

# Assessing the role of environmental, organisational and Managerial characteristics as antecedents of entrepreneurial orientation

Entrepreneurial  
orientation

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Received 23 July 2022  
Revised 18 January 2023  
26 May 2023  
3 June 2023  
Accepted 13 June 2023

## Abstract

**Purpose** – The aim of this study is to empirically examine the impact of several environmental, organisational and managerial characteristics on entrepreneurial orientation (EO).

**Design/methodology/approach** – This study draws on resource-based view theory to construct a quantitative research method. Data were collected by means of a structured questionnaire and analysed by SmartPLS 3 (partial least squares structural equation modelling) software. The sample comprised 185 managers at domestic Israeli companies within various industries.

**Findings** – The data analysis shows that market turbulence, technological turbulence and risk-taking tendency have a positive impact on EO, while centralisation has a negative effect on EO, and formalisation does not affect it at all.

**Originality/value** – This study emphasises the importance of environmental, organisational and managerial characteristics as capabilities within an organisation and has practical implications for managers with regard to achieving a competitive advantage by promoting their EO.

**Keywords** Entrepreneurial orientation, Market turbulence, Technological turbulence, Risk-taking, Formalisation, Centralisation

**Paper type** Research paper

## Introduction

Firms' strategic orientations are perceived as beliefs that guide their activities and direct the behaviours needed for long-term viability and performance (Hakala, 2011). They shape organisational attitudes and behaviours (Hong *et al.*, 2013).

A wide range of organisational strategies is to be found in the marketing literature, such as market orientation (Jaworski and Kohli, 1993), entrepreneurial orientation (EO) (Lumpkin and Dess, 2001), customer orientation (Liu *et al.*, 2002), competitor orientation (Lengler *et al.*, 2013) and pioneering orientation (Ortega and Garcia-Villaverde, 2011). These orientations reflect strategies that encompass a company's way of thinking, processes and actions. Managers work in line with these orientations to gain a competitive advantage. Accordingly, this study focuses on EO and considers this to be an important firm strategy.



Most previous research in this field has examined the impact of EO on a firm's performance. For example, [Hong et al. \(2013\)](#) argue that EO contributes to new product performance, while [Covin and Slevin \(1991\)](#) posit that a company's entrepreneurial positioning is positively related to both the revenue and profitability it generates. Similarly, [Lau et al. \(2012\)](#) identify a positive relationship between entrepreneurial competence and company growth. Zahra (1991) finds that corporate entrepreneurship contributes to a company's superior financial performance.

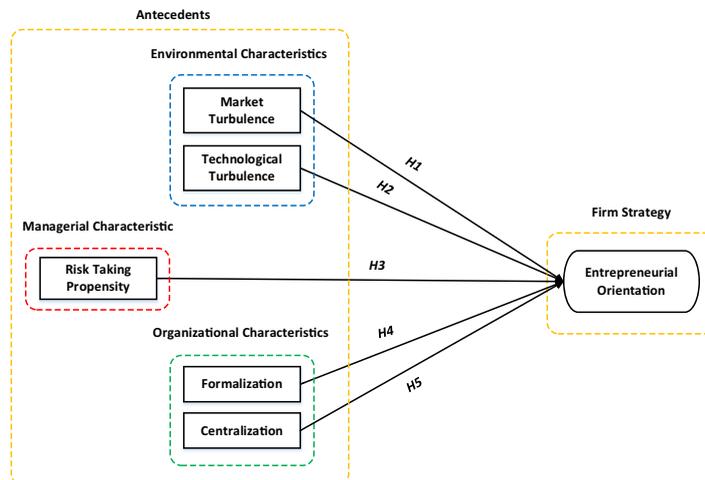
However, this study seeks to explore EO from a different point of view by examining several antecedents that may influence it. Specifically, this study focuses on three different sets of characteristics: the environmental characteristics of market turbulence and technological turbulence; the managerial characteristic of managers' propensity to take risks; and the organisational characteristics of formalisation and centralisation.

There is a vast number of studies on EO, but scholars have tended to investigate each characteristic separately. While some scholars may have examined the advantages or disadvantages of some antecedents of EO, they have not generated an integrative model designed to explore these characteristics in a single framework to assess the impact they have on EO simultaneously.

One of the challenges facing a manager who strives to leverage EO is to know which characteristics have the greatest impact on it. The main aim of this study is to explore and assess the extent to which these three sets of characteristics influence EO.

