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## Article

# Designing an organization for innovation in emerging economies: The mediating role of readiness for innovation

Organizations and Markets in Emerging Economies

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*Suggested Citation:* Arshi, Tahseen Anwer; Burns, Paul (2019) : Designing an organization for innovation in emerging economies: The mediating role of readiness for innovation, Organizations and Markets in Emerging Economies, ISSN 2345-0037, Vilnius University Press, Vilnius, Vol. 10, Iss. 1, pp. 31-56,  
<https://doi.org/10.15388/omee.2019.10.00002>

This Version is available at:

<https://hdl.handle.net/10419/317096>

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# DESIGNING AN ORGANIZATION FOR INNOVATION IN EMERGING ECONOMIES: THE MEDIATING ROLE OF READINESS FOR INNOVATION

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**Abstract.** *The study proposes an organizational design framework that impacts innovation in corporate firms. In an emerging economy like Oman, innovation helps to reduce the dependence on oil revenues and enhance its international competitiveness. However, the corporate organizations in emerging economies are unable to innovate effectively because they are not designed for innovation. Further, scarcity of resources undermines their readiness for innovation. This study empirically validates measures of an entrepreneurial organizational design framework in Omani corporate sector. In order to explain how a corporate organizational design promotes innovation and clarify the missing links between corporate entrepreneurial activity and innovation, the mediating role of readiness for innovation (RFI) is tested. Using a quantitative research approach, data is collected from 401 corporate firms in Oman and analysed using structural equation modelling. The findings support the proposition that entrepreneurial organizational design promotes both radical and incremental innovation degree and frequency, while RFI partially mediates the relationship between entrepreneurial inputs and innovation outputs. The study contributes to the understanding of innovation in emerging economies as it explains that RFI helps firms to enhance its innovation potential by optimizing its resources, capabilities and processes for innovation. These measures are essential for organizations, particularly in emerging economies focused on low cost innovation. The findings of the study will inform managerial decision-making in terms of designing organizations for innovation and implementation of measures related to readiness for innovation.*

**Keywords:** *emerging economies, organizational design; innovation; readiness for innovation.*

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## Introduction

Emerging economies have been traditionally associated with imitation due to global competitive pressures and an underdeveloped innovation eco-system (Brodoni, 2012; Phuc, 2015). However, innovation in emerging economies is essential to drive economic growth (Sesay et al., 2018; Pandey & Banwet, 2018). It helps to bridge the economic gap by localization of western-designed products and develop products for global markets (Wong et al., 2005). Recent research reports indicate that emerging economies are becoming manufacturing hubs for developed markets, and a source of knowledge of innovative production methods and business processes (Yip & McKern, 2014; Lynch & Jin, 2016). These innovations that flow from emerging economies to developed markets, termed as reverse innovation, are targeted towards creating value and affordability instead of abundance and affluence (Prahalad & Mashlekar, 2010). Despite some progress, emerging economies face a number of challenges in terms of generating innovation. Primary among them are the challenges of transition, global competition, research and development costs, access to different resources and infrastructure associated with innovation (Chakravarthy & Coughlan, 2011).

An entrepreneurial organization design framework comprised of entrepreneurial inputs can provide an enabling framework for innovation. Corporates in emerging economies do not innovate effectively, firstly, because they have scarce resources and secondly, because they are not designed for innovation (Tahseen & Burns, 2018; Leonard 1998). As the literature on organizational design and innovation is not well cross-fertilized, the missing link between organizational design activities and innovation are not well articulated. Although the literature establishes the link between entrepreneurial activities and innovation, it does not provide adequate explanation on how entrepreneurial inputs are transformed into innovation outputs. McFadzean et al. (2005) argued that these missing links continue to exist and suggested that entrepreneurial attitude, vision and entrepreneurial activities are some of the missing pieces that can explain this complex relationship.

### 1. Need for the study

This study fills an important gap in the literature by shedding light on why organizations are not able to achieve their innovation objectives despite their strategic priority. By illustrating the role for 'readiness for innovation' concept, this study explains that the organizations that are not ready for innovation cannot exploit the organizational design factors appropriately to produce innovation, and therefore such organizational design is not well integrated with innovation processes and requirements. Readiness for innovation measures can facilitate access to resources and infrastructure, which sets in motion the innovation process, resulting in innovation outputs. The resource based theories form the basis for readiness for innovation conceptualization as they propose enhancement of a firms' capabilities to innovate (Fluery et al., 2013). This is particu-

larly relevant in the context of emerging economies as firms in these markets are disadvantaged in terms of resources, learning, knowledge development, and the acquisition of new knowledge (Zhong et al., 2013; Kumar et al., 2013). A complete framework of enabling and facilitating factors in relation to innovation seems to be both theoretically and empirically neglected and is a desired area for new research.

### ***1.1 Organizational Design and Innovation***

Entrepreneurial organizational design differs from traditional organizational design by its ability to innovate (Hisrich et al., 2010). The entrepreneurship and innovation literature reiterates the role of an entrepreneurial organizational design in promoting innovation. Kuratko and Audretsch (2013) have called for better understanding of entrepreneurial organizational design and its effects on innovation. Researchers such as Marcotte (2014), Morris et al., (2011) Yildiz (2014), Zoltan & Ausdrech (2015) argued that the primary purpose of an entrepreneurial organization is to facilitate innovation. However, innovation becomes a key casualty when firms grow in size and lose their entrepreneurial focus (Badal, 2013). Badal (2013) argued that many large firms lose their entrepreneurial design during their growth life cycle as they become rigid and bureaucratized hence are unable to provide the right climate for innovation. Zacca and Dayan (2017) pointed out that role of entrepreneurs in large organizations becomes focused on maintaining status quo, which makes them administrators rather than entrepreneurs. Therefore, an entrepreneurial organizational design is essential to preserve the entrepreneurial climate in corporate firms.

Burns (2013) proposed an entrepreneurial organizational design framework for innovation through Entrepreneurial Architecture (EA), arguing that such an entrepreneurial design can not only promote but also sustain innovation. Burns (2013) and Bessant and Tidd (2011) explained that corporate firms cannot promote and sustain innovation without a right mixture of appropriate organizational design factors, such as organizational culture, structure, strategies and leadership. A number of studies, which have investigated the role of organizational design factors in promoting innovation, support this proposition. Prominent among these studies are Entrepreneurial Orientation (EO) (Covin & Slevin, 1989; Covin & Wales, 2012 and Lumpkin & Dess, 1996), Entrepreneurial Management (EM) (Steven & Jarillo, 1990) and Entrepreneurial Architecture (EA) (Burns, 2008, 2013). The EA construct has been largely adapted from the Organizational Architecture literature that has been backed by more than fifty years of academic development, since it was first proposed by Sayles (1964) and later developed by Grant (2010), Kay (1998) and Tushman et al., (2006). Tahseen (2012) found positive and significant relationship between EA dimensions and innovation. EA reflects how four organizational dimensions – culture, structure, strategies and leadership (CSSL) – can be embedded into an entrepreneurial organizational design, which can influence innovation outputs.

While innovation is well represented in EO, EM and EA models, little is known on how these organizational factors cause innovation to occur. Tahseen (2017) found that 'readiness for innovation' (RFI), also loosely termed as 'innovativeness' in the literature, is an important contributor of innovation and can explain the relationship between organizational design and innovation. Despite an abundance of research suggesting that innovation capability contributes to innovation performance (e.g., Hamel & Breen, 2007; Morris & Kuratko, 2002; 2011; Narcizo et al., 2017), little is known regarding the extent to which the innovativeness dimension may positively generate innovation outputs (Wang et al., 2015). Further, output measures of innovation are not well developed or empirically validated. In addition, there is lack of clarity between input and output measures of innovation. Bessant & Tidd (2011) proposed output measures for degree (scale) and frequency of entrepreneurial intensity, which Burns (2013) modified as degree and frequency of innovation. Literature considers degree as an important measure of innovation, while it does not throw much light on the measure of frequency of innovation.

## **2. Literature Review and Hypothesis Development**

### **2.1 Entrepreneurial Architecture (EA)**

The literature largely supports Burns' EA construct, which has been used as a basis for this study. Organizational development and design theories have argued that there is a strong linkage between organizational design factors and innovation. Many researchers have studied the role of the CSSL factors in different combinations in promoting innovation. Nelles and Vorley (2011) and Tahseen (2012) in particular found that CSSL factors as conceptualized through EA model are effective in promoting innovation. Brizek (2014) also reported links between all CSSL factors and innovation. Similarly, Adams et al., (2006) Beheshtifar and Shariatifar (2013) and Zheng et al. (2010) reported significant relationship between organizational structure, culture and innovation. Further, Apekey et al., (2011), Melnyk and Davidson (2009) and Tahseen (2013) found that organizational culture and leadership promote innovation. Rainey (2006) and Muller et al. (2005) also found significant relationship between organizational strategy, leadership and innovation.

