DOI https://doi.org/10.5281/zenodo.10049652#144

TWIST, 2024, Vol. 19, Issue 2, pp. 166-174

TWIST

Journal homepage: www.twistjournal.net

Entrepreneurial Orientation: Developing an Instrument of Measurement

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Abstract
Purpose – This study aims to create a tool for measuring entrepreneurial orientation, specifically for measuring the entrepreneurial orientation of individuals, including Malay entrepreneurs.
Design/methodology/approach – A test of the Individual Entrepreneurial Orientation (IEO) was devised, verified, and administered to three hundred Malay business owners. The definitions of the five entrepreneurial orientation dimensions provided by Lumpkin and Dess served as the foundation for the scale's items. Three of the dimensions had valid and dependable measures after the IEO questions were finalized and analysed using exploratory factor analysis.
Findings – Three unique components innovativeness, risk-taking, and pro-activeness that showed reliability and validity were identified throughout the IEO scale development process. These factors are statistically associated with measures of entrepreneurial intention.
Research limitations/implications – The study included Malay business owners in Kelantan, and for better generalizability, it ought to be expanded to include non-business owners, other parts of the nation and the globe.
Practical implications – Entrepreneurship team and project assignments, as well as entrepreneurship training, might benefit from the application of an individual-level entrepreneurial orientation measuring tool. It is valuable as a determining element while deciding on entrepreneurship training for different ideas, such as business ventures and career choices. IEO can also be utilized by those who wish to gauge how strongly they are inclined toward entrepreneurship as well as venture capitalists who are thinking about funding business ideas.
Originality/value – This article aids in measuring an individual's entrepreneurial orientation and can be applied to business training and entrepreneurship education.

Keywords
Entrepreneurship, Individual behaviour, Individual entrepreneurial orientation, Measure development, Entrepreneurs

INTRODUCTION

EO is defined as an entrepreneur's strategic orientation that captures specific entrepreneurial elements (Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005). The elements comprise processes, such as experimenting with new technologies, seizing new products or market opportunities, and taking on risky ventures (Lumpkin & Dess, 2001). Several researchers, including Rauch et al., (2009), Ndubisi & Agarwal (2014), Ring, Pett, & Wolff (2015), and Khedhaouria et al., (2015) found substantial variation in the degree of the correlation between EO and ES. They concluded that certain variables mediated the EO and ES relationship.

Some studies also emphasised entrepreneurs' EO to explain success. EO is used to explain entrepreneurs' strategy-making in the firm. Numerous studies have been carried out to examine the EO concept and its influence on either ES or firm performance (Pradhan & Nath, 2012; Casillas & Moreno, 2010; Zainol, 2011; Awang et al., 2009; Richard, Wu, & Chadwick, 2009; Lechner & Gudmundsson, 2012). Covin and Slevin (1991) stressed that EO is one of the critical aspects that adds competitive advantage to a firm that, subsequently, enhances its performance and shapes its success.

The concept has been discussed conceptually by Covin and Slevin (1991) and Lumpkin and Dess (1996) and empirically by Wiklund and Shepherd (2005), and Khedhaouria, Gurău, & Torrès (2015). In line with that, Misra and Kumar (2000) asserted that individual psychological factors and entrepreneurial behaviour are important concepts in portraying the entrepreneur. In this research the three basic EO dimensions defined by Lumpkin and Dess (1996) are applied to an assessment of Malay Entrepreneurs.

Although EO and attributes have been assessed for Malay entrepreneurs in some academic research (Gu¨rol and Atsan, 2006; Levenburg and Schwarz, 2008; Raposo et al., 2008), the effects of EO at the individual entrepreneur level have been largely ignored (Lechner & Gudmundsson S.V, 2014; Khedhaouria et al., 2015; Hukampal, Bhowmick, Eesley, & Sindhav, 2019). Their discourse has contributed to the greater understanding of EO as a precursor of ES.

