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Entrepreneurial leadership measurement: a multi-dimensional construct

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Entrepreneurial leadership measurement: a multi-dimensional construct

Abstract

Purpose - The purpose of this paper is to refine our understanding of entrepreneurial leadership by developing a multi-dimensional measure for the construct through a comprehensive approach based on the skills and competencies of entrepreneurial leaders as well as their behaviour and roles.

Design/methodology/approach - Following the evidence collected across two cultural and economic contexts namely Iran and Scotland and prior theoretical conceptualisations, this study designed an entrepreneurial leadership scale. Questionnaires were the mode of data collection, and data was triangulated via participants and literature.

Findings - From the study a detailed conceptualisation of entrepreneurial leadership was formed, which in turn provides the basis for an empirical based construct of this phenomenon and its measurement from a cross-cultural perspective. Specifically, this study identifies the items that best describe each dimension of entrepreneurial leadership. By these findings, this study provides the skills, competencies and specific behaviour of entrepreneurial leaders.

Originality/value - The findings of this study have implications in theory and practice. By highlighting the dimensions of entrepreneurial leadership, this study assists the development of theories on how entrepreneurial leadership influence the process of innovation and opportunity recognition. This study is one of the first to examine the validity and reliability of the measure developed for the construct across two countries having different cultural and economic contexts, namely Iran and Scotland. In practice, the findings of this study serve as a useful reference for practitioners of the skills, behaviours and competencies expected of entrepreneurial leaders.

Keywords entrepreneurial leadership measurement, entrepreneurial leadership, multi-dimensional construct, leadership, skills, behaviour, competence, developing economy

Paper type Research Paper

Entrepreneurial leadership measurement: a multi-dimensional construct

1. Introduction

Entrepreneurial leadership is a relatively emergent paradigm that has been applied to overcome the ever-changing and dynamic nature of organisations. This type of leadership has received increased attention of both scholars and practitioners due to its importance in improving competitiveness, success and growth of all types of businesses (Cai *et al.*, 2018; Freeman and Siegfried, 2015; Gupta *et al.*, 2004; Harrison *et al.*, 2016a; Harrison *et al.*, 2018; Huang *et al.*, 2014; Karol, 2015; Koryak *et al.*, 2015; Leitch *et al.*, 2013; Newman *et al.*, 2018; Renko *et al.*, 2015; Swiercz and Lydon, 2002) and a public or private organisation (Bagheri and Akbari, 2018; Kim *et al.*, 2017; Miao *et al.*, 2018). By their focus on innovation and opportunity recognition, specifically in highly complex, turbulent and uncertain environments, entrepreneurial leaders not only create innovative ideas to overcome the challenges of the business, but also direct the process of innovation and opportunity recognition in their business (Bagheri, 2017; Bagheri and Akbari, 2018; Chen, 2007; Fontana and Musa, 2017; Freeman and Siegfried, 2015; Harrison *et al.*, 2018; Karol, 2015; Kim *et al.*, 2017; Swiercz and Lydon, 2002).

Despite the growing interest, a definition of entrepreneurial leadership and theory remain underdeveloped (Gupta *et al.*, 2004; Kempster and Cope, 2010; Leitch and Volery, 2017; Swiercz and Lydon, 2002), for several reasons. First, there is no consensus among scholars on the definition of the notion. While some scholars define entrepreneurial leadership based on the distinctive attributes and qualities of the leader (Chen, 2007; Fernald *et al.*, 2005; Gupta *et al.*, 2004; Kuratko, 2007; Leitch and Volery, 2017; Nicholson, 1998; Swiercz and Lydon, 2002), others focus on their specific leadership behaviour, roles and skills (Cogliser and Brigham, 2004; Gupta *et al.*, 2004; Harrison *et al.*, 2018; Ireland *et al.*, 2005; Kuratko,

2007; Middlebrooks, 2015; Renko *et al.*, 2015; Surie and Ashley, 2008). Second, there is no consensus among scholars on the dimensionality of the construct. While, the majority of scholars recognise entrepreneurial leadership as a multi-dimensional construct (Fontana and Musa, 2017; Gupta *et al.*, 2004; Huang *et al.*, 2014; Kim *et al.*, 2017; Thornberry, 2006), empirical studies have mostly been conducted using a one-dimensional measure (Bagheri, 2017; Bagheri and Akbari, 2018; Cai *et al.*, 2018; Chen, 2007; Miao *et al.*, 2018; Newman *et al.*, 2017; Newman *et al.*, 2018). In general, empirical testing and development of appropriate measures for the construct is scarce (Gupta *et al.*, 2004). Therefore, our understanding on how entrepreneurial leaders influence entrepreneurial behaviour of followers and direct the entrepreneurial processes of their business is limited (Chen, 2007; Gupta *et al.*, 2004; Leitch and Volery, 2017). In addition, further development of entrepreneurial leadership theory requires a precise understanding of the factors that constitute the construct (Leitch and Volery, 2017). There are a small number of studies that empirically examine the dimensionality of entrepreneurial leadership based on theoretical foundations and developed a measurement model for the construct (Fontana and Musa, 2017; Gupta *et al.*, 2004; Huang *et al.*, 2014; Kim *et al.*, 2017; Thornberry, 2006). Of the few measures developed for entrepreneurial leadership, most did not focus on the critical aspects of the construct such as risk taking, innovation (Gupta *et al.*, 2004; Kim *et al.*, 2017), opportunity recognition and orientation towards learning (Gupta *et al.*, 2004; Huang *et al.*, 2014; Kim *et al.*, 2017; Renko *et al.*, 2015).

To narrow the gaps, this study aims to refine our understanding of entrepreneurial leadership by developing a multi-dimensional measure for the construct through a comprehensive approach based on the skills and competencies of entrepreneurial leaders as well as their leadership behaviour and roles. The reliability and validity of the measure is tested using a sample across two cultural and economic contexts of Iran and Scotland. The findings

1
2
3 provide new insights on entrepreneurial leadership construct and its components. Furthermore,
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5 this study highly contributes to the limited research on entrepreneurial leadership measurement
6
7 (Chen, 2007; Renko *et al.*, 2015), specifically through a multi-dimensional (Fontana and Musa,
8
9 2017; Thornberry, 2006) and cross-cultural perspective (Gupta *et al.*, 2004).