Against this background, this study includes an integrative model (see [Figure 1](#)) developed using the three sets of characteristics (environmental, managerial and organisational) that serve as antecedents of EO. Using the resource-based view (RBV) of the firm as a theoretical lens, EO is considered to be a valuable resource that should, ultimately, contribute to organisations' achieving their goals.

Overall, this study has two main objectives. First, it aims to examine the influence of three characteristics (environmental, managerial, and organisational) on organisational EO. Second, it seeks to determine which of the three characteristics has the most influence on organisational EO.



**Figure 1.**  
The research model

Source: Figure by authors

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## Literature review

### *Entrepreneurial orientation*

EO reflects the strategy of a firm, which guides how managers work and act. It encompasses the procedures, practices and decision-making activities that make companies entrepreneurial (Lumpkin and Dess, 1996). As entrepreneurs contribute to the exploration of business opportunities, especially in the pursuit of new ventures, EO is a substantial factor in the exploration of domestic and global opportunities (McDougall and Oviatt, 2000). Anwar and Saleem (2019) note that individuals, society or environment have been identified as factors that enable entrepreneurship.

Grinstein (2008, p. 118) argues that “entrepreneurial values enhance organizational transformation and renewal, can help build new competencies, and create new businesses within the existing business”. Glodowska *et al.* (2019) propose that EO refers to the process by which companies globalise.

EO has been conceptualised in the research literature in various ways. For instance, Lumpkin and Dess (1996, 2001) identify five dimensions of EO, specifically, autonomy, innovativeness, risk-taking, proactiveness and competitive aggressiveness. Kropp *et al.* (2006, 2008) conceptualise EO with reference to a three-dimensional structure, namely, proactiveness, innovativeness and risk-taking, and examine its role in the decision to enter a new venture. Hult *et al.* (2007) define EO as a one-dimensional construct encompassing five items (as detailed in the *Scale and items* section).

Covin and Slevin (1991) view entrepreneurship as a dimension of strategic positioning and see it reflected in companies’ propensity to take risks, their tendency to act in a competitively aggressive, proactive manner and their reliance on frequent and extensive product innovation. Miller (1983, p. 771) defines an entrepreneurial company as one that “engages in product market innovation, undertakes somewhat risky ventures, and is first to come up with proactive innovations, beating competitors to the punch”.

EO represents a broad spectrum of ways in which companies act in their environment. Several studies have discussed a wide range of antecedents that may influence EO. These antecedents include environmental turbulence (Wang *et al.*, 2020), psychological traits and contextual factors (Pittino *et al.*, 2017), conflicts and connectedness among employees within the organisation’s departments (Dahan and Shoham, 2014), organisational structure (Covin and Slevin, 1991) and components of the communication of EO (Kropp *et al.*, 2006). The present study emphasises three important sets of characteristics (environmental, managerial and organisational) and examines their impact on EO.

While many studies have examined the effect of specific antecedents on EO, the current study is unique because its research model integrates and examines several antecedents from different aspects simultaneously and in combination. Therefore, this study seeks to make an important contribution to the marketing literature by bridging the identified research gap.

## Theoretical background

This study is based on RBV theory. Armstrong and Shimizu (2007) note that the RBV is considered to be an accepted theoretical framework in the strategic management literature and enables companies to identify the conditions that will help them to achieve a competitive advantage. According to Barney (1991), companies that seek to gain sustained competitive advantages must possess resources that meet four criteria: they must be valuable, rare, hard to imitate and hard to substitute. The more developed a resource is with respect to these attributes, the more difficult it is for other companies to imitate and copy it. Kozlenkova *et al.* (2014) add that researchers need to identify organisational processes that

may enable companies to take advantage of their valuable, rare resources that cannot be precisely copied.

Daft (1983) argues that resources include the assets, capabilities, processes, knowledge and information controlled by a company that enable it to execute its strategies in an efficient, effective manner. In his broad-based review of the development of RBV theory over time, Bertram (2016) posits that the RBV, at its core, states that the resources a company possesses are the basis upon which it generates a competitive advantage. In its essence, strategy entails the deployment of resources to achieve organisational aims and objectives (O'Regan and Ghobadian, 2004).