Since EO has been found to be an important causal factor in the success of organisations through numerous empirical studies (see Rauch et al., 2009, for a summary), it is of benefit to develop a validated measure for the Malay entrepreneurs rather than organisations. First, the research on individual personality traits and characteristics, and the study of entrepreneurial attitudes should be examined in order to provide support for the development of the IEO construct that is a direct result of the measures inherent in the original EO scale. Therefore, in the following sections there will be a brief review of three major areas of literature relevant to this study: overview of EO theory; examination of individual entrepreneurial traits, characteristics and attitudes; and measurement of individual entrepreneurial propensity.

EO THEORY OVERVIEW: EO

Numerous studies emphasised entrepreneurs' EO to explain success. EO is used to explain entrepreneurs' strategy-making in the firm. Numerous studies have been carried out to examine the EO concept and its influence on either ES or firm performance (Pradhan & Nath, 2012; Casillas & Moreno, 2010; Zainol, 2011; Awang et al., 2009; Richard, Wu, & Chadwick, 2009; Lechner & Gudmundsson, 2012). Covin and Slevin (1991) stressed that EO is one of the critical aspects that adds competitive advantage to a firm that, subsequently, enhances its performance and shapes its success. The concept has been discussed conceptually by Covin and Slevin (1991) and Lumpkin and Dess (1996) and empirically by Wiklund and Shepherd (2005), and Khedhaouria, Gurău, & Torrès (2015). In line with that, Misra and Kumar (2000) asserted that individual psychological factors and entrepreneurial behaviour are important concepts in portraying the entrepreneur.

Entrepreneurial orientation (EO): Firm with entrepreneurial strategic posture is characterised by frequent and extensive technological and product innovation, an aggressive competitive orientation, and a strong risk-taking propensity by the owner. Therefore, building upon the conceptualisation, the study opted to define EO as innovativeness, risk taking propensity, and proactive behaviour of the entrepreneneur simultaneously in entrepreneurial decision-making process of the firm (Covin and Slevin, 1989).

STUDIES OF INDIVIDUAL ENTREPRENEURIAL TRAITS, ATTITUDES AND BEHAVIOURS

The term EO is also interchangeably used as entrepreneurial behaviour was regarded as an essential concept in the strategy-making process. Primarily, the accepted definition was from Miller (1983), which considered that individuals exhibit EO if they perform product-market innovation, take risks, and behave proactively (Liu, Ko, Ngugi, & Takeda, 2017;Yu, Nguyen, & Chen, 2016), and relate to firm performance (Krauss, Frese, Friedrich, & Unger, 89 2005). Covin and Slevin (1986) conceptualised EO as covarying. However, Lumpkin and Dess (1996) suggested that the dimensions may vary depending on the environment and organisational context.

Miller (1983) held that an entrepreneurial firm is "one that engages in product-market innovation, undertakes somewhat risky ventures and is first to come up with "pro-active" innovations, beating competitors to the punch" and decided that EO incorporated three scopes: innovation, risk-taking, and proactiveness. EO also refers to the decision-making styles, practices, process, and behaviours that lead to new or established markets with new or existing goods or services (Kraus, Rigtering, Hughes, & Hosman, 2012). EO is used to explain the strategy involved in pursuing a new venture and provide a useful framework to investigate entrepreneurial activities and reflect how a firm operates rather than what it does (Lumpkin & Dess, 1996).

Lumpkin and Dess (1996) asserted that EO is a process that concerns the "methods, practices, and decision-making styles managers use" in the strategy-making in the organisation. It refers to the way entrepreneurs behave autonomously, in an innovative way, are willing to take risks, and react proactively when dealing with market opportunities. Wales (2015) suggested that EO should be viewed as an "essential part of a unique, identifiable strategy; for example, entrepreneurial strategy as manifested by organisations." Razak (2011) viewed the importance of implementing EO as entrepreneur's success is not only holistic but proactive in action undertaking to materialise a firm's objectives by capitalising on the available resources.