The literature also reported on each of the individual CSSL factors influencing innovation. Nham et al., (2015) emphasized that an entrepreneurial culture characterized by high performance, rewards and team development promotes innovation. A quantum culture characterized by creativity, problem solving, risk taking, speed and tolerance for failure was considered key to an entrepreneurial culture by Glisson (2015) and Gürkan & Tükeltürk (2017). Büschgens et al., (2013) also linked organizational culture, particularly, values to innovation, while Petraite (2014) opined that delegated decision making is a key characteristic of entrepreneurial culture, arguing that bureaucratic control hinders innovation.

On similar lines, various researchers linked organizational structure to innovation. Demrici (2013) and Gürkan and Tükeltürk (2017) suggested autonomous structures that can act independently in order to capture new opportunities and manage risks. Further, Cummings, and Worley (2015) argued that organizational structure can provide adequate provisions for knowledge transfer, which can facilitate innovation. Additionally, Bruce and Birchall's (2009) study showed that cross functional integration of units and innovation champions can promote idea generation and innovation.

Organizational strategies were also found to be promoting innovation. Dobni et al. (2015) argued that innovation strategies should drive innovation throughout the organization and should be a strategic priority. Kuratko et al. (2015) emphasized the need for strategies to build capabilities for innovation. Supporting Kuratko et al. (op. cit.), Bengtsson et al. (2015) and Howe (2008) argued that these capabilities can be enhanced through collaborative partnerships with professional forums, venture capitalists, universities, hobbyists and even customer groups. Similarly, Knott (2012) pointed towards the important role of social and informal networks in developing an entrepreneurial strategy. Ahmed and Shepherd (2010) suggested strategies that defy dominant logic, while Kim and Mauborgne (2005) suggested competitive strategies with high level of differentiation that can be facilitated through innovation.

Entrepreneurial leadership was also found to be positively correlated with innovation (Sarros, Cooper & Santora, 2011). Samech (2006) argued that entrepreneurial leaders are transformational leaders who create high performance work environments. Zacher and Rosing (2015) were of the similar view and found that transformational leadership and inspirational motivation promotes innovation. Supporting this proposition, Denti (2011) explained that these leaders promote innovation as they are open to new ideas, empower staff, and create autonomy and trust, which in turn promotes opportunity seeking and risk taking behaviour in uncertain environments. Further, Waite (2014) argued that change and innovation is well supported by these leaders as they embed it in organizational vision.

All CSSL factors were found to create a synergetic effect, enabling and facilitating innovation in corporate firms. Tahseen and Burns (2018) concluded that EA acts as an enabling framework and therefore is an appropriate organizational architecture to promote innovation. Thus, the review of literature indicates that the CSSL factors comprise organizational inputs that have an impact on innovation. It led to the development of the following hypothesis:

*H1: EA comprises entrepreneurial input measures that significantly and positively impact innovation in corporate firms in emerging economies.*

## **2.2 Innovation**

Whilst the innovation construct has received substantial empirical attention, it has not achieved an equal level of clarity (Fagerberg, 2005). Martínez-Román et al. (2011)



pointed towards the complex nature of innovation, which Ahmed & Shepherd (2010) agreed with arguing that innovation has been misinterpreted at times. Therefore, in order to clarify the different types of innovation, Bastic and Leskova-Spacapan (2006) explained that the complexities arise because there are different facets of innovation, such as product, market, technological, process and organizational, that make innovation difficult to measure. Lack of common consensus on innovation has therefore led to its diverse operationalization, particularly in development of quantitative measures of innovation. Prahalad and Mashlekar (2010) explained that reverse innovation in emerging economies is largely dependent on resources and capabilities. Such innovations can be either incremental or radical. Morris and Sexton (1996), and Morris and Kuratko (2002) operationalized this measure of innovation through the degree or scale of innovation mostly termed as incremental and radical innovation. Incremental innovation is explained by Conway and Stewards (2009) as incremental improvements over time, while radical innovation is associated with major advancement in a particular field through development and launch of radically new products and services (Conway & Stewards, 2009). Generally, incremental innovation is effective when its frequency is high, while the effectiveness of radical innovation is determined by its scale and its impact on customers and competition (Bessant & Tidd, 2011).

### **2.3 Readiness for Innovation (RFI)**

The literature on innovation indicates that innovation is a multi-stage process comprising input and output stages (Baregheh et al., 2009). This is also clearly demonstrated in the following definition: *'Innovation starts with the proposal and generation of new ideas and finishes with the use and commercial exploitation of the outcomes'* [Tonnessen, (2005), p.195]. The organizational climate studies (Amabile et al., 1997; Isaksen & Ekvall, 2010) indicated that the input measures of innovation mainly relate to creativity stages of idea generation and assimilation of resources and capabilities. These studies, particularly by Narcizo et al. (2017), pointed that certain inputs for innovation are required before innovation outputs can occur.

The literature suggests 'innovativeness' as a stage before innovation, but its measures are not clearly deciphered or empirically validated (Kamaruddeen et al., 2011; Rodrigues et al., 2010). While Lau et al. (2012) considered innovativeness as a key element of entrepreneurial behaviour, Rodrigues et al. (2010) argued that innovation could be result of innovativeness. Similarly, Narcizo et al. (2017) considered capability for innovation as a key measure of innovativeness, while Saunila and Ukko (2012) associated it with potential to innovate, and Wang et al. (2014) called it entrepreneurial preparedness. On similar lines, Bessant and Tidd (2011) highlighted the role of capacity for innovation, while Dyer et al. (2011) and Shah et al. (2011) argued that networking and pooling of resources enhances the capacity for innovation and therefore can be considered as a measure of innovativeness. Critics like Francis (2000) opined that capabilities and capacities are a set of factors that may be detectable only when exploited. Real-

zation of capabilities may require interaction of complex organizational factors with external environment, which may suffer under day-to-day operational pressures. Lin et al. (2013) agreed that the 'application' of innovativeness is more important than just possessing the potential to innovate.

Tahseen (2017) opined that the complexity of these relationships could be explained by 'readiness for innovation' (RFI), which facilitates this application to produce innovative outputs. RFI can be created through dedicated innovation structures, systems, processes, partnerships, open innovation and embracement of new business models, which ensures that the capabilities are fully exploited and are not diluted under the pressures of day-to-day operations. The literature supports this proposition and suggests that RFI is a broader dimension, which includes measures such as establishment of corporate venturing units (Hill & Birkinshaw, 2008) and prototyping units (Bordegoni & Rizzi, 2011; Rayna & Ludmila, 2016). Chao et al. (2005) and Cooper (2008) advocated phase-gate processes to facilitate innovation, while Bruce and Birchall (2009) and Swaans et al. (2014) suggested innovation monitoring and evaluation systems. Finally, crowdsourcing, physical and virtual innovation parks were suggested by Salvador et al. (2013), and embracement of open innovation models was advised by Afuah & Tucci (2013), Chesbrough and Bogers (2014), Eftekhari & Bogers (2015), Johnston et al. (2010) and Penin (2008). In the context of emerging economy, these innovation facilitating processes provide firms with common resources, an innovation-market focus and an innovation pipeline that enables the implementation of innovation ideas (Jha, 2013; Kumar & Puranam, 2012). The discussion and emerging importance of readiness for innovation led to the framing of the following hypothesis:

*H2: Readiness for innovation mediates the relationship between EA and innovation in emerging economies.*

### 3. Research Gap

Oman is an emerging and a transitional economy, which is making efforts to reduce dependence on oil based revenues. Therefore, growth through innovation is important for the economic growth of the country. However, according to Global innovation index (Cornell University, INSEAD and WIPO, 2018) Oman ranked 69<sup>th</sup>, behind many Arab nations, indicating that corporate firms need to engage in innovation at a higher pace. There are very few empirical studies that have studied the role of corporates in promoting innovation in Oman (Tahseen, 2013). Corporate firms in Oman can improve on innovation when they can understand the demands of an organization designed for innovation and also develop or access to innovation eco-systems. This is supported by McFadzean et al. (2005), who argued that there is a need for further research to clarify the missing links between corporate entrepreneurial activity and innovation. Lack of clarity on input measures, mediating factors and output measures of innovation has brought difficulties in understanding the meaning and underlying characteristics of an



innovation framework. Nagji and Tuff (2012) pointed that organizations may have ambitious innovation plans in place, but poor entrepreneurial organizational design and lack of understanding of innovation characteristics does not support such ambitions. Considering somewhat similar issue, Bruce and Birchall (2009) argued that 90% of the innovation ideas fail because innovation is not well planned and implemented. Therefore, Burns (2013) argues that EA is an appropriate model that can transplant entrepreneurial DNA in large organizations, which in turn can promote innovation. Readiness for innovation has attracted some attention in the literature but empirical evidence is generally scarce. Further, empirical studies on innovation call for unravelling the innovation process and bringing more clarity on entrepreneurial input and output measures of innovation while exploring the mediating role of various facets of innovation. Based on the identified research gap, the research framework is developed (Figure 1):

