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Impact of entrepreneurial orientation on performance and moderating role of crisis perception: multi-method examination

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Abstract

Purpose – This study aims to examine the role of the dimensions of entrepreneurial orientation (EO) under turbulent market conditions and reveal the role of an entrepreneur's perception of a crisis in shaping the impact of EO on firm performance.

Design/methodology/approach – This study uses partial least squares structural equation modeling (PLS-SEM), multiple linear regression (MLR) and fuzzy-set qualitative comparative analysis (fsQCA). The study sample was comprised of 117 one- and two-star hotels that were operating in Poland.

Findings – The results showed that proactiveness and risk-taking significantly affected firm performance. Furthermore, the results revealed that an entrepreneur's perception of a crisis moderated the impact of risk-taking and proactiveness on firm performance. In particular, the findings suggested that, in firms where the crisis strongly influenced their operations, performance was affected by proactiveness, while in those firms where the crisis influenced their operations to a low or moderate degree, performance was affected by risk-taking. Furthermore, fsQCA unveiled the role of innovativeness, which (along with risk-taking) is a sufficient condition that leads to firm performance.

Originality/value – Two characteristics make this study original: first, it investigates EO under turbulent market conditions, and second, it analyzes the role of an entrepreneur's perception of crisis consequences for business operations. The study contributes to the literature on entrepreneurship and crisis management with findings on the different roles of EO dimensions under crisis conditions and an observation about the moderating role of an entrepreneur's perception of the impact of a crisis on operational management and how this perception differentiates the impact of risk-taking and proactiveness on firm performance.

Keywords Entrepreneurial orientation, COVID-19, Environmental hostility, Crisis perception, SEM, fsQCA

Paper type Research paper

1. Introduction

In today's dynamic business environment, organizations are forced to constantly deal with change and uncertainty in order to grow and gain a competitive advantage (Degbey *et al.*, 2021; Li and Liu, 2014; Santoro *et al.*, 2018). Increased environmental turbulence is driven, among others, by market volatility, changes in customer needs, institutional changes and rapid technological advances that challenge companies at both the individual and

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organizational levels of analysis (Chung *et al.*, 2021; Ferraris *et al.*, 2019). This variability in environmental conditions provides numerous threats as well as countless opportunities for growth (Kuratko and Hodgetts, 2004; Casillas *et al.*, 2010; Gathungu and Baariu, 2018).

Among the factors that can significantly change a business environment is a crisis. A crisis is an unexpected event that poses a serious threat to entire economies, business organizations and individuals (Faulkner, 2001; Doern *et al.*, 2019). A crisis has several serious economic and social consequences. A crisis threatens the achievement of a company's goals as well as the very survival of the company; however, it also generates strong pressure and limits the time that is needed to take countermeasures (Hermann, 1963). In addition to the negative effects that are caused by a crisis (such as reduced business activities, temporary closures, problems with access to human resources or broken supply chains (Amore *et al.*, 2022; Belitski *et al.*, 2022)), a crisis can also become an opportunity for growth (Casillas *et al.*, 2010; Wawrzyniak, 1989; Siuta-Tokarska, 2011) by inducing changes in business models (Archibugi *et al.*, 2013) or redesigning existing solutions in meaningful ways (Kuckertz and Brändle, 2022; Lim *et al.*, 2020).

In accordance with the contingency management theory, we propose that new and unfavorable business conditions that are caused by a crisis require that a company respond appropriately to the situation and be able to adapt to it. Additionally, a change in market conditions may require the ability to capture business opportunities (Shane and Venkataraman, 2000; Karimi and Walter, 2016) and sometimes to also modify their entrepreneurial strategies (Krzakiewicz and Cyfert, 2008; Pasieczny, 2009; Romanowska, 2015; Bogatyreva *et al.*, 2017; Suder *et al.*, 2022; Kusa *et al.*, 2022).

In this context, entrepreneurship (which is about the pursuit of opportunities (Stevenson and Jarillo, 1990)) can be an important characteristic when coping with changing environmental conditions. At the organizational level, entrepreneurship is most commonly described with the concept of entrepreneurial orientation (EO) (Covin and Wales, 2019). EO's origins can be traced to the entrepreneurial organization characteristics that were proposed 40 years ago by Miller (1983); it was later operationalized by Covin and Slevin (1989) as a three-dimensional construct that was comprised of risk-taking, innovativeness and proactiveness. In general, EO is understood as the degree to which an organization is entrepreneurial in terms of strategy and resource orchestration. In particular, EO reflects the ability of a company to act in an innovative and proactive manner in an uncertain environment through the application of decision-making, strategy, management philosophy and entrepreneurial behavior (Zighan *et al.*, 2022). The augmented operationalizations of EO also include autonomy and competitive aggressiveness (Lumpkin and Dess, 1996).

EO has been recognized for more than a dozen years as a key element of entrepreneurial activity that is related to (and positively affects) firm performance (Naldi *et al.*, 2007; Runyan *et al.*, 2008; Baker and Sinkula, 2009; Rauch *et al.*, 2009; Kraus *et al.*, 2012; Wales *et al.*, 2013; Shirokova *et al.*, 2016; Brownhilder, 2016; Al-Mamary *et al.*, 2020; Kusa *et al.*, 2021) and competitive advantage (Semrau *et al.*, 2016). EO and its dimensions enhance the development of a company and its chance to survive during rapid changes in market conditions – especially in hostile and unfavorable environments (Covin and Slevin, 1989; Zahra and Covin, 1995; Lumpkin and Dess, 2001; Rosenbusch *et al.*, 2013; Teece, 2014; Morić-Milovanović, 2022; Kusa *et al.*, 2022; Suder, 2022a).

Most studies show the positive impact of EO on performance; this refers to both EO as a unidimensional construct and its individual dimensions. However, the results indicated that EO (and its particular dimensions) did not always positively determine a company's performance – even in the early days of EO studies (Smart and Conant, 1994; Frank *et al.*, 2010; Renko *et al.*, 2009). Specifically, the relationship between EO and performance can be affected by environmental conditions (Miller and Friesen, 1982; Wiklund and Shepherd, 2005; Tang *et al.*, 2009; Brownhilder, 2016; Dele-Ijagbulu *et al.*, 2021; D'Souza and Fan, 2022);

previous studies revealed an ambiguity regarding the impact of EO on performance and the role of the external environment in shaping this impact. This ambiguity required further investigation; Lumpkin and Dess (1996) recommended considering the moderating and mediating factors that affected the relationship between EO and performance. In a similar vein, Wiklund and Shepherd (2011), Miller (2011) and Martins and Rialp (2013) posited that the impact of EO on performance varied depending on context and that environmental factors should be examined in future EO research.

The COVID-19 pandemic crisis was one of the most severe crises in history. It seriously affected the business environment around the world (Anwar and Clauß, 2021; Bretas and Alon, 2020). The crisis disrupted numerous business operations; consequently, the majority of management processes had to be adapted to previously unknown pandemic business conditions (Jedynak and Bąk, 2022). From this perspective, the recent crisis has become an appropriate context for entrepreneurship studies – in particular, those that are focused on the role of EO in mitigating the negative effects of the crisis as well as the moderating role of market conditions in the EO/performance relationship.

During a crisis, entrepreneurship studies should focus on small businesses. In many countries (including those from the European Union), SMEs are the backbone of economic development and growth (Neneh and Smit, 2013; de Araújo Lima *et al.*, 2020); in low-income countries, the sector is also seen as a source for their economic growth (Poole, 2018). Therefore, it is important to examine how small firms can improve their performance and increase their survival chances in a turbulent economic environment (Herbane, 2010). Past research has provided ambiguous results on small firm operation and performance under unfavorable market conditions. In particular, researchers have indicated that small companies are most vulnerable to market turbulence and are least likely to survive a crisis due to their limited financial resources (Paul *et al.*, 2007; Leiva-Leon *et al.*, 2020; Zak and Garncarz, 2020). On the other hand, some studies have shown that small companies may perform better than large companies under crisis conditions – owing to their ability to quickly recognize, evaluate and exploit new opportunities and adapt their business models to new conditions (Davidsson, 2015; Williams and Shepherd, 2018). These contradictions provide additional arguments for focusing on small firms in studies on the impact of market conditions on the EO/performance relationship.