Kreiser, Marino and Weaver (2002) described the psychometric properties of EO with the three sub-dimensions of innovation, proactiveness, and risk-taking. These three dimensions were adopted by subsequent studies (Kreiser et al.,

2002; Tarbishy, Solomon, Fernald, & Saghkin, 2005; Rezaei & Ortt, 2018; Linton, 2019). Tarbishy et al., (2005) adopted the original framework developed by Miller (1983) with a focus on innovativeness, risk-taking, and pro-activeness, as Lumpkin and Dess (1996) described EO as the process, practice, and decision-making activities that lead to a new entry. They classified the five dimensions of EO including autonomy, innovation, risk-taking, pro-active, and aggressive competitive, which form the basis of almost all of the entrepreneurial process.

Basso, Alain and Bouchard (2009) characterised EO as an entrepreneurial process concerning the methods, practices, and decision-making process for new entrants into the market. They also adopted the same five dimensions proposed by Lumpkin and Dess (1996). However, recent studies theorising the two predominant conceptualisations can co-exist (see in Wales, 2016; p 5). The construct of EO has been discussed extensively in the entrepreneurship literature. Scholars viewed that EO concerns the firm-level strategic process that firms use to obtain a competitive advantage and is essential to the success of today's organisations.

Most studies adopted EO as the firm-level organisation strategic posture. However, researchers also argued that the application of the EO constructs at the individual level could provide a significant role for the owners and organizations (Carland, Hoy, & Carland, 91 1988; Stewart, 1996; Krauss et al., 2005; Zainol, 2011; Lechner & Gudmundsson, 2014; Khedhaouria et al., 2015). They argued that an individual-level analysis could provide the benefits of understanding success (using personality, human capital, goals, strategies, and environment) as the owners of small firms re typically the primary source of action of any decision made by an entrepreneur (Rauch & Frese, 2000), and, hence, it is logical to examine entrepreneurs EO (Lechner & Gudmundsson, 2014; Khedhaouria et al., 2015) and behaviours or some proxy of that behaviour.

In terms of its dimensionality, some viewed EO as unidimensional (Covin & Slevin, 1986) while recent studies theorised EO as being multidimensional (Lumpkin & Dess, 1996; Fadda, 2018; Baldauf, Stettler, & Shirokova, 2013; Tonković Grabovac & Milovanović, 2015). Covin and Slevin (1989) argued that EO is an entrepreneurial strategic posture when they measured the EO on small manufacturing firms. Miller (1983) stressed that entrepreneurs were entrepreneurial if they pursue innovative, risk-taking, and proactive behaviour. They also argued that the entrepreneurial strategic posture is an essential property of ES. Similarly, Kerr et al., (2006) and Staniewski (2016) stressed that successful entrepreneurs tend to have distinctive traits in their personality, such as innovative, risk-taking, and proactive as the characteristics of being a successful entrepreneur.

Covin and Slevin (1998) viewed that specific characteristics should be possessed by managers that make them effective and improves business performance, as not all managers have an equal degree to foster such 92 orientation. As such, Davis et al., (2010) suggested that managers who had preferences for innovativeness, willing to take a risk, and proactive in a business organisation are in a better position to compete and gain competitiveness in a fast-paced business environment. Chen et al., (2016) suggested that emphasis on the product, technology innovation, and creation may achieve superior business performance.

Moreover, the maintenance of these attributes could preserve the spirit of entrepreneurship among entrepreneurs and as the basis to react entrepreneurially (Eternard, 2014). Grimmer et al., (2013) suggested that the business culture, the business reputation, the skills and knowledge, the expertise of management and non- management employees, planning and decision making were among the firm resources that contributed the extent of EO deployed. Frese and Giennik (2014) viewed that, to some extent, EO is related to the perceptions and truthfulness that managerial perceptions matter for the firms and are not just after-the-fact attributions to explain success and failure. Furthermore, Prabhu et al., (2012) suggested that a study on EO would be beneficial to better understand the entrepreneurship process. However, a review of EO literature found that even though this construct improves performance, the empirical results are mixed (Shirokova et al., 2016; Hermann.

