Bringing Back the Discourse on Entrepreneurial Orientation Construct: Further Clarifications on its Dimensions

Tahseen Arshi

Assistant Professor, American University of Rasal Khaimah

Paul Burns

Professor Emeritus, University of Bedfordshire

Usha Ramanathan

Professor, Nottingham Trent University

Michael Zhang

Professor, Nottingham Trent University

Abstract

The nomological validity of entrepreneurial orientation (EO) construct is re-examined as the current conceptualization lacks precise articulation of the construct and its measurement. The validity concern is caused primarily by the innovation dimension. We attempt to critically evaluate the dimensions and associated measures of EO. Data collected from 404 firms in Oman are analyzed using a two-step approach, initially conducting EFA and CFA tests, followed by structural equation modelling. The results suggest that *innovation orientation* significantly improves the clarity of the innovation dimension. The study further clarifies that EO consists of enabling measures that contributes to generation of entrepreneurial outputs in corporate firms. A comprehensive list of measures drawn from multiple scales are used to validate the five-factor EO construct.

Keywords: Entrepreneurial orientation; corporate entrepreneurship; innovation; innovation orientation; behaviour; modelling

JEL: C3 Multiple or Simultaneous Equation Models; Multiple Variables; C5 Model Evaluation, Validation, and Selection; L2 Firm Objectives, Organization, and Behaviour

1. Introduction

The definition and conceptualization of the entrepreneurial orientation (EO) construct has evolved over the last four decades. Despite the claims of conceptual stability, the EO construct has been subjected to theoretical debates, empirical scrutiny and questions regarding its validity are not fully resolved (Basso et al., 2009). Cogliser et al. (2008) highlight the theoretical inconsistencies in the conceptualization of EO, stating that over 19 different labels were used with over a dozen theoretical frameworks. Therefore, the pursuit for a more rigorous conceptualization of EO construct still remains a challenge. Both the three- and the five-factor model lacks conceptual clarity as the measures are either not well aligned to the conceptual positioning of EO construct or measures from one factor overlap with measures from other factors threatening nomological validity. In absence of clear and valid measures, understanding and designing corporate entrepreneurial activities will continue to remain a challenge. Emerging EO research has not contributed adequately in suggesting measures of corporate entrepreneurial activities and clarify EO dimensions and measures. Liu et al. (2012) have emphasized the need for developing appropriate relationship between dimensions and measures in order to establish nomological validity. Covin and Lumpkin (2011: 866) also contended that *"Empirical data can reveal the extent to which measures of EO's dimensions (or components of those dimensions) are correlated in practice"*. Our focus is specifically on innovativeness

dimension amongst the five dimensions. We contend that it is innovativeness rather than innovation that should be an input measure, and that innovation orientation (IO) is more appropriate a dimension for EO research because it aligns with all other EO dimensions, which were conceptualised as input measures. In this paper, we contribute to the understanding of the construct validity of EO, primarily through nomological, convergent and discriminant validity, by empirically testing the five-factor model of EO drawing the measures from multiple scales used in EO research. We also analyse the various definitions EO and associated dimension in an attempt to clarify the meaning associated with it and argue that these indicate to towards a conceptualization of input measures that creates an enabling entrepreneurial framework for corporate firms (Tahseen, 2016).

One might argue that the discourse on EO has moved past it conceptualization. In particular, Covin and Lumpkin (2011: 866) cautioned that *… "too much EO research has proffered responses to the question of how many dimensions EO has based on the results of data-collection efforts. EO's dimensionality is fundamentally a theoretical matter..."* However, taking heed from Basso et al. (2009), we reckon that lack of clarity in theoretical conceptualization may lead to incorrect empirical outcomes. We, therefore, primarily aim to clarify the conceptualization of EO in the Omani context and does not intend to make strong theoretical contribution, but rather an empirical one.

The original conceptualization of the EO construct enjoys a rich heritage of academic development. Miller and Friesen (1977) were amongst a small number of researchers who paid attention to the phenomenon of firm level entrepreneurship, although they did not explicitly use the term EO in their writing (Covin and Wales, 2012). Thus the origins of the EO construct can be traced back to Miller and Friesen (1977, 1980), Miller (1983) and Covin and Slevin (1989, 1990, 1991) who conceptualized the three

dimensions of firm level entrepreneurship, namely; proactiveness, risk taking and innovation. Covin and Slevin (1991, p.21) argued that "*entrepreneurial orientation could best be measured by summing together the extent to which top managers are inclined to take business-related risks (the risk-taking dimension), to favour change and innovation in order to obtain a competitive advantage for their firm (the innovation dimension), and to compete aggressively with other firms (the proactiveness dimension)*".

A common theme in the earlier EO conceptualization constituted primarily the use of these dimensions. However, as the earlier emphasis of EO was on the strategic posture (Miller, 1983), Covin and Slevin (1989) emphasised the term 'orientation'. The term orientation was used to indicate that firm-level entrepreneurship was not limited to strategic posturing but also involved behaviour and action. Taking it further Lumpkin and Dess (1996a) added two more dimensions, namely competitive aggressiveness and autonomy. This attempt to broaden the scope of EO was also echoed in the definition by Lumpkin and Dess (1996a, pp.136-137) who defined EO as *"*involving the *intentions and actions of key players functioning in a dynamic generative process aimed at new venture creation"*. They (ibid. 136) emphasized that it is the entrepreneurial *"process, practices and decision making activities"* that enable firms to behave entrepreneurially.

Based on these conceptualizations and definitions we argue that EO dimensions do not represent outcome measures, rather they represent input measures such as behaviour or organizational capabilities leading to entrepreneurial outcomes (Tahseen, 2017). This is further confirmed by Rauch et al. (2009) who through a meta-study reported that 134 studies have considered EO factors as input measures that influence firm performance. Similarly, Miller (2011) also reported that 67 publications

represented EO as input measures influencing firm's performance. The conceptual confusion arises primarily from the innovation or innovativeness dimension of EO. Covin and Slevin's (2012) widely used scale for innovativeness includes the question: *'How many new lines of products or services has your firm marketed in the past five years (or since its establishment)?'* Respondents to this question are asked to rate firstly the number of innovations (low/high) and secondly their scale (minor/dramatic). Both these measures of innovativeness are outcome measures of innovation, rather than behavioural input measures of innovativeness. Any relationship between entrepreneurial orientation and the improved financial performance observed by Rauch et al. (2009) is therefore, at least in part, attributable to the volume and frequency of innovation.

In recent years a few studies have attempted to bring clarity to EO, nonetheless they are limited to refinement of its measures rather than clarifying the construct itself. Prominent among them were those by Green et al. (2008), Anderson et al. (2009) and George and Marino (2011). The new stream of research exhausted itself with no new research directions. It led Covin and Wales (2012) to comment that the studies on EO has reached a saturation point with most of studies focused on evaluating the effect of EO on firm's performance. Wiklund and Shepherd (2011) also question future research directions related to EO research. Covin and Wales (2012) and Covin and Lumpkin (2011) called for further research on the EO construct, its dimensions, refinement and validation of its measurement scale. We answer this call to contribute empirically to EO research arguing that the EO measures should be seen in the light of an enabling framework that produces entrepreneurial outputs in corporate firms.

The paper is organised as follows: following the introduction, Section 2 provides a detailed review of current literature to support the clarification of the innovativeness

dimension of EO. In Section 3 we develop research hypotheses to be tested using the proposed research framework. Section 4 describes our adopted methods and empirical data, followed by presenting the results in Section 5. We discuss the results against the preceding literature review in Section 6. Section 7 concludes the paper with the contributions, limitations of our current work and future research directions.