When analyzing entrepreneurial behaviors, an entrepreneur's perception should be considered (Kirzner, 1979). At the beginning of entrepreneurial process, the pursuit of opportunities is triggered by its perception and recognition (Wood and McKinley, 2010); then, it is followed by the sense-making process (Weick, 1995). The perception of opportunities can be affected by other factors; for example, an entrepreneur's knowledge-related capability (Hughes *et al.*, 2022) and involvement in social networks (Nowiński and Rialp, 2016). At the stage of starting a new business, the perception of risk is important (Simon *et al.*, 2000). Then, the perception of resource availability can affect an entrepreneur's performance (Brown and Kirchhoff, 1997). According to Stevenson and Jarillo (1990), however, entrepreneurs are willing to pursue opportunity regardless of the resources under their control; this suggests that their perception of this term is not influential. An entrepreneur's perception is commonly used in entrepreneurship research; for example, our knowledge on the EO/performance relationship is built on perceptual performance data (Andersen, 2009). In addition, psychometric indicators are also used to assess managers' perceptions about environmental hostility and dynamism (Kreiser *et al.*, 2020).

Based on Ajzen's theory of planned behavior (TPB), we can assume that the experience of the crisis and an entrepreneur's subjective perception and assessment of its impact can shape the posture towards the future and can modify the entrepreneur's plans and behaviors. Additionally, a perception of the crisis can affect decisions regarding development as well as building resilience for the next crisis; this includes enhancing EO as well as its selected dimensions. The impact of the perception of a crisis on entrepreneurs' decisions constitutes a research gap in the entrepreneurship research. Therefore, this study aims to examine the role

of an entrepreneur's perception of a crisis in shaping the EO/performance relationship as well as the role of the dimensions of EO under turbulent market conditions.

This study uses three different methods to achieve its objectives; namely, regression analysis, structural equation modeling (SEM) and fuzzy-set qualitative comparative analysis (fsQCA). The study sample was comprised of 117 one- and two-star hotels that were operating in Poland.

The remaining part of the article is as follows. First, the relevant literature is reviewed and research hypotheses are proposed (along with a theoretical model). Second, the methodology is described. Third, the results are presented and discussed. Finally, the limitations and recommendations for future studies are considered.

2. Literature review

2.1 Risk-taking and performance under crisis conditions

The readiness to take risks has been highlighted in the early concepts of entrepreneurship. Today, risk-taking is one of the basic dimensions of EO. As opportunities are burdened with risk, their pursuit requires entrepreneurs to accept and take risks (Wiklund and Shepherd, 2005). Moreover, entrepreneurs face different types of risk (including financial, operational and strategic risks) (Actuarial Society, 2003). Starting a new firm, entering new markets and investing resources in introducing new products are some manifestations of entrepreneurial risk-taking (Zahra, 1991; Wiklund and Shepherd, 2003). In the managerial context, risk-taking is related to "the degree to which managers are willing to make large and risky resource commitments – i.e. those that have a reasonable chance of costly failures" (Miller and Friesen, 1978, p. 923). Due to the limited resources of small firms, risk-taking is especially challenging for them (Blanc-Alquier and Lagasse-Tignol, 2006; Kreiser *et al.*, 2013; Schachtebeck *et al.*, 2019). There is evidence that risk-taking can positively affect firm performance (Akinwande and Akinola, 2021; NuelOkoli *et al.*, 2021) and competitive advantage (Hock-Doepgen *et al.*, 2021). However, risk-taking can also be negatively associated with firm performance (Herlinawati *et al.*, 2019; Garba, 2020). Finally, some entrepreneurs tend to avoid risk while preferring proven strategies that bring in expected profits (Covin and Slevin, 1989). However, in dynamic environments enterprises must make bold, risky strategic decisions to cope with constant change to improve business results (Kreiser and Davis, 2010). Companies that accept risk are more likely to maintain market share and a strong position in the industry under hostile environment (Lumpkin and Dess, 1996). During a crisis, both threats and opportunities can arise in the market; however, these opportunities can be burdened with a high level of risk, which is a consequence of high market variability. This implies that pursuing opportunities during a crisis requires greater abilities of entrepreneurs in terms of taking risks. Consequently, entrepreneurs can gain an advantage due to their ability to take risks. On the basis of the above, we propose the following hypothesis:

H1. As an EO dimension, risk-taking affects firm performance during environmental turbulence.

2.2 Innovativeness and performance under crisis conditions

Innovation has been associated with entrepreneurship since its inception. Later on, Schumpeter (1911) exposed innovativeness as a central attribute of entrepreneurial behavior. Innovativeness is an important way to pursue new opportunities (Lumpkin and Dess, 1996). Innovativeness manifests itself in creative activities that are aimed at improving products and processes as well as introducing new technologies (Dess and Lumpkin, 2005). Innovativeness includes the implementation of new business models (Bratnicki, 2008). To

be able to innovate, a firm needs to develop its knowledge resources and R&D capacity, including the employment of highly qualified staff (Liao and Rice, 2010; de Oliveira *et al.*, 2018).

Innovativeness is perceived as a way to improve a firm's performance and competitive advantage (Woodward, 2009; Peris-Ortiz *et al.*, 2014; Rangus and Slavec, 2017; Olowofeso *et al.*, 2021) and investments in innovation are thought to increase a firm's market value (Feeny and Rogers, 2003). However, the financial gains that result from innovation can be achieved in the long term (de Oliveira *et al.*, 2018). There is also evidence of its negative impact on performance (see, e.g. Kandybin, 2009; Artz *et al.*, 2010). The ambiguous impact of innovations can be associated with the costs and risks of innovative activities (Simpson *et al.*, 2006). Despite the limited resources of small firms, they can also make profits from innovation (Soto-Acosta *et al.*, 2016). Innovating is among four main strategic responses to crises (Wenzel *et al.*, 2020). Although innovation implementation is a long process, it can be helpful in mitigating the impact of a crisis on firm performance (Kusa *et al.*, 2023b), increasing competitive advantage (Martínez-Román *et al.*, 2017) and improving performance during times of crisis (Devece *et al.*, 2016). The innovativeness can be crucial in exploiting new market opportunities emerging in turbulent environment (Li and Atuahene-Gima, 2001) and new product innovations can be more beneficial in dynamic environments than in stable ones (Prajogo, 2016). Consequently, companies innovate during crises, what was observable also during the COVID-19 pandemic crisis (Heinonen and Strandvik, 2020). Based on the above, we propose the following hypothesis:

H2. As an EO dimension, innovativeness affects firm performance during environmental turbulence.

2.3 Proactiveness and performance under crisis conditions

Proactiveness reflects the core of entrepreneurial activities that focus on exploiting opportunities. In particular, proactiveness refers to "seeking new opportunities that may or may not be related to the present line of operations, the introduction of new products and brands ahead of competition and strategically eliminating operations that are in the mature or declining stages of the life cycle" (Venkatraman, 1989). Proactiveness represents a forward-looking perspective; it is the opposite of passiveness (Lumpkin and Dess, 1996). Its other characteristics include a tendency to lead (rather than follow) in the development of new procedures and technologies as well as the ability to adapt to changing market conditions (Kraus *et al.*, 2012) and the readiness to respond to competitors' initiatives (Dyduch, 2008).