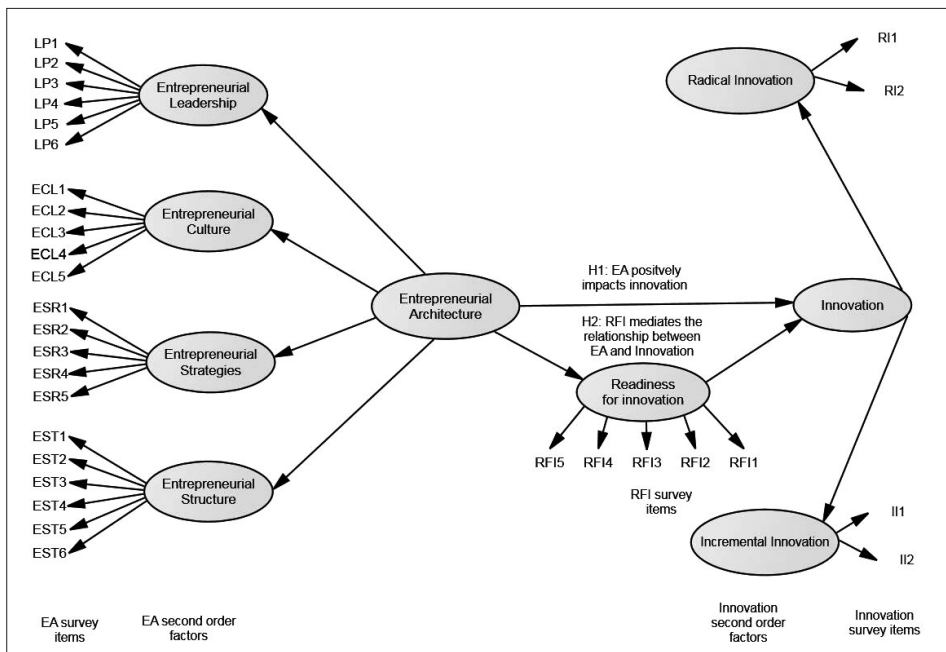


FIGURE 1: Research framework

This study hypothesizes that EA is an appropriate entrepreneurial organizational design that promotes innovation, while this relationship is mediated through readiness for innovation. Based on the suggestions of Diamantopoulos and Siguaw (2006), both formative and reflective measures were included in the research model. The EA and innovation constructs were conceptualized as reflective measures, while the relationship between the two constructs and the mediating role of RFI were posited as formative measures.

## 4. Methodology

This study is largely influenced by positivist and realist research philosophies and follows a deductive approach as most of the variables are identified from the theoretical frameworks (Fisher, 2004). This epistemological stance influenced the hypotheses, and the data collection and analysis were aligned accordingly (Saunders, 2010). Quantitative research strategies were therefore adopted in order to test the hypothesized relationships. Qualitative strategy was restricted to taking feedback from industry and academic experts on the survey items.

### 4.1 Questionnaire development and measures

The measures were derived from established research on EA and innovation. The EA measures included items from Burns (2013) and Tahseen and Burns' (2018) study in the Omani corporate sector. Innovation and RFI measures were derived from multiple models, which include Bessant and Tidd (2011), Wang et al. (2014), Rosenbusch et al. (2010), Narcizo et al. (2017) and Tahseen (2017). A total of 30 items for EA, 8 items for innovation and 7 RFI measures were included in the survey. The survey items were checked with subject experts and 5 senior managers in different industries before its administration.

### 4.2 Sample and unit of analysis

A sample size of 400 based on Yamane's formula was considered appropriate for a cross-sectional research design. A target sample of 760 firms representing all corporate sectors in Oman (based on the International Standard Industrial Classification) was set, realizing that all questionnaires may not be returned or be fit for analysis. A mix of convenience and judgement sampling were used to select the corporate firms through the list available at the Oman Chamber of Commerce and Industry. Judgement was exercised to ensure that the sample represents most of the industries in the corporate sector in Oman. Paying heed to Kuratko et al. (2015), who have recommended studying the role of top managers while investigating entrepreneurship in corporate firms, questionnaires were distributed only to one senior-level manager in each of the organizations.

## 5. Results

A total of 401 firms responded (response rate of 52%), and the data was analyzed quantitatively. The demographic details about the respondents are shown in Appendix 2. Since the data was collected from different industries, homoscedasticity was checked through Levine's Statistic (and single column Tukey HSD), and a score  $>.05$  confirmed homogeneity of variances related to experience of respondents in the company and the industry. The results also showed satisfactory level of reliability, with Cronbach Alpha

coefficient of .783 for EA factors and .701 for innovation factors. The possibility of multi-collinearity was eliminated through the variation inflationary factors (VIF) test and the value < .2 was achieved, which is supported by Tabachnik and Fidell (2013) as satisfactory.

### 5.1 Structure Equation Modelling Tests (SEM)

SEM was considered an appropriate data analysis technique to demonstrate the validity of the EA and innovation scales in this study. SEM combines factor, regression and path directions to provide a comprehensive analysis of the factors and associated variables (Westland, 2015). The measurement model (MM) was developed to test the relationship between the latent variables and their measures. The MM model was based on the maximum likelihood method, and the results showed the validity of a 4-factor EA construct with 22 measures, presence of a 2 factor innovation construct with 4 measures and 1 factor RFI with 5 measures (factor loadings >.40,  $p < .001$ ). The model fit indices showed acceptable model fit as per the recommendations of Tabachnik and Fidel (2013). The results of the measurement model are summarized in Table 1. The validated measures and abbreviations are shown in Appendix 1.

TABLE 1. Results of the Measurement Model

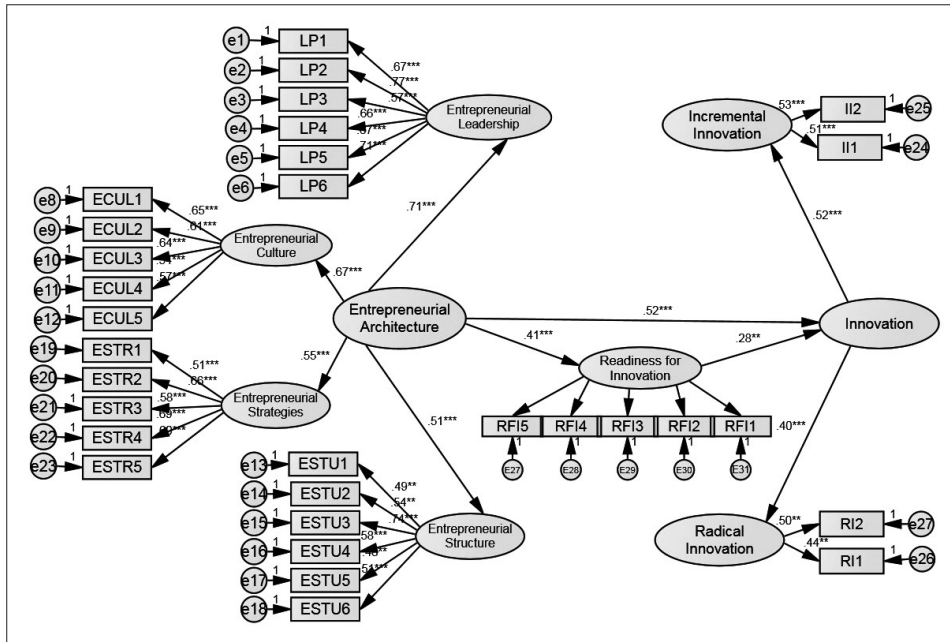
Construct	CMINDF	CFI	GFI	AGFI	RMSEA	CR	AVE	Shared Variance
EA	1.931	.958	.982	.902	.042	0.75	0.5001	0.0004
Innovation	1.997	.915	.975	.901	.049	0.71	0.5012	0.0021

*Recommended:*  $\chi^2/df < .2$ ,  $CFI \geq .90$ ,  $GFI \geq .90$   $RMSEA < .05$   $CR \geq 0.70$ ,  $AVE \geq 0.5$  (Tabachnik & Fidel, 2013)

### 5.2 Structural Model

The structural model was tested to confirm the hypothesized relationship between latent variables and examine the mediating role of the RFI. All the 22 measures for EA, 5 measures for RFI and 4 measures of innovation were found to be valid in the structural model (Figure 2). The results show that the measures of EA are valid (path coefficient values: .71; .67; .55; .51,  $p < .001$ ). The findings show that EA is a second-order reflective construct consisting of four first-order factors, namely entrepreneurial culture, entrepreneurial structure, entrepreneurial strategies and entrepreneurial leadership which are its reflective measures. Further, incremental innovation (path coefficient value .52,  $p < .001$ ) and radical innovation (path coefficient value .40,  $p < .001$ ) were found to be reflective measures of the innovation construct. *H1* is well supported positively and significantly as the results of the complete SEM model indicate that EA has a positive and significant impact on innovation with a path coefficient value of .52 ( $P < .000$ ). The

model fit indices showed that there is good data fit, and the model is acceptable as per the recommendations of Tabachnik and Fidell (2013).