2. Validity and Dimensionality of EO Construct

Entrepreneurial orientation is one of the widely discussed constructs in the extant literature often associated with corporate entrepreneurship (Covin et al. 2006; Wales et al. 2013). In an attempt to clarify the conceptual positioning of EO, Lumpkin and Dess (1996a; 1996b) argued that EO, similar to any other entrepreneurial objective, is primarily concerned with new entry strategies. This significant deviation from the original conceptualization of EO reflects in their statement *"EO refers to the processes, practices and decision-making activities that lead to new entry* (Lumpkin and Dess, 1996a p 137). The reformulation of the EO construct meant that instead of defining entrepreneurial orientation using the three original dimensions, the repositioned five dimensions became a distinct act of entrepreneurship- a process through which entrepreneurial outcomes can be achieved.

Further, challenging its nomological validity and dimensionality, Lumpkin and Dess (1996a; 1996b) not only added two new dimensions to EO, but also pointed out that its dimensions are independent of each other. Lumpkin and Dess, (1996a, p 151) argued that "*EO dimensions may occur in different combinations depending on the type of opportunities a firm pursues"*. They wrote *"firms employing the acquisitive type of entrepreneurship achieve new entry into markets by purchasing existing firms. This approach requires little or no innovativeness and, if the acquired firm is an established business, may involve relatively low risk."* (1996a, p 150). Subsequently, Lumpkin and

Dess, (1996b) concluded that the construct is likely face operationalization and measurement problems and hence recommended that the construct should be captured empirically. Basso et al. (2009) pointed that this new conceptualization weakened the validity of EO construct as each dimension was considered as a means to new entry independent of each other. They (ibid) further contended that this significant departure from the original conceptualization meant that EO became a means to an end and the performance 'new entry' is more important than the performance of the firm. This divergence from the original conceptualization had implications on the orientation of its dimensions, primary among them being innovation dimension. Innovation, as originally conceptualised represented an outcome based orientation and therefore did not match the new diluted EO construct. Conversely, innovativeness as an important dimension of EO constituted an important means to pursue new opportunities (Basso et al. 2009).

3. Innovation and innovativeness within EO research

The dilution of the EO construct meant that the nomological validity of the EO construct was compromised. If new entry can be achieved without innovation dimension, it did not stand up to the claim that innovation is a primary dimension of EO and the proposition that without innovation there is no EO, as observed by Lumpkin and Dess (1996a). Therefore, question of the dimensionality of the EO construct remains unanswered and the confusion on innovation/innovativeness continues to threaten its validity. The confusion is sparked by lack of clarity of *innovation* dimension*,* which is also alternatively termed as innovativeness*.* Although innovation indicates outcome measure, innovativeness implied input or behavioural measure. This is illustrated in Table 1.

Table 1: Inconsistent conceptualization of innovation dimension within EO framework

Authors	Conceptualization	Orientation	Explanation
Lumpkin and Dess (1996a, 1996b)	Innovativeness	Behavioural/ input measure	New opportunities and unique solutions through creativity and experimentation.
Garcia and Calantone (2002)	Innovativeness	Behavioural/ input measure	The propensity for a firm to develop new ideas to experiment and use creative processes for innovation.
Van de Ven et al. (2008)	Innovativeness	Behavioural/ input measure	The process of developing and implementing a new idea.
Covin and Lumpkin (2011), Andersén (2010), Collis and Montgomery (2008), and Liu et al. (2014)	Innovativeness	Behavioural/ Input measure	resources and capabilities, which stimulate innovation in large firms
Preda (2013)	Innovativeness	Behavioural/ input measure	strategic innovation
Miller and Friesen (1977, 1980), Miller (1983)	Innovation	Outcome measure	product and market innovation
Covin and Slevin (1989, 1991), Covin et al. (2006)	Innovation	Outcome measure	product and technological innovation
Chadwick et al. (2008)	Innovation	Outcome measure	extensiveness and frequency of product innovation and technological leadership
Schillo (2011)	Innovation	Outcome measure	technological leadership
Linton and Kask (2017)	Innovation	Outcome measure	product and market differentiation

Dziallas and Blind (2019) clarify that ex-ante indicators of innovation are critical in generating innovation outputs. Idea generation and innovation management stages comprise of ex-ante measures of innovation, while market exploration and exploitation

constitute ex-post measures of innovation. Dziallas & Blind (2019) further point that these ex-ante indicators of innovation are not well represented in the literature. We find that measures are indicative of innovation orientation as conceptualised by Siguaw et al. (2006).

4. Research Gap

We have identified two research gaps in the innovativeness/innovation dimension. Firstly, there are inconsistencies related to the use of the term. Secondly, the operationalization of innovativeness/innovation dimension in various studies does not meet its intended conceptualization and lacks clarity, especially its alignment with entrepreneurial orientation construct which itself indicates behavioural orientation. Further, Covin and Wales (2012) conclude that it is essential for researchers to be explicit and consistent in their choice of conceptualization of EO dimensions and input and output measures should not be mixed. Basso et al. (2009) opined that any attempt to operationalize the EO dimensions would be futile until a formal coherence of EO construct is achieved.

The initial articulation of the EO construct and subsequent clarifications of the construct indicates that earlier researchers focused more on innovativeness than innovation. We found more support in the literature that supported innovativeness as a behavioural and input measure rather than innovation as an outcome measure. Covin and Lumpkin (2011) and Andersén (2010) relate innovativeness to resources and capability development. Such measures of innovativeness would usually result in innovation outputs. Equally important is the motivation of creativity in organizations (Amabile et al., 1997). Isaksen and Ekvall (2010) argue that organizational climate, which contains measures of innovativeness, can support creativity and innovation.

Isaksen (2007) explains some of the measures within an organizational climate that improves innovativeness are recurring patterns of innovative behaviour and positive attitude towards creativity.

Based on the on-going discussions from the literature, we suggest that innovation orientation (IO) can be introduced from the innovation literature to the research of EO. IO is in line with the behavioural orientation of firm-level entrepreneurship, and encompasses resource and capability measures. Some scholars have recently defined and operationalized this concept (Siguaw et al., 2006; Simpson et al., 2006; Stock and Zacharias, 2011). Siguaw et al. (2006, p.560 italic original) define IO as "*composed of a learning philosophy, strategic direction, and transformational beliefs that, in turn, guide and direct all organizational strategies and actions…to promote innovative thinking and facilitate successful development, evolution, and execution of innovations*".

In this line of argument, we develop five research hypotheses in the next section.

5. Hypothesis development and research framework

Hypothesis is developed for each of the dimensions of the EO construct as shown in the research framework (figure 1). Hypotheses testing framework is based on the requirements of structure equation modelling (SEM) tests. According to Kline (2010 p 210) "*the aim of hypothesis testing using SEM is not to reject the null hypothesis but alternatively to accept-support the research hypothesis and show that the model is consistent with the population"*.

5.1 Innovation orientation

Innovation orientation, by the above-mentioned definition, is characterized through development of capabilities, support systems, strategies and a climate for creativity

and innovation. In depicting the IO model Siguaw et al. (2006) propose that organizational learning philosophy comprises organizational competences which are further categorized into five attributes: resource allocation, technology focus, employee focus, operations focus, and market focus. These attributes are in essence equivalent to the attributes of innovativeness used in the EO measurement. The dimension of innovativeness implying 'capability to innovate' has been used by many researchers in EO research. These include new opportunities and unique solutions through creativity and experimentation (Lumpkin and Dess, 1996a), the propensity for a firm to develop new ideas to experiment and use creative processes for innovation (Garcia and Calantone, 2002), the process of developing and implementing a new idea (Van de Ven et al., 2008), and resources and capabilities which stimulate innovation in large firms (Covin and Lumpkin, 2011). Therefore, we adopt the concept of IO and develop it as a dimension of EO in the following hypothesis:

H_1: Innovation Orientation consists of input measures and enables creation of innovation capability in entrepreneurial firms.

