Imperatives for improving entrepreneurial behavior among females in the UAE

An empirical study and structural model

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Abstract

Purpose – Despite various governmental efforts, female entrepreneurship in the UAE is still not a popular option among women. The purpose of this study is to identify the enablers to female entrepreneurship and to establish relationships among them.

Design/methodology/approach – This research uses a two-phased approach. In the first-phase, an empirical study on female entrepreneurs was conducted to find out the most important enablers from among a set of variables identified through a comprehensive literature review. In the second-phase, using interpretive structural modeling, a hierarchy-based model is developed among the most important enablers. Further, these enablers are also classified depending on their driving power and dependence.

Findings – Survey results indicate that female entrepreneurs consider enablers as the driving force in creating an entrepreneurial culture. Further, the hierarchy-based model developed in this research helps to identify variables that are of strategic importance and require utmost attention.

Practical implications – The framework presented in this study can be used effectively by the policymakers to develop suitable strategies for improving entrepreneurial behavior among women in the United Arab Emirates.

Originality/value – The novelty of this approach is the integration of questionnaire and interpretive structural modeling methodology and classifying enablers in four clusters. The research provides useful insights about the perception of female entrepreneurs about the entrepreneurial culture in the United Arab Emirates, and a relationship model that may serve as a decision tool for improving female entrepreneurship.

Keywords Female entrepreneurship, Interpretive structural modelling (ISM), Enablers,
United Arab Emirates (UAE)

Paper type Research paper

Introduction

Entrepreneurship is recognized as critical to economic development and sustainability worldwide (Global Entrepreneurship Monitor, 2014). As small businesses are vital for economic progress of any developing country, the contribution of female entrepreneurs to

this sector assumes great significance. Women all over the world have managed small-scale projects successfully. However, regardless of an upturn in the number of female entrepreneurs in recent years, entrepreneurial movement among males is greater, and noteworthy differences are evident across national settings (Shinnar *et al.*, 2012). The gendered nature of entrepreneurship has become a topical research area (Cochrane, 2015) and represents a legitimate research practice (Marlow and McAdam, 2012). The prominence of national context is important in entrepreneurship (Bruin *et al.*, 2007) as different socio–cultural and institutional contexts affect female entrepreneurial commotion because of their differing roles ascribed to them (Venugopal, 2016).

According to (Maier, 2013), females constitute 77 per cent of the university students in the United Arab Emirates (UAE). With an increasing number of female graduates and a proliferation of Western business practices, male-dominated environment and national policies evolve to accommodate Emirati women's interest in entrepreneurial endeavors (Madichie and Gallant, 2012). This has created a cultural shift by promoting the rights of females with regard to business ownership and management (Pervan *et al.*, 2015). UAE females contribute about US \$3.6bn to the country's economy and over 80 per cent of this contribution comes from female-owned small and medium enterprises (SMEs) (Al-Ansari *et al.*, 2013). UAE is ranked 19th out of 132 countries and has the highest score (61.4) in the Gulf Cooperation Council (GCC) region in terms of favorable conditions for female entrepreneurs (Global Entrepreneurship and Development Institute, 2016). Although Emirati females account for 49 per cent of the UAE Emirati population, their entrepreneurial participation is lower than males. Emirati males are 30 per cent more likely than their female counterparts to be early stage entrepreneurs. In addition, the rate of early stage female entrepreneurs is 7.6 per cent, compared to their male counterparts 11.8 per cent (El-Sokari *et al.*, 2013).

The increasing post-modern values in the Arab world have substantial effects on males compared to females, signifying that males are likely to benefit considerably more with regards to their entrepreneurial behavior (Bastian and Zali, 2016). While Emirati society has witnessed a significant level of modernization, it is still described as traditional and patriarchal (Naguib and Jamali, 2015) and is influenced by traditional Arab practices (Ahmad, 2011). Even though Islam supports the "notion of females running business" (Roomi, 2013), it reinforces gender differences by granting males pre-eminence and authority over females. Addressing a country with obvious gender imbalances backs to a more evocative body of research on gender in entrepreneurship worldwide (Scott *et al.*, 2012). While gender seems a common variable in entrepreneurship studies, gender viewpoint has not been comprehensively discovered (García and Capitán, 2016). Thus, the major objectives of this research are:

- to identify the enablers that will positively impact female entrepreneurship in the UAE;
- establish the relationship among these identified enablers using interpretive structural modeling (ISM); and
- provide managerial insights for improving entrepreneurial behavior among females in the UAE in particular and GCC countries in general.

This study will provide useful theoretical acumens. It will propose some pragmatic suggestions to identify the major enablers and design the policies for effective promotion of female entrepreneurship in the region.

The paper is organized as follows. After the introduction, the next section presents the literature review on the enablers on female entrepreneurship. It is followed by a two-stage

research methodology. Finally, the survey results and the ISM-based model are discussed along with the scope for future research.

