Fin. Perf.	0.109	0.112	0.044	2.491	0.013*
Mkt. Dyn. > Crisis Read. > Non-Fin. Perf.	0.138	0.141	0.051	2.710	0.007*
Mkt. Dyn. > PLC > Crisis Read.	0.155	0.158	0.049	3.149	0.002*
Mkt. Dyn. > PLC > Crisis Read. > Fin. Perf.	0.040	0.043	0.020	2.035	0.042*
Mkt. Dyn. > PLC > Crisis Read. > Non-Fin. Perf.	0.051	0.053	0.023	2.211	0.027*
PLC > Crisis Read. > Fin. Perf.	0.099	0.101	0.039	2.538	0.011*
PLC > Crisis Read. > Non-Fin. Perf.	0.125	0.128	0.047	2.652	0.008*
SME > Crisis Read. > Fin. Perf.	-0.029	-0.029	0.016	1.866	0.062
SME > Crisis Read. > Non-Fin. Perf.	-0.037	-0.037	0.019	1.945	0.052
SME > PLC > Crisis Read.	0.061	0.059	0.023	2.629	0.009*
SME > PLC > Crisis Read. > Fin. Perf.	0.016	0.016	0.008	1.897	0.058
SME > PLC > Crisis Read. > Non-Fin. Perf.	0.020	0.020	0.010	1.977	0.048*

\* significant at .05 level

Coefficient alphas exceeded 0.800, composite alphas exceeded 0.800, and average variance explained (AVE) exceeded 0.500 for all constructs (see table 3). The Fornell-Larcker and hererotrait-monotrait (HTMT) criteria suggest discriminant validity in all instances (see tables 5-6). Variance inflation factor (VIF) scores were below three for all items, suggesting that collinearity was not a significant concern. These results reinforce earlier decisions to retain several items with marginal loadings.

Hypotheses were tested by consistent bootstrapping. Each hypothesis was supported, as depicted in table 7 and figure 1. The indirect effects in the hypothesized model were assessed as well (see table 8). Results support some, but not all, mediated relationships in the model.

Although the bootstrapping results support the proposed path model, it is also important to evaluate the practical significance of each relationship. Effect sizes were assessed and interpreted following Cohen’s benchmarks of 0.02 (small), 0.15 (moderate), and 0.35 (large) (Hair, Sarstedt, Pieper, & Ringle, 2012). The influence of firm size (SME) on PLC and crisis readiness were the smallest, 0.023 and 0.032, respectively. The effects of market dynamism on PLC (0.207) and crisis readiness (0.263) were moderate, as was PLC’s effect on crisis readiness (0.210).