CMINDF 1.952 GFI .962 AGFI .901 CFI.912 RMSEA .048

FIGURE 2. Complete SEM model showing the mediation effect of RFI between EA and innovation

The complete SEM model showed that path coefficient value between EA and RFI was .41 and between RFI and Innovation .28 ( $P < .005$ ). Since the direct and mediating path are both significant, partial mediation between EA-RFI Innovation was established (Table 2). Based on the results,  $H2$  is also supported significantly and positively, and results of all hypotheses testing are shown in Table 3.

TABLE 2. Path estimates before and after testing for mediation

			Beta Estimate	S.E.	C.R.	P-value	Result
Innovation <---	EA		.760	0.119	7.451	.000	Significant
After the mediator variable (RFI) enters the model							
			Beta Estimate	S.E.	C.R.	P-value	Result
Innovation	<---	EA	.520	0.110	5.091	.000	Significant
RFI	<---	EA	.411	0.187	4.019	.000	Significant
Innovation	<---	RFI	.283	0.198	2.411	.004	Significant

Further, as suggested by Baron and Kenny (1986) and Gaskin (2012), the effect of the mediating variable (RFI) was tested firstly without the mediator variable and then subsequently with the mediator variable. The results are shown in Table 2.

TABLE 3. Hypotheses testing results after data analysis

Hypotheses	Path Coefficient	significance	Status	Rationale
H1	0.52	$p < .000$	Accepted	Results
H2	0.41 0.28	$p < .005$	Accepted	Partial mediation established

*P Values < 0.05 are considered significant in this study.*

## 6. Discussion and Conclusion

The present study makes a number of contributions to the research literature. It concurs with earlier studies that innovation is essential in emerging economies (Haar & Ernst, 2016; Sesay et al., 2018). The findings confirm that an organizational design and creation of an innovation eco-system helps in promoting innovation in emerging markets. The findings of the study were helpful to illustrate the measures of an entrepreneurial organization design for innovation and clarified input and mediating factors influencing innovation outputs. The findings therefore address the missing links between corporate entrepreneurial activity and innovation. EA was found to be an appropriate model that represents an entrepreneurial organizational design and consists of key entrepreneurial inputs that are instrumental in facilitating innovation.

Entrepreneurial Leadership dimension represented a number of leadership characteristics particularly drawing on transformational and inspirational leadership literature. In an entrepreneurial organizational design, leaders initiate, promote, and sustain employee driven ideas for innovation (Jung et al., 2003). These leaders motivate and engage employees beyond the expected levels of performance, particularly when they work in open and uncertain environments (Denti, 2011; Ahmed & Shepherd, 2010). Further, the results find resonance with various researchers such as Ahn (2017), Kuratko and Hodges (2007) and Deschamps (2005), who pointed that entrepreneurial leaders support and develop high performance teams that are essential to meet the rigors of innovation. These leaders, as El-Awad et al. (2017) argued, facilitate team learning that contributes to the development of innovation capabilities. Creating teams with trust, empowerment and rewards is also associated with entrepreneurial leadership style. Finally, entrepreneurial leaders have a vision for change and innovation, which results in responsive management buy-in into innovative ideas (Sarros et al., 2011; Waite, 2014). Entrepreneurial leaders adopt new business models that can be modelled according to the requirements of innovation (Ahn, 2017).

The findings indicated that entrepreneurial structure dimension is about optimizing organizational structures suited to innovation. These include decentralization, autonomy and structures to manage and monitor risks (Gürkan & Tükeltürk, 2017). The findings of this study resonate with the literature which emphasizes the importance of autonomous organizational structures in providing information on new opportunities (Allen & Henn, 2007). The findings showed that an entrepreneurial structure requires cross-functional integration between different units (Brettel et al., 2011). Autonomy and independence encourage departments or divisions to be outward-looking. It also gives the flexibility and fast response that is a necessary condition for innovation (Tsang, 2016).

The findings indicated that entrepreneurial strategy dimension relates to market opportunities and innovation. Knowledge acquisition, information and learning should be a strategic imperative, without which technical know-how and development of new capabilities will become challenging. Marks and Lockyer (2004) and Mulec and Roth (2005) highlighted the role of informal and social networks in gaining market and customer insights into new commercial opportunities. Similarly, Debruyne (2015) and Martin (2011) argued that various types of innovation is a result of listening to customers and valuing their feedback. Tang and Hull (2012) and Wang et al. (2015) associated opportunity seeking with first mover advantage, while Rhee and Mehra (2013) link it to superior firm performance. However, as argued by Kuckertz et al. (2017), opportunity recognition must be followed by opportunity exploitation. It is a key distinction as opportunity exploitation may lead to different forms of innovation. Interestingly, strategies related to opportunity and innovation also need to be internally directed. These strategies focus on development of capabilities and resources, which needs strategizing, which Teece (2012) termed as dynamic capabilities. The strategy should be to promote and develop unique, rare and inimitable competencies, which permeates throughout the organization and provides it with necessary competitive advantage (Mitchelmore & Rowley, 2010).

Entrepreneurial culture revolves around soft innovation practices and relates more closely to organizational climate studies (Amabile, 1997; Isaksen & Ekvall, 2010). The measures of entrepreneurial culture identified through this study are similar to those conceptualized by Amabile (1997). It included measures such as time for learning and innovation, encouragement of experimentation, reward and recognition for creative ideas and innovation. The validated measures in this study are mostly associated with the ideals of 'quantum culture' proposed by Youngblood (2007), which is characterized by tolerance for failure and regard for people development, which should be a priority above financial objectives. Employee motivation comes from an inspiring vision and the ability of everyone in the organization to contribute towards it. Such a culture promotes feelings of belongingness, trust and creative development.

This study, through empirical support, advances the conceptualization of readiness for innovation. Readiness for innovation was found to be a valid element with five sig-



nificant measures. Although RFI partially mediates the relationship, it explains how an entrepreneurial organization can enhance its readiness for innovation by creating an appropriate innovation eco-system. Elements of entrepreneurial organization design may be compromised under the pressure of day-to-day operations, but RFI through dedicated structure, systems, processes and partnerships keeps the readiness levels in high gear and enables firms to exploit innovation opportunities on a continuous basis.

RFI facilitates venturing opportunities in emerging economies. Knowledge about products and services that fit the market opportunities can be exploited faster and more effectively through corporate venture units (Hajizadeh & Zali, 2016; Hill & Birkinshaw, 2008). Corporate firms can venture into segments that require localized or low cost innovation. Firms can expand such low cost innovation for global markets (Agnihotri, 2014).

RFI helps firms to develop capabilities for innovation and one such capability is to develop prototypes before innovation can be commercialized. Many a times, new ideas are not clear until a prototype is designed, and therefore prototyping gives designers, engineering, manufacturing, and sales and marketing departments the ability to virtually or physically evaluate product feasibility before it can be commercialized (Kelley & Lutman, 2016). Digital prototyping particularly can complement physical prototyping, and it helps to reduce costs and improve speed to the market (Bordegoni & Rizzi, 2011). 3D printing technologies have further enhanced the potential for prototyping by creating enhanced value and changing the way business model innovation is carried out (Rayna & Ludmila, 2016). The findings and above discussion concur with García et al. (2017), who argued that design and prototyping should lead innovation efforts.

Phase-gate process is another RFI measure which enhances an organization's readiness for innovation through development of innovation through a feasibility screen. New ideas or venturing opportunities are lost in transition or may get delayed. The fact that innovation is a multistage process is well enumerated by Bruce and Birchall (2009) and Gapp and Fisher (2007), who argued that most of the innovative ideas do not go forward as ideas are not captured, screened, organized and prioritized. When a phase-gate process is in place, everyone in the organization knows how ideas will take shape into innovation. Each stage can take decisions on business case, risk analysis and resource allocation (Chao et al., 2005; Cooper, 2008). Phase-gate process allows successful piloting, development and implementation.

Innovation monitoring and evaluation systems are considered useful as they determine extent, direction and frequency of innovation (Bruce & Birchall, 2009; Swaans et al., 2014). These monitoring systems also play a major role in aligning innovation objectives with business goals and market intelligence (Goffin & Mitchell, 2010).

Open innovation is another measure of RFI that can enhance readiness for innovation through making necessary amendments to the business model (Penin, 2008; Schutte & Marais, 2010). Open innovation and crowdsourcing allows access to resources and technical skills, and knowledge can be shared through online communities

globally (Ghezzi et al., 2017). Corporate innovation is becoming harder, mostly constrained by business models and closed innovation platforms. Open innovation models drive down the cost and time associated with research and development and provide vast access to resources, technology and expertise, without necessarily owning them (Chang et al., 2009). Chesbrough and Bogers (2014) particularly highlighted the role of distributive innovation process where knowledge flows across organizational boundaries. Organizational readiness for innovation is enhanced with continuous knowledge flows about new technologies, opportunities and market and customer requirements. This has brought a paradigm shift in sourcing and manufacturing. An open innovation business model readies the organization to exploit changes in technology and monitor trends and opportunities (Ollila & Yström, 2016).