Proactiveness positively affects firm performance (Garba, 2020; Olowofeso *et al.*, 2021), including small firm performance (Tang *et al.*, 2014; Urban Boris, 2014). The role of proactiveness is especially important in low-tech SMEs (Lomberg *et al.*, 2017). But in an extreme hostile environment the high degree of proactiveness can be ineffective (Miller and Friesen, 1982). During a crisis, some entrepreneurs can avoid proactive behavior due to the lack of resources (Rosenbusch *et al.*, 2013). However, because proactiveness reflects the ability to adapt to changing market environments, as well as anticipating and responding to future needs, it is crucial during a crisis (Bivona and Cruz, 2021). Numerous research studies suggest that proactiveness is stimulated by unfavorable market conditions (e.g. Bogatyreva *et al.*, 2017; Dele-Ijagbulu *et al.*, 2021). Under hostile environment, proactiveness can be particularly beneficial for small enterprises (Covin and Slevin, 1989). The increase in proactive behaviors was observed during the last pandemic crisis (Okręglicka *et al.*, 2021). On the basis of the above, we propose the following hypothesis:

H3. As an EO dimension, proactiveness affects firm performance during environmental turbulence.

2.4 Perception of crisis and EO/performance relationship

As stated above, each of the three dimensions of EO affects firm performance; however, the common impact of all three dimensions together is complex. In order to understand a mechanism that leads to increased firm performance, we need to consider the relationships among the dimensions of EO (Putnis and Sauka, 2020) and their configurations (including other accompanying factors; see Kusa *et al.*, 2021).

During the early stages of EO research, the impacts of external conditions on the EO/performance relationship were indicated; these environmental conditions included variability, complexity and industry characteristics (Lumpkin and Dess, 1996). These can be supportive while also being hostile (Naman and Slevin, 1993). For example, the impact of environmental hostility on EO and performance in small firms in South Nigeria was recently reported by Onwe *et al.* (2020).

Apart from impacting EO in general, market conditions can affect particular dimensions of EO; however, the influence of the external environment is ambiguous. In the case of risk-taking, some research suggests a negative impact (that is, a hostile environment decreases an entrepreneur's risk-taking) (Goll and Rasheed, 1997; Kreiser *et al.*, 2013; Martins and Rialp, 2013). According to entrepreneurship theory, a hostile environment can encourage entrepreneurs to act entrepreneurially, including taking risks (Covin and Slevin, 1989; Miller, 1983; Miller and Friesen, 1982; Rosenbusch *et al.*, 2013). This was confirmed in the study of Dele-Ijagbulu *et al.* (2020), who reported that a hostile environment encouraged entrepreneurs to take on risky behaviors.

Market conditions also affect firm innovativeness. Some researchers provide evidence that favorable market conditions encourage firms to innovate (see, e.g. Kreiser and Davis, 2010); in particular, increasing R&D expenditures (Zahra, 1996). On the contrary, a hostile environment can lead entrepreneurs to protecting their resources (Miller and Friesen, 1982) and increasing their aversion to investments in technological innovation (Zahra, 1996). The negative impact of unfavorable market conditions on innovation is also visible in small firms (Khan and Manopichetwattana, 1989; Wolff and Pett, 2006). However, a crisis can also force companies to innovate; for example, the last pandemic crisis accelerated the implementation of digital solutions in many companies (Dwivedi *et al.*, 2020). However, companies can have limited resources during a crisis. Due to the varying market conditions, they must change their actions; thus, innovation can be difficult (Chesbrough, 2020; Wenzel *et al.*, 2021).

Market conditions also impact firm proactiveness (Dele-Ijagbulu *et al.*, 2020). A hostile market encourages entrepreneurs to act proactively (Miller, 1983; Urban Boris, 2014). However, a hostile environment forces managers to hoard resources; this hampers experimentation and other proactive actions (Lumpkin and Dess, 2001). Regarding the objectives of this study, it is important to note that those companies that were seriously affected by the crisis became more reactive than proactive; this could be associated with organizational learning (Brzozowski *et al.*, 2019). Similar to risk-taking and innovativeness, the impact of market conditions on proactiveness is, therefore, ambiguous; previous studies did not determine the direction of this impact.

As stated in the introduction, the last pandemic crisis disrupted numerous business operations (Gourinchas *et al.*, 2020). Specifically, a crisis affects human resource management (Gartner, 2020) and the management of other firm resources (Lim *et al.*, 2020), including supply-chain management (Craven *et al.*, 2020). Additionally, the crisis increased financial risks (Cepel *et al.*, 2020). Due to lockdowns and travel limitations, the travel and tourism industry was severely affected by the pandemic; this led to changes in its business models

(Pärl *et al.*, 2023). However, business operations were affected by the crisis to different degrees in particular firms.

The above review indicates that market conditions can impact EO (along with its dimensions) and firm performance; however, this impact can be ambiguous. Concurrently, EO and its dimensions affect firm performance. Thus, the impact of the external environment can be complex and not necessarily direct. In particular, market conditions can play a moderating role (e.g. Milovanovic and Wittine, 2014). For example, there is evidence that market dynamism can moderate the EO/performance relationship; specifically, a higher degree of market dynamism slightly weakens the impact of innovativeness and strengthens the impact of risk-taking (Wójcik-Karpacz *et al.*, 2018). On the other hand, the relationship between risk-taking and performance can be negatively moderated by environmental hostility (Brownhilder, 2016). In the crisis context, we assume that entrepreneurs make decisions that are based on their assessments of market situations; thus, the perception of a crisis can affect different aspects of entrepreneurial activity (see, e.g. Birkholz and Kühn, 2021). As entrepreneurial behaviors are the constitutive characteristics of an entrepreneur, the relationship between EO and performance is fundamental; however, the perception of a crisis can affect this relationship as a moderator. On the basis of the above, we propose a hypothesis about the role of crisis perception in shaping the EO/performance relationship:

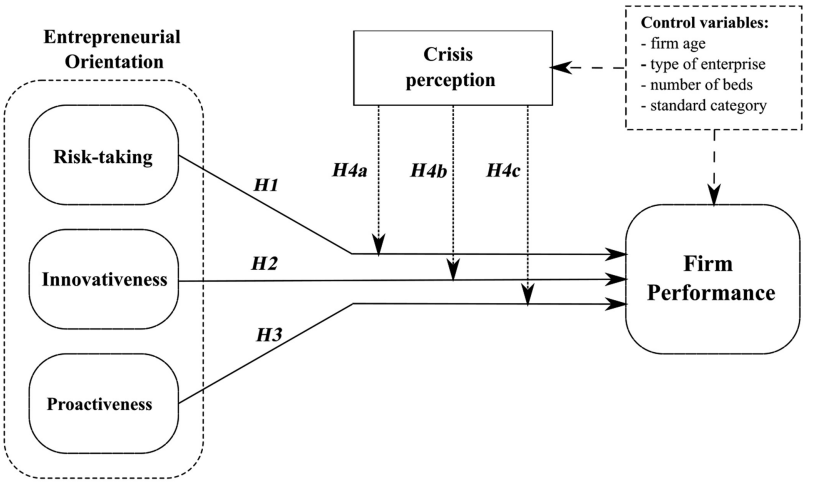
H4. The perception of a crisis's disruption of firm operations moderates the impact of EO on firm performance; in particular, the impacts of risk-taking (H4a), innovativeness (H4b) and proactiveness (H4c).

The above hypotheses are depicted in Figure 1.

3. Methodology

3.1 Sample and data collection

Taking into account the fact that the study is aimed at determining which of the dimensions of EO have a significant impact on firm performance, a quantitative approach was adopted in



Source(s): Authors work

Figure 1.
Theoretical model

the investigation. The study population consisted of one- and two-star hotels that operated in Poland. The choice of this industry was justified by the fact that it was seriously affected by the pandemic restrictions (Dahlke *et al.*, 2021; Wieczorek-Kosmala, 2021). According to the Central List of Hotel Facilities (Ministry of Sport and Tourism of the Republic of Poland, 2021), there were 680 one- and two-star hotels operating in Poland in November 2021; this constituted the population. The data were collected by using a questionnaire (PAPI). The questionnaire was previously validated during preliminary interviews with the owners of several hotels that operated in Małopolska. The survey was conducted by a specialized company from November 2021 through January 2022; the respondents were owners or managers, and the sample was selected using simple random sampling without replacement. Finally, correctly completed questionnaires were obtained from 117 hotels; these constituted our sample. This size of the sample resulted in a 17.2% response rate in the research (with a maximum error of 9.04%). Using G*Power 3.1.9.7 software (Faul *et al.*, 2007), we determined that the statistical power of the 117-element sample was 0.957. This value was higher than the required 0.8, which indicated the acceptable statistical power of the analyzed sample (Cohen, 1988). Table 1 shows the selected characteristics of the test sample.