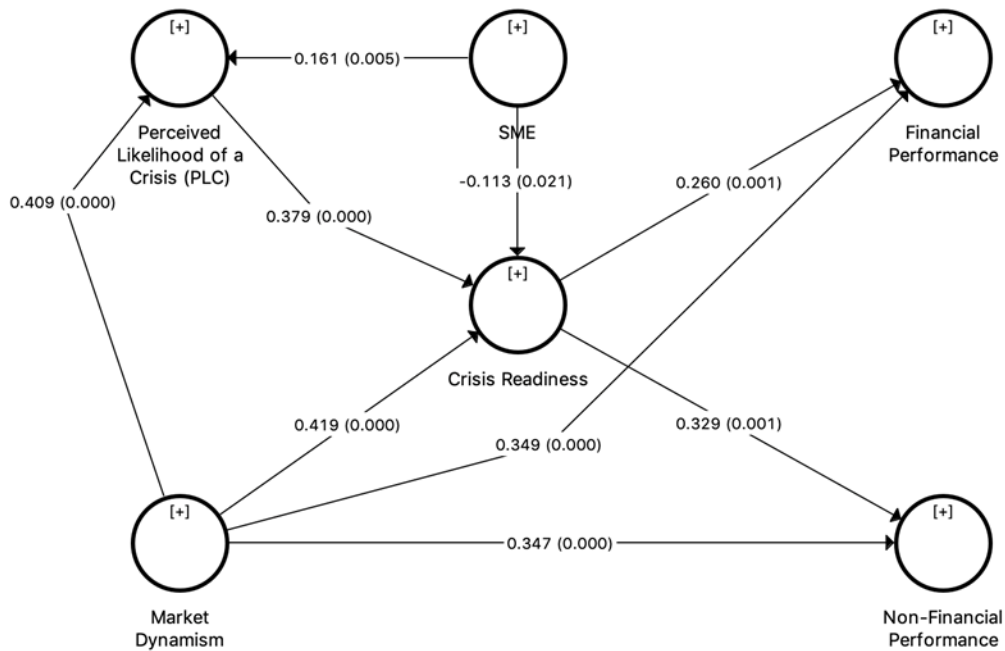


Figure 1. Tests of Hypotheses

R<sup>2</sup> and Q<sup>2</sup> values are provided in table 9. Crisis readiness produced the highest R<sup>2</sup> value (0.448). The R<sup>2</sup> value for non-financial performance (0.360) was higher than for financial performance (0.294).

Q<sup>2</sup> values were calculated with a blindfolding test with seven iterations (see table 8). Scores ranged from 0.091 to 0.205, suggesting small predictive relevance for each of the four dependent variables in the model.

The PLSpredict algorithm with ten folds and ten repetitions was applied to provide an out-of-sample evaluation of the predictive model. RMSE calculations were lower for the PLS model than for the linear model (LM) in all but one instance (PLC<sub>3</sub>), supporting predictive power for the tested model (see table 10).

**Table 9.** R<sup>2</sup> and Q<sup>2</sup> Values

Variable	R <sup>2</sup> value	Q <sup>2</sup> value
Crisis Readiness	0.448	0.205
Financial Performance	0.294	0.138
Non-Financial Performance	0.360	0.173
PLC	0.192	0.091

**Table 10.** PLSpredict Results

Item	PLS		LM		Change in RMSE
	PLS RMSE	Q <sup>2</sup> predict	LM RMSE	Q <sup>2</sup> predict	
oif1	1.222	0.140	1.231	0.128	-0.009
oif2	1.182	0.144	1.187	0.137	-0.005
oif3	1.138	0.140	1.133	0.149	0.005
oif4	1.259	0.136	1.272	0.118	-0.013
oif5	1.239	0.179	1.246	0.171	-0.007
oif6	1.256	0.124	1.268	0.107	-0.012
oif7	1.264	0.148	1.274	0.135	-0.010
oif8	1.187	0.156	1.194	0.146	-0.007
perform1	1.160	0.111	1.173	0.090	-0.013
perform2	1.188	0.033	1.193	0.024	-0.005
perform3	1.170	0.142	1.179	0.129	-0.009
perform4	1.159	0.149	1.161	0.146	-0.002
perform6	1.186	0.058	1.198	0.038	-0.012
perform7	1.285	0.134	1.299	0.115	-0.014
perform8	1.042	0.188	1.048	0.178	-0.006
plc1	1.517	0.094	1.526	0.083	-0.009
plc2	1.466	0.089	1.473	0.081	-0.007
plc3	1.550	0.082	1.557	0.074	-0.007

**Table 11.** Saturated Model

Hyothesis Link	Sample	Mean	Dev.	t-stat.	p-value	value
H1a: Mkt. Dyn. > Fin. Perf.	0.354	0.353	0.099	3.558	0.000*	0.116
H1b: Mkt. Dyn. > Non-Fin. Perf.	0.352	0.348	0.100	3.553	0.000*	0.127
H2a: Mkt. Dyn. > PLC	0.408	0.411	0.078	5.264	0.000*	0.206
H2b: Mkt. Dyn. > Crisis Readiness	0.419	0.420	0.084	5.003	0.000*	0.264
H3: PLC > Crisis Readiness	0.379	0.380	0.081	4.688	0.000*	0.211
H4a: SME > PLC	0.161	0.161	0.059	2.749	0.006*	0.032
H4b: SME > Crisis Readiness	-0.113	-0.111	0.049	2.300	0.021*	0.023
H5a: Crisis Read. > Fin. Perf.	0.274	0.282	0.097	2.833	0.005*	0.059
H5b: Crisis Read. > Non-Fin. Perf.	0.349	0.359	0.106	3.279	0.001*	0.105
n/a: PLC > Fin. Perf.	-0.032	-0.034	0.089	0.359	0.719	0.001
n/a: PLC > Non-Fin. Perf.	-0.041	-0.043	0.077	0.530	0.596	0.002
n/a: SME > Fin. Perf.	-0.006	-0.005	0.058	0.104	0.917	0.000
n/a: SME > Non-Fin. Perf.	0.016	0.018	0.057	0.286	0.775	0.000