The findings shed more light on how readiness for innovation measures interacts between organizational design factors to promote innovation, particularly in emerging economies. This is illustrated through Table 3.

TABLE 3. Explaining the mediating role of innovation in the innovation process and its relevance to emerging economies

EA factors	Readiness for innovation factors	Innovation outputs	Emerging Economy context
Organizational Structure <i>Innovation supporting structures create enabling ecosystems for innovation to flourish</i>	Dedicated corporate venturing units that exploit new venturing opportunities in local markets. Digital or physical prototyping facilities through a consortium help in evaluating innovation feasibility.	Incremental and/or radical innovation	Corporate venturing units identify localization context, low cost innovation opportunities as well as opportunities for reverse innovation. Corporates get access to a shared innovation ecosystem.
Organizational Culture <i>Idea recognition and direction promotes a culture of creativity and innovation</i>	There is a stage-gate process in place to convert new ideas into innovation. When employees are assured of an innovation pipeline, it supports a culture of innovation.	Incremental and/or radical innovation	An innovation focused culture encourages idea generation for low cost innovation, spurred by employees at all levels of the organization. Such innovative ideas emerge from personal experiences and close observations rather than R & D projects.
Organizational Strategies <i>Innovation strategies focus on appropriateness and value of innovation</i>	There is an innovation monitoring and evaluation process in place focusing on product/service market fit.	Incremental and/or radical innovation	Clear innovation strategies in terms of localization versus globalization and low cost versus high cost innovation.
Organizational Leadership <i>A vision of openness and collaboration is supported by leadership</i>	The business model is flexible to embrace open innovation in order to access technology and low cost innovation.	Incremental and/or radical innovation	Corporates get access to a shared innovation ecosystem; Reduction in R&D costs, access to technology and lower cost of production.

All four measures of innovation were found to be significant in this study. The findings are in line with the conceptualization of incremental and radical innovation by Nieto et al. (2013), Tellis et al. (2009) and Wong (2014). Incremental innovation is an output measure and relates to improvements and modifications of products and services and are more frequently observed (Dong, 2015; Norman & Verganti, 2014). Radical innovation is also an output measure and relates to radical changes in products and services. The frequency of these radical changes may be lower due to greater degree of research and development associated with radical innovation. According to Dunlop-Hinkler et al. (2010), radical innovation provides superior competitive advantage and is more sustainable. While radical innovation is critical in disturbing the equilibrium by impacting competition, customers and markets, the value of incremental innovation is in making incremental improvements, searching and adjusting around an equilibrium (Alvarez & Barney, 2007; Bessant & Tidd, 2011; Raisch & Birkinshaw, 2008). Tahseen (2017) asserted that both forms of innovation are important for organizations and if used in combination can provide sustained competitive advantage. Dunlop-Hinkler et al. (2010) argued that both radical and incremental innovation can be combined at different stages of the business lifecycle to achieve sustained competitive advantage.

## Conclusion

This research supports the hypothesis that an appropriate entrepreneurial organizational design impacts innovation in emerging markets. In particular, it validates 22 measures of the EA scale. It supports the proposition that there is a causal link between EA and both incremental and radical forms of innovation undertaken on a frequent basis. The frequency of incremental and radical innovation may vary but both types of innovation provide substantial level of competitive advantage to firms in emerging economies. This study concludes that entrepreneurial leadership creates an innovation ecosystem, whereby innovation can be promoted. Entrepreneurial structure creates support structures and work processes that support innovation, while entrepreneurial culture creates a value system, work practices and reward systems that promote both creativity and innovation. Finally, entrepreneurial strategies are externally directed towards opportunity finding in markets and among customers and are internally driven to support development of competencies and resources required for innovation.

Readiness for innovation measures also supports the hypothesis, as it plays a mediating role between EA and innovation. It explains the missing links between corporate entrepreneurial activity and innovation. By creation of dedicated structure, systems, partnerships and new business models focused on innovation, corporate firms in emerging economies are able to manage the paradoxes between stability and change. RFI measures are critical in developing or facilitating access to innovation ecosystems, particularly for firms focused on low cost innovation. It explains that there has to be clear demarcation between exploration opportunities and execution mechanisms,

which are facilitated by RFI measures. RFI measures should not be ideally part of an entrepreneurial organizational design as it may lose its effectiveness under pressures of operational stability.

## **7. Implications of the study**

The findings of this study will guide researchers, practitioners and corporate firms in emerging economies, and Omani corporate sector in particular, in creating an entrepreneurial organization design that promotes innovation. It can guide managerial decision making as firms can synergistically design their organizations based on the entrepreneurial architecture measure validated in this study. Firms in the Omani corporate sector can enhance their firm's readiness for innovation levels by carefully designing an innovation ecosystem. A corporate firm can enhance its readiness for innovation through dedicated platforms, partnerships and adoption of new business models and enhance its ability to execute innovative initiatives. Finally, managers can aspire for either incremental or radical innovation as both improve a firm's performance and operate at different levels of degree and frequency. Both these forms of innovation have an impact on markets and competition. Recommendations on designing an entrepreneurial architecture include focusing on creating a culture of creativity and innovation through dedicated resources and rewards. Creating an entrepreneurial structure is essential to facilitate innovation through independent and autonomous units, cross functional integration and delegated decision making. Entrepreneurial strategies should be designed to firstly develop capacities and partnerships and then effectively reinforce the differentiation. Finally, the leadership, if the organization acts as a binding force to facilitate innovation. The leadership-buy-in is essential before any innovation can see the light of the day. Leaders should be motivators and facilitators in the long drawn and multi-stage innovation process.

## **8. Limitations and future research directions**

Although in the present research setting, EA was found to be influencing innovation facilitated through RFI measures, there are caveats to these conclusions because the research was limited to Omani corporate firms. The validity of measures was not checked in different emerging economies. Effectiveness of EA and readiness measures may vary in different research settings. The effectiveness of EA and RFI in impacting innovation degree and frequency may also be subject to change in different conditions. The concept of RFI particularly needs further conceptual and empirical development. It may therefore be appropriate to include qualitative inputs to provide contextual as well as statistical validity to the scales used. Further research is needed to validate the transferability of these results and establish a more generalizable management tool to measure entrepreneurial organizational design, explore moderating roles of different facets of the innovation process and their influence on different types of innovation.

## References

- Adams, R., Bessant, J., & Phelps, R. (2006). Innovation management measurement: A review. *International Journal of Management Reviews*, 1(8), 21–47.
- Afuah, A., & Tucci, C. L. (2013). Capture and crowdsourcing. *Academy of Management Review*, 38, 457–460.
- Agnihotri, A. (2014). Low-cost innovation in emerging markets. *Journal of Strategic Marketing*, 23(5), 399–411.
- Ahmed, P. K., & Shepherd, C.D. (2010). *Innovation Management, Context, Strategies, Systems and Process*. London: Person Education.
- Ahn, J. M., Minshall, T., & Mortara, L. (2017). Understanding the human side of openness: the fit between open innovation modes and CEO characteristics. *R&D Management*, 47(5), 727–740.
- Allen, T., & Henn, G. (2007). *The Organization and Architecture of innovation: Managing the Flow of Technology*. MA: Butterworth-Heinemann.
- Alvarez, S. A., & Barney J. B. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, 1(1), 11–26.
- Amabile, T. M. (1997). Motivating creativity in organizations: on doing what you love and loving what you do. *California Management Review*, 40(1), 39–58.
- Apekey, T. A., Mc Sorley, G., & Tilling, M. (2011). Room for improvement? Leadership innovation, culture and uptake quality improvement methods in general practice. *Journal of Evaluation in Clinical Practice*, 17(2), 311–318.
- Badal, S. (2013) Building Corporate Entrepreneurship is hard work. *Gallup Business Journal*, [online]<http://businessjournal.gallup.com/content/157604/building-corporateentrepreneurship-hard-work.aspx>, (accessed 5th March 2017).
- Balker, B. (2015). The Relationships between Organizational Climate, Innovative Behavior and Job Performance. *International Online Journal of Educational Sciences*, 7(2), 81–92.
- Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision*, 47(8), 1323–1339.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Bastic, M. & Leskovar-Spacapan, G. (2006). What do transition organizations lack to be innovative? *Kybernetes*, 35(7/8), 972–992.
- Beheshtifar, M. & Shariatifar, F. (2013). A Study of Relationship between Organizational Structure and Culture with Corporate Entrepreneurship. *Entrepreneurship and Management Journal*, 1(1), 19–32.
- Bessant, J. & Tidd, J. (2011). *Innovation and Entrepreneurship* (2<sup>nd</sup> ed.). NJ: John Wiley and Sons Ltd.
- Bengtsson, L., Lakemond, N., Lazzarotti, V., Manzini, R., Pellegrini, L., & Tell, F. (2015). Open to a Select Few? Matching Partners and Knowledge Content for Open Innovation Performance. *Creativity and Innovation Management*, 24, 72–86.
- Bogers, M. (2014). The open innovation paradox: knowledge sharing and protection in R&D collaborations. *European Journal of Innovation Management*, 14(1), 93–117.
- Bordegoni, M. & Rizzi, C. (2011). *Innovation in Product Design from CAD to Virtual Prototyping*. London: Springer.
- Brettel, M., Heinemann, F., Engelen, A., & Neubauer, S. (2011). Cross-Functional Integration of R&D, Marketing, and Manufacturing in Radical and Incremental Product Innovations and Its Effects on Project Effectiveness and Efficiency. *Journal of Product Innovation Management*, 28, 251–269.