5.2 Risk Taking and Risk Management

Risk taking within the EO framework was initially explained as risky strategies that managers are willing to take as part of the new entry process and innovation (Miller and Friesen, 1982). Memili et al. (2010) argued risk taking is the driving force behind corporate entrepreneurship. Therefore, risk taking dimension is closely related to innovation (Hoonsopon and Ruenrom, 2012). Tang et al. (2014) observed that firms which take risks are known to achieve superior organizational performance, which is usually possible through innovation. Risk taking is the willingness of corporate managers to commit resources to risky propositions, which have the potential to fail in uncertain futures (Eggers et al., 2013). Conceptual development of the risk-taking

dimension includes measures such as the ability of firms to differentiate between calculated and random risks, make decisions in uncertain circumstances and risk assessments related to new entry. Risky propositions involve venturing into new and unknown markets and drawing large borrowings to enhance returns (Baker and Sinkula, 2009). Therefore, risk taking is focused on business venturing and risky strategies. However, risk dimension is not limited to risk taking but also risk management. Dess and Lumpkin (2005) pointed that risk dimension is also characterised through management of risks through calculated risk taking and resource commitments in uncertain environments. Further, Blanco et al. (2014) suggested that risk management is essential in uncertain environments, which can be managed through risk policies, methodologies and structure to monitor risks. Based on the review of the literature the following hypothesis is framed:

H_2: Risk taking reflect input measures of EO focused on risk management pertaining to corporate entrepreneurial activities.

5.3 Proactiveness

Proactiveness is an important dimension of EO and is linked to competitive advantage, since it provides the first-mover advantage to firms in the market place (Wang et al., 2015). This dimension describes the characteristic of entrepreneurial actions in pursuit of new opportunities for future growth. The measures usually indicate opportunities for new products or technologies, emerging markets and consumer demand that is accompanied by innovation. Nieto et al. (2013) found the proactiveness dimension to be associated with superior firm performance. Without proactiveness, organizations would not be able to effectively compete in the market and exploit innovation. Information search, alertness, networking, anticipating demand and prior knowledge of products and markets are key themes associated with the proactiveness dimension

(Lumpkin and Dess, 2001). Thus proactiveness is reflected as ability to deal with change, lead markets and competition, develop strategic alliances and seek opportunities for innovation. Based on the review of the literature, which indicated the proactive nature of this dimension is in line with the enabling framework of EO, the following hypothesis is framed:

H_3: Proactiveness comprises of input measures of EO pertaining to opportunity identification and exploitation.

5.4 Competitive Aggressiveness

Competitive aggressiveness refers to the firm's strategic posture of intensely and directly engaging with competitors. The measures constitute elements of strategy design facilitating corporate entrepreneurial activities. This are manifested through pursuing new and existing target markets, on various aspects such as price competition, use of unconventional tactics and innovation (Grimm et al, 2006). The multiplicity of competitive strategies associated with speed and frequency are also associated with the competitive aggressiveness dimension (Lumpkin and Dess, 2001). This dimension supports the existing dimensions of innovation orientation, risk taking and proactiveness. However, the effectiveness of these three dimensions will to a large extent depend on the capability of firms to compete in the market. The importance of the competitive aggressiveness dimension lies in the influences it has on the firm's ability to differentiate itself through a strong offensive posture and aggressively and frequently entering markets identified or dominated by rivals. Therefore, Blackford (2014) noted that aggressively promoting innovative products and services is a sign of competitive aggressiveness and hence this dimension is also closely related to innovation. The measures associated with this dimension also indicates behavioural orientation and suggest an enabling framework of

entrepreneurship. Based on the review of the literature the following hypothesis is framed:

H_4: Competitive aggressiveness reflect input measures of EO focused on competitive posturing and strategy design.

5.5 Internal autonomy

Internal autonomy (hereafter autonomy will be used) clearly indicates that it is a key element in the enabling framework within EO. The autonomy dimension was added to the EO construct to facilitate the achievement of other EO dimensions and the overall entrepreneurial orientation of the firm. Autonomy is about independent spirit, which is a key to unlocking entrepreneurial potential (Lumpkin and Dess, 1996b). It specifically refers to the independent action of an individual or a team in bringing forward an idea or a vision and carrying it through to completion, without being held back by overly stringent organizational constraints (Burns, 2013). According to Lumpkin et al. (2009), the autonomy dimension improves the ability of the firms towards decision-making, delegation and empowerment. In uncertain environments managers are required to use their cognitive abilities and therefore there is a greater need for autonomy. In the absence of autonomy, firms would not be able to innovate, take risks, identify opportunities and compete aggressively in the market. Based on the review of the literature the following hypothesis is framed:

H_5: Autonomy comprises of input measures of EO focused on promoting and fostering entrepreneurial activities across the corporate firm.

5.6 Research Framework

We develop a research framework to test the conceptualization of EO within the Omani context and test the appropriateness of its measures. Here, we test whether all five dimensions appropriately reflect the second order EO construct and the measures are

reflective of their dimensions. Whereas only a small number of researchers adopt a formative construction of EO (Anderson et al. 2015), the majority of the authors in EO literature have recommended reflective construction of EO.

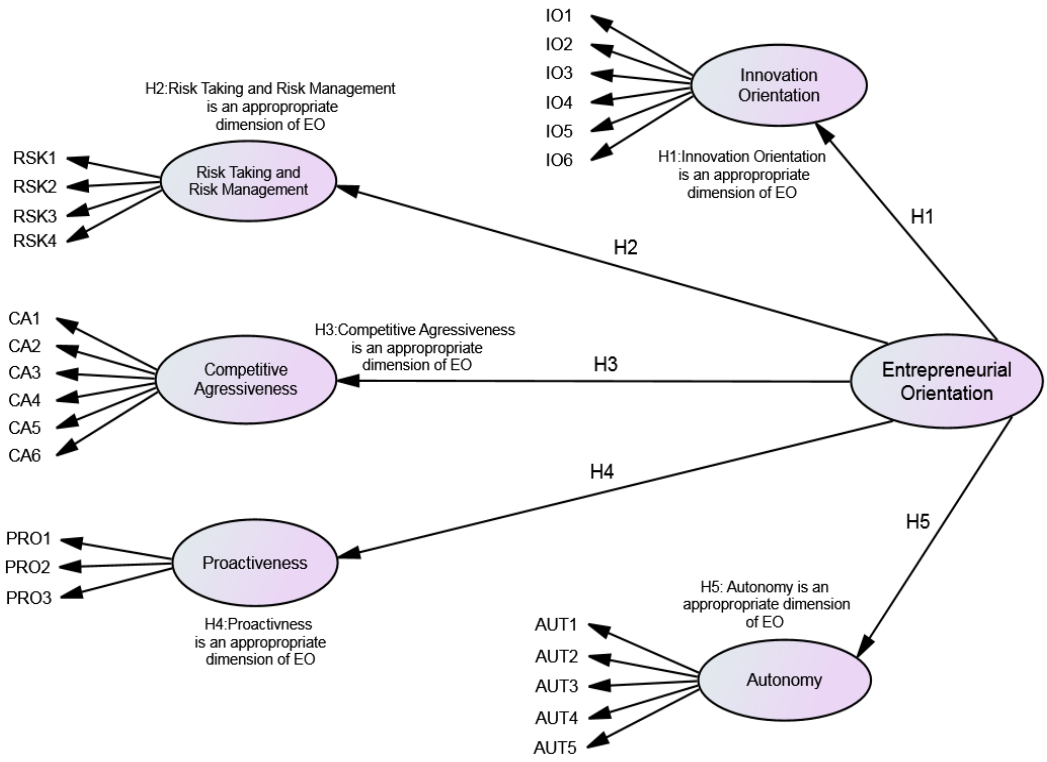


Figure 1: Research Framework of EO

This study, in line with those by Covin and Wales (2012), Rauch et al. (2009) and Wales et al. (2013) has conceptualized EO as a second order reflective construct considering the strength of the nomological network and its intensively investigated relationship with other constructs such as new entry and firm performance. The objective of the research framework is to test and establish the conceptual integrity of EO with the five factor model. It further aims to test the hypothesized relationships and nature of EO dimensions, particularly innovation orientation.