The link between the RBV and EO has been discussed in the research literature. For example, Hult and Ketchen (2001) note that EO is considered to be a capability on the part of a company that can form the basis for gaining a sustainable advantage. Similarly, Alvarez and Busenitz (2001, p. 755) argue that “entrepreneurs have individual-specific resources that facilitate the recognition of new opportunities and the assembling of resources for the venture”. Al Mamun *et al.* (2019) note that the RBV is connected with business environments and includes unique skills and market sales-oriented approaches that increase an entrepreneur’s capabilities.

Against this background, this study uses the RBV as a theoretical framework according to which EO, as well as environmental characteristics (market turbulence and technological turbulence), a managerial characteristic (risk-taking), and organisational characteristics (formalisation and centralisation) are considered as organisational capabilities. In the spirit of the RBV, this study sees these characteristics as organisational capabilities that are valuable, rare, inimitable and non-substitutable resources. Hence, managers need to strengthen these resources and distinguish them from those of their rivals to gain a competitive advantage.

### **Research model**

The research model is based on the RBV theory. It integrates three facets of characteristics (environmental, managerial and organisational) and examines their impact on EO, as presented in Figure 1.

### **Hypothesis development**

The hypotheses of this study were developed with reference to studies from the marketing literature. In each of the hypothesis pathways, an attempt was made to strengthen the basis of the hypothesis. The background to each of the research hypotheses is detailed below.

#### *Environmental characteristics and entrepreneurial orientation*

This set of characteristics represents two important market conditions under which companies operate: market turbulence and technological turbulence. Market turbulence, for its part, is characterised by “continuous changes in customers’ preferences/demands, in price/cost structures and in the composition of competitors’ (Calantone *et al.*, 2003, p. 92), while technological turbulence refers to the “rate of technological advancement within an industry” (Autry *et al.*, 2010, p. 528). Both reflect the dynamic changes that often occur in the business environment. In light of these characteristics, managers need to respond in the most appropriate way to maintain their competitive advantage over rival companies. As Park (2017, p. 160) observes, “the core of entrepreneurship is a positive energy that challenges or changes existing conventions by acutely responding to the changing environments with an innovative and creative mind”.

Several studies have found that market and technological turbulence exert a positive influence on EO. For example, [Davis et al. \(1991\)](#) argue that environmental turbulence has a significant causal impact on a company's level of entrepreneurship. Additionally, [Hall and Rosson \(2006\)](#) theorise that technological turbulence creates entrepreneurial opportunities, along with a challenge to incumbents and established norms. Lumpkin and Dess (1996) argue that EO is associated with performance, especially when combined with an appropriate strategy under the proper environmental conditions. [Wang et al. \(2020\)](#) identify a relationship between environmental turbulence and a company's EO. As a result, it can be expected that:

- H1. Market turbulence positively affects EO.
- H2. Technological turbulence positively affects EO.

#### *Managerial characteristics and entrepreneurial orientation*

The managerial characteristic considered in this study is the risk-taking propensity of managers within the organisation. In fact, managers do tend to take risky actions ([Lammers et al., 2010](#)). Managers mostly operate according to their behavioural propensities: some act intuitively, while others act more logically ([Lu, 1995](#)). [Masters and Meier \(1988, p. 33\)](#) define risk-taking propensity as “the perceived probability of receiving the reward associated with the success of a proposed situation”.

Proactive managers are more likely to take risks. To support this argument, [Crant \(2000, p. 437\)](#) notes that “proactive people actively seek information and opportunities for improving things; they don't passively wait for information and opportunities to come to them”.

The European Conference on Entrepreneurship Education (2006) highlights that entrepreneurship education must teach personal attributes and skills that form the basis of an entrepreneurial mindset and behaviour (e.g. creativity, the willingness to take the initiative, risk-taking, autonomy, self-confidence and leadership). [Cho and Lee \(2018\)](#) note that entrepreneurs should recognise business risks when trying to take advantage of opportunities in an environment shaped by uncertainty but at the same time should minimise such risks.

Risk-taking is, by its very definition, a dimension of EO ([Kropp et al., 2008](#); [Miller, 1983](#)). However, several studies have treated the two concepts separately and discussed the relationship between risk-taking and entrepreneurship ([Brockhaus, 1980](#); [Covin and Slevin, 1991](#)), including in the specific context of innovation ([Craig et al., 2014](#); [Zhang et al., 2018](#)).