Enablers of female entrepreneurship in the Arab world: resemblances and variances

The demographic characteristics, entrepreneurship-related traits, social capital and sensitivity toward community are the most researched enablers of immersion in entrepreneurial activity (Holienka *et al.*, 2016). An entrepreneur's knowledge base develops through education and work experience, as well as gaining exposure to entrepreneurial activities within the community (Welsh *et al.*, 2014). Business training does indeed lead to increased business knowledge and better business practices (Gine and Mansuri, 2014) and articulates the process of entrepreneurship (García and Capitán, 2016). The entrepreneur's personality and external environmental forces shape the growth and emergence of new enterprise (Langowitz and Minniti, 2007). Likewise, the aspiration to pay back the entrepreneur's community through philanthropy or the business itself can act as an enabler (Estrin *et al.*, 2013).

Several scholars (Aldrich and Cliff, 2003) have advocated the benefits of adopting a family embeddedness perspective. The business person's learning base, familial support and external help can be significant in endeavor creation (Chang *et al.*, 2009). Jabeen *et al.* (2015) reported that familial support impacts the accomplishment of Emirati female entrepreneurs. Instead of Emirati women perceiving business as an economic entity, they may recognize their businesses as "supportive networks of relationships" in which commercial relations are assimilated rather than alienated from family, societal and personal factors (El-Sokari *et al.*, 2013). The motivational factors that influence Emirati entrepreneurs differ significantly from their Western counterparts because of their unique traditional values (Tlaiss, 2015), where other counterparts value self-expression (Inglehart and Welzel, 2010). Emirati women opt for venture creation owing to distinctive "pull-reasons" such as creating a higher purpose for themselves and increasing their personal independence (Tlaiss, 2015).

Socio–demographic variables have an impact on the usage of advice-seeking networks by female entrepreneurs in the Arab region as female entrepreneurs tend to rely more on personal networks as compared to male entrepreneurs (Huang *et al.*, 2013). In addition, they exploit their social network as channels that enable them to identify opportunities, access information, customers, suppliers and financial resources (Arasti *et al.*, 2012). The availability and connectivity to formal and informal professional linkages is vital to business development and growth (Rosenbusch *et al.*, 2010). Professional affiliation and attending their events might provide access to potential clienteles (Cochrane, 2015), as well as access to entrepreneurial learning and training (Idrus *et al.*, 2014). Mentoring and network support is important in enhancing women's outlook (Fielden and Dawe, 2004). Hence, individual entrepreneurs may seek out counseling from qualified advisors, networks and business associations.

In recent years, a number of support programes and initiatives have been instigated to focus on female entrepreneurship development in the Gulf nations (Khan, 2013). As part of a worldwide trend, a variety of socio–political enablers is creating an impetus toward greater opportunities for female entrepreneurs in the Arab countries (Danish and Smith, 2012). Government initiatives to boost entrepreneurial ventures vary across national settings. The legal infrastructure providing equal rights to education, networks and the stability of the legal environment to protect businesses are instrumental in promoting entrepreneurship (Goby and Erogul, 2011). Human capital including education (Arenius and De Clercq, 2005)

enhances an individual's ability to identify and enact opportunities (Ucbasaran *et al.*, 2008). It also equips individuals with greater information handling aptitudes, search techniques and skimming proficiencies (Lim *et al.*, 2016). Moreover, a key to attaining a competitive advantage is to offer goods and services that are innovative in nature (El-Sokari *et al.*, 2013).

Individuals who are risk-takers are more likely to start their own ventures (Niess and Biemann, 2014). GCC females have inward boundaries that restrain their capacity to exceed expectations in business and hinder their readiness to take part in business ventures. Emirati females were less inclined to take risk (Zeffane, 2013) because of their fear of being unsuccessful (Itani *et al.*, 2011). In another study, fear of failure and unwillingness to take risks were the major obstacles facing Omani females in taking an entrepreneurial route (Belwal *et al.*, 2015). Despite the educational progression, Emirati women have generally been found to avoid career and entrepreneurship opportunities in science, technology, engineering and maths (Al Marzouqi and Forster, 2011). Hattab (2012) affirmed that females get very limited opportunities to advance their professional venturing skills. Family resistance and cultural restrictions are significant obstructions confronting female entrepreneurs, which is more evident in male-dominated societies with strong gender stereotyping (Hasan and Almubarak, 2016). Saudi females consider their gender as a major barrier in economic ventures, which makes them severely dependent on their male kin (Ahmad, 2011). Similarly, the UAE have entrenched norms about the Emirati women roles to the overall society (El-Sokari *et al.*, 2013).The persistence of stereotypes, patriarchy (Naguib and Jamali, 2015), risk aversion and low confidence levels in venture start-ups and growth are the key restraining factors. Hence, it can be concluded that the under-representation of women in entrepreneurship is because of the similar patriarchal and entrenched socio–cultural norms of the GCC society, including the UAE. Thus, preparing women with the required skills and providing a conducive platform is considered essential to improving their rate of venture creation. Table I below summarizes the enablers identified in various national settings.