MEASURING ENTREPRENEURIAL ORIENTATION

The most commonly used scale for measuring EO is the scale initially developed by Miller (1983) and later modified by Covin and Slevin (1989). The attributes making up EO on the firm-level closely resemble the psychological variables on an individual level. Following this line of thought, some researchers have to extend the application of EO at the individual level (Covin & Lumpkin, 2011; Covin & Slevin,1988; Davis et al., 2010; Frese & Gielnik, 2014; Kollmann et al., 2017). Following the abundance of past studies on EO, this study managed to compile several kinds of literature used on EO in their respective studies.

In the meta-analysis study conducted by Rauch et al., (2009), out of 51 studies on EO, they found that EO was considered as unidimensional in 37 studies and multidimensional in the remaining 14 studies. Richard et al. (2004) adopted the three most commonly cited EO dimensions of innovativeness, risktaking, and proactiveness with nine-items to measure the EO. Richard et al., (2009) utilised the three dimensions of innovativeness, risk-taking, and proactiveness to measure EO. Similarly, Ndubisi and Agarwal (2014) also adopted the three dimensions of proactiveness (5 items), risk-taking (5 items), and autonomy (3 items) to measure the direct and indirect effects of service innovation and EO on the quality performance of SMEs in developing the 94 economy.

Previous studies provided evidence concerning the reliability and validity of the EO scale (Garba & Mahmoud, 2017; Al Mamun et al., 2017; Naman & Slevin, 1993; Kreiser et al., 2002). Casillas and Moreno (2010) adopted the five dimensions consisting of innovativeness, risk-taking, proactiveness, competitive aggressiveness, and autonomy to measure firm growth. In that study, a Likert scale ranging from 1 to 7 was used to measure the EO. Lee, Lim and Pathak

(2011) adopted only four dimensions of the EO construct with a 5-point Likert scale to measure innovativeness, risk-taking, competitive aggressiveness, and autonomy dimensions. The dimension of proactiveness was dropped from the analysis as the researchers believed it was redundant in terms of the psychometric properties between the dimension of innovativeness and competitive aggressiveness.

The measure of the reliability of the respective dimensions of the EO construct revealed that the items achieved the required level for Cronbach's alpha above 0.6. Imran Hameed and Bakhtiar Ali (2011) adopted two dimensions of EO, namely, innovative and risk-taking characteristics to measure a firm's financial performance. The reliability test met the requirement of 0.6 for Cronbach's alpha suggesting that the items were valid and reliable for further analysis. The study found that both innovative and risktaking have a significant direct impact on firm financial performance. However, Krauss et al., (2005) adopted slightly different dimensions for EO when assessing EO.

The study viewed EO as consisting of seven dimensions, namely, learning orientation, achievement orientation, autonomy, orientation, competitive aggressiveness, innovation orientation, risk-taking orientation, and personal initiatives. The study added the learning orientation dimension because of the importance of the learning process of individual managers in making a decision that improves firm performance and ES as a manager's positive and negative experiences are necessary to become a successful entrepreneur. Similarly, the achievement orientation dimension was added because the study believed that entrepreneurs with higher orientation on achievement were more likely to succeed in business.

Past studies have shown that achievement-oriented entrepreneurs set high goal for themselves, are growth-oriented, enjoy challenging tasks and goals, and are more likely to succeed. While highly personal initiative entrepreneurs tend to be more proactive, self-starting, and persistent in their orientation. The measurement of the Cronbach's alpha was 0.70 suggesting that the instruments were valid and reliable (Krauss et al., 2005). The measures for EO at the organisation level were modified to assess EO for an individual. The assumption was that it is logical to examine individuals' EO (Kuratko et al., 2005) and behaviours or some proxy of those behaviours as these constructs have been successfully measured at that level and have been positively correlated with improved performance (Covin & Slevin, 1989; Lumpkin & Dess, 1996; Runyan et al., 2008).