- Brizek, M. G. (2014). Explaining corporate entrepreneurship: a contemporary literature investigation. *Journal of Management and Marketing Research*, 14(1), 1–13.
- Brodoni, S. M. (2012). Innovation and Imitation: Corporate Strategies for Global Competition. Symphonia. *Emerging Issues in Management*, 1, 10–24.
- Bruce, A. & Birchall, D. (2009). *Fast Track to Success Innovation*. Harlow: Pearson Education.
- Burns, P. (2008). *Corporate Entrepreneurship: Building the entrepreneurial organization* (2<sup>nd</sup> ed.). London: Palgrave, Macmillan.
- Burns, P. (2013). *Corporate Entrepreneurship: Innovation and strategy in large organizations* (3<sup>rd</sup> ed.). London: Palgrave Macmillan.
- Butler, T. (2017). *Hiring an entrepreneurial Leader*. MA: Harvard Business Review.
- Büschgens, H., Bausch, A., & Balkin, D. A. (2013.) Organizational Culture and Innovation: A Meta-Analytic Review. *Product Innovation Management*, 30(4), 763–78.
- Chao, L. P., Tumer, I., & Ishii, K. (2005). *Design Process Error-Proofing: Benchmarking Gate and Phased Review Life-Cycle Models*. Proceedings of the ASME Design Engineering Technical Conference. California.
- Chakravarthy, B., & Coughlan, S. (2011). Emerging market strategy: innovating both products and delivery systems. *Strategy & Leadership*, 40(1), 27–32.
- Chang, C., Chen, Y., & Kuo, T. K. (2009). Strategic technology sourcing in corporate ventures: A study of Taiwanese pharmaceutical firms. *International Journal of Entrepreneurial Behavior & Research*, 15(5), 497–517.
- Cooper, R. G. (2008). The stage-gate idea-to-launch process update, what's new and nextGen Systems. *Journal of Product Innovation Management*, 25(3), 213–232.
- Chesbrough, H., & Bogers, M. (2014). Explicating open innovation. In H. Chesbrough et al. (Eds.), *New Frontiers in Open Innovation* (pp. 17–18). Oxford: Oxford University Press,.
- Conway, S., & Stewards, S. (2009). *Managing and Shaping Innovation*. NY: Oxford University Press.
- Covin, G. C., & Lumpkin, G. T. (2011). Entrepreneurial Orientation Theory and Research: Reflections on a Needed Construct. *Entrepreneurship Theory and Practice*, 35(5), 855–872.
- Covin, G. C., & Wales, W. J. (2012). The Measurement of Entrepreneurial Orientation. *Entrepreneurship Theory and Practice*, 36(4), 677–702.
- Cummings, T. G., & Worley, C. G. (2015). *Organizational development and change*. Cengage Learning, CT.
- Debruyne, M. (2015). *Customer Innovation*. NC: Franklin Press.
- Demirci, E. (2013). In pursuit of corporate Entrepreneurship: How employees perceive the role of formalization and centralization. *Journal of Management Research*, 5(3), 115–132.
- Denti, L. (2011). *Leadership and Innovation: How and when do Leaders Influence Innovation in R&D Teams?* University of Gothenburg, Sweden.  
<http://www.gu.se/english/research/publication?publicationId=142546> (accessed 15<sup>th</sup> April 2018).
- Deschamps, J. (2005). Different leadership skills for different innovation strategies. *Strategy and Leadership*, 33(5), 31–38.
- Dong, A. (2015). Design × innovation: perspective or evidence-based practices. *International Journal of Design Creativity and Innovation*, 3(3), 148–163.
- Dobni, C. B., Klassen, M., & Nelson, W. T. (2015). Innovation strategy in the US: top executives offer their views. *The Journal of Business Strategy*, 36(1), 3–4.
- Dunlop-Hinkler, D., Mudambi, R., & Kotabe, M. (2010). A Story of breakthrough and incremental innovation. *Strategic Entrepreneurship Journal*, 4(2), 106–127.
- Dyer, J., Gregersen, H., & Christensen, C. M. (2011). *The DNA of disruptive innovator: mastering five skills of disruptive innovators*. MA: Harvard Business Publishing.



- Eftekhari, N. & Bogers, M. (2015). Open for Entrepreneurship: How Open Innovation Can Foster New Venture Creation. *Creativity and Innovation Management*, 24, 574–584.
- El-Awad, Z., Gabriellsson, J., Politis, D. (2017). Entrepreneurial learning and innovation: The critical role of team-level learning for the evolution of innovation capabilities in technology based ventures. *International Journal of Entrepreneurial Behavior & Research*, 23(3), 381–405.
- Fagerberg, J. (2005). Innovation: A guide to the Literature. In J. Fagerberg et al. (Eds.), *The Oxford Handbook of Innovation* (pp. 1–27). Oxford: Oxford University Press.
- Fisher, C. (2004). *Writing Research dissertations for Business Students*. NY: Prentice Hall.
- Fleury, A., Fleury, M.L., & Borini, F.M. (2013). The Brazilian multinational's approach to innovation. *Journal of International Management*, 19 (3), 260–275.
- Fuentes, A.M., & Gomez-Gras, J.M. (2011). Radical and Incremental Entrepreneurial Orientation. *Journal of Management and Organization*, 17(3), 326–343.
- Francis, D. L. (2000). *Assessing and improving innovation capability in organizations*, Unpublished PhD thesis, University of Brighton, United Kingdom.
- García, L. M., Deserti, A., & Teixeira, C. (2017). Entrepreneurial design: the role of design as driver of entrepreneurial opportunity generation and assessment. *International Journal of Entrepreneurship and Innovation Management*, 21(1/2), 64–85.
- Gapp, R., & Fisher, R. (2007). Developing an intrapreneur-led three-phase model of innovation. *International Journal of Entrepreneurial Behavior & Research*, 13(6), 330–348.
- Gaskin, J. (2012). Model fit again, Gaskination's Statswiki. Retrieved from <http://statswiki.kolobkreations.com> (Accessed 20th January 2019).
- Ghezzi, A., & Gabelloni, D., Martini, A., & Natalicchio, A. (2017). Crowdsourcing: A Review and Suggestions for Future Research. *International Journal of Management Reviews*, 16. <http://onlinelibrary.wiley.com/doi/10.1111/ijmr.12135/full> (Accessed 20th December 2018).
- Glisson, G. (2015). The role of organizational culture and climate in innovation and effectiveness. *Human, Service Organizations: Management, Leadership and Governance*, (39)4, 245–250.
- Grant, R. M. (2010). *Contemporary Strategic Analysis*. NY: John Wiley and Sons.
- Goffin, K. & Mitchell, R. (2010). *Innovation Management*. London: Palgrave McMillan.
- Gürkan, G. C., & Tükeltürk, S. A. (2017). Strategies for Innovative Organization Structure: Innovative Culture and Open Innovation. In *Global Business Strategies in Crisis: Strategic Thinking and Development* (pp. 185–199). NY: Springer.
- Hamel, G., & Breen, B. (2007). *The Future of Management*. MA: Harvard Business School Publishing.
- Hajizadeh, A., & Zali, M. (2016). Prior knowledge, cognitive characteristics and opportunity recognition. *International Journal of Entrepreneurial Behavior & Research*, 22(1), 63–83.
- Haar, J., & Ernst, R. (2016). *Innovation in Emerging Markets*. London: Palgrave McMillan.
- Hill, S. A., & Birkinshaw, J. (2008). Strategy-organization configurations in corporate venture units: Impact on performance and survival. *Journal of Business Venturing*, 23, 423–444.
- Hisrich, R. D., Peter, M. P., & Shepherd, D. A. (2016). *Entrepreneurship*. Yorkshire: McGraw Hill.
- Howe, J. (2008). *Crowdsourcing*. NY: Crown Publishing.
- Isaksen, S. G., & Ekvall, G., (2010). Managing for innovation: The two faces of tension in creative climates. *Creativity and Innovation Management*, 19(2), 73–88.
- Jha, S. K. (2013). *Evolution and organization of global innovation network in multinational enterprises* (unpublished doctoral dissertation). Indian Institute of Management, Bangalore.
- Johnston, L., Robinson, S., & Lockett, N. (2010). Recognising 'open innovation' in HEI industry interaction for knowledge transfer and exchange. *International Journal of Entrepreneurial Behavior & Research*, 16(6), 540–560.
- Jung, D. I., Chow, C., & Wu, A. (2003). The role of transformational leadership in enhancing or-

ganizational innovation: Hypotheses and some preliminary findings. *Leadership Quarterly*, 14(4–5), 525–544.