Methodology
In this research, a questionnaire-based survey and ISM have been used to achieve the research objectives. These methodologies and the respective results are discussed in the following sections.

Questionnaire survey
The questionnaire was designed on a five-point Likert scale. It comprised questions to concisely understand the enablers for doing business, sources of advice sought to start the business, specific firm and institutional level factors affecting business operations and the problems Emirati female entrepreneurs face in being self-employed. The questionnaire was prepared in English and Arabic and included both open- and close-ended questions. A total of 300 copies of the questionnaire were distributed in person or by email with the assistance of Abu Dhabi Business Women Council. The required sample size was determined using Cohen's power analysis procedure (Cohen and Cohen, 1983) to ensure statistical validity. A total of 224 questionnaires were collected with a response rate of 75 per cent.

Interpretive structural modeling methodology
According to Sage (1977), ISM is an advanced planning methodology used to identify and summarize various relationships among factors that define a problem or issue. It provides a means by which researchers can impose an order and create models around factors of a

Research focus/outcomes	Author	Country of study
Reducing gender stereotyping; socio–cultural enablers; entrepreneurial education; and previous experience	Petraki Kotis and Ventoura Neokosmidi (2004); Arasti et al. (2012)	Greece and Iran
Work–life balance; and family support	Itani et al. (2011); Jabeen et al. (2015); Ahmad (2011); Jamali (2009)	UAE, KSA and Lebanon
Religious and cultural enablers; innovative behavior; opportunity identification; and risk seeking	Syed (2008); McIntosh and Islam (2010); Belwal et al. (2015)	UAE, Bahrain and Oman
Financial competencies; informal networks; opportunities to gain the business skills; and experiences required to start and manage	Ahmad (2011); Katta and Hussien (2009); Al-Owaihan and Rao (2010); Bruin et al. (2007); Jamali (2009)	KSA, Egypt, Syria, Kuwait and Lebanon
Product competency; and business capability (quality of product/ service, customer loyalty and competent staff)	Ahmad and Xavier (2012)	Malaysia
Entrepreneurship support; and gender equality	Mostafa (2005)	UAE
Social networks; and professional networks	Alam et al. (2011)	Malaysia and Kenya
Government support; clear policies and procedures; and policy awareness training and education for growth	Varadarajan et al. (2010); Itani et al. (2011); Jamali (2009); Idrus et al. (2014); Welsh et al. (2014) Belwal et al. (2015)	UAE, Lebanon, Malaysia, Saudi Arabia and Oman
Funding schemes	Ahmad (2011)	KSA

Table I.
Female entrepreneurship enablers in developing nations

system by developing the complexity of relationships among them (Warfield, 1974). The method is "interpretive" in the sense that the experts' decisions develop the relationships among the variables. It is "structural" on the basis of proposed relationships that create an overall structure extracted from a complex set of factors. It is a "modeling" technique as the specific relationship, and overall structure are portrayed carefully in a graphical model as well as words (Li and Yang, 2014).

As a modeling technique, ISM has been extensively used in different domains to understand the relationship among the various factors that contribute to a whole system (Faisal and Al-Esmael, 2014). ISM analysis and modeling can help managers and practitioners visualize issues through a systems approach. It can then identify factors that have high levels of influence and, therefore, require significant attention and effort to resolve them.

In the literature, we identify many issues that are important for developing female entrepreneurship in the UAE and/or GCC countries. However, there is a need to understand the issues' mutual relationships. Thus, the present study makes use of the ISM approach to identify the role of 14 enablers of female entrepreneurship. Though many studies can be found in the literature on female entrepreneurship, none of them deal with the analysis of the relationships among the enablers of female entrepreneurship. For such reasons, the ISM approach has been adopted in this research study. The steps involved in developing the ISM model to achieve the stated research objectives are presented in Figure 1.
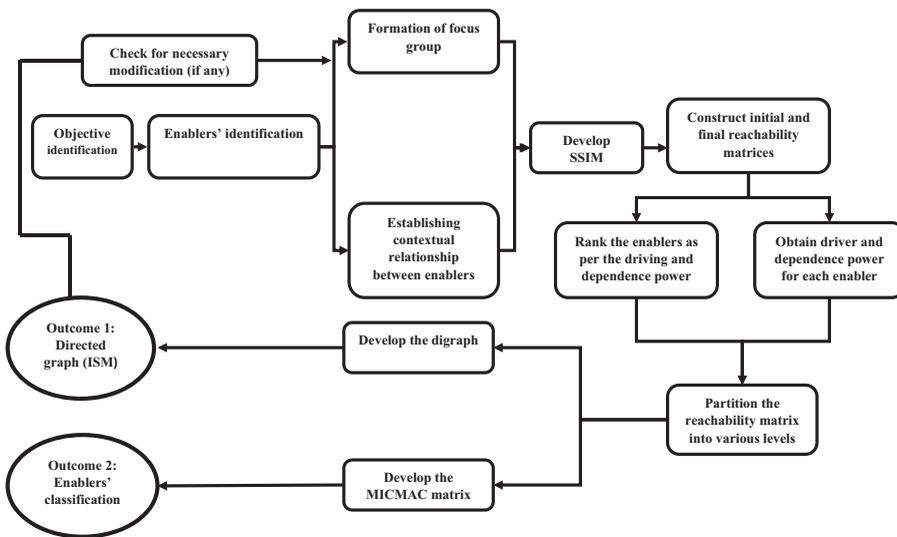
Source: Adapted from Khan *et al*. (2015)