6. Research approach

As suggested by Weber (2004), research approaches in this study were chosen that best fitted the objectives of the research. Development and testing of measures, ensuring reliability, validity, and generalizability and understanding patterns of relationships were the key features in this study. Therefore, a dominant quantitative research approach influenced by a realist research stance was adopted for this study (Bryman and Bell, 2015, Fisher, 204).

6.1 Measures and questionnaire development

The EO scale has witnessed a number of modifications and refinements since the 9-item scale was originally proposed by Covin and Slevin (1989). Wales et al.'s (2013) study observed that 80% of prior studies used Covin and Slevin's (1989) conceptualization. The main objective of these refinements were related to depth versus breadth issues. Some researchers refined the measures of each of the dimensions, while other developed extensive measures for one dimension.

Table 2: Major sources from which the measures in this study were drawn

Existing EO Scales	Measures adopted
Original Entrepreneurial Orientation (EO) Scale (Covin and Slevin 1986, 1989) EO Modified Scale (Morris and Sexton, 1996) ENTRESCALE (Knight, 1997)	**3**
Innovation Capacity Model (Hurley and Hult, 1998), Innovation Capability-Rigidity Paradox (Atuahene-Gima, 2005) Organizational Climate Models, (Amabile, 1996; Isaksan et al., 1999)	**2**
Innovation Orientation Model (Siguaw et al., 2006; Simpson et al., 2006; Stock and Zacharias, 2011)	**4**
Corporate Entrepreneurship Audit (CEA) Scale (Burns, 2013) Autonomy Scale (Lumpkin et al., 2009)	**5**
Opportunity Recognition Scale (Ardichvili et al., 2003)	**3**
Competitive Aggressiveness Model (Ferrier, 2002)	**6**
Risk taking and Risk Management Models (Dess and Lumpkin, 2005) Nishimura (2015) and Bekefi et al. (2008	**5**
Total	**28**

The 28 measures used in this study were adapted from a number of scales that were proposed in the literature for the measurement of EO dimensions. The sources of the measures used in this study are shown in Table 2.

6.2 Sampling

The main motive for deciding the sampling strategy was to enhance the efficiency and validity of research (Morse and Niehaus, 2009). A mix of purposive and random sampling was adopted. One respondent was chosen from each of the corporate firm in the sample. A larger sample size enhanced the representativeness of the population, while selecting respondents who had knowledge about the research phenomenon, enhanced the quality and validity (Cresswell and Clark, 2011). Sample firms were chosen based on the International Standard Industrial Classification, available with Oman Chamber of Commerce and Industry (OCCI). The sample characteristics are shown in appendix 4.

6.3 Data Collection and analysis

Questionnaires were distributed to only one senior-level manager in each of the chosen corporate firm. Kuratko et al. (2015) have recommended that while studying entrepreneurship at corporate level, top managers are model ideal sample for data collection. A total of 615 questionnaires was sent through the Oman chamber of commerce and industry. A good response rate of 66.9 % was witnessed as 412 questionnaires were returned, out of which 404 were found fit for analysis. To analyse the data, we developed measurement and structural models as two distinct sub-models in model building process. Anderson and Gerbing (1992) argued that measurement modelling is an approach through which the observed measures within the construct are allowed to correlate freely, proving higher level of validity to the

dimensions and measures. The structural model in the second step helps to judge the formative or reflective nature of the construct and its relationship with its dimensions improving its nomological validity (Liu et al., 2012). It also enables assessment of both convergent and discriminant validity, which overall establishes its construct validity (Hu and Bentler, 1999).

7. Results

Homoscedasticity was checked using Tabachnik and Fidell's (2007) and Pallant's (2005) recommendations through Levene's test. Tests on homogeneity of variances indicated that the sample across all the sectors were homogeneous (indicated by Levene statistic >.05 and single column Tukey HSD) on all demographic factors such as industry distribution, number of years in the company, number of years in the industry, and total number of staff. To rule out multi-collinearity, variance inflationary factor (VIF) scores were checked. If there is multi-collinearity, VIF scores would show how much variance is inflated (O'Brien, 2007). The VIF values were <2.5, which is desirable as suggested by Tabachnik and Fidell (2007). The reliability test of the interval scaled data for the factorial structure of EO measures showed good internal consistency as the Cronbach's alpha values were >.70 (Table 3).

EFA was employed to understand shared variance of measured variables, which is believed to be attributable to a factor or latent construct (Suhr, 2006). At the same time EFA was employed to identify the complex interrelationships among groups of items which are part of a unified construct (Russell, 2002). A total of 28 items were subjected to principal component analysis with oblique method using promax rotation to ensure that the items converged correctly onto their factors. Considering the cut-off value >.4 that was chosen for this study, the loadings indicated that the factor structure with

relevant items is valid. A total of 25 items were retained after EFA. The Cattell scree plot was also confirmed the validity of the 25 items. The pattern matrix, which is an output of promax rotation showed the factorial structure of the EO factors and the representative items.

7.1 Construct Validity

The nomological validity, although not tested directly, was implied through the reflective construction of second order EO construct, which is in line with earlier conceptualizations evident in EO literature. Zhang et al. (2014) in particular supported reflective measurement of five dimensional EO construct and treated EO as a behavioural construct. The theoretical models are often complex involving multiple antecedents and outcome variables and therefore assessment of its nomological network helps in understanding the nature of dimensions and measures (Hagger et al, 2017). Since this study, in line with the new stream of research, have established that EO contains behavioural measures, its relationship with other constructs such as 'new entry' and 'firm performance' becomes causal in nature (Liu et al 2012). Further, the results indicated convergent validity as each item loaded significantly on its respective first-order factor and subsequently the higher-order construct. The factor loadings displayed no cross-loading to any other first-order factor of the same construct. The average factor loadings and the AVE scores met the threshold standards with scores for average loadings >.7, while the AVE for the study constructs and their respective first-order factors were >0.5 indicating convergent validity. The AVE comparative scores were higher than its shared variance scores which indicated presence of discriminant validity. The method to assess discriminant validity as proposed by Fornell and Larcker (1981) was confirmed by Hair et al. (2006, p. 778) who noted that "*the variance extracted estimates should be greater than the squared correlation*

estimate." Based on this method, the table in appendix 1 shows presence of convergent and discriminant validity. Exploratory factor analysis (EFA) was conducted to identify the underlying factor structure of both EO construct. The possible factor structure needed to be verified and to meet this objective confirmatory factor analysis (CFA) was conducted. CFA was conducted to confirm whether the factors reflect the items, by feeding the exact number of items identified through EFA.