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11
12 This paper is organised in four main sections. First, the literature on entrepreneurial leadership
13
14 and the previously developed measures for the construct are reviewed. In addition, a
15
16 comparative construction of Iran and Scotland from the lens of a national culture perspective
17
18 is provided. The research methodology is then described. In the next section, the findings are
19
20 presented. Finally, the findings of the study in the light of their applications for theory
21
22 development, practice and research are discussed.
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28 29 2. Literature review

30 31 2.1 Entrepreneurial leadership: definition and theory

32
33 There is a considerable body of research in the fields of entrepreneurship and leadership
34
35 spanning several decades. Despite such work across both domains, entrepreneurship and
36
37 leadership still remain ambiguous concepts. There are considerable overlaps and parallels
38
39 between entrepreneurship and leadership, both historically and conceptually (Clark and
40
41 Harrison, 2018; Cogliser and Brigham, 2004; Galloway *et al.*, 2015), with some researchers
42
43 defining entrepreneurship as leadership within a narrow context (Vecchio, 2003). This research
44
45 has led to the emergence of a new paradigm known as *Entrepreneurial leadership* (Bagheri
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47 and Pihie, 2011; Cogliser and Brigham, 2004; Fernald *et al.*, 2005; Harrison *et al.*, 2018;
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49 Kuratko, 2007).
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55 Organisations exist in environments which are both complex and turbulent.
56
57 Entrepreneurial leadership has been proposed as a specific form of leadership that individuals
58
59 should embrace in order to maintain their competitiveness in a dynamic environment (Fernald
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2
3 *et al.*, 2005; Harrison *et al.*, 2016a; Harrison *et al.*, 2016b; Harrison *et al.*, 2018). Moreover, it
4
5 has been empirically shown that entrepreneurial leadership is positively related to
6
7 organisational performance (Agus and Hassan, 2010; Harrison *et al.*, 2018; Hmieleski and
8
9 Ensley, 2007; Van Zyl and Mathur-Helm, 2007). According to Harrison *et al.* (2018), in a
10
11 competitive environment, an entrepreneurial leader who is distinct from other types of leaders
12
13 is required. Such leadership is essential when there is high competition for limited resources,
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15 and organisations have to be resource dependent in order to avoid decline (Santora *et al.*, 1999).
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20
21 Due to the recognised value of this new form of leadership in enhancing organisational
22
23 performance, interest in entrepreneurial leadership has increased among scholars. Evidence of
24
25 this can be seen in the large number of definitions that have emerged in regard to
26
27 entrepreneurial leadership, which in turn has been defined as a type of leadership that creates
28
29 visionary scenarios that are used to assemble and mobilise a “supporting cast” of participants,
30
31 (Gupta *et al.*, 2004, p. 242). Harrison *et al.* (2018) argue that there are three main perspectives
32
33 on entrepreneurial leadership adopted by scholars namely; psychological perspective,
34
35 behavioural perspective and the skill-based perspective. Most research conducted in the
36
37 domain of entrepreneurial leadership has sought to identify the characteristics essential for
38
39 entrepreneurial leaders (e.g. Darling and Beebe, 2007; Gupta *et al.*, 2004). Gupta *et al.* (2004)
40
41 in their seminal work on entrepreneurial leadership identified 19 attributes and Darling and
42
43 Beebe (2007) suggested attributes related to communication. Although these studies are
44
45 informative, they take the trait approach that leaders are born and not made.
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51 Focusing on the roles that entrepreneurial leaders play in the process of innovation
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53 creation and direction, Surie and Ashley (2008) define entrepreneurial leadership as leadership
54
55 capable of sustaining innovation and adaptation in high velocity and uncertain environments.
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57 Other scholars highlighted entrepreneurial leaders’ capabilities in identifying and exploiting
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opportunities (Harrison *et al.*, 2018; Renko *et al.*, 2015) and solving complex business, social, and environmental problems (Greenberg *et al.*, 2013).

This range of definitions show that, although there is heightened interest among scholars, there is no universal consensus on the concept of entrepreneurial leadership. Progress in this new field has been hindered by a lack of conceptual development and the absence of adequate tools to assess an entrepreneurial leader's characteristics and behaviours (Clark and Harrison, 2018; Harrison *et al.*, 2018; Renko *et al.*, 2015).

Some studies examine the behaviour of the leaders; hence what they actually do (Darling *et al.*, 2007a; Darling *et al.*, 2007b; Flamholtz, 2010). Functions such as creating the vision and coordinating operations are highlighted as important for entrepreneurial leaders. Furthermore, entrepreneurial leadership has also been investigated on the basis of values (Darling *et al.*, 2007a; Darling *et al.*, 2007b; Surie and Ashley, 2008), enterprise logic and authentic leadership (Jones and Crompton, 2009), and charismatic and transformational leadership (Darling *et al.*, 2007a). Although these studies have found some similarities, they have not produced convincing conceptual frameworks and still need to be tested empirically.

Focusing on the personal and functional capabilities and challenges that entrepreneurial leaders need to deal with in organisational settings, Gupta *et al.* (2004) developed a theoretical foundation for this type of leadership. The theory explains that entrepreneurial leaders' personal competencies enable them to develop an innovative vision for their organisation whilst their functional competencies empower them to influence and inspire their followers to adopt innovation in their task performance (Leitch *et al.*, 2013).

Finally, most studies on the skill perspective are conceptual and do not provide any empirical justification for entrepreneurial leadership skills (Freeman, 2014; Karol, 2015; Lippitt, 1987). This creates a significant gap within entrepreneurial leadership literature.

Harrison *et al.* (2018) provides a skill-based analysis of entrepreneurial leadership. Though laudable, the study is limited in context and more empirical work is required to test the proposed model.

Notwithstanding the growing body of literature on entrepreneurial leadership (e.g., Bagheri and Pihie, 2010; Chen, 2007; Cogliser and Brigham, 2004; Fernald *et al.*, 2005; Gupta *et al.*, 2004; Harrison *et al.*, 2016a; Harrison *et al.*, 2018; Nicholson, 1998; Renko *et al.*, 2015; Swiercz and Lydon, 2002), there has been little scholarship focused on developing a scale to assess the entrepreneurial leaders' competencies and skills (Harrison *et al.*, 2018; Swiercz and Lydon, 2002). In particular, studies aimed at constructing and testing an entrepreneurial leadership scale across the context of different countries have been lacking (Gupta *et al.*, 2004; Yousafzai *et al.*, 2015). Exploring entrepreneurial leadership from the perspectives of a developed and a developing country will add a valuable contextual perspective and validation to the concept. This paper develops a conceptual and empirical foundation for entrepreneurial leadership from both perspectives.

2.2 Entrepreneurial leadership scale

There are few studies that have attempted to design a scale for measuring entrepreneurial leadership (Hejazi *et al.*, 2012; Renko *et al.*, 2015; Gupta *et al.*, 2004). Hejazi *et al.* (2012) developed a scale for measuring entrepreneurial leadership consisting of four different factors which were strategy, communication, motivation and personal factors. However, this scale excluded the critical components of entrepreneurial leadership such as the roles that entrepreneurial leaders play in directing innovation and opportunity recognition process (Renko *et al.*, 2015; Surie and Ashley, 2008). The scale is also limited within the context of Tehran (the capital city of Iran) and SMEs. Similarly, Renko *et al.* (2015) developed a scale