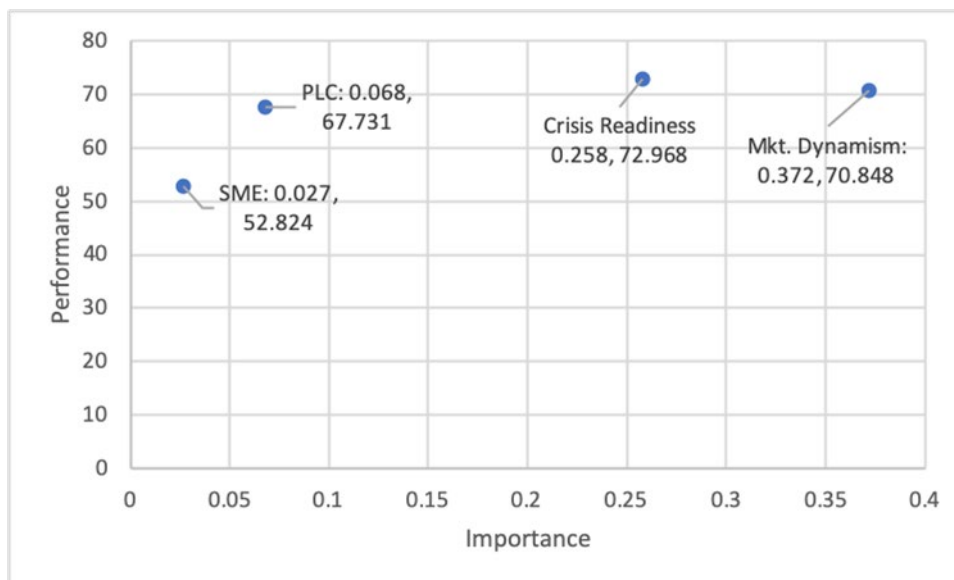
\* significant at .05 level

A model including each of the hypothesized links was compared to a saturated model, but only the hypothesized links were supported in the latter (see table 11). The Bayesian information criteria (BIC) calculations for financial and non-financial performance were lower in the hypothesized model than in the saturated model, -88.522 and -118.059 versus -77.461 and -107.198, respectively, thereby supporting the hypothesized model.

**DISCUSSION**

An importance-performance map analysis (IPMA) assessed the practical implications of the tested model. Values in the first four columns in table 12 represent the importance values for each of the four target constructs in the model. Values in the final column represent performance values for each construct. The IPMA maps are presented later in this section.

The uncertainty inherent in dynamic markets appears to raise crisis concerns and readiness while also promoting firm performance. The IPMA results presented in figure 2 identified market dynamism as the most important driver of both financial and non-financial performance. On the surface, organizations appear to have no control over market dynamism, but this is not entirely true. Firms ultimately choose the markets in which they compete (Parnell, Lester, Zhang, & Köseoglu, 2012; Zajac & Shortell, 1989).



**Figure 2.** IPMA Results: Financial Performance

**Table 12.** IPMA Results: Importance and Performance Values

Target Construct	Crisis Readiness	Financial Perf.	Non-Fin. Perf.	PLC	Performance Value
Crisis Readiness		0.258	0.318		72.968
Financial Performance					69.157
Market Dynamism	0.446	0.372	0.403	0.398	70.848
Non-Fin. Performance					73.403
PLC	0.263	0.068	0.084		67.731
SME	-0.105	-0.207	-0.033	0.394	52.824

The findings reinforce the idea that firms often benefit from the turbulence and uncertainty inherent in dynamic markets. In contrast, when managers pursue “safety” in less dynamic sectors, they can limit the performance possibilities.