Therefore, this study considers risk-taking propensity to be an antecedent of EO and examines the relationship between the two. This relationship has already been discussed in the marketing literature. [Naldi et al. \(2007\)](#) conclude that risk-taking is a distinct dimension of EO, and that it is positively associated with proactiveness and innovation. Given today's rapidly changing and highly uncertain markets, entrepreneurial enterprises must be willing to take risks because “without risk-taking, the prospects for business growth wane” ([Ward, 1997, p. 326](#)). [Avlonitis and Salavou \(2007\)](#) document that active entrepreneurs adopt an aggressive orientation characterised by a willingness to undertake high-risk actions. Hence, it can be expected that:

- H3. Risk-taking positively affects EO.

#### *Organisational characteristics and entrepreneurial orientation*

This set of characteristics represents organisational structure and comprises two components: formalisation and centralisation. Both characteristics have been reported in the

marketing literature as performance-reducing (Caruana *et al.*, 2002; Covin and Slevin, 1991; Jaworski and Kohli, 1993).

Regarding formalisation, Caruana *et al.* (1998, p. 19) argue that it “refers to the existence of formal rules and regulations and the organization’s efforts to enforce those rules”. Toivonen and Rivera-Santos (2016) add that such formalisation is measured by the internal documentation of the organisation and expressed by written organisational rules, procedures, policies and regulations. Jaworski and Kohli (1993, p. 56) extend the concept of formalisation by noting that it also “represents the degree to which rules define roles, positions, authorities, communications, norms, sanctions, and procedures within an organization”.

With respect to centralisation, Zalewska-Turzynska (2018) argues that this refers to decision-making authority and is measured by the number of decisions taken by managers at all organisational levels. Similarly, Jaworski and Kohli (1993) note that centralisation relates to the level of decision-making within the organisation and reflects the extent to which employees take part in the decision-making process. Caruana *et al.* (2002, p. 48) add that “centralization refers to the extent that decision-making power is concentrated at the top levels of the organization”.

Covin and Slevin (1991) propose that internal organisational structures, such as formalisation and centralisation, can be viewed as antecedents to entrepreneurship. Moreover, Caruana *et al.* (1998) add that these two components reflect key aspects of the organisational structure and affect entrepreneurship at companies. Accordingly, the current study uses formalisation and centralisation as antecedents of, and aims to examine their influence on, EO.

The influence of formalisation and centralisation on EO has been examined in the research literature. Yang *et al.* (2019) argue that organisational structure, such as centralisation and formalisation, plays a decisive role in mobilising resources to support EO activities.

Organisational structure serves as a crucial antecedent to entrepreneurship, which is negatively related to formalisation (Covin and Slevin, 1991). Additionally, a high level of formalisation within a unit reduces the level of exploratory innovation (Jansen *et al.*, 2006). Several studies suggest that internal organisational structures, such as centralisation, are of great significance for facilitating the development of innovations (Atuahene-Gima, 2003; Jansen *et al.*, 2006; Jaworski and Kohli, 1993).

Caruana *et al.* (1998) argue that a high level of centralisation reduces the level of entrepreneurship. Likewise, Covin and Slevin (1991) suggest that entrepreneurial positioning is negatively related to a company’s level of structural centralisation. Additionally, a high degree of centralisation at public sector organisations has been shown to reduce the degree of entrepreneurship (Caruana *et al.*, 2002). In sum, it can be expected that:

*H4.* Formalisation negatively affects EO.

*H5.* Centralisation negatively affects EO.

## Methodology

### *The questionnaire*

The two-part study questionnaire was developed based on a thorough review of the marketing literature. Its first part contains several demographic questions that aimed to screen out participants who were not suitable for this study. Specifically, besides the general

demographic questions (e.g. determining the respondent’s age, gender and position), this part contained three questions used to establish the reliability and validity of the answers and to ensure that respondents had sufficient knowledge and expertise to answer questions about certain issues in their company (professional seniority, the amount of time that they had spent as managers at their company and the extent of their experience in this respect). Table 1 presents the means, medians and standard deviations (SD) of the answers to items designed to assess respondents’ expertise. As Table 1 indicates, the managers are relatively experienced in their areas of responsibility at their current companies.

The second part is the major component of this questionnaire. It contains five-point Likert-type scales (1 = strongly disagree to 5 = strongly agree) taken from previous research that represents the questions exploring the main constructs of this study. Only respondents who successfully met all the criteria in the first part were allowed to answer this second part.