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2
3 for measuring entrepreneurial leadership based on the follower's perspective but did not
4
5 consider how employees perceive the opportunity capabilities of their leaders (Kyndt and
6
7 Baert, 2015; Thornberry, 2006). Entrepreneurial leadership studies have traditionally focused
8
9 narrowly on a limited set of elements by highlighting the leader while overlooking relevant
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11 elements of leadership (such as the follower and the context) (Harrison *et al.*, 2018). There
12
13 remains a need for more research which considers both leader and follower perspectives as
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15 well as taking into consideration a broader contextual perspective in validating an
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17 entrepreneurial leadership (EL) scale.
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23 Furthermore, there have been few studies that focused on the competencies and skills of
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25 entrepreneurial leaders (Bagheri *et al.*, 2013; Harrison *et al.*, 2018; Swiercz and Lydon, 2012).
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27 Harrison *et al.* (2018) proposes 17 entrepreneurial leadership skills required for success.
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29 Although this empirical study does provide a basis from which to develop further empirical
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31 research, it does not include the specific behaviour of entrepreneurial leaders and is limited by
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33 context as the focus of the scholars was a developing economy. Swiercz and Lydon (2012)
34
35 specify the competencies required by successful career entrepreneurial leaders in transition
36
37 from a small business to the development stage. Bagheri *et al.* (2013) examined entrepreneurial
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39 leadership competencies among Malaysian student entrepreneurial leaders. However, these
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41 two studies do not provide a clear measure of entrepreneurial leadership.
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47 Arguably the more prominent approach to entrepreneurial leadership has been to develop
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49 a framework or model based on entrepreneurial leadership attributes or behaviour (Bagheri and
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51 Pihie, 2011; Carpenter, 2012; Gupta *et al.*, 2004; Jones and Crompton, 2009). Although such
52
53 a perspective is valuable, this singular approach mirrors the trait perspective in mainstream
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55 leadership research, which has been heavily criticised for failing to take into account that
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57 leadership can be learned (Harrison *et al.*, 2018; Kempster and Cope, 2010).
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3 Exploring the skills and competencies of entrepreneurial leaders is a research stream
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5 which has become pertinent. The development of this research stream requires better
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7 knowledge of its measurement. Although there have been some conceptual views (Freeman,
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9 2014; Karol, 2015; Lippitt, 1987), there is a limited understanding of entrepreneurial leadership
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11 skills and competencies based on the empirical deficiency in the literature. This perspective
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13 has a greater potential of providing a clearer conceptualisation of an entrepreneurial leader.
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15 Therefore, it is important that more scholarly work examines this perspective (Harrison *et al.*,
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17 2018).
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23 This paper presents a multidimensional and robust scale based on entrepreneurial
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25 leadership skills, competencies and behaviour. The scale was designed by formulating a
26
27 primary questionnaire based on the theoretical basis of entrepreneurial leadership and then
28
29 testing it in a cross-cultural context of both a developing and developed economy. Table 1
30
31 shows the previously developed measures for entrepreneurial leadership and if they assess the
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33 notion through a uni- or multi-dimensional perspective. As the table shows, the majority of
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35 researchers considered entrepreneurial leadership as a multi-dimensional view.
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Table 1

Studies on entrepreneurial leadership measurement {Insert Table 1 about here}

46 A review of the prior studies using these measures indicates that researchers mostly use
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48 the measure developed by Gupta *et al.* (2004) to examine the association between this type of
49
50 leadership and employees' individual (Huang *et al.*, 2014) and group level behaviour (Chen,
51
52 2007) as well as organisational performance (Kim *et al.*, 2017). Some scholars have employed
53
54 the entrepreneurial leadership questionnaire (ELQ) developed by Thornberry (2006) to explore
55
56 the dimensionality of the construct (Pihie *et al.*, 2014). Finally, recent research used Renko *et*
57
58 *al.*'s (2015) ENTRELEAD questionnaire to investigate the impact of entrepreneurial
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1
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3 leadership practices on employees' innovative behaviour (Bagheri, 2017; Bagheri and Akbari,
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5 2018; Newman *et al.*, 2017; Newman *et al.*, 2018).
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11 **2.3 National Culture of Iran and Scotland**

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15 Hofstede *et al.* (2010) defines culture as beliefs, values and assumptions people learn from an
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17 early age which distinguishes them from another group. An understanding of the national
18
19 culture of a geographical area is paramount since it has a bearing on the behaviour of people
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21 and the perception of their leader. This section of the paper explores the national macro effect
22
23 of culture in Iran and Scotland and highlights why there may be differences in leadership styles
24
25 in both contexts.
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29
30 Culture is the collective programming of the mind that differentiates the members of one
31
32 human group from another. Though there have been various dimensions proposed by scholars
33
34 to understand the culture of nations and organisations (Schwartz, 1984; Hofstede, 1980),
35
36 Hofstede (1980) use of four dimensions namely; power distance, uncertainty avoidance,
37
38 collectivism vs individualism and masculinity vs femininity to create a national culture profile
39
40 is well recognised (Sui Pheng and Yuquan, 2002; Wu, 2006) and will be adopted to examine
41
42 Iran and Scotland.
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47 **Iran** is positioned in the Western part of the Asian continent, a region identified as the Middle
48
49 East. It is regarded as a Muslim country and as required of the Islamic culture, employees
50
51 expect their leaders to be visionary, generous and honest (Burns, 1979). Based on Hofstede's
52
53 four dimensions, Iran is high in power distance, collectivism, uncertainty avoidance and
54
55 femininity.
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3 Iran is high in power distance which refers to the extent to which nations accept that power
4
5 should be distributed unequally. It implies that the Iranian community expects a highly unequal
6
7 power distribution. This could be as a result of the Iranian family structure and particularly,
8
9 families with ethnic minorities where the family leader is the father who wields ultimate power.
10
11 They generally prefer leaders who can guide, support and inspire them like a father; hence
12
13 many scholars have proposed transformational leadership as more preferred and effective
14
15 within Iran (Javidan and Dastmalchian, 2003; Bikmoradi *et al.*, 2010). In addition, they have
16
17 been shown to have a high societal collectivism rather than individualism (Javidan and
18
19 Dastmalchian, 2003; Yeganeh and Su, 2007). Collective societies tend to have strong family
20
21 ties while individualistic ones have loose ties with their family. This is not surprising since they
22
23 also have a high power distance index based on Hofstede dimensions. However, Thiebaut
24
25 (2008) argues that this may no longer be the case as this effect has reduced with the emergence
26
27 of education which has resulted to a closer relationship between mothers and children. Indeed,
28
29 there is now a progression towards modernity and a demand for political, cultural and social
30
31 change. There is now more focus on individuality rather than totalitarianism. As a result, it is
32
33 arguable that entrepreneurial leadership which deals with combating change and identifying
34
35 opportunities will be more aligned to this context.
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44 Uncertainty avoidance is high within Iran as they prefer to avoid ambiguity (Yeganeh and Su,
45
46 2007) as well femininity as they share modest and caring views. This is in line with Global
47
48 Leadership and Organizational Effectiveness (GLOBE) studies that suggests that Iran values
49
50 charisma, humane leadership and good team orientation (House *et al.*, 2004). Uncertainty for
51
52 the Iranians can be reduced by having a charismatic leader; hence, the preference is given to
53
54 concerned, modest and self-effacing leaders (Yeganeh, and Su, 2007; Mehrabani and
55
56 Mohamad, 2011). Indeed, leadership plays a paramount role in the growth and development of
57
58 any nation or organisation and its survival is dependent on the adaptability and responsiveness
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60

of the leader in adapting a leadership style that fits the context and the emotions of its members (Schimmoeller, 2010).