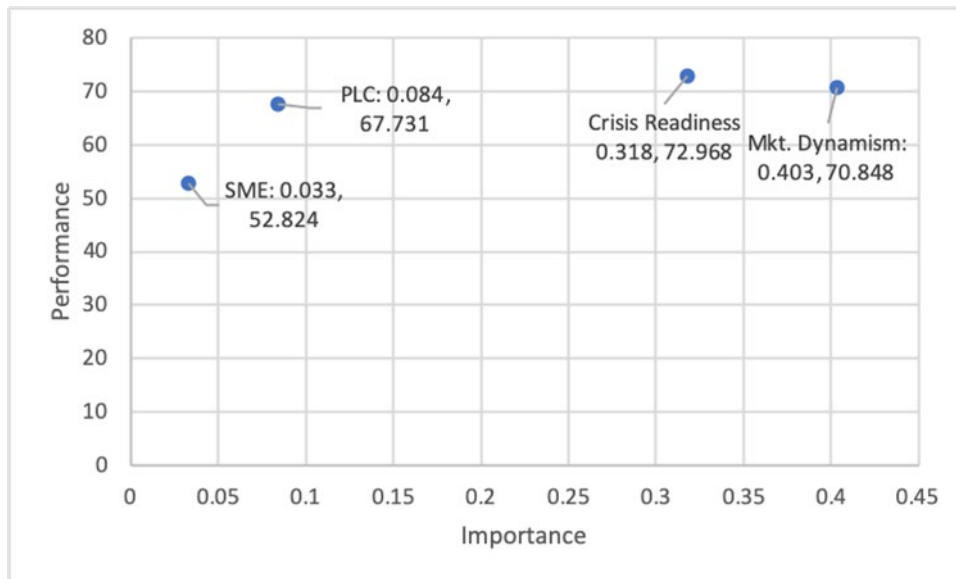


Figure 3. IPMA Results: Non-Financial Performance

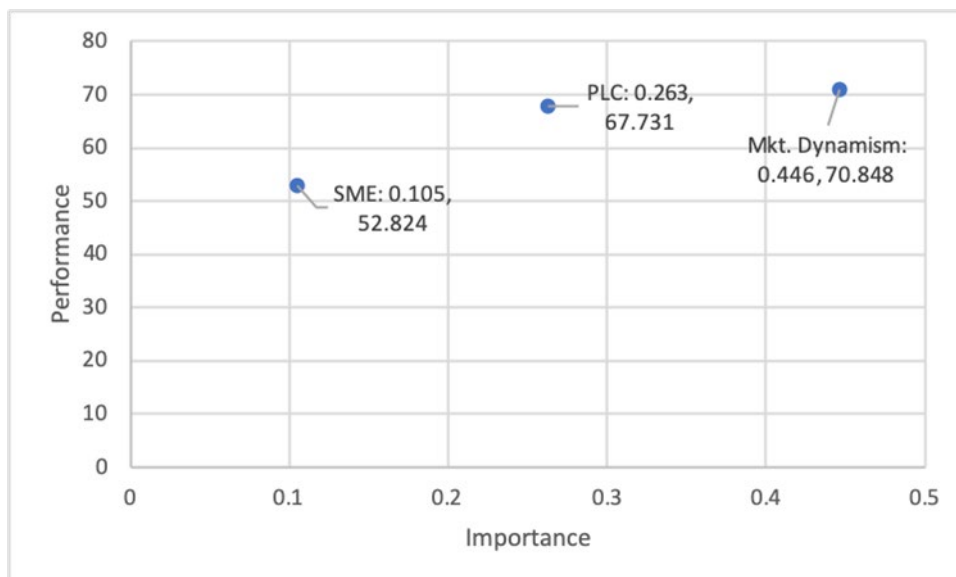
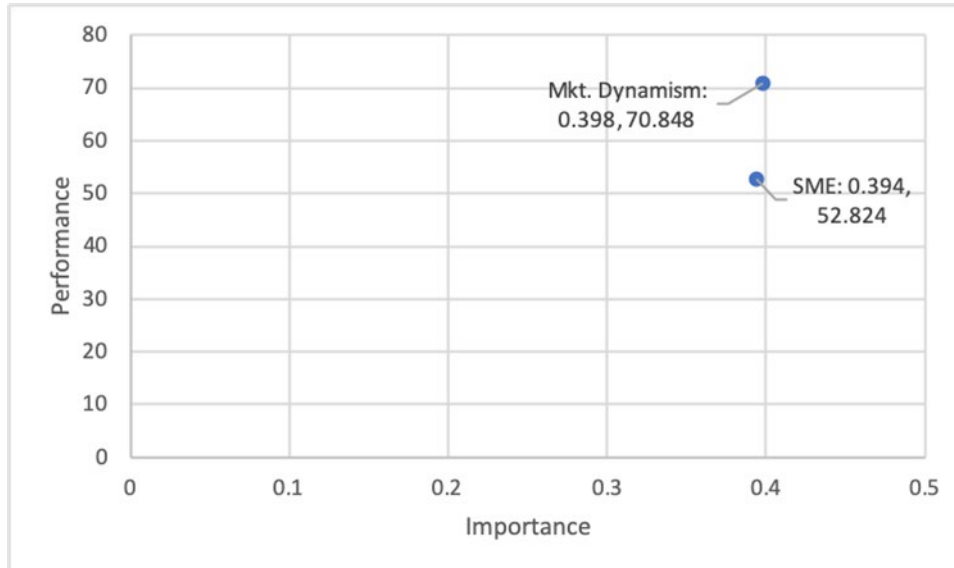
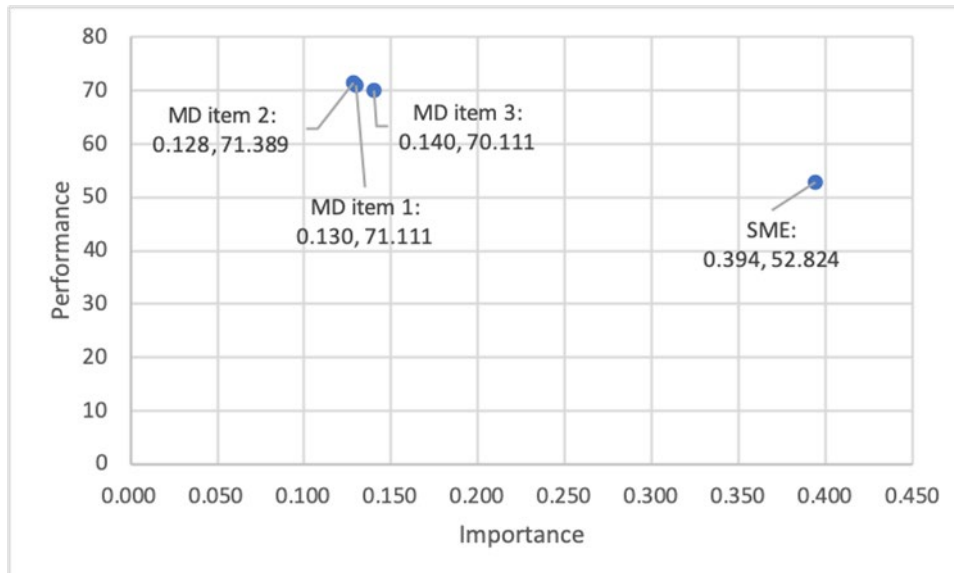


Figure 4. IPMA Results: Crisis Readiness

Crisis readiness was the second-most important driver of both financial and non-financial performance, as depicted in figure 3. Previous studies reported similar links, but they only assessed the financial dimension of performance (Antonacopoulou & Sheaffer, 2014; Elsubbaugh et al., 2004). However, the link between crisis readiness and *non-financial* performance produced higher  $R^2$  and  $Q^2$  values than the link between crisis readiness and *financial* performance. This distinction suggests that crisis readiness could have an underappreciated positive influence on customers, employees, and other stakeholders.



**Figure 5.** IPMA Results: Perceived Likelihood of a Crisis (PLC)



**Figure 6.** IPMA Results for Indicators: Perceived Likelihood of a Crisis (PLC)

The investments required to improve crisis readiness vary across organizations, but forming a CMT, developing a CMP, and taking other basic measures can provide clear performance benefits. Nonetheless, crisis readiness is relatively more expensive in SMEs because preparation costs must be allocated to fewer units of production (Kurschus et al., 2017; Vargo & Seville, 2011). This challenge is not only intuitive but is also supported by the findings presented herein.