Results

Survey results

The entrepreneur's personal and business profiles are mentioned in Table II. The findings revealed that the average age of Emirati female entrepreneurs was 34.33 years, with a standard deviation = 8.80. A majority of the female respondents (62.74 per cent) were graduates, and 56.13 per cent of them were married. Nearly 76 per cent of respondent's spouses worked outside the business (which means either employed in government/semi-government jobs). Approximately 72.17 per cent of businesses were self-established by the female entrepreneurs, and 39.62 per cent of the businesses were owned by the female entrepreneurs, with merely 1.89 per cent inherited. Regarding their preferred sector, 42 per cent of the SMEs were engaged in retail, 56 per cent were engaged in services, and only 2 per cent (were engaged in manufacturing business with majority of workers being part-time in these businesses). A majority of these SMEs used their personal savings and/or funds from friends and family members to start their business ventures, with an average start-up capital of AED 650,000. UAE-based public-sector banks were a common choice for obtaining finances. Foreign banks were least preferred by the Emirati female entrepreneurs owing to their higher interest rates and excessive documentation. Most of the entrepreneurs (64 per cent) used word-of-mouth to promote their businesses. This kind of business promotion is very common in the relationship-based society. However, an increase in the usage of paid advertisement was evident. The findings reveal that 47 per cent of the female entrepreneurs used paid advertisement to promote their products/services.

In Table I, many enablers that positively affect entrepreneurial behavior were found. Thus, to determine the most important enablers as considered by the entrepreneurs in UAE, female entrepreneurs were also asked to rank 25 enablers gleaned from the literature. Based on the survey analysis, Table III presents 14 most important enablers. The findings show that Emirati female entrepreneurs ranked spotting market trends and customer needs

Serial no.	Variable	Mean	SD
(a) Entrepreneur characteristics			
1	Age	34.17	8.91
2	Years working independently	5.91	6.79
3	Years in this business	5.93	6.79
4	Education	No formal university degree (66%)	University degree (34%)
5	Marital status	Married (56.25%)	Unmarried (56.25)
(b) Type of business ownership		Frequency	(%)
6	Established by the female entrepreneur	161	72.17
7	Partnership	10	4.25
8	Sole proprietorship	88	39.62
9	Inherited	4	1.89
10	Franchised business	42	18.87
11	Bought from another owner	26	12
(c) Type of business		Frequency	(%)
12	Service	125	56
13	Retailing	94	42
14	Manufacturing	5	2

Table II.
Female entrepreneurs and enterprise characteristics

Enablers	Mean	SD	Rank
Spotting market trends and customer needs	4.79	0.56	1
Management skills development	4.68	0.36	2
Sustainable competitive advantage	4.52	0.47	3
Social networks	4.33	0.53	4
Community involvement	4.02	0.29	5
Quality customer service	3.98	0.48	6
Venturing in new business areas	3.95	0.50	7
Simplification of procedures	3.88	0.44	8
Government support	3.79	0.33	9
Professional networking	3.47	0.26	10
Competent staff	3.35	0.45	11
Special finance schemes for women	3.29	0.41	12
Family support	3.18	0.30	13
Entrepreneurial education and training for females	3.08	0.54	14

Table III.
Enablers of female entrepreneurship

(Mean = 4.79) as the prime enabler of entrepreneurship, followed by management skills development (Mean = 4.68) and sustainable competitive advantage (Mean = 4.52).