Scotland, located in the mid-west of Europe, is a country that is part of the United Kingdom (UK). Having more than 790 Islands, with the most spectacular scenery in all of the UK, Scotland shelters the northern third of the island of Great Britain, with a border with England to the southeast, and is walled by the North Sea to the northeast, the Atlantic Ocean to the north and west and the Irish Sea to the south (Scotlandisnow, 2019). Whilst the geographic and demographic features of Scotland are significant in differentiating the nation from others in the UK, they are arguably not the paramount influence. In political terms, Scotland can be considered to be in a unique position, given its membership of a union of nations; the United Kingdom of Great Britain and Northern Ireland. In addition, Scotland has its own Parliament, but Westminster is the overall UK parliament.

Based on Hofstede's four dimensions, Scotland is low in power distance, individualism, uncertainty avoidance and femininity. Scotland is distinct in its cultural position from Iran. According to Hofstede *et al.* (2010) they have a low power distance. This means that less powerful employees in organisations accept that power will be distributed unequally, hence, unequal spread of power is expected and acceptable. This translates to having a flat team structure in organisations where hierarchy is only for convenience. UK employees will usually be on a first name basis with their superiors and expect easy access to them. By contrast, in Iran which scores high for power distance, managers expect to dictate to their subordinates on what to do and team hierarchy is much more acceptable.

According to Hofstede (2001), Scotland has a low uncertainty avoidance. Employees within this context will generally avoid uncertainty. They do not mind being uncertain about certain events and can tolerate not having information about what the future may hold. There is more

1
2
3 probability for UK to take a bit more risk for potentially higher benefit in the future. This is in
4
5 contrast to Iran who prefer avoiding uncertainty.
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9 In addition, Scotland is an individualistic country, employees within the nation are more
10
11 bothered about themselves and their immediate families and less interested in their immediate
12
13 community. Their self-image is defined as 'I' vs 'We'. This is in divergence to Iran where
14
15 group's interest comes first. Furthermore, Scotland is fairly masculine as they value
16
17 competition. They are driven by achievement, success and competition. On the other end is
18
19 Iran, which is considered a relatively feminine society as the aim is to work to earn a good
20
21 living (Hofstede, 2001).
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26 Although there are more than four cultural dimensions for example; long-term orientation and
27
28 indulgence. The above dimensions are sufficient to provide a comparative construction of both
29
30 societies. The geo-political environment of both countries and the challenges they are currently
31
32 facing has made it imperative for entrepreneurial leadership to be advocated. In order to
33
34 manage an organisation effectively, an entrepreneurial leader should be abreast with not only
35
36 the local culture, but also aware of the cultural diversity of their followers. Arguably, an
37
38 effective entrepreneurial leader is one who is able to interact with people from diverse cultural
39
40 backgrounds and origins as organisations could fail due to the absence of personal multicultural
41
42 abilities and skills (Steers *et al.*, 2010).
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47 Indeed, entrepreneurial leaders are required as change agents in the dynamic nature of the
48
49 environment faced in both contexts. There has been no empirical study to date that has
50
51 examined this phenomenon in Scotland and Iran. Specifically, in Scotland, there is an absence
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53 of entrepreneurial leadership empirical research and this has created a significant gap in
54
55 literature. This study draws on both societies to develop a multi-dimensional construct of
56
57 entrepreneurial leadership.
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3. Methodology

3.1 Empirical study

Drawing on previous research (Carpenter, 2018; Hinkin, 1995; Renko *et al.*, 2015), a scale for measuring entrepreneurial leadership was constructed and validated in two studies and in the context of two countries; Iran and Scotland. The first study aimed to test the large list of items developed through a review of previous literature on entrepreneurial leadership theory and measurement. In this way, dimensionality of the construct was tested. In the second study, the validity and reliability of this novel scale was examined.

3.2 Scale development protocol

To develop a valid and reliable scale for entrepreneurial leadership and explore the structure of its possible dimensions, the ten steps of scale development by Carpenter (2018) was used. In the first step, entrepreneurial leadership was defined based on the theoretical framework developed for the concept (Gupta *et al.*, 2004) and the key competencies, behaviour and roles of entrepreneurial leaders in framing the challenge, absorbing uncertainty, underwriting, building commitment, defining gravity, identifying and exploiting opportunities and orientation towards learning (Gupta *et al.*, 2004; Huang *et al.*, 2014; Kyndt and Baert, 2015; Thornberry, 2006). Gupta *et al.*'s (2004) definition was adopted because of the universal consensus by scholars on the entrepreneurial leadership construct developed. Evidence of this, is shown as this work has the highest number of citations in the field of entrepreneurial leadership (Harrison *et al.*, 2016b). More specifically, framing the challenge is defined as entrepreneurial leaders' capabilities in defining highly challenging goals and standards for the performance of individuals and the business using their exceptional knowledge and insight. Absorbing uncertainty reflects entrepreneurial leaders' abilities in accepting the responsibilities, developing a vision, imagining the possibilities in the future and constructing

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2
3 followers' confidence by believing in their abilities to achieve the visionary future.
4
5 Underwriting indicates entrepreneurial capabilities in negotiation and interpersonal
6 interactions, convincing others to accept their ideas and reassuring and advising followers to
7 improve their inspiration and courage. Building commitment means developing shared goals,
8 inspiring and motivating followers to put all of their efforts to achieve the goals, demonstrating
9 and imparting strong positive feelings and emotion for work, building teams and seeking for
10 constant improvements in individual and business performance. Defining gravity refers to
11 entrepreneurial roles in creating integration and cohesion by developing a shared understanding
12 and consensus on the goals, inspiring followers to use their intellectual capabilities and creating
13 innovative ideas, showing confidence and making firm and fast decisions.
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26 Huang *et al.* (2014) argue that entrepreneurial leaders' capabilities in framing the
27 challenge, absorbing uncertainty and underwriting, empower them to recognise opportunities
28 to create sustainable competitive advantage for their business. The authors also highlighted the
29 critical roles that entrepreneurial leaders play in motivating followers and mobilising resources
30 to create change by constructing followers' commitment and defining gravity. To improve their
31 business performance and competitive advantage, entrepreneurial leaders also search and
32 identify new opportunities and take actions to exploit the opportunities (Chen, 2007; Gupta *et*
33 *al.*, 2004; Kyndt and Baert, 2015; Thornberry, 2006). Finally, entrepreneurial leaders are
34 continuous learners who have the ability and tendency to constantly seek for new knowledge
35 and skills to develop their capabilities, learn from various resources and facilitate training and
36 professional development of their followers (Holcomb *et al.*, 2009; Kempster and Cope, 2010;
37 Kyndt and Baert, 2015, Thornberry, 2006).
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54 Building on the previously developed questionnaires and theoretical and empirical
55 studies on entrepreneurial leadership (Gupta *et al.*, 2004; Kyndt and Baert, 2015; Renko *et al.*,
56 2015; Thornberry, 2006), a pool of 72 items was developed using both deductive and inductive
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3 approaches for generating the initial items of the scale (Hinkin, 1995). Seven items for framing
4 the challenge, nine items for absorbing uncertainty, nine items for underwriting, 12 items for
5 building commitment, 10 items for defining gravity, 16 items for identifying and exploiting
6 opportunities and nine items for orientation towards learning were identified. Three items on
7 creative collective self-efficacy (Dampérat *et al.*, 2016) were also included in order to further
8 test the discriminant and construct validity of entrepreneurial leadership dimensions using a
9 theoretically connected but distinct construct to entrepreneurial leadership. In the next step, the
10 initial pool of items was submitted to two ‘expert panels’ including two faculty members at the
11 University of the West of Scotland and two faculty members involved in entrepreneurship and
12 leadership research and one PhD student at the Faculty of Entrepreneurship, University of
13 Tehran. This step assisted in ensuring the internal content validity of the items and conceptual
14 consistency of each dimension of entrepreneurial leadership. Based on the comments of the
15 panel, three repetitive items were deleted, and the ambiguous, unfamiliar and complex words
16 were edited in order to reduce the probability of random and bias responses (Hinkin, 1995;
17 Podsakoff *et al.*, 2003). To administer the questionnaire among the sample from Iran, it was
18 translated into Persian using standard back-translation procedures (Brislin, 1986) where the
19 items were translated by a bilingual academic to Persian and then translated back to English by
20 a panel of experts consisting of two entrepreneurship researchers. The items measuring the
21 constructs in different sections of the questionnaire were separated to reduce the bias of the
22 responses (Podsakoff *et al.*, 2003; Podsakoff *et al.*, 2012). Participants’ demographic
23 information were also collected.
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54 3.3 Pilot study