3.2 Measures and variables

To collect the data, we used a questionnaire with a seven-point Likert scale. The variables and items were based on previous studies; however, they were adapted to the hospitality industry. In particular, indicators for individual dimensions of EO (namely, risk-taking [R-T], innovativeness [IN] and proactiveness [PR] as well as firm performance [FP]) were based on the scales that were used in the works of Hughes and Morgan (2007) and Kusa *et al.* (2021). The moderating variable (that is, crisis perception [CP]) was a one-item indicator and referred to the individual entrepreneurs' assessments of the negative impact of the COVID-19 pandemic crisis on the operation of their companies. Entrepreneurs evaluated the degree of these difficulties on a scale of 1 (a very weak negative impact of the crisis) to 7 (a very strong negative impact of the crisis), which means that this variable is categorical.

One of the objectives of this article is to determine the levels of the individual dimensions of EO and firm performance. The levels of EO show the degrees of the entrepreneurship of the surveyed companies (Semrau *et al.*, 2016; Wójcik-Karpacz *et al.*, 2018). In particular, this allows us to distinguish entrepreneurial companies from those that were managed more conservatively. An analysis of the levels of EO components allows one to assess the

Characteristic	Range	*N*	%
Age	0–10	41	35.04
	11–20	29	24.79
	21–30	32	27.35
	above 30	15	12.82
Size	micro	70	59.83
	small	44	37.61
	medium	3	2.56
Number of beds	20–50	74	63.25
	51–100	27	23.08
	more than 100	16	13.68
Standard category	one-star	31	26.5
	two-star	86	73.5

Source(s): Authors' work

Table 1. Characteristics of sample

applications of entrepreneurial strategies under extremely unfavorable market conditions. The levels of performance reflect the conditions of the surveyed companies. As stated above, the perception of a crisis is also included in the analysis. Basic statistical measures have been determined for all of the variables. Furthermore, the use of the signed rank test verified whether the levels of the variables differed significantly from 4 (that is, the neutral level). The results of this analysis are presented in Table 2.

The results that are presented in Table 2 show that the levels of two out of three dimensions (i.e. R-T and IN) were at the average level (4.01 for R-T and 4.14 for IN); however, the PR level (4.72) was significantly higher than the average level. The variability that was expressed as a standard deviation was relatively high (taking into account that the data range was from 1 to 7). This means that, in the examined group, some enterprises behaved conservatively while others showed entrepreneurship that was higher than average.

The observed average level of FP (3.64) was significantly lower than the average value on the adopted scale (i.e. 4.0). This means that the surveyed companies assessed their results as being lower than those of their direct competitors. Moreover, none of the entrepreneurs reached their maximum value (i.e. 7). This result indicates the poor performance of companies from the tourism industry during the considered period. The differentiation of CP was at a moderate level, indicating that most of the companies assessed their performance at a similar level; only a few of them reported losses or advantages over their competitors. The average value of CP was 5.49 (standard deviation: 1.48); this implied a high level of the negative impact of the crisis on firm operations (with a relatively high differentiation of perceived impact). Furthermore, the empirical distribution of CP was determined; this is depicted in Figure 2.

Figure 2 shows that nearly 50% of the surveyed companies assessed their negative perception of the crisis at the highest level (i.e. 7). In total, more than 2/3 of the hotels agreed with the statement that the crisis had had a negative impact on their operations (indicating values of 5, 6, or 7). Only 3 hotels completely disagreed with this statement; 39 companies reported neutral or weak perceptions of the crisis (they indicated values from 1 to 4). Due to the large asymmetry of the distribution of the moderation variable that was adopted in the model and the low abundance for some levels, a dichotomous variable was introduced, where 0 meant a neutral or low level of crisis perception (indications from 1 to 4) and 1 meant a high or very high negative level (indications from 5 to 7). These groups will be called G_0 and G_1, respectively.

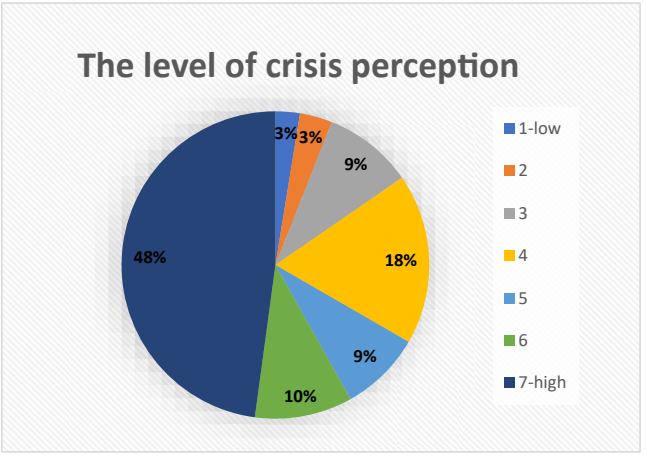
Before proceeding with a further analysis, the associations among CP and the control variables were tested. This analysis was performed by comparing the distributions of the CP variable depending on the individual control variables. The results are shown in Table 3.

The results that are presented in Table 3 show that the distribution of the CP variable was not dependent on the proposed control variables. Even though there was a noticeable variation in the distribution in the cases of some variables (e.g. for the age of the hotel or the

Variable	Average	Median	Standard deviation	Minimum	Maximum	Signed rank test results	
						Statistics	*p*-value
R-T	4.01	4.00	1.22	1	7	0.193	0.846
IN	4.14	4.25	1.30	1	6.75	1.168	0.242
PR	4.72	4.75	1.18	2	7	5.710	0.000
FP	3.64	3.80	0.98	1	6	3.605	0.000
CP	5.49	6.00	1.48	1	7	8.040	0.000

Source(s): Authors' work

Table 2.
Basic statistics for analyzed variables



Source(s): Authors work

Figure 2.
Empirical distribution of level of crisis perception

Characteristic	Range	G_0 group	G_1 group	Tests of independence (p-value)
Age	0–10	22.0%	78.1%	0.2186
	11–20	44.8%	55.2%	
	21–30	34.4%	65.6%	
	Above 30	40.0%	60.0%	
Size of enterprise	Micro	38.6%	61.4%	0.6355
	Small	30.0%	70.0%	
	Medium	33.3%	66.7%	
Number of beds	20–50	35.3%	64.7%	0.4591
	51–100	36.7%	63.3%	
	More than 100	21.1%	79.0%	
Standard category	One-star	25.8%	74.2%	0.2998
	Two-star	36.1%	64.0%	

Source(s): Authors' work

Table 3.
Effect of control variables on CP variable

number of beds), the dependency was not statistically significant (all of the p-values were greater than 0.05).

To ensure that the respondents distinguished the impacts of their perceptions of the crisis on their operations (CP) and their levels of company performance (FP) in their responses, the average value of FP was compared in the group of respondents who perceived the crisis as neutral/low (G_0) and heavily negative (G1). The results of this analysis showed that the average level of the result in the G_1 group was 3.72, which was nearly 0.4 higher than the result for the G_0 group; however, this difference was not statistically significant ($p > 0.05$).

The analyses indicate that the CP variable was not associated with the control variables nor the result variable (FP). These facts further confirmed the desirability of using this variable (CP) in the model as a moderator.

3.3 Method and procedure

In the study, three different statistical methods were used; namely, partial least squares structural equation modeling (PLS-SEM), multiple linear regression (MLR) and fsQCA.