Table 3: Confirmatory Factor Analysis on all five factors

Dimensions	Factor Loadings	Total Variance Explained	Kaiser-Meyer-Okine Measure	Bartlett's Test	Reliability (Cronbach Alpha)
Innovation Orientation		59.659	.826	555.022	.78
IO1	.662				
IO2	.776				
IO3	.689				
IO4	.700				
IO5	.661				
IO6	.636				
Risk Taking and Risk Management		78.147	.723	197.081	.76
	.845				
RSK1	.847				
RSK2	.826				
RSK3	.794				
RSK4					
Competitive Aggressiveness		47.041	.830	539.948	.72
	.680				
CA1	.786				
CA2	.740				
CA3	.711				
CA4	.576				
CA5	.594				
CA6					
Proactiveness		58.531	.683	156.123	.70
PRO1	.756				
PRO2	.648				
PRO3	.596				
Autonomy		44.435	.729	297.489	.71
AUT1	.695				
AUT2	.688				
AUT3	.697.				
AUT4	.581				
AUT5	.665				

7.1.1 Innovation Orientation (IO)

The first factor ‘innovation orientation’ showed a KMO score of .82 and confirmed that the 6 items’ convergence on the IO factor during EFA is valid and the 6 items (IO1–IO6) together account for almost 60% variance (Table 3). The factor loadings were >.6 indicating validity of the items explaining this EO dimension.

7.1.2 Risk Taking and Risk Management

The factor ‘risk taking and risk management’ showed a KMO score of .72, indicating sampling adequacy. The results of CFA confirmed that the 4 items’ convergence on RSK factor during EFA are valid and the 4 items (RSK1 and RSK4) together explain almost 78% variance. The factor loadings were >.8 indicating validity of the items explaining this EO dimension.

7.1.3 Competitive Aggressiveness (CA)

The factor ‘competitive aggressiveness’ showed a KMO score of .83, indicating sampling adequacy. The results of CFA confirmed that the 6 items’ convergence on CA factor during EFA is valid and the 6 items (CA1–CA6) together explain almost 47% variance. The factor loadings were >.5 indicating validity of the items explaining this EO dimension.

7.1.4 Proactiveness (PRO)

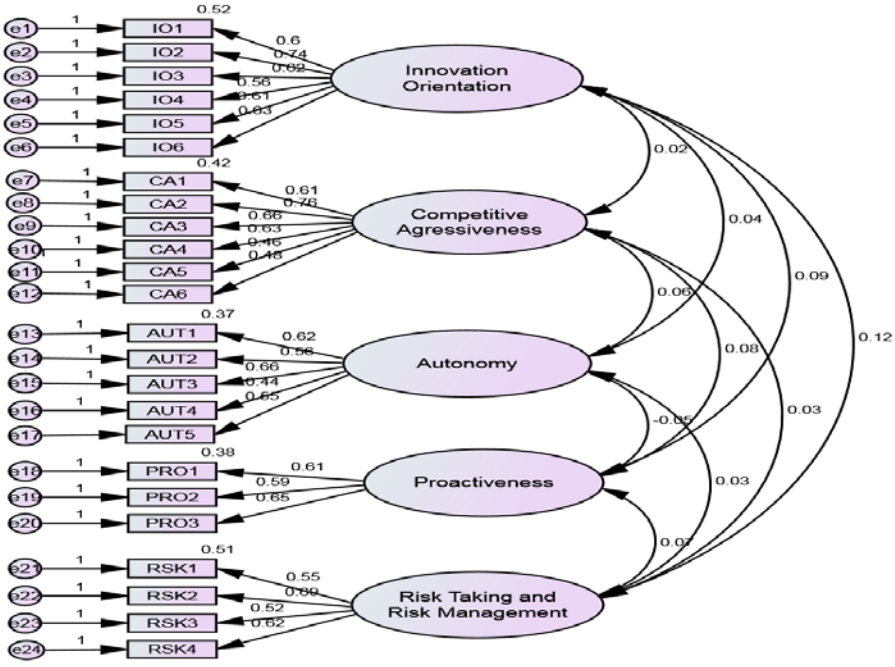
The ‘proactiveness’ factors showed a KMO score of .68, indicating sampling adequacy. The results of CFA confirmed that the 3 items’ convergence on PRO factor during EFA is valid and the 3 items (PRO1–PRO3) together explain almost 59% variance. The factor loadings were >.7 indicating validity of the items explaining this EO dimension.

7.1.5 Autonomy (AUT)

The ‘autonomy’ factor showed a KMO score of .72 indicating sampling adequacy. The results of CFA confirmed that the 5 items’ convergence on AUT factor during EFA is valid and the 5 items (AUT1–AUT5) together explain almost 44% variance. The factor loadings were >.5 indicating validity of the items explaining this EO dimension.

7.2 Model Development

A measurement model was developed to test the EO construct and test the reflective nature of its dimensions and measures. It showed the covariance values between the latent variables and regression values for the indicators situated to their factor structures as shown in Figure 2.



CMINDF 1.324; GFI .957; AGFI .921; CFI .964; RMSEA .028

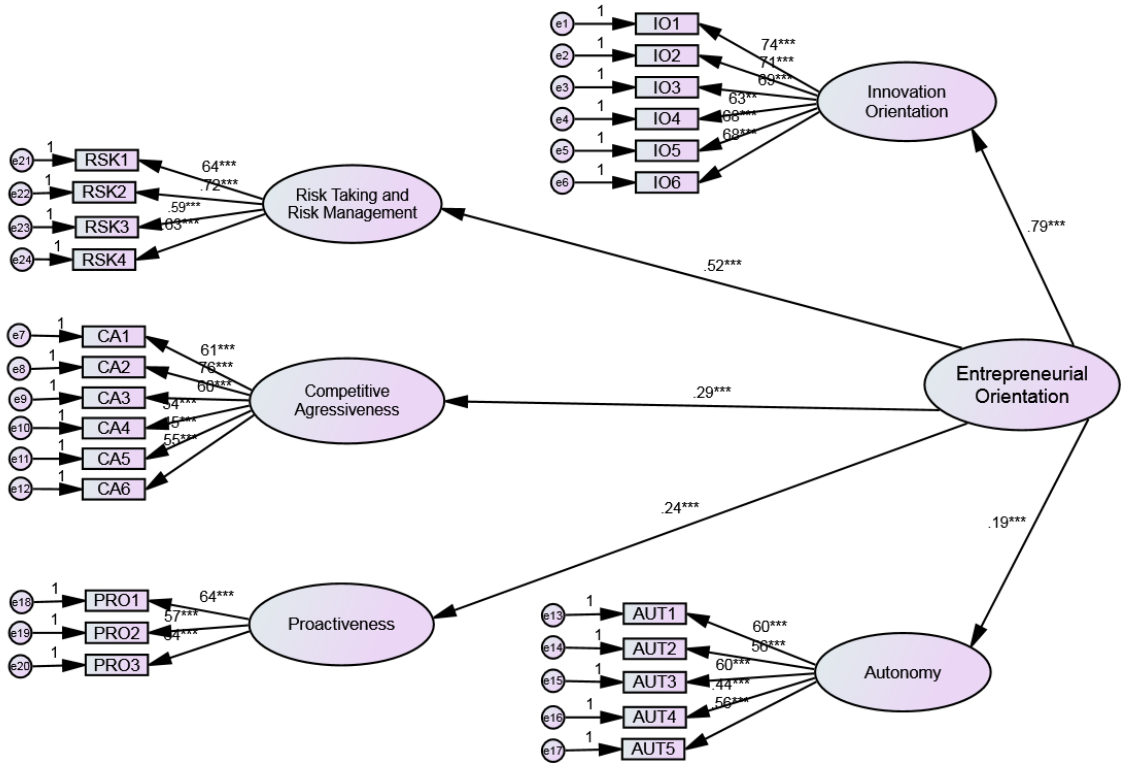
Figure 2: Measurement Model – EO construct

Measurement models have the ability to show covariance values (or correlation between latent variables) and account for measurement errors. SPSS Amos (version 22) was used for testing the measurement and subsequently structural or path model.