For that purpose, the items had to be reworded to ask about these variables of interest in the environment that the individual would encounter them, rather than in an organisation. Initially the validated measures provided 96 by Lumpkin et al., (2009) were changed from "my firm" and "managers of my firm" to "I" and the "business opportunities" to "opportunities" and so on. In a different study, Pradhan and Nath (2012) assumed that factors, such as the need for achievement, the locus of control, propensity to take risk, self- confidence, innovativeness, and extraversion, were the psychological variables that influenced EO.

In their study, the reliability values for the total composite for EO was 0.84, and its dimensions ranged from 0.62 to 0.75. Esnard (2010) adopted and modified the work of Robinson et al. (1991) with four sub-scales: 1) entrepreneurial achievement attitude (affective); 2) perceptions of entrepreneurship based on feasibility, desirability, respectability, and viability (cognition); 3) personal control over failure, goals, dreams and their future (conation); and 4) judgment or consideration of entrepreneurial tasks (innovation) to measure entrepreneurial attitude orientation (EAO) with the scale ranging from 1 – strongly disagrees to 5 – strongly agrees. The reliability of Cronbach's alpha for the scale was 0.796.

More recently, Krishnan and Kamalanabhan (2013) adopted almost the same EO construct as Esnard (2010) in their study on ES and life satisfaction among women entrepreneurs in micro- enterprises in India. However, the researchers added two more sub-dimensions – business leadership and life satisfaction – into the EO construct in the assessment. For the measures for internal consistency, the Cronbach's alpha for the respective sub-dimensions showed a value of more than 0.6, which was considered acceptable for further analysis. Dawn et al., (2012) found that the dimensions of innovativeness, risk-taking, and proactiveness emerged as the three distinct factors measured by the reliability and validity of the individual EO scale. The study also revealed that the autonomy and competitive aggressiveness dimensions were weaker loaded than the other dimensions.

The findings were supported by Rauch et al., (2009) in their meta-analysis study which reported that the dimension of competitive aggressiveness and autonomy were the least studied in the EO literature, as both competitive aggressiveness and autonomy had little empirical validation. The authors also stressed that (as cited in Swoboda and Olejnik, 2016) the difference in EO measurement did not significantly change in their performance implications. A study by Krauss et al., (2005) added learning orientation, achievement orientation, and personal initiatives to the EO construct. The outcomes of the study showed that all the dimensions had a positive association with ES with personal initiative, achievement orientation, and risk-taking significantly impacting firm performance.

Similarly, Pradhan and Nath (2012) adopted psychological and social variables in examining the EO construct. However, Venkatraman (1989) identified six dimensions of strategic orientation, namely, aggressiveness, analysis, defensiveness, futurity, proactiveness, and riskiness. Lumpkin and Dess (1996) contended that EO consists of five dimensions, namely, autonomy, innovativeness, risk-taking, competitive aggressiveness, and proactivity. The summary of the EO scale and its dimensions used in the previous studies is summarised.

METHODOLOGY

Creating the subscale items for each of the five EO variables and pretesting them for reliability, convergent and discriminant validity were the first steps in the scale building process. The second phase was giving a sizable sample the updated EO scale. Ultimately, the validity and reliability of the updated EO scale were evaluated.

Step one: Entrepreneurial Orientation Instrument Development

For this study, the researcher adopted and customised questionnaires developed by Covin & Slevin (1989), and Lumpkin (1996). The questionnaire consists of three dimensions of EO: 1) Innovativeness: a tendency to engage in, and support new ideas, novelty, experimentation, and creative process, which may result in new products, services, or technological processes. 2) Risk-taking: incurring massive debt or making substantial resource commitments by seizing opportunities in the marketplace in the interests of high returns. 3) Proactiveness: taking initiatives by anticipating and pursuing new opportunities and participating in emerging markets. To measure EO at the individual level, the author reworded the items to ask about the variables of interest at the individual level rather than at the organisation level.