Although linear regression has been a well-known and widely used statistical tool for several decades, PLS-SEM and fsQCA have gained more interest from researchers only in the last decade. These have developed intensively during this period (Hair *et al.*, 2022; Pappas and Woodside, 2021) and have been used in research in many fields, including management (Kraus *et al.*, 2018; Dash and Paul, 2021; Kusa *et al.*, 2021; Suder *et al.*, 2022; Suder, 2022b; Ruiz-Palomino *et al.*, 2022). Both methods are used in analyses of cause-and-effect relationships, but they are characterized by a completely different approach in the search for the considered relationships. Each also has some drawbacks and limitations (Woodside, 2013; Skarmeas *et al.*, 2014). For this reason, many researchers recognize these methods as complementary and use them simultaneously (Hernández-Perlines *et al.*, 2021; Rasoolimanesh *et al.*, 2021; Saha *et al.*, 2023; Kusa *et al.*, 2023a). In this way, they broaden the understanding of the analyzed relationships.

3.3.1 Partial least squares structural equation modeling (PLS-SEM). Structural equation modeling (SEM) allows for testing research hypotheses that are characterized by high degrees of the complexities of the relationships among their variables (Jöreskog, 1978; Konarski, 2009). This technique is a combination of factor analysis and multiple regression analysis; its advantage lies in the possibility of using the structural relationships among measured variables and latent structures for analysis. The PLS-SEM method (which is used in this study) is a type of SEM in which a predictive approach is considered rather than the confirmatory approach (Hair *et al.*, 2022). This enables the maximization of the explained variance of endogenic constructs and, consequently, the creation of a model that offers forecasting capabilities (Gefen *et al.*, 2011). Unlike other SEM tools, PLS-SEM is not as rigorous in terms of the number of cases that can be analyzed (Reinartz *et al.*, 2009) and the characteristics of the indicators that are used to build the constructs (Ali *et al.*, 2018). Due to the fact that the study was focused on determining those variables that had a significant impact on the results and that a relatively small amount of data was used in the studies, the choice of PLS-SEM for analysis was justified.

3.3.2 Multiple linear regression (MLR). MLR was used because, for the G_0 group (whose number is relatively small), the results that were obtained with PLS-SEM were burdened with errors (Kock and Hadaya, 2018). A comparison of the results from the PLS-SEM and MLR methods allowed us to verify whether the treatment of variables as observable or unobservable (latent) affected the obtained results.

When using both SEM and MLR in the analysis of moderating effects, two approaches can be used; namely, simple moderation and multigroup analysis (Memon *et al.*, 2019). The former can be used in the case of a continuous moderator and the latter in the case of a categorial or dichotomous moderator (MacKinnon, 2011). Due to the fact that the moderating variable in this study is dichotomous (0 or 1), the latter approach was used (as in previous works by Aguinis *et al.* (2017) and Ting *et al.* (2019)). Therefore, the moderation effect was verified in the PLS-SEM and MLR methods by comparing the data results in two subgroups (G_0 and G_1).

3.3.3 Fuzzy-set qualitative comparative analysis (fsQCA). FsQCA represents configural comparative methods and is a kind of combination between case-orientated qualitative analysis and quantitative analysis that is orientated toward a specific sample of a population (Ragin, 2008; Schneider and Wagemann, 2012). QCA (which is a prototype of fsQCA and its equivalent for dichotomous variables) was developed as a method that allowed for the assessment of cause-and-effect relationships. The aim of the method was to compare analyzed cases; this resulted in the identification of causal relationships between conditions' combinations of examined and assumed outcomes (results). Through the use of logical inference (using fuzzy set theory, among others), this technique consequently allows us to determine which combinations of conditions lead to an adopted outcome. According to Rihoux and Ragin (2009), the main advantages of the fsQCA method over regression-based analysis (including SEM) are the asymmetric relationships, equifinality and complexity of causes. A great advantage of QCA methods is

the possibility of using them for small and medium-sized samples (Fiss, 2011); however, no contraindications to the use of these methods for large samples have been found (Vis, 2012). It should also be noted that fsQCA does not formulate hypotheses due to the fact that no significance tests are performed; instead, researchers formulate proposals and, based on the results of the analysis, determine whether these proposals are confirmed in the examined group only; the obtained results cannot be generalized to the research populations (even if the sample is representative). In this study, the moderation effect was examined with fsQCA by including the crisis perception as a fourth condition; the appearance of this factor in any configuration was treated as the occurrence of a moderation effect.

In this study, three methods were used on purpose; SEM and fsQCA represent different and complementary approaches to examined relationships and the parallel use of both enables deeper understandings of the relationships. MLR was employed due to the small size of one of the sub-samples and enabled the verification of the results that were obtained with SEM.

4. Results

The results are presented in three parts (respectively, for each of the three methods that were used). The first part presents the results of the PLS-SEM analysis. In the second part, these results were validated by applying MLR. The third part presents the results that were obtained via fsQCA.

4.1 PLS-SEM results

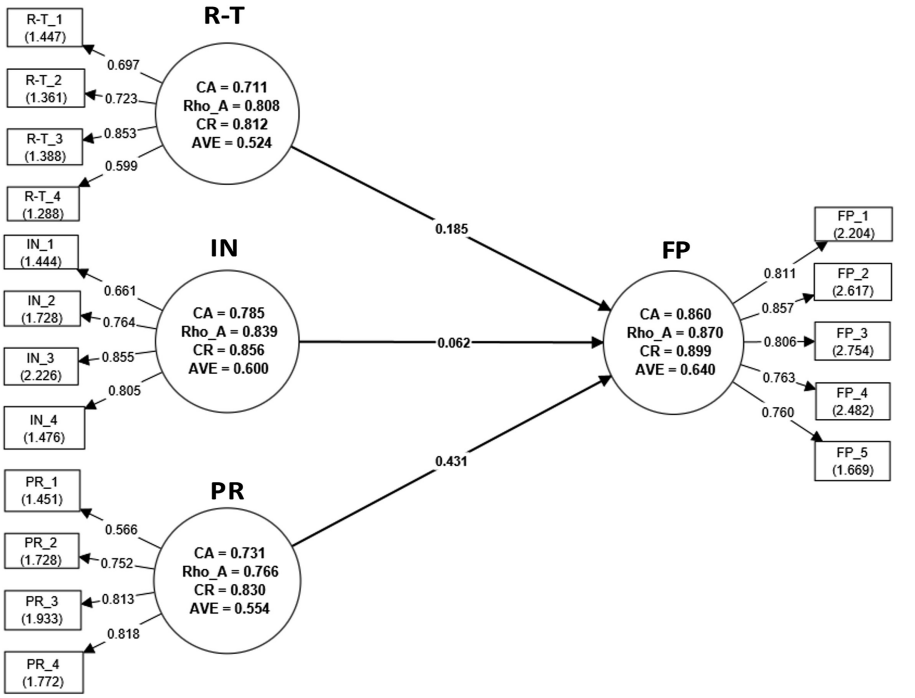
The entire procedure was performed according to the guidelines that were proposed by Hair *et al.* (2022). In particular, the measurement models were first validated and then their correctness was assessed.

4.1.1 Evaluation of measurement model. The measurement model allowed us to assess whether the considered constructs were correctly measured when using the selected indicators (Klarner *et al.*, 2013; Hair *et al.*, 2022). Therefore, the model needed to be evaluated in terms of the appropriate values of the outer loadings, the existence of a collinearity problem and the reliability and validity of the analyzed constructs. Since the theoretical model (see Figure 1) takes the possible impact of the selected control variables on the relationship between EO and FP into account, two models were initially verified; namely, with and without control variables. The path coefficients for the impacts of the individual EO dimensions on the results did not differ in these models. In addition, it was previously shown that the control variables did not affect the moderator (this was the perception of the crisis). Following the indications of Bernerth and Aguinis (2016), the control variables were therefore not included in the further analysis.