The fit indices for the model were all above the threshold standards with CMINDF 1.324. The x^2 statistic is very sensitive to sample size and is no longer relied upon as a basis for acceptance or rejection (Schlermelleh-Engel et al. 2003, Vandenberg 2006). Therefore, we have used a number of goodness of fit measures. GFI and AGFI values in the measurement model were .937 and .921, respectively, which showed that the values were above the desired level. Comparative fit index (CFI) is a very reliable and most often reported index as it is least affected by sample size. The CFI value in the above measurement model was .954, which indicates a good fitting model. Another commonly reported fit index is the root mean square of approximation (RMSEA), which estimates the lack of fit in compared (perfect) and saturated models. RMSEA <.05, according to Hu and Bentler (1999) is indicative of a good fitting model The RMSEA value in the measurement model in figure was .028, which was as per the desired level. The standardized regression weights were >. 4 and all the measures demonstrated the desired significance ($p < .001$). These covariance parameters shown in above figure are quite low ranging from .00 to .11, showing evidence of the discriminant validity of the measures.

Once the measurement model established the validity of the items, the next step was to test the causal path in the model and confirm whether the hypothesized factors and their measures indeed represent EO construct in this study. This was done through path diagram, which is the method of depicting that the second-order construct of EO is reflected through the factorial structures of first-order factors. The standardised regression weights were >.40 and found to be significant (Appendix 2). The path

diagram in figure 3 shows that all the coefficients are standardized means and they all use the same scale to quantify the construct.



CMINDF 1.302 GFI .950 AGFI .917 CFI.957 RMSEA .027

Figure 3: Second Order Structural Model – Entrepreneurial Orientation

The structural model in figure 3 shows that the second-order EO consists of five first-order factors namely, innovation orientation, risk taking and risk management, competitive aggressiveness, proactiveness and autonomy were found to be appropriate measure of EO. Among all the factors, 'IO' with the highest coefficient value of .79 was found to be a significant measure of the EO construct (Figure 3). The IO factor also showed highest reliability score of .78 (table 3).

Risk taking and risk management was a significant measure of EO showing a coefficient value of .52, while proactiveness and competitive aggressiveness and autonomy were also found to be significant measures of EO showing coefficient values of .24 and .29 and .19 respectively. The final pool of items (measures) are shown in Appendix 3.

Table 4: Results of Hypothesis Testing

Hypotheses	Path coefficient	Significance	Status
H_1: Innovation Orientation consists of input measures and enables creation of innovation capability in entrepreneurial firms.	.79***	p <.001	Accepted
H_2: Risk taking reflect an input measures of EO focused on risk management pertaining to corporate entrepreneurial activities.	.52***	p <.001	Accepted
H_3: Proactiveness comprises of input measures of EO pertaining to opportunity identification and exploitation.	.24***	p <.001	Accepted
H_4: Competitive aggressiveness reflect input measures of EO focused on competitive posturing and strategy design.	29***	p <.001	Accepted
H_5: Autonomy comprises of input measures of EO focused on promoting and fostering entrepreneurial activities across the corporate firm.	.19***	p <.001	Accepted

The absolute fit indices for the model were all above the required standards. CMIN/DF showed a value of 1.302, while GFI and AGFI values were .930 and .917, respectively, which were at the desired level. The CFI value in the model was .947, while the RMSEA value in this model was .027, which was according to the recommended level.

Based on the findings, all the hypotheses were accepted. The results of hypothesis testing are shown in Table 4.

8. Discussion

This study confirmed that EO is a second-order construct consisting of five first-order factors. Hughes and Morgan (2007) had reported that most of the studies on EO had only examined three out of five factors and hence the EO scales were incomplete. The five factors with reflective measures, are in line with behavioural orientation of EO construct and establishes the nomological validity of the EO construct. Lee and Chu's (2011) findings supported the claim that EO is a resource and capability developing framework that provides competitive advantage to firms. This is also in line with Schillo (2011), Vora and Polley (2012), Rauch et al. (2009) and Hosseini (2012) who reported EO as an enabling framework. Our study supports unidimensional measurement of EO construct as all EO dimensions and their measures were found to be behavioural measures and synergistically creates an enabling framework that characterises entrepreneurial firms. We agree with Lumpkin and Dess (1996a; 1996b) that the dimensions of EO are a means to an end, enabling entrepreneurial outcomes. Although, they (ibid) considered each dimension as having varying levels of effect on new entry, we contend that EO is more effective when there is a synergistic effect, although the contribution of each dimension may vary. In a similar study, conducted in Omani corporate sector, Tahseen and Burns (2018) found the synergistic effect of

entrepreneurial dimensions more forceful compared to individual dimension due the complementary effect of the dimensions.

8.1 Innovation orientation

Through this study, we clarify that conceptualization of innovation dimension within the EO construct relates to input measures, which enhances the readiness of an entrepreneurial organization to innovate. Innovation orientation is in line with the behavioural conceptualization of EO in general and innovativeness in particular. Kundu and Katz (2003) believe that intention to be innovative is an important element of innovation orientation, which is similar to 'willingness' and 'tendency' labels emphasized in EO studies by Miller & Friesen (1982) and Garcia and Calantone (2002). Further, Basso et al. (2009, p. 316) argued that original conceptualization of *"posture may also refer to the military notion of capability in terms of personnel and materiel that affect the capacity".* IO dimension broadly incorporates behavioural, capability and process measures that ideally represents innovation within EO framework as envisioned by Siguaw et al. (2006). A culture of creativity and innovation is an appropriate reflection of innovation orientation [IO1]. In such a culture, ideas and innovation flourish and there is willingness to innovate. This is also confirmed in the definitions by Garcia and Calantone (2002, p. 113) who defined it as "propensity of the firms to innovate and develop new ideas", which was similar to the definition of Lumpkin and Dess (1996a, p. 142) who conceptualized it as *"a willingness to depart from existing technologies or practices".* Both Hogan and Coote (2014) and Sadegh and Ataei (2012) confirmed that a culture of creativity and innovation is reflected in innovative behaviour of employees and leads to innovation. According to Martins and Martins (2002) it is characterised through idea management, rewards, mistake handling and trust. Similarly, Büschgens et al. (2013) pointed out that a culture of

creativity and innovation is characterised through ideation aspects arising from organizational values and control and coordination structures in the organization, both of which lead to innovation.

With such innovative orientation, the management actively seeks ideas that can be transformed into innovation [IO2.] Forssén (2001) opined that since employees are immersed in their work environments, they are in a better position to generate creative ideas and employee-driven ideas promote participation, engagement and innovation. Similarly, Høyrup (2012) contended that employees, especially front line staff, interact with users and customers and are better aware of their needs and therefore the ideas for innovation from them are more genuine.

Martini et al (2017) emphasized that time for learning is required for entrepreneurial process that leads to innovation [IO3]. On similar lines, Amabile (1997) and Isaksen and Ekvall (2010) have also called for time for learning and balanced workload, so that ideas can be incubated and tested before innovation can take place. O'Shea and Buckley (2007) argued that creativity at the individual level to innovation at the macro level is a sequential process and required time and management effort.