*Data collection and sample*

Data were collected for this study by *iPanel*, an Israeli commercial enterprise that specialises in data collection and serves a wide range of academic institutes in Israel. The study sample consisted of 185 managers of domestic Israeli companies from various fields, such as pharmaceuticals, services and manufacturing. It is worth noting that none of the companies is a start-up.

Of the companies, 52.43% had more than 100 employees. With regard to demographics, the average age of the respondents was 43 years, and 71.9% of respondents were male. Furthermore, 62.7% of the respondents were employed as mid-level managers. Regarding decision-making authority, 41.1% of the respondents made marketing decisions.

*Scales and items*

The scales of this study were based on previously validated scales with five-point Likert-type items (1 = strongly disagree to 5 = strongly agree) drawn from the marketing literature. The EO scale was taken from Hult *et al.* (2007) and comprised five items (emphasising research and development and technological leadership, initiate actions to which other organisations respond, introducing new administrative techniques and operating technologies, having strong proclivity for high-risk projects, maximizing the probability of exploiting opportunities). The market turbulence and technological turbulence scales were obtained from Jaworski and Kohli (1993) and comprised six and four items, respectively. Lastly, the risk-taking, formalisation and centralisation scales were also based on Jaworski and Kohli (1993) and comprised five, seven and five items, respectively.

Question	Mean	Median	SD
How many years have you been working in your area of responsibility?	11.69	10	8.46
How many years have you been working in your current company?	9.62	7	7.83
How many years have you been working in your area of responsibility in your current company?	6.47	5	5.86

Source: Table by authors

**Table 1.**  
Descriptive statistics  
related to managers’  
job experience

*Analysis tool*

This study used SmartPLS 3 software as its main analysis tool. Hair *et al.* (2012) note that PLS-SEM is widely used in marketing research. The main advantage of PLS-SEM is its ability to analyse complex models without depending on restrictive assumptions, such as data normality and large sample size. The method of reporting the analysis's findings is structured and comprises two steps (Hair *et al.*, 2012; Wong, 2013). The first step involves the examination of the measurement model (also called the outer model), including a confirmatory factor analysis and assessment of several of its psychometric properties. The second step involves examination of the structural model via exploratory factor analysis and testing the research hypotheses.

*Measurement model*

The measurement model used in this study is based on constructs of latent variables, conceptualised as reflective variables. According to Hair *et al.* (2012), a reflective measurement model should involve confirmatory factor analysis as well as the assessment of several indices, such as indicator reliability, internal consistency reliability, convergent validity and discriminant validity. The measurement model's properties were calculated via the PLS algorithm procedure and included several assessments, as detailed below. Figure 2 depicts the measurement model in graphical form.

*Reliability analysis* To assess the reliability of each scale, I used SPSS 28 software and examined Cronbach's alphas, as recommended by Kalpande and Toke (2023). Table 2 presents the descriptive statistics for each scale and the scales' reliability. The data show that all the scales were reliable, exceeding 0.70 (Nunnally, 1978).