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56 *Participants.* In the next step, the questionnaire was administered to a sample of 112 university
57 students. By selecting the participants among students from Iran and Scotland, two sources of
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3 data are included thus guarding against common method biases (Hinkin, 1995; Podsakoff *et*
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5 *al.*, 2003). Of the students, 48 were MBA and DBA students from the University of the West
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7 of Scotland enrolled in the School of Business and Enterprise and 64 were MBA and DBA
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9 students from the Faculty of Management, University of Tehran. The selection of participants
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11 among MBA and DBA students was based on the premise that the students involved in the
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13 courses have had a good engagement in organisations and are aware of leadership practices.
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15 This supports previous studies that have used samples of students to develop a measure for
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17 entrepreneurial leadership (Renko *et al.*, 2015).
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24 *Data Collection Procedure.* Data collection via questionnaires in Scotland was performed
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26 online using Qualtrics. Qualtrics is an intuitive online software interface used to create,
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28 distribute and analyse questionnaires. In Iran, the questionnaires were distributed to the
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30 students before their classes. Following previous studies (Huang *et al.*, 2014; Renko *et al.*,
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32 2015), the participants were asked to declare their agreement with the items on entrepreneurial
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34 leadership and creative collective self-efficacy in a 7-point Likert scale (1 = strongly disagree
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36 to 7= strongly agree).
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42 *Analysis and Results.* Building on previous studies on scale development (Carpenter, 2018;
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44 Hinkin, 1995), the quality of the data was first checked. In this step, 15 questionnaires were
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46 deleted from the data collected from Scotland and 10 cases from Iran because of non-response
47
48 to 50 per cent of the items (Carpenter, 2018). This yielded a sample size of 87 (33 from Scotland
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50 and 54 from Iran) and a response rate of 68.75 per cent and 84.37 per cent respectively. To
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52 aggregate the data collected from the two countries, t-tests were performed to compare the
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54 demographic characteristics of the samples. Analysis of the results of the tests showed no
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56 significant difference between the samples on their age, gender, education, work experience
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3 and experience as an entrepreneur. To examine the structure of the items explaining
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5 entrepreneurial leadership, the adequacy of the data was tested for factor analysis. Analysis of
6
7 the Kaiser–Meyer–Olkin (KMO) test indicated acceptability of the sample size (0.84) and the
8
9 Bartlett test of sphericity was also significant at $p < 0.001$, indicating suitability of the data for
10
11 performing factor analysis. In addition, all of the items had significant correlations. Analysis
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13 of the data indicates high internal reliability of the questionnaire ($\alpha = .98$) and its dimensions
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15 including framing challenges ($\alpha = .93$), absorbing uncertainty ($\alpha = .94$), underwriting ($\alpha = .89$),
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17 building commitment ($\alpha = .95$), defining gravity ($\alpha = .93$), identifying and exploiting
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19 opportunities ($\alpha = .97$), orientation towards learning ($\alpha = .94$) and creative collective self-
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21 efficacy ($\alpha = .95$). To identify the structure of the dimensions and the shared variance among
22
23 items, a common factor analysis was performed using principal axis factoring (PAF) which is
24
25 the most robust extraction method for a small sample size and oblique rotation. The results
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27 indicate seven factors with eigenvalues higher than one which explains 77.5 per cent variance
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29 of the variables. Analysis of the Scree plot also supported the factors identified with
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31 eigenvalues. Five items were deleted from the analysis because it loaded less than .40 per cent
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33 to their constructs (Hinkin, 1995; McCroskey and Young, 1979).
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43 3.4 Main study