One of the measures of IO directly indicated that capability to innovate enhances innovation orientation [IO4]. Kanter (2010) and Mbizi et al. (2013) emphasized the influence of a necessary set of capabilities on innovation. Zawislak et al. (2012) emphasised the need for an innovation capability framework. They identified four types of capabilities that are necessary for an innovation capability, namely technological development capability, operations capability and management capability and transaction capability. Sourcing of ideas from shared forums and professional groups [IO5] enhances the transactional capability as it reduced transactional costs. Sourcing

of ideas from shared forums and professional groups can improve an organization's ability and readiness to innovate. It develops collaborative capabilities and enable firms to access a wide range of new technologies and technical know-how. According to Ghezzi, et al. (2017) and Eftekhari and Bogers (2015), open innovation allows sharing of resources at a global level and it also promotes business venturing.

8.2 Risk-taking and risk management

Risk taking and risk management was found to be an appropriate measure of EO. Market risks, also termed as strategic risks by Koudstaal et al. (2016), are associated with opportunities and competition. Hoonsopon and Ruenrom (2012) linked market risks to innovation, since innovation requires risk taking [RSK1]. Hoonsopon and Ruenrom (2012) argued that degree or scale of innovation determines level of risk. Bekefi et al. (2008) pointed out that risk and opportunity are two sides of the same coin [RSK2]. Missing out on opportunities in the market, perceiving them to be too risky, may not be a good strategy. Nishimura (2015) also supported the view that missing opportunities in the face of risk is a risky strategy. Risk management was found to be equally important measure of risk dimension, which supports the discussion in the literature that risk taking should be balanced by risk management. Blanco et al. (2014) suggested that the senior management should periodically assess the risk-taking climate in their organizations so that risks can be monitored [RSK3]. They pointed out that the risk-taking climate drives business practices and hence called for development of a risk culture framework. Blanco et al. (2014) suggested that risk culture framework should include risk policies, methodologies and structure to monitor and manage risks [RSK3].

The findings in line with Wiklund and Shepherd (2008), Baker and Sinkula (2009) and Eggers et al. (2013) who pointed out that risk taking not only involves taking bold steps

but also risk management [RSK4]. There has been an extensive debate in the literature on the utility and benefits associated with risk taking strategies and the literature reported lack of consensus on the risk-taking dimension. The perception of risk, therefore, is related to level of risk. Risks can be managed through appropriate systems and structure that can help to manage and reduce risks. Risk-tolerant organizations also put in place strategies and structures that can help them to manage and mitigate risks.

8.3 Pro-activeness

Proactiveness, within EO, is also an input measure that enhances the entrepreneurial orientation of a firm. Firms that show proactiveness, by monitoring environments, are usually the first in the market and proactively engage with competition [PRO1]. Applegate (2008) pointed out that high-growth opportunities and breakthrough opportunities, which are usually accompanied by innovation, provide firms with first-mover advantage and subsequently competitive advantage. Wang et al. (2015) and Tang and Hull (2012) also viewed the proactiveness dimension as a facilitator of first-mover advantage. Entrepreneurial organizations therefore, lead the market in product and service development [PRO2] (Rhee and Mehra, 2013). These require entrepreneurial firms to be in a constant state of change [PRO3]. The entrepreneurial organization also forges strategic alliances so that these opportunities are adequately exploited and market share is captured [PRO4]. Lau (2015) suggested that joint ventures, especially with overseas firms, provide opportunities for expanding existing businesses. Wang et al. (2012) noted that venture capitalists forge strategic alliances with entrepreneurial firms instead of just funding these organizations. Employees in entrepreneurial organizations constantly search for opportunities by environmental scanning [PRO5]. Bekefi et al. (2008) pointed out that these opportunities may present

themselves through technological innovations, supply chain activities and from customer and competitive intelligence.

8.4 Competitive aggressiveness

We found competitive aggressiveness as an important dimension of EO. Achieving competitive edge over competitors by capturing new market segments is a key measure of competitive aggressiveness [CA1]. Out of the two types of competitive action, this measure relates to proactive behaviour rather being reactive to competitors' moves (Stambaugh et al., 2011). Cost was found to be an important measure to develop competitive aggressiveness [CA2]. Zawislak et al. (2012) argued that reduction in transaction cost related to marketing and capability development can be a major competitive advantage. Competitive aggressiveness of the firm can be enhanced by the speed and multiplicity of competitive attacks by selecting a number of appropriate strategies [CA3]. Ferrier and Hun (2002) found that competitive actions can be initiated on a number of fronts, which include markets, products, cost and price and development of inimitable capabilities. Porter (2008) also noted that firms often use price as a source of differentiation. This competitive action is facilitated by a reduction in cost.

Further, adopting a competitive aggressive posture may not be adequate, it must be supported by the capabilities needed to compete [CA4]. A firm may have the propensity for competitive aggressiveness, and may also adopt such as posture, but its ability to outperform its rivals largely depends on its capabilities to do so and the resources at its disposal to achieve its objectives (Chen et al., 2007; Yu and Cannella, 2007). Entrepreneurial firms also create partnerships that can help them to become more competitive in the market. These views were shared by Gnyawali and Madhavan (2001) who argued that inter-firm collaboration improve competitive aggressiveness.

Collaborative partnerships, particularly in the supply chain improve competitive aggressiveness. They particularly provide cost, efficiency and quality advantage (Barney, 2012).

Differentiating the products and services in the market [CA5] was found a key measure Baker and Sinkula (2002) also believed that adequate level of differentiation through products and services and cost lends towards competitive aggressiveness. Baroto et al. (2012) posited that such a hybrid strategy is the new strategy for competitive advantage as it reduces the heavy reliance of firms on costs and results in multiple sources of competitive advantage.

8.5 Autonomy

Autonomy was found to be a valid dimension of EO. Among the EO dimensions, autonomy is perhaps the most prominent dimension that points towards the fact that EO is an input measure that influences entrepreneurial orientation. Job autonomy through which employees are given freedom take decisions [AUT1] is a key measure that improves entrepreneurial orientation in firms. Zgheib and Kowatly (2011) and Monsen (2005) concluded that autonomy is the independent spirit that drives entrepreneurship. Autonomy can be an important motivator, particularly for those undertaking cognitive tasks (Pink, 2011). It directly relates to creating an organizational climate in which the employees have the freedom to act and take decisions. Amabile (1997) and Isaksen and Ekvall (2010) emphasised that organizations must provide freedom to their employees in order to promote creativity and entrepreneurial behaviour. Employees are also allowed to deal with problems and opportunities [AUT2] Burcharth et al. (2017) and De Spiegelaere et al. (2014) found links between job autonomy and innovative behaviour. Autonomy is also possible when operating divisions and sub-divisions are independent [AUT3] Ahmed &

Shepherd (2010) and Demrici (2013), recommend independence of operating divisions, while Gürkan & Tükeltürk (2017) suggested decentralised decision making which are ideal for entrepreneurial firms. In such decentralised firms, managerial decision making is given to middle level managers [AUT4] and employees are trusted with entrepreneurial decisions [AUT5].

9. Conclusions

Earlier attempts to measure EO have yielded mixed results due to a lack of conceptual clarity which in turn lead to overlaps in measurement. In the light of this conceptual confusion and operational duplication, the attempt to refine and validate the EO scale is a challenging endeavour. This study has a particular aim to bring back conceptual clarity of EO construct, so that it benefits theoretical understanding, its future operationalization and professional practice particularly in the Omani context.