Developing the relationships among the enablers using interpretive structural modeling
To develop the contextual relationship among the factors, the ISM methodology suggests the use of experts' opinions. For this research, an expert group was formed by contacting several women entrepreneurs, policymakers and academicians. Initially, women entrepreneurs were contacted based on their willingness to meet the authors. In the beginning, we did not put any prior condition for contacting experts, as our previous experience indicated that usually people from the field are not highly forthcoming about

participating in such an academic exercise. However, after meeting around 15 women entrepreneurs, it was decided to include 5 in our research. The selection was based on their experience (more than five years) and the diversity of the venture. Other experts were drawn from a group of academics who were shortlisted based on their research interest in the area of entrepreneurship/female entrepreneurship. The selection criterion was a minimum *h*-index of ten on SCOPUS. We selected SCOPUS rather than Google Scholar because several experts in the list did not have a public Google Scholar account. We contacted seven academics and five agreed to help in our research. Finally, four experts from the domain of policy-making were contacted through reference, but only two agreed to provide their input.

To develop the model initially, we decided to follow the traditional method of conducting a brainstorming workshop, where we could receive inputs of the expert group and revise simultaneously (Faisal and Talib, 2016). However, we soon found that this was not a feasible option in this case because of the busy schedule of the five entrepreneurs and the location of other experts from academia and policy-making. Hence, we collected their responses individually and used a majority response to develop the relationships among various enablers. The experts in this study were contacted through email. A summarized literature on female entrepreneurship was communicated to the experts. Next, face-to-face meetings were arranged to understand the experts' opinions on the relationships among these enablers. The final relationships as developed were sent to all the experts who agreed (after some clarifications, mainly by the academic experts). For analyzing the relationships among the enablers of female entrepreneurship, a contextual relationship of "leads to" type was chosen, meaning that one enabler led to another. On the basis of this, the contextual relationship between the factors was developed. Experts were asked to compare the column statement with the row statement for each cell and to choose a value from the set (V, A, X and O) to represent their perception of direct relationship between two sources at each time.

Structural self-interaction matrix
The 14 enablers were put in a row and column format, where enablers in rows and columns are represented by *i* and *j*, respectively. Thus, each pair of enablers is analysed separately after the formation of grid, which was obtained in the above process. Four keywords are used to represent the direction of the relationship between a set of the enablers (*i* and *j*):

(1) O: indicates that enabler *i* and *j* are unrelated;
(2) X: indicates that enablers *i* will help to achieve enabler *j* and enabler *j* will help to achieve enabler *i*;
(3) A: indicates that enabler *j* helps to achieve enabler *i*; and
(4) V: indicates that enabler *i* helps to achieve enabler *j*.

The relationships between enablers are presented in a matrix known as structural self-interaction matrix (SSIM; Table IV), with the value for each pair of enabler being an agreed-upon value among experts. For example, when there is an explicit support by the government to women entrepreneurs (E1), it would have a positive impact on the financial institutions to develop special schemes for women (E11), and, thus, the relationship between E1 and E11 is "V". However, venturing in new business areas (E6) considered traditional domain men by UAE women, is facilitated by family support (E13) and, thus, the relationship between E6 and E13 would be "A". Similarly, the relationship between spotting market trends and customer needs (E3) and management skills development (E11) is a two-way relationship and, thus, is represented by "X" in Table IV. Finally, if no direct

Enabler No.	Enabler description	14	13	12	11	10	9	8	7	6	5	4	3	2	1
E1	Government support	O	V	V	V	O	O	O	V	V	V	X	O	O	
E2	Participation in social networks	V	A	V	O	X	O	V	X	V	O	A	V		
E3	Spotting market trends and customer needs	V	A	X	O	A	V	X	A	V	O	O			
E4	Community involvement	O	V	V	V	O	O	V	V	O					
E5	Simplification of procedures	O	O	O	O	V	O	O	O	V					
E6	Venturing in new business areas	A	A	A	A	A	X	A	A						
E7	Exclusive entrepreneurial training for females	V	A	V	A	X	V	V							
E8	Competent staff and their development	V	O	X	O	O	O								
E9	Sustainable competitive advantage	X	O	A	O	A									
E10	Professional networking	V	O	V	O										
E11	Special financing schemes for women	O	O	O											
E12	Management skills development	V	A												
E13	Family support	O													
E14	Quality customer service														

Table IV.
Structural self-interaction matrix (SSIM)

Notes: Entry in the cell: V when row influences the column; A when column influences the row; X when row and column influences each other; and O when there is no relation between row and column

relationship exists, as between competent staff and their development (E8) and simplification of procedures (E5), it would be represented by "O" in Table IV.

Reachability matrix
The reachability matrix is obtained from SSIM (Table IV) using a two-step process. In the first step, the alphabets used to indicate the relationships among the enablers in SSIM are replaced by "0" or "1". The value in the reachability matrix depends on the type of relationship in the SSIM (Faisal, 2015), and is summarized below:

- if the relationship between an enabler in a row with another enabler in a column is "V", then in the initial reachability matrix, the row entry becomes "1" while the column entry between these two enablers becomes "0";
- if the relationship between an enabler in a row with another enabler in a column is "A", then in the initial reachability matrix, the row entry becomes "0" while the column entry between these two enablers becomes "1";
- if the relationship between an enabler in a row with another enabler in a column is "X", then in the initial reachability matrix, the row entry becomes "1" while the column entry between these two enablers also becomes "1"; and
- if the relationship between an enabler in a row with another enabler in a column is "O", then in the initial reachability matrix, both row and column entries become "0".