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45 *Participants.* To evaluate the new scale validity and reliability, a sample of 124 participants
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47 (49 MBA and DBA students from the School of Business and Enterprise, University of the
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49 West of Scotland, Scotland and 75 MBA and DBA students from the Faculty of
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51 Entrepreneurship, University of Tehran, Iran) completed the questionnaire. The sample was
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53 selected among those who did not participate in the first study in Scotland and from a different
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55 faculty than the first study (Faculty of Entrepreneurship) in Iran to improve validity and
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57 generalisability of the new questionnaire (Hinkin, 1995).
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6 *Data collection procedure.* In Iran, the data was collected through distributing the new scale
7 among students before their classes. The data for the second study in Scotland was collected
8 through online questionnaires using Qualtrics. The final analysis was performed using the
9 responses from 106 participants (41 from Scotland and 65 from Iran) with a response rate of
10 83.67 per cent and 86.6 per cent respectively. Analysis of the t-tests also indicated no
11 significant difference between the samples from the two countries in their demographic
12 characteristics.
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24 *Analysis and Results.* The Kaiser–Meyer–Olkin (KMO) test for the second study also indicated
25 adequacy of the sample size (0.81) and the Bartlett test of sphericity was also significant at $p <$
26 0.001, indicating suitability of the data. In addition, all of the dimensions of entrepreneurial
27 leadership had significant correlations. To identify the structure of the dimensions and the
28 shared variance among items, a common factor analysis was performed with maximum
29 likelihood extraction and oblique rotation. The results supported the seven factors with
30 eigenvalues higher than one that explain 77.5% variance of the variables. **Analysis of the Scree**
31 **plots also supported the factors identified with eigenvalues and confirmed that each variable is**
32 **explained only with one factor.** Five items were deleted from the analysis because they loaded
33 less than .40 per cent to their constructs. Table 2 indicates age, gender, education, employment
34 status, work experience, entrepreneurship experience and number of employees of the
35 participants in study 1 (n=87) and study 2 (n=105). Based on the table, the participants were
36 diverse regarding their age, education, employment and work and experience as an
37 entrepreneur. As the table shows, the majority of the participants from both countries aged
38 between 25 and 44 years old, were male, had Master's degree, were from non-managerial to
39 top managerial positions and had no experience as an entrepreneur. Of the participants running
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3 a business, the majority had 10 and less employees. Most of the participants also worked in a
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5 private sector.
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8 **Table 2**
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10
11 **Age, Gender, Education, Employment Status, Work Experience, Entrepreneurship**
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13 **Experience and Number of Employees of the Participants in Study 1 (n=87) and Study 2**
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15 **(n=105) {Insert Table 2 about here}**
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21 To test the structure of entrepreneurial leadership and identify the items that most
22 explain the different dimensions of the construct in the second study, a common factor analysis
23 was performed. The results supported that entrepreneurial leadership is a multi-dimensional
24 construct and agrees with the seven theoretical dimensions that were identified in the previous
25 studies (Gupta *et al.*, 2004; Kyndt and Baert, 2015; Leitch and Volery, 2017; Renko *et al.*,
26 2015; Thornberry, 2006). Then, the items with less than 0.50 loading to their construct and
27 those highly correlated with other items were deleted. The remaining items have high loadings
28 (>0.50) to their constructs that indicate convergent and discriminant validity of the
29 measurements because the items of each dimension significantly ($p < 0.01$) load on their own
30 dimension and do not have a significant high loading on other dimensions. Thus, the proposed
31 items for each dimension of entrepreneurial leadership describe a significant and relatively high
32 degree of the variance of their own dimension. The results also support the theoretical
33 foundations of entrepreneurial leadership dimensionality.
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53 In addition, the final items have a high internal reliability ($\alpha = .98$). Table 3 indicates
54 the final identified dimensions and 40 identified items for entrepreneurial leadership and the
55 items on creative collective self-efficacy with their factor loadings, Cronbach's Alpha,
56 composite reliability (C.R) and average variance extracted (AVE). As the table shows, five
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3 items explain framing challenges ($\alpha = .85$), four items significantly load to absorbing
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5 uncertainty ($\alpha = .80$), five items explain underwriting ($\alpha = .87$), six items explain building
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7 commitment ($\alpha = .90$), five items have significant loadings to defining gravity ($\alpha = .79$), 10 items
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9 explain opportunity identification and exploitation ($\alpha = .93$) and five items explain orientation
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11 of entrepreneurial leaders to learning ($\alpha = .84$). The results also showed high reliability of the
12
13 items on creative collective self-efficacy ($\alpha = .89$). A confirmatory factor analysis for each
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15 identified dimension of entrepreneurial leadership was performed to identify their sub-
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17 dimensions. The analysis showed that the majority of each dimension of the construct variance
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19 is by only one factor ($>.90$ and eigenvalues >1). The composite reliability (C.R) for each
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21 construct is also greater than the recommended level of 0.70 and the AVE scores are higher
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23 than 0.50 (Hair *et al.*, 2010; Kline, 2016) Therefore, the high convergent and discriminant
24
25 validity of the seven constructs in this study is strongly supported by the data and the
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27 questionnaire is valid and reliable to measure entrepreneurial leadership. Table 4 depicts the
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29 significant correlations between the dimensions of entrepreneurial leadership and creative
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31 collective self-efficacy.
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38 **Table 3**

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40 **Cronbach's Alpha (α), Factor Loadings, Composite Reliability (C.R), Average Variance**
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42 **Extracted (AVE) {Insert Table 3 about here}**
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46 **Table 4**

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48 **Mean, Standard Deviation and Correlation of Entrepreneurial Leadership Dimensions**
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50 **{Insert Table 4 about here}**
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57 The structure of dimensions and the 40 identified items and creative collective self-
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59 efficacy were tested using covariance analysis and techniques for confirmatory factor analysis
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(AMOS 22). First, a single common factor model in which all items loaded on a single factor was performed (Hinkin, 1995). The results indicate a poor fit for the model because χ^2/df was higher than 3, all of the goodness of fit indexes were less than .90, root mean square error of approximation (RMSEA) and standardized RMR were higher than the .05 threshold (Byrne, 2010), $\chi^2/df=3.57$, $p < 0.01$, comparative fit index (CFI) = 0.61, goodness of fit index (GFI) = 0.37, Tucker-Lewis non-normed fit index (TLI) = 0.60, Bollen's incremental fit index (IFI) = 0.61, RMSEA = 0.135; SRMR= 0.67. Therefore, a one-factor model for entrepreneurial leadership was not supported by the data. Then, a multi-dimensional model with the identified factors and items was tested. The results showed that all of the items significantly loaded to their related dimensions and the model has acceptable model fit indexes, ($\chi^2/df = 2.66$, $p < 0.01$, CFI = 0.92, GFI = 0.90, TLI = 0.90, IFI = 0.91, RMSEA = 0.03, SRMR= 0.04). Furthermore, each dimension of entrepreneurial leadership and creative collective self-efficacy explained higher than 50% of the variance in the items related to each dimension. However, the correlations between the variables in the model are relatively high. This needs to be considered in future studies.

4. Discussion

Despite the growing interest in entrepreneurial leadership in businesses, organisations and leadership domains (e.g., Cogliser and Brigham, 2004; Freeman and Siegfried, 2015; Harrison *et al.*, 2018; Kim *et al.*, 2017; Middlebrooks, 2015; Surie and Ashley, 2008; Swiercz and Lydon, 2002), few researchers have attempted to develop a measure to assess entrepreneurial leadership skills, qualities and behaviour (Chen, 2007; Fontana and Musa, 2017; Gupta *et al.*, 2004; Leitch and Volery, 2017; Renko *et al.*, 2015; Thornberry, 2006). This study attempts to address the gap by developing a questionnaire to examine this type of leadership based on the existing literature and theoretical framework. The analysis suggests a

list of 40 items that can be used to explore entrepreneurial leadership through the perspective of followers. While a majority of previous studies used a total score of entrepreneurial leadership and the results of such research provide small contributions to which underlying dimensions of entrepreneurial leadership is more effective (e.g. Bagheri, 2017; Bagheri and Akbari, 2018; Cai *et al.*, 2018; Newman *et al.*, 2017; Newman *et al.*, 2018), the multi-dimensional nature of the construct was tested by examining the dimensions for entrepreneurial leadership. Specifically, focus was on the previously identified dimensions of the construct including framing the challenge, absorbing uncertainty, underwriting, building commitment (Gupta *et al.*, 2004; Huang *et al.*, 2014), opportunity identification and exploitation and orientation towards learning (Kyndt and Baert, 2015; Thornberry, 2006). This study is one of the first to examine the validity and reliability of the measure developed for the construct across two countries (Gupta *et al.*, 2004) having different cultural and economic contexts; namely Iran and Scotland.

Specifically, this study suggests the items that best describe each dimension of entrepreneurial leadership including five items for each dimension of framing the challenge, underwriting, defining gravity and orientation towards learning, four items for absorbing uncertainty, six items for building commitment and 10 items of opportunity identification and exploitation. By these findings, this study includes the skills and competencies of entrepreneurial leaders and their specific behaviour in performing their tasks and roles. These findings contribute deeper insights into the factors that constitute entrepreneurial leadership. Using a survey research design, the study places itself among the few scholarly works that identify the specific skills, competencies and behaviours of entrepreneurial leaders (Fontana and Musa, 2017; Harrison *et al.*, 2018; Renko *et al.*, 2015). Although a context-based perspective to entrepreneurial leadership has been established in the literature (Kempster *et al.*,

2018; Freeman and Siegfried, 2015), this study develops the insights across Iran as a developing and Scotland as a developed country.