The results of the measurement model are shown in Figure 3 and Table 4. In particular, Figure 3 provides information on the external loadings of the indicators in the measurement models and the variance inflation factor (VIF). In addition, Figure 3 presents the reliability and validity measures for each construct; the reliability measures were Cronbach's alpha (CA), the reliability coefficient (Rho_A), the composite reliability (CR) and the convergent validity measure (average value extracted [AVE]).

Most of the outer loadings were well above the threshold of 0.7, which is generally considered to be satisfactory in terms of index reliability (Chin, 2010). For one IN item, one PR item and two R-T items, the ranges were between 0.5 and 0.7, which was also acceptable due to their strong contribution to the examined indexes (Hair *et al.*, 2022).

The VIF values were all below 3, which was a very satisfactory result for this type of analysis (Kock, 2015); this means that there were no collinearity problems with the items that comprised each construct.



Note(s): Values on arrows represent outer loadings, while values in brackets show variance inflation factors (VIFs)
Source(s): Authors work

Figure 3.
Measurement model

Composite	1	2	3	4
Fornell–Larcker criterion				
1. Risk-taking	*0.724*			
2. Innovativeness	0.330	*0.775*		
3. Proactiveness	0.293	0.667	*0.744*	
4. Firm performance	0.332	0.411	0.527	*0.800*
HTMT criterion				
1. Risk-taking				
2. Innovativeness	0.440			
3. Proactiveness	0.386	0.843		
4. Firm Performance	0.386	0.452	0.636	

Note(s): Elements in italic show square roots of AVE
Source(s): Authors' work

Table 4.
Discriminant validity of construct: Fornell–Larcker and Henseler (HTMT) criterion

The validation of the measurement model included assessing the reliability and convergent validity of the variables (Campbell and Fiske, 1959; Fornell and Larcker, 1981). All of the measures that were used had expected values; that is, CA, the reliability coefficient and the CR ranged from 0.7 to 0.9, confirming the adequate level of the reliability of the variable

structures that were tested (Drolet and Morrison, 2001; Diamantopoulos *et al.*, 2012). The measure of the convergent validity (AVE), on the other hand, exceeded the acceptance threshold of 0.5 for all of the constructs (Chin, 1998).

The next step in the validation of the measurement model was to assess the discriminant validity; for this, the Fornell–Larcker and Henseler criterion was used (Hair *et al.*, 2022). The discriminant validity is appropriate if the square root of the AVE of the construct is greater than the correlation with the other variables in the model (Fornell and Larcker, 1981) and the heterotrait-monotrait (HTMT) ratio is lower than 0.85 (Henseler *et al.*, 2015). In our measurement model, these conditions were met (see Table 4), indicating the discriminant validity of the constructs.

The final stage of testing the measurement model was to determine the fit of it to the data (Henseler *et al.*, 2015). For this purpose, a measure of standardized root mean squared residual (SRMR) was determined, resulting in a value of 0.093; this was lower than the accepted threshold of 0.10 (Hu and Bentler, 1999; Kock, 2020). This suggests an acceptable level of the model fit to the data.

A validation of the measurement model was performed, which showed that the model that was used in this study was appropriate for the data set.

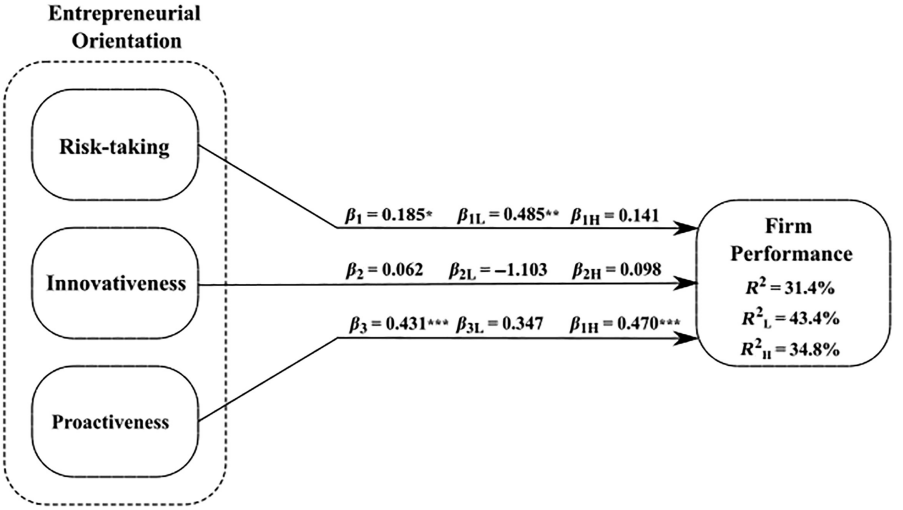
A similar verification of the measurement model was performed regarding the data that represented the G_0 and G_1 sets. The values of the measures and parameters were slightly worse than for the entire sample; however, these values were acceptable in all cases.

4.1.2 Structural equation modeling (SEM) – verification of hypotheses. A bootstrapping procedure with 5,000 iterations was used to test the statistical significance of the path coefficients (β) that were determined by the model. Since the hypotheses were two-sided (assuming no direction of influence), a two-sided test with a standard 5% significance level was used to validate the hypotheses. Coefficient of determination R^2 and effect size f^2 were used as measures of the predictive capacity of the proposed model (Falk and Miller, 1992). The first measure represented the degree of the explanation of the variance of the endogenous variables by all of the dependent variables, while the second measure identified the degree of the influence of the individual exogenous variables in explaining the variance of the outcome variable. Regarding f^2, this study followed Cohen's (1988) proposal about thresholds; namely, values that are greater than 0.02 represent small influence, whereas 0.15 and 0.35 represent medium and large influence, respectively.

Figure 4 and Table 5 present the results of the analysis for the entire data set. They show that statistical significance was achieved for two of the three relationships that were tested.

The greatest impact on FP could be observed for PR ($\beta_3 = 0.431$; $p < 0.05$). The scale value of the effect size in this relationship was at a medium level. This result confirms Hypothesis H3. The impact of R-T on the outcome variable was not as strong as PR, but path coefficient $\beta_1 = 0.185$ was still statistically significant ($p = 0.045$) in this case. Although visible, the effect size was small in this case. Therefore, Hypothesis H1 was also confirmed. In our sample, innovation did not affect FP ($\beta_2 = 0.062$; $p > 0.05$), which meant that the H2 hypothesis was not confirmed. The three exogenous variables together explained 31.4% of the variance of the FP in this model; this can be described as not a high value but substantial nonetheless when using criteria that are relevant to social science research (Falk and Miller, 1992; Kock, 2020).

To verify Hypothesis H4, the results of the estimation of the model parameters and their significance for the data from the G_0 and G_1 groups were compared. For the first group of companies, the greatest impact on FP was obtained for R-T ($\beta_{1L} = 0.485$). This path coefficient was the only one of the three in this model that was found to be statistically significant ($p = 0.008 < 0.05$). Although the impact of PR also had a positive effect and a relatively high value of $\beta_{3L} = 0.347$, it was not statistically significant. In turn, the impact of IN on the result was negative ($\beta_{2L} = -0.103$) but not statistically significant. Therefore, only R-T significantly affected FP in the G_0 group. The results for the data from the G_1 group were



Note(s): *p-value < 0.05; **p-value < 0.01; ***p-value < 0.001; L index– results for G_0 group; H index– results for G1 group