Based on the above rules, the initial reachability matrix for the enablers to female entrepreneurship is constructed. Next, by incorporating transitivities (Ravi, 2015), the final reachability matrix is obtained, as shown in Table V. The transitivity of the contextual relation is a basic assumption made in the ISM. It states that if variable A is related to B and B is related to C, then A is necessarily related to C (Venkatesh *et al.*, 2015; Jabeen *et al.*, 2017). Table V also provides the driving power [total number of enablers (including itself), which it may help to achieve] and dependence power of each enabler (total number of enablers, which may help in achieving it). For example, from Table IV, it is clear that the Enabler 1 (government support) directly influences eight enablers. When its transitivity is checked, it is indirectly influencing

Enabler No.	Enabler description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Driving power
E1	Government support	1	1†	1†	1	1	1	1	1†	1†	1†	1	1	1	1†	14
E2	Participation in social networks	0	1	1	0	0	1	1	1	1†	1	0	1	0	1	9
E3	Spotting market trends and customer needs	0	0	1	0	0	1	0	1	1	0	0	1	0	1	6
E4	Community involvement	1	1	1†	1	1†	1	1	1†	1†	1	1	1	1	1†	14
E5	Simplification of procedures	0	1†	1†	0	1	1	1†	0	1†	1	0	1†	0	1†	9
E6	Venturing in new business areas	0	0	0	0	0	1	0	0	1	0	0	0	0	1†	3
E7	Exclusive entrepreneurial training for females	0	1	1	0	0	1	1	1	1	1	0	1	0	1	9
E8	Competent staff and their development	0	0	1	0	0	1	0	1	1†	0	0	1	0	1	6
E9	Sustainable competitive advantage	0	0	0	0	0	1	0	0	1	0	0	0	0	1	3
E10	Professional networking	0	1	1	0	0	1	1	1†	1	1	0	1	0	1	9
E11	Special financing schemes for women	0	1†	1†	0	0	1	1	1†	1†	1†	1	1†	0	1†	10
E12	Management skills development	0	0	1	0	0	1	0	1	1	0	0	1	0	1	6
E13	Family support	0	1	1	0	0	1	1	1†	1†	1†	0	1	1	1†	10
E14	Quality customer service	0	0	0	0	0	1	0	0	1	0	0	0	0	1	3
	Dependence power	2	8	11	2	3	14	8	10	14	8	3	11	3	14	

Note: 1† indicates that there is a transitive link

Table V.
Final reachability
matrix

five other enablers, although it is only influenced by Enabler 4 (community involvement).
Thus, in Table V, the driving power for E1 is the sum total of the values of the entries in the
row, which is 14. The dependence (the sum of the entries in the column) is two. Similarly, the
values of driving power and dependence are calculated for all the remaining enablers.

Level partition
From the final reachability matrix, the next step is to establish reachability and antecedent sets.
The reachability set for a particular enabler consists of the enabler itself and the other enablers
that it may help achieve. Similarly, the antecedent set consists of the enabler itself and the other
enablers that influence it. The intersection of these sets is derived for all the enablers. The
enablers for which the intersection and reachability set are the same form the top level of
the hierarchy in the ISM model. These enablers would not help achieve any other enabler above
their level. To illustrate, from Table VI, it can be observed that "sustaining competitive
advantage" (Enabler 9) and "quality customer service" (Enabler 14) are found at Level I. Thus,
they would be positioned at the top of the ISM model (Figure 2). Next, the enablers that form the
top most level are discarded from the list of enablers, and the process for finding out the next
level is repeated for the rest of the enablers. This process is continued until levels of each of
enablers are found. Table VII shows the reachability set, antecedent set, intersection set and
their levels. From Tables VI and VII, it can be concluded that Level I enablers (E9 and E14)
have the lowest driving power, while Level V (E1 and E4) have the highest driving power. The
identified levels help in building the digraph and the final model of ISM.