5. Implications

The findings of this study have several implications for theory, research and practice. By highlighting the dimensions of entrepreneurial leadership, this study assists the development of theories on how entrepreneurial leadership influence the process of innovation and opportunity recognition. Researchers can also use the questionnaire developed in this study to examine the areas of entrepreneurial leadership most influential in directing the individual and groups of followers' behaviour as well as businesses toward entrepreneurial initiations. The questionnaire can also be applied in studies aiming to evaluate entrepreneurial leadership skills and behaviour among business and organisational leaders.

Leaders of all type of businesses from large companies to small new ventures (Renko *et al.*, 2015) can use the skills and behaviours of entrepreneurial leadership emerging from this study to evaluate their capabilities and identify their strengths and weaknesses regarding each aspect of their leadership style. Business consultants may also use the entrepreneurial leadership capabilities and roles identified in this study to guide nascent and current entrepreneurs to effectively lead their business. Educators aiming to enhance the number and quality of entrepreneurial leaders may use the questionnaire to measure entrepreneurial leadership skills of their students and engage them in entrepreneurial leadership education and training programs based on their needs (Bagheri and Pihie, 2018). Finally, educators can also use the entrepreneurial leadership dimensions that emerged from this study to develop the entrepreneurial leadership education programs that more effectively and purposefully develop such leadership capabilities in students and nascent entrepreneurs.

6. Limitations and Future Research Agenda

This analysis is limited to developing a measure for entrepreneurial leadership and does not examine the impact of such form of leadership on followers' behaviour and organisational outcomes. Using the questionnaire developed in this study, future research can examine the influence of entrepreneurial leadership on different aspects of individual and groups of followers' behaviour and performance such as innovation (Bagheri and Akbari, 2018; Newman *et al.*, 2018) and opportunity recognition (Bagheri, 2017; Harrison *et al.*, 2016a; Harrison *et al.*, 2018) as well as organisation innovation performance (Chen, 2007; Fontana and Musa, 2017; Huang *et al.*, 2014; Kim *et al.*, 2017). This study also involved a sample of university students. These university students included nascent and experienced entrepreneurs as well as top and middle managers and previous researchers have also used a sample of students for developing entrepreneurial leadership measurement (Renko *et al.*, 2015). However, future research should be undertaken to explore the validity and reliability of the findings in different business and organisational contexts. **Though the multi-dimensional construct of entrepreneurial leadership was developed from a sample of Iran and Scotland, future studies may also examine the cultural and religious influences that impact on entrepreneurial leadership.** Although this study provides empirical insight on the dimensions of entrepreneurial leadership, high correlations were found among the dimensions which should be considered in further investigations. Future research can contribute better understanding of entrepreneurial leadership by examining the reliability of the questionnaire using the followers of each leader to evaluate their leaders' entrepreneurial leadership. Future studies can also examine the reliability of the questionnaire among leaders who evaluate their own entrepreneurial leadership. This research engaged a small sample size. Therefore, future research should examine the reliability of the questionnaire using a larger sample size.

7. Conclusion

The concept of entrepreneurial leadership has received increasing interest from scholars and practitioners in recent years. Notwithstanding the growing body of literature from both empirical and conceptual standpoints (e.g., Gupta *et al.*, 2004; Renko *et al.*, 2015; Swiercz and Lydon, 2002), there has been little scholarship which has developed a measure for entrepreneurial leadership from a cross-cultural perspective (Gupta *et al.*, 2004). To address this, this paper develops an empirical foundation for entrepreneurial leadership by producing a questionnaire that assesses the entrepreneurial leadership skills, competencies and behaviour. The main contribution is the development of a multi-dimensional construct of entrepreneurial leadership and its applicability across different cultural and economic contexts.

This study highlights the importance of refining our understanding of entrepreneurial leadership and the sources of its formation. In accordance to previous studies (Gupta *et al.*, 2004; Huang *et al.*, 2014; Thornberry, 2006), these findings indicate the dimensionality of the construct. This study advanced our understanding of the sources that shape entrepreneurial leadership. It highly contributes to the empirical studies on entrepreneurial leadership and its measurement that are increasingly growing (e.g., Fontana and Musa, 2017; Renko *et al.*, 2015).

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Table 1

Studies on entrepreneurial leadership measurement

Reference	No and label of dimensions	No items	Sample	Key findings
Fontana and Musa (2017)	4, Strategic; communicative; motivational; personal/organizational	29	Middle and senior managers	Significant impact of entrepreneurial leadership in fostering all elements in the innovation process including idea generation, idea selection and development and idea diffusion.
Kim et al. (2017)	5, Framing the challenge; Absorbing uncertainty; Path-clearing; Building commitment; Specifying limits	25	Public employees	Co-worker and organisational support have significant positive influence on entrepreneurial leadership. Entrepreneurial leadership has significant positive impact on affective and cognitive trust of employees.
Renko et al. (2015)	One	8	Students and working adults	Entrepreneurial leadership is more prevalent among founder-leaders than non-founder leaders. Entrepreneurial leadership has significant relationship with entrepreneurial orientation, transformational leadership, and creativity-supportive leadership.
Huang et al. (2014)	5, Framing the challenge; Absorbing uncertainty; Underwriting; Building commitment; Defining gravity	26	New venture employees	Entrepreneurial leadership positively influences both exploratory and exploitative innovations which is positively associated with new venture performance.
Chen (2007)	One	5	New ventures	Entrepreneurial leadership significantly influences team members' creativity and new venture's innovative capability
Thornberry (2006)	5, General entrepreneurial leader behaviour; explorer behaviour; miner behaviour; accelerator behaviour; integrator behaviour	50	Managers	Entrepreneurial leadership is transformational and transactional in nature
Gupta et al. (2004)	5, Framing the challenge; absorbing uncertainty; path clearing; building commitment; specifying limits	25	Middle managers of established firms	Found cross-cultural and universal nature of entrepreneurial leadership

Table 2

**Age, Gender, Education, Employment Status, Work Experience, Entrepreneurship
Experience and Number of Employees of the Participants in Study 1 (n=87) and Study 2
(n=105)**