The validated measures 143 provided by Covin & Slevin (1989) and Lumpkin (1996) were changed from "my firm" to "I" and the "business opportunities" to "opportunities" and so on. Covin and Slevin (1989) and Lumpkin (1996) reported good internal consistency with an average Cronbach's alpha value of 0.87 for each item. The response format for each question is a 7-point interval Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The measurement of the EO questionnaire was based on the respondents perceived agreement or disagreement for each statement. The respondents were asked to circle 1 for strongly disagree and 7 for strongly agree on the EO statement from number 34 to 43.

Step two: Data Collection

In this study, after the questionnaire was developed, it was pretested by academicians and experts. In the first stage of pre-testing, two (2) academicians were selected to review the instructions, scales, questions, and the appropriateness of the questions and language of the instrument. They provided valuable feedback concerning the content validity of the instrument, such as the terms, the arrangement of the layout and language for both English and Bahasa Melayu translation. In the second stage, three (3) experts from the respective domains reviewed the survey questionnaires.

The experts were chosen based on their field and knowledge about the topic, the research method, and their willingness to help. The experts were asked to examine the survey instrument and provide feedback on the wording, content, and clarity of the questions, to give 145 comments and suggestions for improvement. Based on the feedback from the academicians and experts, the survey questionnaire was revised. In the next stage, ten entrepreneurs were picked at random to give feedback concerning the appropriateness of the research instrument. Hertzog (2008) suggested that a sample size between 10 and 15 is sufficient for a feasibility study.

In this study, the face validity was done through the pre-test to receive feedback from the respondents concerning the understandability of the research questions, wording, and time taken to complete the research questionnaire. Based on the feedback from academicians and entrepreneurs, the instrument was revised. All difficult, awkward or offensive questions were corrected. For instance, some respondents suggested that the sentences of the items should be more direct and easier to understand as it may create confusion. For instance, the respondents considered that some questions were too long and needed to be rephrased as they may be deemed cumbersome and time-consuming.

The majority of the respondents viewed the overall questionnaires as being acceptable and easy to understand. Based on the above discussion, the study content validity could be reasonably confirmed both theoretically and practically. More importantly, the construct was operationalised based on the relevant content domain from the past literature and was pretested by domain experts to confirm the content validity.

Step three: EO scale assessment

Crowl, Kaminsky, and Podell (2019) recommended a Cronbach's alpha value of 0.7 as being the most suitable to measure personality, attitudes, and opinions of the respondents. Despite 166 different authors recommending different Cronbach's alpha values, the value of 0.70 and above is generally deemed to be acceptable. Thus, this study adopted 0.7 as an acceptable value for the instrument reliability.

RESULTS

The Validity and Reliability of the Entrepreneurial Orientation Construct

In the study, the EO construct was measured by proactiveness (Proc), risk-taking (Rt), and innovativeness (Inno) dimensions. Proactiveness has four items labelled as Eo5, Eo6, and Eo7. The Risk-Taking dimensions were measured by Eo8, Eo9, and Eo10. While innovativeness was measured by Eo1, Eo2, Eo3, and Eo4. Table 1 illustrates the EO items and their descriptions. Table 1 The CFA Results for Entrepreneurial Orientation and its Sub Construct.

Internal validity: Factor analysis of the Entrepreneurial Orientation scale

The principal component factor analysis with varimax rotation was performed for the 10 items of EO. The results indicate that Bartlett's test of sphericity (Bartlett, 1954) was significant with Chi-square = 594.494 and $p < 0.001$. The KMO measuring for sampling adequacy was 0.837, and has improved above 0.5; as shown in Table 2.