Source(s): Authors work

Figure 4.
Structural model

Set of data	Path	Original sample (β)	Sample mean (M)	Bootstrapping Standard deviation (STDEV)	t-statistics	p-values	f^2	R^2
Entire sample	R-T → FP	0.185	0.205	0.092	2.01	0.045	0.040	0.314
	IN → FP	0.062	0.069	0.095	0.655	0.512	0.003	
	PR → FP	0.431	0.436	0.096	4.478	0.000	0.150	
G_0 group	R-T → FP	0.485	0.517	0.183	2.652	0.008	0.320	0.434
	IN → FP	−0.103	0.061	0.366	0.282	0.778	0.008	
	PR → FP	0.347	0.220	0.386	0.900	0.368	0.082	
G_1 group	R-T → FP	0.141	0.176	0.106	1.333	0.182	0.028	0.348
	IN → FP	0.098	0.102	0.094	1.044	0.297	0.008	
	PR → FP	0.470	0.476	0.093	5.025	0.000	0.201	

Source(s): Authors' work

Table 5.
Structural model results

slightly different. In this group, the greatest and most significant effect on FP was obtained for PR ($\beta_{3H} = 0.470$; $p < 0.05$). No significant linear relationship was obtained for the R-T→FP and IN→FP relationships. Therefore, only PR had a significant impact on performance in this group. The described PLS-SEM results for the two groups (which differed in terms of CP level) imply that CP had a moderating impact on the EO→FP relationship. In particular, this effect was visible in the case of two dimensions (i.e. R-T and PR). Furthermore, it can be concluded that, for the surveyed hotels, a high level of CP weakened the impact of R-T on FP; so, it was significant in this group. In turn, the low perception of the crisis led to a weakening of the PR→FP relationship – so much so that PR became statistically insignificant for this group. Thus, the H4a and H4c hypotheses were confirmed. In the case of innovation, no

significance was obtained for the models in either group. Thus, innovation did not affect FP in any of the groups, which consequently led to a lack of confirmation of the H4b hypothesis.

4.2 Multiple linear regression (MLR) results

As mentioned previously, the multiple regression method was used in the research to verify the results that were obtained with PLS-SEM. Similar to PLS-SEM, the parameters for the same model were estimated three times (for the entire data set, for the data from G_0 and for the data from G_1). The adopted model was as follows:

$$FP = \beta_0 + \beta_1 \cdot RT + \beta_2 \cdot IN + \beta_3 \cdot PR + \varepsilon.$$

The analysis used Statgraphics Centurion 18 software and the backward stepwise regression method was used as the fitting procedure (Neter *et al.*, 1996). During this process, insignificant variables were removed; therefore, only those variables for which the β-coefficients were statistically significant were included in the equations of the fitted models. The results of the analysis, including the formulas from the relevant models together with the given values of the coefficient of determination (R^2), are presented in Table 6.

For all of the considered models, the relevant assumptions regarding regression analysis were met (Stanisz, 2007).

The results in Table 6 led to the conclusion that the regression analysis fully confirmed the results that were obtained via the PLS-SEM method. In particular, the importance of two dimensions was obtained for the entire dataset (namely, R-T and PR), with the impact of PR on FP being much greater. For the G_0 group, only R-T significantly affected FP. On the other hand, the important determinant of performance in the G_1 group was proactivity; this was exactly the same as in the previous PLS-SEM analysis.

4.3 fsQCA result

The fsQCA analysis used the fsQCA v.3.1 software (Ragin and Sean, 2016). This was applied at various stages (starting with the calibration, creating the truth tables and determining the necessary and sufficient conditions) as suggested by Pappas and Woodside (2021). This approach allowed for the identification of the combinations that led to the presence or absence of an outcome (in our case, the high level of FP). For this reason, two models were considered in this study:

(1) Model I: FP = f(R-T, IN, PR, CP)

(2) Model II: ~FP = f(R-T, IN, PR, CP)

Where (~) generally denotes logical negation, ~FP means low performance, R-T, IN, PR and CP are the conditions and FP is the outcome. The intermediate solution that was recommended by Ragin (2008) was used in the analysis of the sufficient conditions. This study presented the most important points of the analysis along with the parameters that allowed for reproducing the study [1].

Set of data	Equation of fitted model	R^2
Entire sample	$FP = 1.28 + 0.14 \cdot RT + 0.38 \cdot PR$	28.64%
G_0 group	$FP = 1.78 + 0.38 \cdot RT$	29.13%
G_1 group	$FP = 1.44 + 0.47 \cdot PR$	27.08%

Source(s): Authors' work

Table 6. Basic results of MLR analysis

The calibration process (which is the first stage of the fsQCA procedure) is performed by using a logistic function. To use this function, it is necessary to determine the cut-off points. In this study, the threshold values of 0.05, 0.5 and 0.95 were adopted based on the work of Ragin (2008). Table 7 shows the cut-off threshold values for the continuous variables. As a dichotomous variable (0–1), CP did not require calibration.

In the next step, the necessary condition analysis was performed (see Table 8); this revealed that the results of the investigation (for both FP and ~FP) could not have been achieved without the contribution of these conditions. As a result of this analysis, the values of the key parameters of the fsQCA method (i.e. consistency and coverage) were determined. Consistency indicates the extent to which an outcome (as a fuzzy set) belongs to a condition (as a set); this parameter can be interpreted in a similar way to the correlation coefficient (Woodside, 2013). Coverage is an indicator of the overlap between conditions and outcomes (Veri, 2018). Coverage is equivalent to the explanation of variance or R^2 in a regression analysis.

Schneider and Wagemann (2012) suggested that a condition for which the consistency is above 0.9 is a necessary condition. No value that was greater than the threshold was obtained for any of the conditions (see Table 8), so there were no necessary conditions.

The final result of the fsQCA procedure is to determine those condition combinations that are sufficient for obtaining a high level of outcome and those that lead to a low level of outcome. For the intermediate solution that was considered in this analysis, these combinations included the so-called contributing causal conditions in addition to the core causal conditions. Table 9 shows the essential results of fsQCA.

Table 9 includes all of the combinations of conditions that contribute to firm performance as well as to the absence of such outcomes. Furthermore, Table 9 contains the consistency and coverage levels that were used to assess the accuracy of the entire model and individual solutions. Rihoux and Ragin (2009) assumed that the minimum coverage should be 0.25, while the

Table 7.
Calibration thresholds for conditions and outcome

Condition/Outcome	Full membership (0.95)	Cross-over point (0.5)	Full non-membership (0.05)
R-T	1.75	4.00	6.00
IN	1.98	4.25	6.25
PR	2.50	4.75	6.50
FP	1.76	3.80	5.02

Source(s): Authors' work

Table 8.
Analysis of necessary conditions

	FP		~FP	
Condition	Cons.	Cov.	Cons.	Cov.
R-T	0.729	0.729	0.613	0.581
~R-T	0.580	0.613	0.713	0.714
IN	0.723	0.747	0.574	0.562
~IN	0.576	0.588	0.742	0.718
PR	0.787	0.778	0.557	0.522
~PR	0.517	0.552	0.763	0.772
CP	0.868	0.650	0.828	0.587
~CP	0.448	0.733	0.506	0.784

Note(s): Cons. = consistency; Cov. = coverage
Source(s): Authors' work

Conditions	Sets/Solutions Presence of FP				Sets/Solutions Absence of FP		
	S1a	S1b	S2	S3	P1	P2	P3
R-T		●	⬤	⬤	○		
IN		●	○	⬤		⬤	○
PR	⬤	⬤	○		○	○	○
CP	●		○	●	●	●	○
Consistency	0.823	0.864	0.831	0.845	0.86285	0.807587	0.886541
Raw coverage	0.716	0.535	0.272	0.534	0.522443	0.402915	0.404509
Number of cases	22	20	4	20	20	9	13
Solution coverage	0.817				0.699		
Solution consistency	0.77				0.827		
Frequency cutoff	2				2		
Consistency cutoff	0.83				0.83		

Note(s): ⬤ = core causal condition (present); ○ = core causal condition (absent); ● = contributing causal condition (present); ○ = contributing causal condition (absent)

Table 9. Analysis of sufficient conditions that led to presence and absence of FP

consistency of the entire model and the individual solution should be at least 0.75 (Ragin, 2008). Thus, the values in Table 9 are accepted and confirm the accuracy of the results (see Table 9).