IO is a broad dimension and includes measures such as innovation building capabilities but is not limited to it. It also includes measures such as the role of organizational culture and climate, role of venture units and establishment of external partnerships that contributes towards making an organization ready to innovate. Innovation orientation is an important facilitator of all other dimensions, in the absence of which other dimensions may not be effective.

This study throws light on the dimensionality and measurement debate associated with EO. It supports unidimensional conceptualization of EO and its aggregated measurement due to complimentary effect of dimensions. Presence of all dimensions are important and lower scores on one dimension can be compensated by higher scores on another. Both entrepreneurial attitude and behaviour are essential for firms because without intent and action entrepreneurial orientation would be difficult to elicit.

Finally, it can be concluded that EO is best measured as a reflective construct as this study was able to establish and enhance its nomological validity through this approach.

9.1 Limitations and future research

Although results, conclusions and contributions made by this study are robust and satisfactory, there are a few limitations to the study. The first limitation is related to the depth and breadth of the study. Some of the very distinctly different sectors such as manufacturing, oil and gas and services sectors were part of the study. Therefore, sector-specific variables or controls, which could have impacted the hypothesized relationships could be included in the research model. There may have been moderators that influenced the hypothesized relationships. However, Schillo (2011) pointed out that use of moderators that may be specific to different industries is problematic. Each industry would have separate levels of dynamism and complexity and would have a certain level of resources.

A second limitation is related to the size of the firms participating in the study due largely to our focus on corporate entrepreneurship and resultant sample selection. Most of the firms were large in size, with only a few small and medium-sized enterprises (SMEs) participated in the study. The limitation of this sample characteristic is that SMEs may have a different set of capabilities, resources, risk perceptions and strategies that may have had some impact on the results. The learning curve in SMEs is different compared to large firms. If this holds true, the measures may have been undermined by their responses. However, since most of the measures showed high significance levels, it is assumed that the measures were not undermined in a significant way. The upside of including firms of varying sizes was that the generalisability of the results and measures has increased.

The findings of the study are mainly restricted to Omani corporate sector. The discourse on entrepreneurial orientation can be enhanced by testing the refined EO scale, developed in this study, in different research settings and establish the transferability of the measures. As against a quantitative approach used in this study, a qualitative approach using case studies can also be used to understand the depth in each of the dimensions. The effect of each dimension on different parameters of organizational performance can be an area of future study. Future studies that aim to study EO as a causal construct, should develop a complete model of EO comprising of reflective measures, while the formative relationship should be limited to its effect on other constructs. In doing so nomological network validity of the EO construct would be enhanced. However, it is recommended that future studies should limit the measurement of EO to behavioural measures and should not include outcome measures, particularly while operationalizing innovation dimension. Input measures of innovation are conceptually and practically distinct from output measures of innovation. Regardless of the limitations, the discussion and conclusion indicates that this study has made unique contributions to the advancement of theoretical knowledge and improvement in professional practice in the field of EO research. At the same time, we acknowledge that the discourse on EO and its measurement is far from complete and requires our research community to make further effort to refine and improve our understanding, conceptualization, and operationalization.

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Appendix 1: Convergent and discriminant validity through AVE and shared variance

Factors	IO	CA	AUT	PRO	RSK
	0.657	0.673	0.704	0.786	0.707
	0.760	0.785	0.701	0.725	0.712
	0.709	0.746	0.700	0.762	0.799
	0.741	0.715	0.754		0.826
	0.742	0.754	0.684		
	0.641	0.684			
Average	0.7083	0.7248	0.7086	0.7577	0.7635
Average Variance Extracted (AVE)	0.5017	0.5158	0.5021	0.5741	0.5812
AVE between factors		0.5087	0.5019	0.5379	0.5862
Inter- factor Correlation		0.0200	0.0180	0.0590	0.0681
Correlation square/shared variance		0.0004	0.0003	0.0035	0.0024

Variance extracted estimates > squared correlation estimate

Appendix 2 Standardized Regression Weights: (EO measurement model)

Items		Factors	Estimate	P values
IO1	<---	IO	.600	***
IO2	<---	IO	.741	***
IO 3	<---	IO	.619	***
IO4	<---	IO	.561	***
IO5	<---	IO	.602	***
IO6	<---	IO	.631	***
CA1	<---	CA	.603	***
CA2	<---	CA	763	***
CA3	<---	CA	.661	***
CA4	<---	CA	.631	***
CA5	<---	CA	.462	***
CA6	<---	CA	.480	***
AUT1	<---	AUT	.621	***
AUT2	<---	AUT	.559	***
AUT3	<---	AUT	.660	***
AUT4	<---	AUT	.439	***
AUT5	<---	AUT	.551	***
PRO 1	<---	PRO	.614	***
PRO 2	<---	PRO	.590	***
PRO 3	<---	PRO	.688	***
RSK1	<---	RSK	.550	***
RSK2	<---	RSK	.689	***
RSK3	<---	RSK	.522	***
RSK4	<---	RSK	.769	***

Appendix 3: Final Pool of Valid Items and Dimension of Entrepreneurial Orientation

Innovation Orientation [IO]

IO1	My organization has a culture where creativity and innovation is highly regarded
IO2	Management in my organization actively seeks and rewards innovative ideas
IO3	Staff in my organization get time for learning and innovation during their daily routine
IO4	My organization focuses on developing new competencies even if the existing ones are effective
IO5	Venture units in my organization facilitate and enable new product and service development
IO6	My organization is open to sourcing of ideas from shared technology forums and professional groups

Risk Taking and Risk Management [RSK]

RSK1	Innovation in my organization is perceived as too risky and is resisted
RSK2	Missing an opportunity in the market is considered as a risk in my organization
RSK3	There are structure in my organization to monitor and manage risks
RSK4	My organization manages risks well and is willing to accept moderate level of risk

Proactiveness [PRO]

PRO1	My organization initiates actions to which competitors respond
PRO2	My organization usually leads the market in product and service development
PRO3	Change in my organization happens regularly
PRO4	My organization participates in strategic alliances/ partnerships / joint ventures with outside companies
PRO5	Staff in my organization are encouraged to proactively monitor changes in the environment

Competitive Aggressiveness [CA]

CA1	My organization places emphasis on beating competitors to enter new markets

CA2	My organization places emphasis on pushing costs lower, faster than our competitors do
CA3	My organization uses multiple strategies to attack the competitors
CA4	My organization has adequate level of capabilities and resources to compete aggressively
CA5	My organization places emphasis on creating important partnerships with suppliers/ retailers, on a higher level, than the competitors
CA6	My organization find ways to differentiate itself from competitors

Autonomy [AUT]

AUT1	Staff members in my organization are given the freedom to act
AUT2	Staff members in my organization are allowed to deal with problems and opportunities
AUT3	Operating divisions or sub-divisions in my organization are quite independent
AUT4	The middle level managers in my organization have to take consent from senior management to take decisions
AUT5	Top management in my organization assign new responsibilities to staff

Appendix 4: Sample profile

Item	Categories	%		Item	Categories	%
Nature of Company	Local	67		Respondent's Profile	MD/CEOs	41
	MNCs	33			Directors	29
					General Managers	30
	Health	15				
	Manufacturing	20		Company Size (Number of Employees)	Below 100	20
	Retail	15			100-150	67
	Financial and Insurance	14			Above 150	13
	Real State	05				
	Education	06		Gender	Male	90
	Human Health	07			Female	10
	Arts and Entertainment	05				
	Other service activities	05		Experience	Below 5 Years	14
					5-10 Years	47
					10-20 Years	39