From the Table 2, the value of KMO is 0.837, which exceeds the recommended value of 0.6, as suggested by Kaiser (1974). The results indicate that the data are suitable for proceeding with the factor analysis procedure. The principal component factor analysis procedure for EO was performed and extracted three distinct dimensions, with eigenvalues exceeding 1.0, as shown in Table 2. The total variance explained for the three dimensions is 69.26% (Table 3). From the analysis, Component 1 contributed 29.42% of the total variance, Component 2 explained 20.73%, and Component 3 contributed 19.09% of the total variance.

Table 1 CFA Results for Entrepreneurial Orientation and its Sub Constructs

Construct	Item	Factor Loading	CR (Above 0.6)	AVE (Above 0.5)
Entrepreneurial Orientation	Innovativeness	0.94	0.953	0.871
	Pro-activeness	0.93		
	Risk-Taking	0.93		
Innovativeness	Eo 1	0.80	0.886	0.660
	Eo 2	0.84		
	Eo 3	0.80		
	Eo 4	0.81		
Pro-activeness	Eo 5	0.82	0.842	0.640
	Eo 6	0.79		
	Eo 7	0.79		
Risk-Taking	Eo 8	0.78	0.817	0.599
	Eo 9	0.74		
	Eo 10	0.80		

Table 2 KMO and Bartlett's Test for Entrepreneurial Orientation

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Adequacy	Measure of Sampling	.837
Bartlett's Test of Sphericity	Approx. Chi-Square	594.494
	df	45
	Sig.	.000

Table 3 Total Variance Explained for Entrepreneurial Orientation Construct

Component	Initial Eigenvalues			Rotation Sums of Squared Loading		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.485	44.851	44.851	2.943	29.428	29.428
2	1.296	12.961	57.811	2.073	20.732	50.161
3	1.145	11.445	69.257	1.910	19.096	69.257

Extraction Method: Principal Component Analysis

The Rotated Component Matrix for Entrepreneurial Orientation

The rotated component matrix for the 10 items of the EO construct is illustrated in Table 3 Factor loadings are the correlation of each variable and used as the means of interpreting the role that each of the variables play in defining each factor (Hair et al., 2014). The study used the minimal loading of 0.6, as stated by Hair et al., (2014) and Awang (2014) in determining the value of the factor loading for each item. The rotated component matrix for the EO items for this study are divided into three major components and labelled with similar names to those suggested in the literature (Covin & Slevin, 1989; Lumpkin 1989). As such, Component 1 is named as innovativeness (Inno), Component 2 as proactiveness (pro), and Component 3 as risk-taking (rt). The rotated component matrix for the EO construct is shown in Table 4.

Table 4 Rotated Component Matrix for Entrepreneurial Orientation Items

	Component		
	1	2	3
I favour a strong emphasis on the marketing of tried and true products and services.	.783		
I have marketed new lines of products or service as compared to my competitors.	.799		
I have introduced changes in product or service lines, but they have been mostly of a minor nature.	.849		
I favour experimentation and original approaches to problem solving rather than imitating the methods of competitors.	.853		
I typically initiate action rather than respond to actions of my competitors.		.802	
I am usually the first business to introduce new products/services, administrative techniques and operating technologies.		.799	
I have no tendency to follow the leader in introducing new products or ideas.		.761	
I have s strong proclivity for high risk projects.			.752
I prefer to study a problem thoroughly before deploying resources to solve it.			.804
I rarely adopt a cautions,"wait-and-see" posture in order to minimize the probability of making a costly decision.			.697