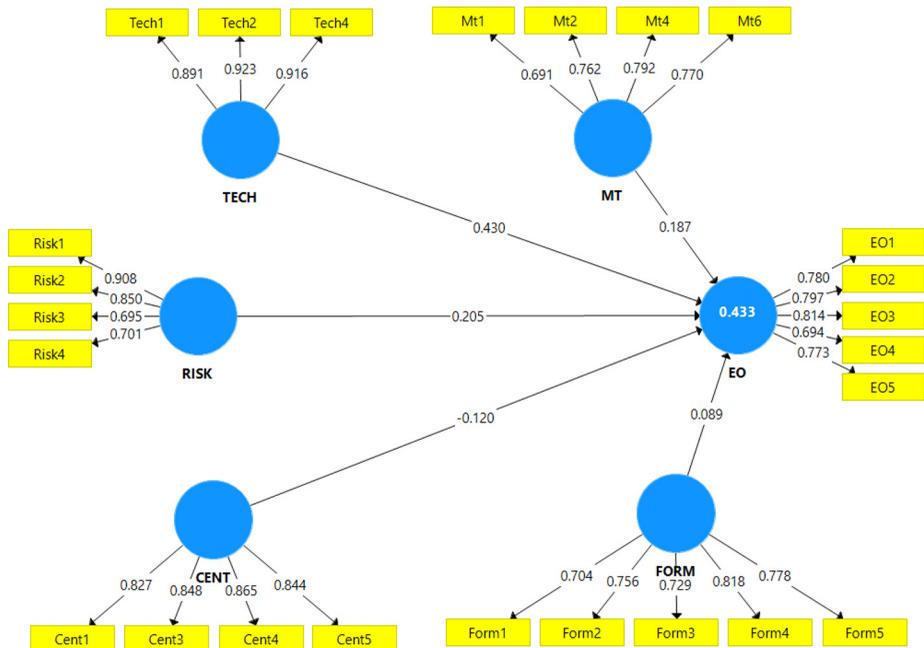


Figure 2.  
The measurement model

Source: Figure by authors

*Outer model loadings* This assessment determines the indicators' reliability, as reflected in the squared standardised outer loading of each indicator. As can be seen in Table 3, all the outer loadings were exceeded the acceptable threshold of 0.7 (Wong, 2013). It is important to note that the outer loadings of the indicators Mt3, Mt5, Tech3, Form6, Form7 and Cent2 were 0.508, 0.566, 0.482, 0.408, 0.567 and 0.648, respectively. As these items did not meet the 0.7 threshold, they were removed from the model, as discussed, and recommended by Hair et al. (2016).

*Internal consistency reliability* The internal consistency reliability assessment entailed calculating the composite reliability (CR) of each construct. As can be seen in Table 3, all the

Scale	# Items	Mean	SD	$\alpha$
EO	5	3.24	0.86	0.83
Market turbulence	6	3.53	0.71	0.76
Technological turbulence	4	3.39	1.00	0.84
Risk-taking tendency	5	2.90	0.85	0.83
Formalisation	7	3.08	0.77	0.83
Centralisation	5	2.46	0.97	0.88

Source: Table by authors

**Table 2.**  
Descriptive statistics and Cronbach's alphas

Construct	Label	Indicators	Outer loadings	CR	AVE
Entrepreneurial orientation	EO	Eo1	0.780	0.881	0.597
		Eo2	0.797		
		Eo3	0.814		
		Eo4	0.694		
		Eo5	0.773		
Market turbulence	MT	Mt1	0.691	0.841	0.570
		Mt2	0.762		
		Mt4	0.792		
		Mt6	0.770		
Technological turbulence	TECH	Tech1	0.891	0.935	0.829
		Tech2	0.923		
		Tech4	0.916		
Risk-taking tendency	RISK	Risk1	0.908	0.871	0.631
		Risk2	0.850		
		Risk3	0.695		
		Risk4	0.701		
Formalisation	FORM	Form1	0.704	0.871	0.575
		Form2	0.756		
		Form3	0.729		
		Form4	0.818		
		Form5	0.778		
Centralisation	CENT	Cent1	0.827	0.910	0.716
		Cent3	0.848		
		Cent4	0.865		
		Cent5	0.844		

Notes: CR = Composite reliability; AVE = Average variance extracted

Source: Table by authors

**Table 3.**  
Outer loadings, CR and AVE for the measurement model

CR values are greater than 0.7 and exceed the recommended threshold (Wong, 2013). As a result, it can be argued that all the indicators in the measurement model were reliable.

Convergent validity Hair *et al.* (2016, p. 112) define convergent validity as “the extent to which a measure correlates positively with an alternative measure of the same construct”. To examine the convergent validity, the average variance extracted (AVE) of each construct was assessed. As shown in Table 3, the AVE values of all the constructs are greater than the acceptable threshold of 0.5 (Hair *et al.*, 2014). Hence, it can be assumed that convergent validity is confirmed.

Discriminant validity This study used the Fornell and Larcker (1981) criterion to assess the existence of discriminant validity. Hair *et al.* (2014, p. 112) define discriminant validity as “the extent to which the construct is empirically distinct from other constructs”. According to the method stipulated by Fornell and Larcker (1981), the square root of the AVE of each construct should be greater than the correlation with any other construct.

Table 4 presents the square root of the AVE of each construct along its diagonal, with the correlations with any other construct located below the diagonal. As can be seen in Table 4, all the AVE values are higher than the correlation with any other construct, supporting the discriminant validity of the study’s scales. Thus, it is concluded that there is discrimination between the constructs.