As a result of the fsQCA procedure, three main solutions were obtained that lead to a high level of firm performance. The first solution (S1) was based on PR as a core causal condition; however, there were different contributing causal conditions that accompanied PR. In Solution S1a, such a condition was the presence of CP, while in Solution S1b – risk-taking and innovativeness. In Solution S2, there were two core conditions: R-T and the absence of CP (which were supported by the absence of IN and PR). In Solution S3, R-T and IN were core conditions, and they were supported by CP.

As mentioned above, one of the advantages of fsQCA is its asymmetry. Consequently, combinations that lead to the absence of an outcome are not obtained by "simple" negation of the combinations that lead to the presence of an outcome. An analysis of the absence of an outcome is performed separately according to the same procedure as with the analysis regarding the presence of an outcome. The results of this analysis are also presented in Table 9. Three solutions were obtained; in each solution, the absence of PR is among the core conditions. In Solution P1, the absence of R-T is also a core condition (apart from the absence of PR). This configuration applied mainly to those companies with high negative perceptions of the crisis (the presence of CP was a contributing causal condition). Solution P2 implied that maintaining a high level of IN with low PR led to a low level of FP. This applied mainly to those firms in the G_1 group (but not only because CP was a contributing causal condition). The last solution (namely, P3) applied only to those firms with low CP levels. In this group, entrepreneurs who showed low PR accompanied by low IN achieved low performance.

4.4 Summary of results

The results of fsQCA were consistent to a large extent with the results that were previously obtained with PLS-SEM and MLR. Solution S1a reflected the fact that PR was an important

factor that led to an increase in performance – especially in those firms with high levels of CP. This was consistent with the result that was obtained earlier on the data from the G_1 group. Solution S1b indicated that high PR can lead to an increase in performance with the support of IN and R-T (independent of CP); this confirmed the results that were obtained with PLS-SEM and MLR for the entire data set. Solution S2 confirmed the moderation impact of CP on the relationship between R-T and FP; namely, the presence of R-T led to a high level of FP in only those enterprises with low levels of CP. However, some companies (mainly in the G_1 group) owed their high FP levels to the combined presence of IN and R-T (as was visible in Solution S3). Solution S3 complemented the results on the role of IN, which was not significant in the models that were tested with PLS-SEM and MLR.

In summary, the fsQCA analysis largely confirmed the results that were obtained with PLS-SEM and MLR; in particular, it confirmed the significant role of PR and R-T as well as the moderating role of CP. Additionally, fsQCA revealed that IN can also play a role in shaping a high level of performance (in the case of PLS-SEM and MLR, this was not significant). Moreover, fsQCA allowed us to identify those combinations of conditions that led to a low outcome. It should be noted that a lack of PR occurred in all of the combinations that led to a low level of firm performance; this confirmed the important role of proactiveness in entrepreneurial activity.

5. Discussion and conclusions

This study had two objectives. First, it aimed to specify the role of EO dimensions in improving firm performance under turbulent market conditions. The results of the MLR and PLS-SEM analyses showed that two of the three dimensions of EO (namely, proactiveness and risk-taking) significantly affected firm performance. Furthermore, the results of fsQCA (which confirmed the obtained results with quantitative methods) showed that innovativeness could also lead to an increase in performance along with risk-taking and crisis perception as supporting factors. The above results confirmed previous observations that firm performance was positively affected by proactiveness (e.g. Tang *et al.*, 2014; Urban Boris, 2014; Lomberg *et al.*, 2017) and risk-taking (e.g. Akinwande and Akinola, 2021; NuelOkoli *et al.*, 2021) as well as innovativeness to some degree (e.g. Peris-Ortiz *et al.*, 2014; Soto-Acosta *et al.*, 2016; Olowofeso *et al.*, 2021); our results confirmed this impact under crisis conditions.

Second, this study examined the role of an entrepreneur's perception of a crisis in shaping the impact of EO on firm performance. The results revealed that, in the case of entrepreneurs who were seriously affected by the crisis, the impact of proactiveness on performance increased. Concurrently, the impact of risk-taking on performance increased for entrepreneurs who were not seriously affected by the crisis. These findings confirmed previous propositions that hostile environments could increase the degree of organizational entrepreneurship (e.g. Covin and Slevin, 1989; Rosenbusch *et al.*, 2013); in particular an entrepreneur's risk-taking (as reported by Dele-Ijagbulu *et al.*, 2020) and proactiveness (Urban Boris, 2014).

This study corresponds to the research stream that focuses on factors that affect the EO/performance relationship. The study also contributes to the literature on entrepreneurship (in particular, the impact of external conditions on EO/performance relationships) and crisis management with (1) findings that regard different roles of EO dimensions under crisis conditions and (2) observations that pertain to the moderating role of an entrepreneur's perception of the impact of a crisis on operational management and how this perception differentiates the influence of risk-taking and proactiveness on firm performance. In particular, these findings contribute significantly to the discussion on the role of market conditions in entrepreneurial activity; as the previous review of the literature showed, this

discussion has not yet provided a clear explanation. Two characteristics make this study original. First, it investigated EO under turbulent market conditions, and second, it analyzed the role of an entrepreneur's perception of crisis consequences for business operation. The study adds value to the TPB and the contingency theory. In the case of the first theory, the study shows that perception of a crisis can affect managerial behaviors also in the entrepreneurial context under crisis conditions. Regarding the latter theory, the study confirms that environmental contingency plays a role in entrepreneurial activity.

In addition, this study contributes to the methodology of organizational research. This study used three different methods to achieve its objectives namely, two quantitative methods (partial least squares structural equation modeling [PLS-SEM] and MLR) and fsQCA (which represents qualitative methods). The use of these methods enabled us to confirm the obtained results. All three of the employed methods proved to be complementary to each other. On the basis of this experience, the simultaneous use of these different methods can be recommended in future studies.

This study also offers meaningful implications for entrepreneurs. The results showed that EO led to an increase in performance during the crisis. Thus, managers should improve proactiveness, risk-taking and innovativeness. In order to benefit from innovativeness, however, it should be accompanied by risk-taking and sensitivity to the impact of a crisis. Additionally, entrepreneurs should be conscious of how they perceive a crisis, as it can affect the effectiveness of their entrepreneurial actions (specifically, the EO/performance relationship). Relevant training can change an entrepreneur's perception of the threats sourced from a crisis and their posture toward the opportunities that can occur during a crisis, and consequently, it can affect their entrepreneurial behaviors during a crisis.

This study has some limitations. First, the sample represents only one type of business activity (that is, hospitality services). Furthermore, all of the surveyed companies were located in one country and operated under similar cultural and legal conditions. These two sample-related limitations should be considered when generalizing the study results to other enterprises. The sample size limited the use of methods; although the sample represented the surveyed population, it was too small to examine multigroup moderation. Furthermore, the homogeneity of the sample in terms of location and industry raised awareness regarding the observed impact of crises – despite the numerous similarities, the last crisis developed in different ways in different countries (depending on the recovery policy of a country's government, for example). Additionally, we refer to the perception of a crisis in our research – this can be affected by a country's culture. Also, the methodology and constructs should be considered when interpreting the results. In particular, the perception of a crisis can be conceptualized and then operationalized in other ways, affecting the results of the examination. In particular, the perception of a crisis was a one-item variable in our study; it is recommended to develop this variable into a multi-item construct.

The limitations listed above indicate directions for future studies. Specifically, an improvement of the methodology to measure an entrepreneur's perception of the impact of a crisis on firm operation is recommended – especially during dynamic market changes. Furthermore, similar examinations in other country and industry contexts are recommended in order to verify the impact of these contexts on any potential examined relationships.

Note

1. The presentation of the results does not discuss the step of building a truth table. However, the parameters that are relevant for this stage and, consequently, for the results (i.e. frequency cutoff and consistency cutoff) are presented in Table 9. These parameters were selected according to the recommendations of Pappas and Woodside (2021).

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