Formation of interpretive-structural-modeling-based model
A structural model is constructed from the final reachability matrix (Table V). The model is
obtained through nodes and lines connecting the nodes that represent contextual
relationships. The nature of the relationship determines the direction of arrow on the line
(Khan *et al.*, 2015). The graph, thus, developed is called the digraph. Finally, from the

Enabler (Bi)	Reachability set R(Bi)	Antecedent set A (Bi)	Intersection set R(Bi) ∩ A(Bi)	Level
E1	1,2,3,4,5,6,7,8,9,10,11,12,13,14	1,4	1,4	
E2	2,3,6,7,8,9,10,12,14	1,2,4,5,7,10,11,13	2,7,10	
E3	3,6,8,9,12,14	1,2,3,4,5,7,8,10,11,12,13	3,8,12	
E4	1,2,3,4,5,6,7,8,9,10,11,12,13,14	1,4	1,4	
E5	2,3,5,6,7,9,10,12,14	1,4,5	5	
E6	6,9,14	1,2,3,4,5,6,7,8,9,10,11,12,13,14	6,9,14	I
E7	2,3,6,7,8,9,10,12,14	1,2,4,5,7,10,11,13	2,7,10	
E8	3,6,8,9,12,14	1,2,3,4,5,7,8,10,11,12,13	3,8,12	
E9	6,9,14	1,2,3,4,5,6,7,8,9,10,11,12,13,14	6,9,14	I
E10	2,3,6,7,8,9,10,12,14	1,2,4,5,7,10,11,13	2,7,10	
E11	2,3,6,7,8,9,10,11,12,14	1,4,11	11	
E12	3,6,8,9,12,14	1,2,3,4,5,7,8,10,11,12,13	3,8,12	
E13	2,3,6,7,8,9,10,12,13,14	1,4,13	13	
E14	6,9,14	1,2,3,4,5,6,7,8,9,10,11,12,13,14	6,9,14	I

Table VI.
Enablers to female entrepreneurship in the UAE – level iteration i
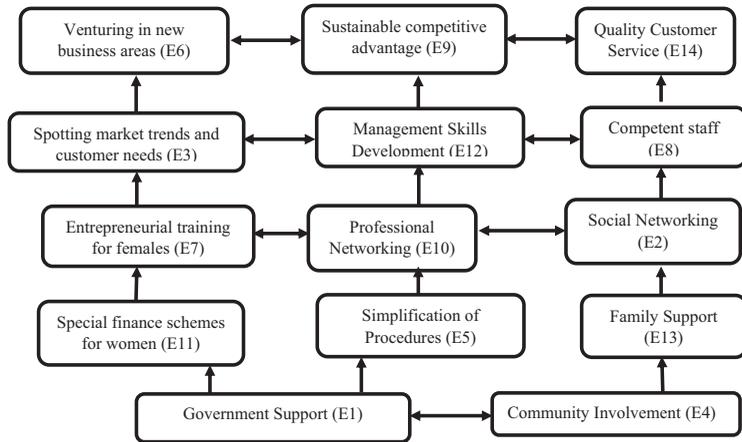
Figure 2.
ISM-based model for the enablers to female entrepreneurship in the UAE

Iteration	Enabler (Bi)	Reachability set R(Bi)	Antecedent set A (Bi)	Intersection set R(Bi) ∩ A(Bi)	Level
v	E1	1,2,3,4,5,7,8,10,11,12,13	1,4	1,4	V
iii	E2	2,3,7,8,10,12	1,2,4,5,7,10,11,13	2,7,10	III
ii	E3	3,8,12	1,2,3,4,5,7,8,10,11,12,13	3,8,12	II
v	E4	1,2,3,4,5,7,8,10,11,12,13	1,4	1,4	V
iv	E5	2,3,5,7,10,12	1,4,5	5	IV
iii	E7	2,3,7,8,10,12	1,2,4,5,7,10,11,13	2,7,10	III
ii	E8	3,8,12	1,2,3,4,5,7,8,10,11,12,13	3,8,12	II
iii	E10	2,3,7,8,10,12	1,2,4,5,7,10,11,13	2,7,10	III
iv	E11	2,3,7,8,10,11,12	1,4,11	11	IV
ii	E12	3,8,12	1,2,3,4,5,7,8,10,11,12,13	3,8,12	II
iv	E13	2,3,7,8,10,12,13	1,4,13	13	IV

Table VII.
Enablers to female entrepreneurship in the UAE – iteration ii-v

digraph, the transitivity is removed, thereby resulting in a final model represented by the ISM as depicted in Figure 2. Level V forms the root node. Thus, enablers "government support" (Enabler 1), "community involvement" (Enabler 4), are the key driving enablers followed by Level IV consisting of "special finance schemes for women" (Enabler 11), "simplification of procedures" (Enabler 5) and "family support" (Enabler 13). These enablers have maximum driving power and can be considered as the most influential variables of the system under consideration. The digraph is partitioned into five different levels. It has no cycles or feedback. Finally, enablers are connected in a hierarchical pattern.