*Structural model*

The structural model (also known as the inner model) is the next step in PLS-SEM to be addressed after the measurement model has been established (Hair *et al.*, 2019). This step includes reporting on the R<sup>2</sup> coefficient that reflects the contribution of the exogenous latent variables to the endogenous latent variables (Wong, 2013). As can be seen in Figure 3, the R<sup>2</sup> value is 0.433, meaning that 43.3% of the exogenous variables explained the variance. Additionally, this step includes calculating the statistical results of the path coefficients for the study’s hypotheses.

*Path analysis.* To assess the path coefficients and test the study’s hypotheses, the recommendation of Hair *et al.* (2012) was followed, and the bootstrap method was used in SmartPLS 3, with 5,000 bootstrap samples. Table 5 presents a summary of the results of the hypotheses tests. As shown in Table 5, H1, H2, H3 and H5 were found to be supported, while H4 was found not to be supported.

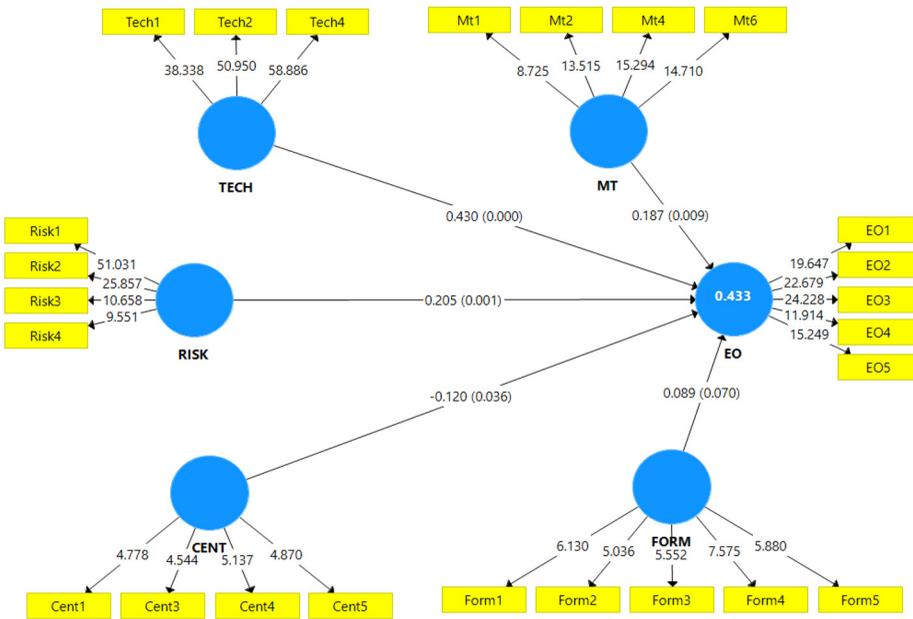
**Discussion**

To briefly reiterate, this study aimed to examine the role of three sets of characteristics (environmental, managerial and organisational) as antecedents of EO. The findings show

**Table 4.** Testing discriminant validity by Fornell–Larcker criterion

	EO	MT	TECH	RISK	FORM	CENT
EO	0.773					
MT	0.444	0.755				
TECH	0.575	0.464	0.91			
RISK	0.343	0.155	0.248	0.794		
FORM	0.213	0.163	0.087	0.220	0.758	
CENT	-0.116	-0.097	0.006	0.136	-0.093	0.846

Source: Table by authors



Source: Figure by authors

Figure 3. The structural model

Hypothesis	Path	$\beta$	STDEV	$t$	$P$	Result
H1	MT → EO	0.187	0.078	2.387	0.009*	Supported
H2	Tech → EO	0.43	0.063	6.837	0.000*	Supported
H3	Risk → EO	0.205	0.064	3.174	0.001*	Supported
H4	Form → EO	0.089	0.06	1.475	0.07	Not Supported
H5	Cent → EO	-0.12	0.067	1.798	0.036**	Supported

Notes: \* $p < 0.001$ ; \*\* $p < 0.05$   
 Source: Table by authors

Table 5. Summary of results of hypotheses tests

that most of the hypotheses were found to be significant, but one was not confirmed. The importance of these findings is reflected in the influence of each characteristic on EO.

Regarding environmental characteristics, the findings substantiate that both market turbulence and technological turbulence have a positive impact on EO. Moreover, comparing the standardised  $\beta$  of market turbulence ( $\beta = 0.187$ ) to the standardised  $\beta$  of technological turbulence ( $\beta = 0.43$ ) emphasises that the effect of technological turbulence on EO is quite clearly greater than that of market turbulence.