Market dynamism was also the most important driver of crisis readiness and PLC, as depicted in figures 4 and 5. Nonetheless, the strong link between PLC and crisis readiness reinforces the intuitive notion and previous work suggesting that management awareness of and expectations about prospective crisis events drives efforts to prepare for those events (Bruce & Nowlin, 2011; Chew Abdullah & Khairuddin, 2013; Tanifuji, 2000; Wong, 2019).

Given that PLC also mediated the market dynamism-crisis readiness relationship (see table 7), many firms appear to develop crisis readiness capabilities because they see a crisis as a viable threat,



particularly in the markets in which they operate. This link also suggests that managers in less dynamic markets underestimate and do not prepare sufficiently for crises in their organizations. Firms in dynamic markets might be more likely to experience a crisis, but all organizations are susceptible and should prepare accordingly (Ali & Al-Aali, 2016; Bundy et al., 2017).

The PLC-crisis readiness nexus among SMEs depicted in figure 5 is intriguing. Direct and indirect results suggest that PLC partially mediates the link between SME status and crisis readiness, but that SME status *negatively* influences crisis readiness directly. Hence, managers in SMEs expressed greater concern about prospective crises in their organizations while also reporting a lower degree of crisis readiness, reinforcing the resource dependence of crisis preparation efforts. As firms grow, their managers tend to become better informed about potential crises and better equipped to prepare for them. Although the effect sizes for the SME links were small, SMEs appear to experience the greatest crisis vulnerability.

IPMA maps the indicators of each construct are summarized in table 11. The three items in the market dynamism scale were the most important indicators in the assessments with financial performance, non-financial performance, and crisis readiness as target constructs. As figure 6 illustrates, when PLC was evaluated as a target variable, SME was the most important, but also the poorest performing indicator.

## MANAGEMENT IMPLICATIONS

The link between PLC and crisis readiness suggests that crisis training should begin with crisis awareness. Managers who do not anticipate a crisis are less likely to prepare for one (Ali & Al-Aali, 2016; Nizamidou, Vouzas, & Gotzamani, 2019). Wide-ranging reports of crises in the business press should enhance awareness in a broad sense, but overexposure can lead some managers to associated crisis events with *other* organizations and think that such events are less likely to occur at their organizations (Caponecchia, 2010; Parnell & Dent, 2009). The notion that “it can’t happen to us” is shortsighted.

The results presented herein underscore the need for more effective crisis planning among SMEs. Managers in SMEs appear to anticipate crises but are not comfortable with their overall level of preparation. Innovative SMEs tend to outperform their rivals in dynamic markets (Kraus, Rigtering, Hughes, & Hosman, 2012), but the inherent uncertainty can also make SMEs more prone to crises (Kurschus et al., 2017; Vargo & Seville, 2011). The strategic challenges faced by SMEs and large firms can differ. Hence, crisis training for SMEs is not only vital but should account for challenges unique to smaller organizations.

Effective crisis planning appears to enhance both financial and non-financial performance. Managers often resist crisis planning because they do not see a link between the resources required and firm performance. There is growing evidence that such resource commitments are worthwhile (Helm & Tolsdorf, 2013; Liu et al., 2017; Mansor & KaderAli, 2017).

The positive link between crisis planning and firm performance depicted herein suggests that managers should be more proactive crisis planners. However, this is not always the case. Advocates of crisis awareness and planning often find themselves in a precarious position because they champion preparation for specific events that are unlikely to occur. If an organization does not experience a crisis—at least for a time—crisis preparation might be deemed unnecessary. However, the results can be costly or even catastrophic when a firm does not prepare for a crisis (Parnell & Crandall, 2017). In this respect, those who promote crisis planning may be the unsung heroes in organizations.