Kamaruddeen, A. M., Yusof, N. A., & Said, I. (2011). Assessing the innovativeness of housing developers in Malaysia. *International Journal of Academic Research*, 3(3), 178183.

Kay, J. (1998). *Foundations of Corporate Success*. Oxford: Oxford University Press.

Kelley T., & Litman, J. (2016). *The art of Innovation, Lessons in Creativity from IDEO*. London: Profile Books.

Kim, W. C., & Mauborgne, R. (2005). *Blue Ocean Strategy: How to Create Uncontested Market Space and Make Competition Irrelevant*. MA: Harvard Business Press.

Kline, R. B. (2010). *Principles and practice of structural equation modelling* (3rd ed.). NY: Guilford Press.

Knott, A. M. (2012). *The Trillion Dollar R&D Fix*. MA: Harvard Business Review.

Kumar, N., & Puranam, P. (2012). *India inside: The emerging innovation challenge to the West*. MA: Harvard Business Press.

Kuratko, D. F., & Audretsch, D. B. (2013). Clarifying the domains of corporate entrepreneurship. *International Entrepreneurship and Management Journal*, 9(3), 323–335.

Kuratko, D. F., Morris, M. H., & Schindehutte, M. (2015). Understanding the dynamics of entrepreneurship through framework approaches. *Small Business Economics*, 45(1), 1–13.

Kuratko, D. F. & Hodgetts, R. M. (2007). *Entrepreneurship, Theory, Process, Practice* (7th ed.). NJ: Thompson South Western.

Kuckertz, A., Kollmann, T., Krell, P., & Stöckmann, C. (2017). Understanding, differentiating, and measuring opportunity recognition and opportunity exploitation. *International Journal of Entrepreneurial Behavior & Research*, 23(1), 78–97.

Kumar, R., Mudambi, R., & Gray, S. (2013). Internationalization, innovation and institutions: The 3 I's underpinning the competitiveness of emerging market firms. *Journal of International Management*, 19(3) 203–206.

Lau, T., Shaffer, M. A., Chan, K. F., & Man, T. W. (2012). The entrepreneurial behaviour inventory: A simulated incident method to assess corporate entrepreneurship. *International Journal of Entrepreneurial Behavior & Research*, 18(6), 673–696.

Lin, H. E., McDonough, E. F., Lin, S. J., & Lin, C. Y. Y. (2013). Managing the exploitation/exploration paradox: The role of a learning capability and innovation ambidexterity. *Journal of Product Innovation Management*, 30(2), 262–278.

Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the Entrepreneurial Orientation Construct and linking it to Performance. *The Academy of Management Review*, 2(1), 135–172.

Lynch, R., & Gin, Z. (2016). Knowledge and Innovation in emerging market multinationals: the expansion paradox. *Journal of Management*, 69(5), 1593–1597.

McFadzean, E., O'Loughlin, E., & Shaw, E. (2005). Corporate entrepreneurship and innovation part 1: the missing link. *European Journal of Innovation Management*, 8(3), 350–372.

Marcotte, C. (2014). Entrepreneurship and innovation in emerging economies: Conceptual, methodological and contextual issues. *International Journal of Entrepreneurial Behavior & Research*, 20(1), 42–65.

Marks, A., & Lockyer, C. (2004). Producing knowledge: the use of the project team as a vehicle for knowledge and skill acquisition for software employees. *Economic and Industrial Democracy*, 2(2), 219–245.

Martin, R.L. (2011). *The innovation catalysts*. MA: Harvard Business School Publishing.

Martínez-Román, J. A., Gamero, J., & Tamayo, J. A. (2011). Analysis of innovation in SMEs using an innovative capability-based non-linear model: A study in the province of Seville (Spain). *Technology*, 31(9), 459–475.

Melnyk, B. M., & Davidson, S. (2009). Creating a culture of innovation through shared vision, leadership, interdependent partnerships and positive deviance. *Nursing Administrative Quarterly*, 33(94), 288–295.

Mitchelmore, S., & Rowley, J. (2010). Entrepreneurial competencies: a literature review and development agenda. *International Journal of Entrepreneurial Behavior & Research*, 16(2), 92–111.

Morris, M. H., & Sexton, D. L., (1996). The concept of entrepreneurial intensity: Implications for company performance. *Journal of Business Research*, 36(1), 5–13.

Morris, M. H., & Kuratko, D. F. (2002). *Corporate Entrepreneurship*. Fortworth: Harcourt College Publishers.

Morris, M. H., Kuratko, D. F., & Covin, J. G. (2011). *Corporate Entrepreneurship and Innovation: Entrepreneurial Development within organizations*. Mason, Ohio: South Western Cengage Learning.

Mulec, K., & Roth, J. (2005). Action, Reflection and learning: Coaching in Order to Enhance the Performance of Drug Development Project Management Team. *R&D Management*, 25 (5), 483–91.

Muller, A., Malikangas, L., & Merlyn, P. (2005). Metrics for innovation: Guidelines for developing customized suite of metrics. *Strategy and Leadership*, 33(1), 37–45

Narcizo, R. B., Canen, A. G., & Tammela, I. (2017). A conceptual framework to represent the theoretical domain of innovation capability in organizations. *Journal of Entrepreneurship, Management and Innovation*, 13(1), 147–166.

Nagji, B., & Tuff, G. (2012). *Managing your innovation portfolio*. MA: Harvard Business Review.

Nelles, J., & Vorley, T. (2011). Entrepreneurial Architecture: A blueprint for entrepreneurial universities. *Canadian Journal of Administrative Sciences*, 28(3), 341–353.

Nham, P. T., Pham, H. G., & Ngyuen, N. (2015). The impact of organizational culture on innovation activities. *Journal of Global Management Research*, 1(1), 125–142.

Nieto, M. J., Santamaria, L., & Fernandez, Z. (2013). Understanding the Innovation Behaviour of Family Firms. *Journal of Small Business Management*, 53(2), 382–399.

Norman, D. A., & Verganti, R. (2014). Incremental and radical innovation: Design research versus technology and meaning change. *Design Issues*, 30(1), 78–96.

Ollila, S., & Yström, A. (2016). Exploring Design Principles of Organizing for Collaborative Innovation: The Case of an Open Innovation Initiative. *Creativity and Innovation Management*, 25, 363–377.

Pandey, A., & Banwet, D. K., (2018). Innovations in Indian Financial Systems: remedy for financial growth? *Technology Analysis & Strategic Management*, 30(11), 1283–1295.

Penin, J. (2008). *More open than open innovation? Rethinking the concept of openness in innovation strategies*. Working paper 2008-18 Beta, Université Louis Pasteur, Strasbourg.

Phuc, N. H. (2015). Imitation & Innovation in Emerging Countries: A conceptual framework for analysis. *Journal of Innovation and Sustainability*, 6(1), 37–47.

Petratite, M. (2014). Organizing and Monitoring Innovation: linking Processes, Design, and Strategy, *The International Society for Professional Innovation Management (ISPIM)*, 115.

Raish, S., & Birkinshaw, J. (2008). Organizational Ambidexterity: Antecedents, Outcomes, and Moderators. *Journal of Management*, 34(3), 375–409.

Rainey, D. (2006). *Product Innovation: Leading change through integrated product development*. NY: Cambridge University Press.

Rayna, T., & Ludmila, S. (2016). From rapid prototyping to home fabrication: How 3D printing is changing business model innovation. *Technological forecasting and Social Change*, 102, 214–224.

Rhee, M., & Mehra, S. (2013). Managing Operational Proactiveness to Facilitate Functional Area Alignment and Enhance Business Performance. *Seoul Journal of Business*, 19(2), 45–72.

Rodrigues, H. S., Figueroa, P., & Jardon, C. (2010). The Influence of human capital on innovativeness of firms. *International Journal of Economics and Business Research*, 9(9), 53–64.

Rosenbusch, N., Brinckmann, J., & Bausch, A. (2010). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26(4), 441–457.

Salvador, E., Mariotti, I., & Conicella, F. (2013). Science Park or Innovation Cluster? Similarities and differences in physical and virtual firm's agglomeration phenomena. *International Journal of Entrepreneurial Behavior & Research*, 19(6), 656–674.

Sarros, J. C., Cooper, B. K., Santora, J. C. (2011). Leadership vision, organizational culture, and support for innovation in not-for-profit and for-profit organizations. *Leadership & Organization Development Journal*, 32(3), 291–309.

Saunders, M., Lewis, P., & Thornhill, A. (2010). *Research Methods for Business Students Financial Times*. London: Pitman Publication.

Sayles, L. R. (1964). *Managerial Behaviour: Administration in complex organizations*. NY: McGraw.

Saunila, M., & Ukko, J. (2012). A conceptual framework for the measurement of innovation capability and its effects. *Baltic Journal of Management*, 7(4), 355–375.