With respect to the managerial characteristic considered, the findings show that risk-taking has a positive impact on EO. This finding is aligned with the notion that managers' risk-taking propensity may foster their entrepreneurial behaviour. Support for this argument can be found in previous studies. For example, Lee and Peterson (2000) argue that entrepreneurs are often individuals who are willing to accept uncertainty and riskiness.

Masters and Meier (1988) suggest that being an entrepreneur and a manager has always involved risk-taking.

In terms of organisational characteristics, the findings show that formalisation does not affect EO. This finding can likely be explained with reference to the cultural differences between countries. Under Hofstede's (2001) power distance index (PDI), which records the acceptability of inequality between managers and employees at all levels, Israel is a low-PDI country, making Israelis less accepting of organisational inequality. This level of acceptance typically gives rise to workplaces with an informal atmosphere, which can foster a lack of formalisation among managers.

By contrast, centralisation was found to have a negative impact on EO. Early studies found similar evidence for this finding. For example, Caruana *et al.* (2002) find, with reference to public sector organisations, that a higher level of centralisation reduces the level of entrepreneurship. Similarly, Engelen (2010) identifies that the degree of centralisation negatively impacts the degree of EO.

### Conclusions

The conclusions of this study relate to the three levels of characteristics considered.

Firstly, from an environmental point of view, managers who wish to enhance EO should ensure they are aware of developments in their market environment by paying attention to the wants and needs of their customers and noticing how these wants and needs change over time, especially in dynamic environments. Moreover, improving mechanisms to manage technological turbulence should be a high-priority activity for companies seeking to promote EO. For example, innovation, technological developments and improved manufacturing processes, such as the use of new materials, new machines, new packaging solutions and new manufacturing software, may enhance EO.

Secondly, from a managerial perspective, managers need to be more daring and take risks in order to promote their organisational EO.

Thirdly, from the organisational point of view, organisational structures should be decentralised to promote EO. Practically, managers should be less centralised and delegate authority to their subordinates to encourage entrepreneurial thinking among the organisation's members.

In sum, this study has demonstrated that, among the three sets of characteristics considered (environmental, managerial and organisational), technological turbulence is the most influential antecedent of EO. As a result, companies seeking to enhance their EO need to be aware of the technological environment in which they operate and respond quickly to changes in it so they can achieve and maintain their competitive edge.

### Implications

This study focused on several characteristics that affect EO in general without referring to a specific type of company. Therefore, the conclusions are also general. The managerial implications are cross-field and can be relevant for all managers who aspire to promote an EO in their companies. The findings of this study provide both practical and theoretical implications for marketing managers.

Firstly, from an environmental perspective, the most influential antecedent of EO is *technological turbulence*, meaning that managers must be aware of the technological environment in which they operate. They need to constantly be on the lookout for new technological improvements and implement them quickly to strengthen their organisation's entrepreneurial strategy and thereby gain a competitive advantage.

Secondly, from a managerial perspective, the findings suggest that managers need to successfully manage their *risk-taking propensity* to safeguard entrepreneurship within their organisation. Managers can be more daring and should capitalise on opportunities and respond to threats from competitors in the marketplace.

Thirdly, from an organisational perspective, managers need to act in a more decentralised manner. They should share powers with their subordinates to enhance cooperation and thus allow autonomy to promote entrepreneurial initiatives.

Lastly, from a theoretical point of view and in the spirit of RBV theory, managers should think about EO as a multi-purpose organisational resource and a prime target for the investment of limited and rare resources to achieve competitive advantage.

#### *Limitations and further research*

Beyond the contribution it makes to the research literature, the current study has several limitations that should be taken into consideration in further research. Firstly, the sample used in this study encompassed a variety of industries in Israel and did not focus on one specific industry. Examining this study's model with respect to specific industries, such as the high-tech sector, can provide new insights into the impact of these antecedents on EO.

Secondly, the data collection questionnaire included subjective self-reported responses from managing directors and upper-level managers. Further research should combine the questionnaire with interviews with managers to strengthen the validity of the data. Third, this study focused on several specific organisational characteristics and examined them as antecedents of EO. Choosing other kinds of organisational characteristics may produce different results.

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