## CONCLUSIONS, LIMITATIONS, AND FUTURE DIRECTIONS

Two interrelated limitations of this study have been identified. First, this study assessed managers in multiple industries. Industry-specific factors influence strategic action and performance. Second, self-typing scales were employed to assess financial and non-financial performance (Ramanujam & Venkatraman, 1987; Venkatraman & Ramanujam, 1986). This approach is especially appropriate for evaluating performance with cross-industry samples because it considers performance relative to competitors instead of relying on objective performance data that is driven in part by industry factors (McGahan & Porter, 1997). Nonetheless, quantitative measures provide a more traditional and useful lens for performance assessment, which can also reduce the influence of common method variance (Chang, Van Witteloostuijn, & Eden, 2010; Lindell & Whitney, 2001; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Several viable research directions have been identified. First, the results presented in this study are based on a sample of US firms and include a limited number of constructs. Additional scholarship on global crisis management is warranted (Coombs & Laufer, 2018) and would help evaluate the appropriateness of the model presented herein in other nations. Specifically, research that integrates the role of innovation, particularly as a mediator in the market dynamism-firm performance relationship, is germane. Previous work supports a link (Antoncic & Hisrich, 2001; Atuahene-Gima et al., 2006; Parnell, 2015; Rodrigo-Alarcón et al., 2017), but the distinctions between financial and non-financial performance are not clear. Consideration of crisis self-efficacy would be appropriate as well (Park & Avery, 2019).

Second, the SME links to PLC and crisis readiness were significant in the present study, but the effect sizes were small. Additional work is necessary to delineate the influence of firm size on the model. Other measures of size (e.g., revenues) may contribute to a more thorough explanation.

Third, this study examines links between crisis readiness and *current* performance. Future work should consider the extent to which increasing crisis readiness benefits organizations over the long term. This distinction is important, as several scholars have delineated. For example, recent research on the long-term implications of product recalls suggests that negative effects linger over time, while negative long-term effects were mitigated by voluntary recalls and effective crisis communication (Liu et al., 2017; Mansor & KaderAli, 2017). Such findings suggest that the short-term performance influence of crisis readiness and response approaches might not translate into a long-term impact.

The short- and long-term effects associated with crisis preparation can influence commitment to the process. From a rational perspective, managers discount the value of future benefits associated with an action. This phenomenon can present a severe challenge for managers seeking to raise crisis awareness in an organization and acquire the resources necessary to engage in crisis preparation (Parnell & Crandall, 2016). Hence, additional work that distinguished between short- and long-term impacts is germane.

Fourth, this study treats PLC and crisis readiness as reflective constructs. While item wording and loadings support reflective conceptualizations, the development of formative measures could lend insight. For example, PLC assesses three broad crisis *categories*, not specific crises. Similarly, crisis readiness assesses the preparation for crises in general, not *the preparation for specific crises*. Reorienting these scales to include a wide variety of potential crises events could produce rich, formative measures that more accurately explain how and why some organizations might be concerned about and better prepared for some crises, but not others (Bundy et al., 2017; Crandall et al., 2020).

Finally, a refinement of the performance measures is germane. Specifically, the similarity in results for both financial and non-financial performance raises questions about the value of assessing each performance dimension as a different construct. The reliability and validity measures reported herein

support the existence of two constructs and modest differences in the model (e.g., higher  $R^2$  and  $Q^2$  values for non-financial performance). Still, the results did not suggest any practical differences. Bayesian information criteria (BIC) calculations for a model with a composite performance measure were lower in the hypothesized model (-123.521) than in the saturated model (-117.826), lending support to a more parsimonious, unidimensional conceptualization of firm performance. Goodness-of-fit comparisons between competing models with one and two dimensions of performance were inconclusive and have limited usefulness when comparing PLS models (Henseler & Sarstedt, 2013).

This challenge could be resolved by reconsidering the construction of financial and non-financial performance measures. Like PLC and crisis readiness, this study also treats financial and non-financial firm performance as reflective constructs. Including multiple measures in each construct strengthens the analysis, and results from the reliability assessments (see table 3) support this approach. However, one item in the financial performance scale and two items in the non-financial performance scale loaded below 0.70, suggesting that an assessment of additional financial and non-financial items might support a more sophisticated conceptualization of firm performance (Cheah, Sarstedt, Ringle, Ramayah, & Ting, 2018; Van der Stede, Chow, & Lin, 2006). Models that include two or more formative measures or a combination of reflective and formative measures could be readily assessed with higher-order models. More intricate measures of firm performance could contribute to a more granular explanation of how crisis readiness drives specific organizational outcomes.

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