Schutte, C., and Marais, S. (2010). *The Development of Open Innovation Models to Assist the Innovation Process*. Unpublished Master's thesis, University of Stellenbosch, South Africa.

Sesay, B., Yulin, Z., & Wang, F. (2018). Does the national innovation system spur economic growth in Brazil, Russia, India, China and South Africa economies? Evidence from panel data. *South African Journal of Economic and Management Sciences*, 21(1), a16147. <https://doi.org/10.4102/sajems.v21i1.1647>

Shah, C. M., Ortt, J. R., & Scholten, V. (2011). Building a Radical Innovation Mechanism at Large Firms. *Innovation in Business and Enterprise: Technologies and Frameworks*, 120134 World Scientific Publishing, [Online] [www.worldscientific.com](http://www.worldscientific.com) (accessed 27<sup>th</sup> December 2017).

Somech, A. (2006). The Effects of Leadership Style and Team Process on Performance and Innovation in Functionally Heterogeneous Teams. *Journal of Management*, 32(1), 132–157.

Stevenson, H. H., & Jarillo, J. C. (1990). A paradigm of entrepreneurship: Entrepreneurial Management. *Strategic Management Journal*, 11, 17–27.

Swaans, K., Boogaard, B., Bendapudi, R., Taye, H., Hendrickx, S. & Klerkx, L. (2014). Operationalizing inclusive innovation: lessons from innovation platforms in livestock value chains in India and Mozambique. *Innovation and Development*, 4(1), 239–257.

Tabachnik, B. G., & Fidell, L. S., (2013). *Using Multivariate Statistics* (6<sup>th</sup> ed.). London: Pearson International Education.

Tahseen Arshi, A. (2012). Entrepreneurial Intensity in the Corporate Sector in Oman: The Elusive Search Creativity and Innovation. *International Business Research*, 5(9), 171–183.

Tahseen Arshi, A. (2013). Can organizational culture influence innovation: An empirical study on organizational culture characteristics and innovation intensity. *Scottish Journal of Arts and Sciences*, 10(2), 6–15.

Tahseen Arshi, A. (2017). Is innovation a second-order construct: Clarifying the Formative and Reflective Measures of Innovation. *Archives of Business Research*, 5(2), 1–13.

Tahseen Arshi A., & Burns. P. (2018). Entrepreneurial Architecture: A Framework to Promote Innovation in Large Firms. *Journal of Entrepreneurship*, 27(2), 151–179.

Tang, Z., & Hull, C. (2012). An Investigation of Entrepreneurial Orientation, Perceived Environmental Hostility, and Strategy Application among Chinese SMEs. *Journal of Small Business Management*, 50(1), 132–158.

Teece, D. J. (2012). Dynamic capabilities: Routine versus entrepreneurial action. *Journal of Management Studies*, 49(8), 1395–1401.

Tellis, G. J., Prabhu, J. C., & Chandy, T. K. (2009). Radical Innovation across Nations: The pre-eminence of corporate culture. *Journal of Marketing*, 73, 3–23.

- Tonnessen, T. (2005). Continuous innovation through companywide employee participation. *TQM Magazine*, 17(2), 195–207.
- Tsang, D. (2016). *Work autonomy and Product Innovation, Industrial Democracy in Chinese Aerospace Industry*. London: Palgrave Macmillan.
- Tushman, M., Smith, W. K., Wood, C., Westerman, G., & O' Reilly, C. (2006). *Organizational Design and Innovation Streams*. MA: Harvard Business Publishing, Working Paper Series, 7–087.
- Waite, A. M. (2014) Leadership influence on innovation and sustainability. *European Journal of Training and Development*, 38(1), 15–39.
- Wang, K. Y., Hermens, A., Huang, K., & Chelliah J. (2015). Entrepreneurial Orientation and Organizational Learning on SMEs' Innovation. *International Journal of Organizational Innovation*, 7(3), 65–75.
- Catherine L. W., Rafiq, M., Li, X., & Zheng, Y. (2014). Entrepreneurial preparedness: an exploratory case study of Chinese private enterprises. *International Journal of Entrepreneurial Behavior & Research*, 20(4), 351–374.
- Westland, J. C. (2015). *Structural Equation Modelling: From Paths to Networks*. NY: Springer.
- Wong, S. K. S. (2014). Impacts of environmental turbulence on entrepreneurial orientation and new product success. *European Journal of Innovation Management*, 17(2), 229–249.
- Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data. *Small Business Economics*, 24(3), 335.
- Yildiz, M. L. (2014). The effects of organizational culture on corporate entrepreneurship. *International Journal of Business and Social Science*, 5(2), 35–44.
- Yip, G., & McKern, B. (2014). Innovation in emerging markets – the case of China. *International Journal of Emerging Markets*, 9(1), 2–10.
- Youngblood, M. D. (2007). Winning cultures for the new economy. *Strategy and Leadership*, 20(6), 4–9.
- Zacca, R., & Dayan, M. (2017). Entrepreneurship: an evolving conceptual framework. *International Journal of Entrepreneurship and Innovation Management*, 21, (1/2), 2–26.
- Zacher, H., & Rosing, K. (2015). Ambidextrous leadership and team innovation. *Leadership and Organization Development Journal*, 36(1), 54.
- Zheng, W., Yang, B., & McLean, G. (2010). Linking organizational culture, structure, strategy, and organizational effectiveness: Mediating role of knowledge management. *Journal of Business Research*, 63(7), 763–771.
- Zoltan, ACS, J., & Ausdrech, D. B. (2010). Entrepreneurship and Innovation. *The Papers on Entrepreneurship, Growth and Public Policy* No. 43. Max Plank Institute for Research into Economic Systems and Group Entrepreneurship.



## Appendix 1: Valid Measures of EA, RFI and Innovation

TABLE 3: Valid Measures of Entrepreneurial Architecture

Entrepreneurial Leadership		
1	LP1	The leaders in my organization have a vision for change and innovation.
2	LP2	The leaders in my organization are open to new ideas.
3	LP3	The leaders create high performing teams that can independently handle innovative projects.
4	LP4	Leaders motivate and inspire employees for innovation.
5	LP5	Leaders are good at clarifying uncertainties going forward and providing reassurance.
6	LP6	Leaders support the management buy-in into innovative projects and new business models.
Entrepreneurial Structure		
7	ESTU1	There are structures to monitor and manage risk.
8	ESTU2	Operating divisions or subsidiaries are relatively autonomous
9	ESTU3	Different divisions have the flexibility to respond to new opportunities.
10	ESTU4	There are provisions for cross functional integration on new projects.
11	ESTU5	There are structures to provide opportunities for knowledge transfer.
12	ESTU6	The organization encourages and facilitates delegated decision-making.
Entrepreneurial Culture		
13	ECUL1	There is a risk taking culture in the organization.
14	ECUL2	Staff members have the time for learning and creative thinking.
15	ECUL3	Employees and teams are recognized and rewarded for creativity and innovation.
16	ECUL4	Experimentation is encouraged at all levels in the organization.
17	ECUL5	There is tolerance for failure.
Entrepreneurial Strategies		
18	ESTR1	My organization has focused and meaningful strategies for innovation.
20	ESTR2	My organization develops dynamic capabilities for innovation.
22	ESTR3	My organization has clear differentiation strategies.
23	ESTR4	My organization makes the effort to collaborate with external partners.
25	ESTR5	Seeking new opportunities is prominent strategic priority of my organization.

Leadership- LP, Structure-ESTU, Culture-ECUL, Strategies- ESTR

TABLE 4. Valid Measures of Readiness for Innovation

1	RFI1	There are dedicated corporate venturing units that exploit new venturing opportunities in local markets.
2	RFI2	Digital or physical prototyping facilities through a consortium help in evaluating innovation feasibility.
3	RFI3	There is a structured stage-gate process in place to convert new ideas into innovation.
4	RFI4	There is an innovation monitoring and evaluation process in place focusing on product/service market fit.
5	RFI5	The business model is flexible to embrace open innovation in order to access technology and low cost innovation



TABLE 5. Valid measures of Innovation

1	RI1	Radical innovation creates impact on competition and customers through radical changes to products and services.
2	RI2	A number of radical changes to products and services have occurred over the last two years.
3	II1	Incremental innovation creates impact on competition and customers through improvements and modifications to existing products and services.
4	II2	A number of incremental changes to products and services have occurred over the last two years.

*Radical innovation Degree-RI, Incremental Innovation-II*

## Appendix 2: Profile of Respondents

Item	Categories	%		Item	Categories	%
Nature of Company	Local	72		Respondent's Profile	CEO/MD	37
	MNCs	28			Directors	28
					Senior Managers	30
					Managers	05
Industry Category	Agriculture and Fishing	09		Company Size	Below 100	30
	Health	15			100-150	60
	Manufacturing	22			Above 150	11
	Retail	14				
	Financial and Insurance	11		Gender	Male	90
	Real State	04			Female	10
	Education	08				
	Human Health	08		Experience	Below 5 Years	10
	Arts and Entertainment	08			5-10 Years	38
	Other service activities	05			10-20 Years	50