Variables	Study 1				Study 2			
	Iran		Scotland		Iran		Scotland	
	N	%	N	%	n	%	n	%
Age								
18 – 24	3	5.6%	1	3.0%	4	6.3%	4	9.8%
25 – 34	25	46.3%	13	39.4%	30	46.9%	21	51.2%
35 – 44	22	40.7%	15	45.5%	26	40.6%	11	26.8%
45 – 54	3	5.6%	3	9.1%	3	4.7%	4	9.8%
55 – 64	1	1.9%	1	3.0%	1	1.6%	1	2.4%
Gender								
Male	34	63.0%	20	60.6%	40	62.5%	23	56.1%
Female	20	37.0%	12	36.4%	24	37.5%	18	43.9%
Education								
Some college	4	7.4%	2	6.1%	4	6.3%	3	7.3%
Four-year degree	3	5.5%	2	6.1%	17	26.6%	3	7.3%
Master's Degree	40	74.0%	22	66.7%	35	54.7%	28	68.3%
Doctorate	7	13.0%	7	21.2%	8	12.5%	7	17.1%
Employment status								
Employed full time	24	44.4%	9	27.3%	29	45.3%	14	34.1%
Employed part time	15	27.8%	11	33.3%	18	28.1%	8	19.5%
Unemployed, looking for work	4	7.4%	2	6.1%	5	7.8%	3	7.3%
Student	11	20.4%	11	33.3%	12	18.8%	16	39.0%
Work experience								
Non-manager	8	14.8%	6	18.2%	9	14.1%	8	19.5%

Lower level manager/supervisor	17	31.5%	11	33.3%	20	31.3%	12	29.3%
Middle manager level	13	24.1%	8	24.2%	17	26.6%	13	31.7%
Upper level and top manager	15	27.8%	6	18.2%	17	26.6%	7	17.1%
Experience as an entrepreneur								
No experience	19	35.2%	13	39.4%	21	32.8%	21	51.2%
Interested in a business start-up	13	24.1%	8	24.2%	14	21.9%	13	31.7%
Engaged in one start-up activity	1	1.9%	1	3.0%	1	1.6%	1	2.4%
Less than two years of entrepreneurship	11	20.4%	2	6.1%	15	23.4%	3	7.3%
3-8 years of entrepreneurship	7	13.0%	6	18.2%	10	15.6%	2	4.9%
9-14 years of entrepreneurship	3	5.6%	3	9.1%	3	4.7%	1	2.4%
Number of employees at your business								
Less than 5	22	40.7%	12	36.4%	23	35.9%	12	29.3%
6-10	14	25.9%	4	12.1%	18	28.1%	3	7.3%
11-50	7	13.0%	6	18.2%	9	14.1%	6	14.6%
51-100	2	3.7%	1	3.0%	3	4.7%	4	9.8%
>101	9	16.7%	8	24.2%	11	17.2%	15	36.5%
Business/organisation sector								
Public sector (e.g. government)	2	3.7%	2	6.1%	7	11%	7	17.1%
Private sector	39	72.2%	24	72.7%	43	67.2%	25	61.0%
Not-for-profit sector	10	18.5%	4	12.1%	14	21.9%	6	14.6%

Table 3

**Cronbach's Alpha (α), Factor Loadings, Composite Reliability (C.R), Average Variance
Extracted (AVE)**

No	Dimensions/items	Factor loadings	α	C.R	AVE
1	Framing challenges		.85	.84	.52
	Seeks continuous performance improvement.	.67			
	Sets high performance expectation for organizational development.	.69			
	Sets task goals according to the staffs' ability.	.64			
	Sets a creative plan for the business.	.83			
	Spends time on new strategies for organization development.	.78			
2	Absorbing uncertainty		.81	.81	.52
	Anticipates possible future events.	.79			
	Thinks ahead about new developments that will occur in the sector we are active in.	.82			
	Undertakes business risk to reduce the uncertainty in followers' work.	.61			
	Promotes an environment where risk taking is encouraged.	.65			
3	Underwriting		.87	.87	.58
	Negotiates effectively to eliminate the obstacles in followers' work.	.63			
	Shows empathy towards his/her followers.	.80			
	Makes staff enthusiastic for his/her ideas.	.78			
	Inspires emotions, beliefs, values and behaviours of followers.	.82			

1				
2				
3		Inspires passion for new idea generation and	.79	
4		exploitation of followers.		
5				
6	4	Building commitment		.90 .90 .62
7				
8				
9		Recruits team-oriented staff.	.74	
10				
11				
12		Acquires followers' identification with organizational	.83	
13		change.		
14				
15		Motivates followers' commitment to the goals of	.81	
16		organizational development.		
17				
18		Prioritizes tasks required for organization's success.	.82	
19				
20				
21		Communicates effectively with followers.	.77	
22				
23				
24		Listens and acts upon organization stakeholders'	.75	
25		complaints.		
26				
27	5	Defining gravity		.83 .83 .51
28				
29				
30		Integrates people or things into a cohesive, working	.67	
31		whole.		
32				
33		Makes decisions firmly and quickly.	.69	
34				
35				
36		Specifies the business scope of the organization to	.73	
37		suggest what can or cannot be done.		
38				
39		Understands limitations of organizational ability to	.71	
40		avoid unnecessary resource.		
41				
42		Demonstrates the ability to manage time effectively.	.77	
43				
44		Opportunity identification and exploitation		.93 .93 .57
45				
46				
47		Recognises existing market opportunities.	.79	
48				
49				
50		Adjust his/her planning approach when new	.75	
51		opportunities arise.		
52				
53		Actively identifies, develops and goes after new	.77	
54		business opportunities.		
55				
56		Has insight into the market and business competition.	.60	
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2				
3		Points out the competition's weaknesses and how we	.77	
4		could exploit them.		
5				
6		Often comes up with radical improvement ideas for	.65	
7		the products/services we are selling.		
8				
9		Pushes staff to be innovative in how we do our work.	.78	
10				
11				
12		Allots time to helping staff find ways to improve our	.80	
13		business innovation and opportunity recognition		
14		performances.		
15				
16		Creates a climate that encourages continuous	.86	
17		innovation and opportunity recognition.		
18				
19		Creates an environment where organization staff feel	.76	
20		free to try new things.		
21				
22	7	Orientation towards learning		.87 .87 .53
23				
24				
25		Shows awareness of their strengths and weaknesses.	.71	
26				
27				
28		Seeks continuous self-improvement.	.62	
29				
30				
31		Leads their followers by serving as role models.	.78	
32				
33				
34		Focuses on staff training.	.73	
35				
36				
37		Keeps the organization informed and updated on new	.77	
38		educational trends and methods to improve staffs'		
39		learning and achievement.		
40				
41		Creative collective self-efficacy		.89 .89 .74
42				
43				
44		Has confidence in the ability of the team to solve	.85	
45		problems creatively.		
46				
47		Has confidence in the team's ability to produce new	84	
48		ideas.		
49				
50		Has confidence in the team's ability to further	89	
51		developing new ideas of others.		
52				
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Table 4

Mean, Standard Deviation and Correlation of Entrepreneurial Leadership Dimensions

Dimensions	Mean	SD	1	2	3	4	5	6	7	8
1 Framing challenges	2.96	1.87								
2 Absorbing uncertainty	3.17	1.64	.47**							
3 Underwriting	3.11	1.41	.45**	.68**						
4 Building commitment	3.58	1.02	.60**	.49**	.52**					
5 Defining gravity	3.39	1.89	.46**	.62**	.60**	.57**				
6 Opportunity identification and exploitation	3.06	1.57	.59**	.56**	.58**	.58**	.66**			
7 Orientation toward learning	3.32	1.90	.47**	.40**	.46**	.49**	.56**	.63**		
8 Creative collective self-efficacy	3.58	1.39	.22**	.34**	.35**	.23**	.28**	.37**	.25**	

**<0.01 level (2-tailed)