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization

a. Rotation converged in 5 iterations

DISCUSSION AND CONCLUSIONS

After the EO scale creation procedure, three unique factors were produced that showed validity and reliability. The three variables that have been utilized most frequently in the EO literature to date are innovativeness, risk-taking, and pro-activeness. The proposed measures of autonomy only slightly loaded on any of the other elements and did not load on a separate component. It is not surprising that autonomy has modest factor loadings given other empirical research has not extensively supported it. It's also plausible that the bulk of these young adults' autonomy is a behaviour that evolves with age, which would add to its unreliability. Additionally, the competitive aggressiveness characteristic has not received much empirical support. Like autonomy, this might be a learned behaviour or just relevant in situations when real money and business are at stake. According to the Rauch et al. (2009) meta-analysis, only three of the 51 studies that included these two variables—competitive aggressiveness and autonomy—reported their findings. This indicates that these two factors are the least researched in the current EO literature. Proactivity, inventiveness, and taking risks were prevalent in the studies that were published.

Research has indicated that opinions of an individual's potential for entrepreneurship vary widely. Individual traits have been studied, and a lot of research has been done in that area. According to Zhao and Siebert's (2006) research, entrepreneurs tend to be less pleasant and neurotic and more extraverted, open, and conscientious than traditional managers. However, a recent meta-analysis (Zhao et al., 2010) has demonstrated that the only traits that are strongly connected with entrepreneurial ambitions and performance are conscientiousness and openness. Gender and culture appear to have some bearing on attitudes (Harris and Gibson, 2008). Thus far, no particular attempt has been made to target an individual's EO, which is a direct outcome of the trait and attitude assessments included in the original EO scale. There is clearly a need for a validated measure for EO given the abundance of research that uses EO as a variable of interest at the individual level without providing a consistent measuring tool. In order to evaluate an individual's orientation, the EO scale is a crucial step in expanding on the research conducted in these areas. Even though the recently created EO has a lot of great potential, there might be some restrictions. It is important to try and further validate the EO with Malay entrepreneurs from different age groups around the nation. One. A confirmatory factor analysis is also an essential next step as research continues to validate each of these recently created subscales and their connection to the EO construct. A longitudinal study that measures Malay entrepreneur's EO and whether or not they become entrepreneurs could be used to further investigate the EO scale and see whether it corresponds with ambitions to become an entrepreneur. Additionally, this would support the scale even more.

Using this EO test has significant practical ramifications for researchers, teachers, trainers, and career strategists. This study offers a crucial starting point for comprehending Malay entrepreneur's EO. Researchers will have the chance to investigate the relationship between these three variables and other relevant aspects. Their increased understanding of the characteristics of EO makes it an added advantage. Gaining a deeper understanding of the assets people possess that they might leverage to launch their own businesses can also be beneficial. It is also important to look at the connection between the EO and other facets of the entrepreneur' performance. An individual's EO may be taken into consideration when making a variety of decisions, including those related to their career and business ventures.

Professors could use a validated measure to help organize their teaching strategies, choose their teams, and create curricula. Teaching entrepreneurial faculty members, the EO instrument at the start of the semester will provide them a chance to better tailor the course material's content to their student body. Malaysian Government's entrepreneurship programs, instructors, and entrepreneurs would all gain from being able to support and foster each individual's entrepreneurial spirit. In order to place individuals in business programs and summer entrepreneurship camps, Malaysian Government could find the EO scale useful. For the purpose of selecting entrepreneur team members, the EO tool should also be utilized. Entrepreneur team membership should also be determined using the EO tool.

Given that entrepreneurs' effectiveness can be significantly impacted by their cohesiveness (DeRue et al., 2010), a better knowledge of entrepreneurs' EO may result in more cohesive entrepreneurial project teams.

A regular evaluation of entrepreneurs EO would aid in the examination of government programs that promote entrepreneurship. Such analysis is required, as noted by Harris and Gibson (2008), and government programs supporting entrepreneurship must "be willing to use this information to modify policies".

Future entrepreneurs, business incubators, and possible investors who are thinking about funding business ideas may find it helpful to understand EO. A scale to quantify EO will be available to government officials/lawmakers, educators and trainers, which they can use to both instruct attendees in small-business seminars, teach entrepreneurship and formulate government policies.

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