Matrix of cross impact multiplications applied to classification analysis
Godet (1986) has popularized the matrix of cross impact multiplications applied to classification (MICMAC) analysis to classify the variables of the system under study. The basis of this classification is the driving power and dependence calculated in Table VII. Additionally, the MICMAC analysis may be used for examining direct and latent relationships among enablers obtained from the ISM technique. Thus, based on the driving power and dependence, enablers in the present study are classified into four clusters, as shown in Figure 3, and explained below:

(1) *Autonomous enablers*: These enablers have neither high driving power nor high dependence. They are detached from the system, with which they have few links that may be very strong. Quadrant I in Figure 3 represents autonomous enablers. In this study, none of the enablers fall into this category.

(2) *Dependent enablers*: Quadrant II represents dependent enablers that have low driving power and high dependence. From the MICMAC analysis, venturing in new business areas (Enabler 6), "sustainable competitive advantage" (Enabler 9) and "quality customer service" (Enabler 14), "spotting market trends and customer
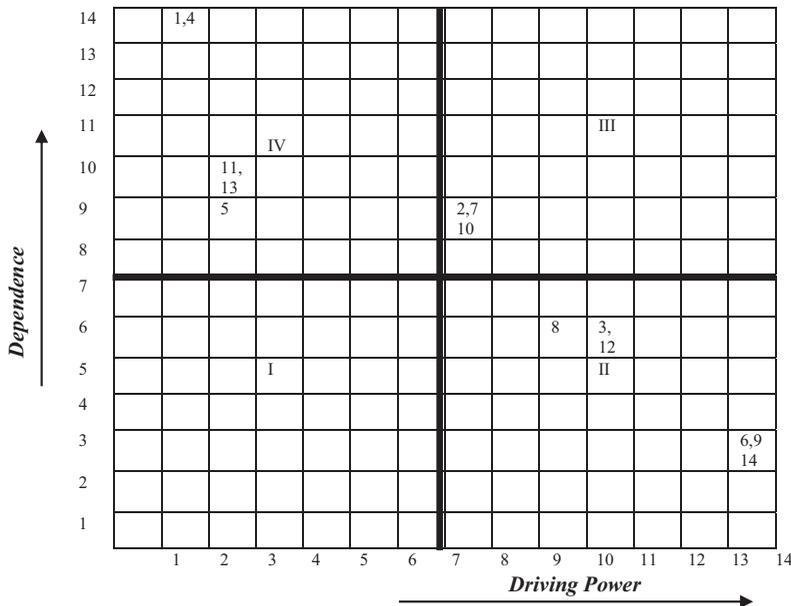

Figure 3.
MICMAC analysis

needs" (Enabler 3), "management skills development" (Enabler 12), and "competent staff" (Enabler 8) are dependent enablers.

(3) *Linkage enablers*: These enablers have high driving power and high dependence. Their characteristic is that any action on them will have an effect on the enablers above their level and a feedback effect on themselves. Quadrant III represents linkage enablers. In the present research, "exclusive entrepreneurial training for females" (Enabler 7), "joining professional networks" (Enabler 10) and "joining social networks" (Enabler 2) would fall in the category of linkage enablers.

(4) *Independent enablers*: These enablers have high driving power and low dependence. They represent Quadrant IV in Figure 3. The two variables that have the maximum influence on the model are "government support" (Enabler 1) and "community involvement" (Enabler 4). In addition, variables "special finance schemes for women" (Enabler 11), "simplification of procedures" (Enabler 5) and "family support" (Enabler 13) are part of this quadrant.

Discussion

It is evident from the results of the questionnaire-based study that Emirati female entrepreneurs considered spotting market trends and customer needs, management skills, attaining sustainable competitive advantage, social networks and community involvement as major enablers. Specific training and education to start, run and manage the business was also considered important. Most of the female entrepreneurs at certain business stages felt that their enterprise growth was stagnant as they do not have enough skills to manage and expand their business. The study also affirms the previous research (Jabeen *et al.*, 2015) about the females receiving a positive familial support in education and venture start up. This is evident as stated by one of the respondent:

> "My father sent me to United Kingdom for jewelry designing course and supported me emotionally and financially" (Azza Al Qubaisi, Aged 30 years, Jewelry Designer).

Regardless of various government supports, Emirati female entrepreneurs were of the opinion that many more actions are needed to strengthen and support the female entrepreneurship in the country. A majority of them stressed the importance of a professional staff, financial schemes, training and education for further development and growth, which are vital to business success. Apparently, some female entrepreneurs were oblivious about the support programs available through Emirati businesswomen councils and financial institutions:

> "I know that our Government is doing a lot to empower Emirati women. However, I am unaware about what specific support programs are introduced and to whom shall I approach" (Noora, Emirati female entrepreneur, Aged 32 years, Retail Business).

Data from the UAE Ministry of Economy indicate that approximately 56 per cent of women-owned SMEs are less than 5 years old (Statistics Centre–Abu Dhabi, 2015) and can, thus, be considered in their early formative stage. Literature indicates that SMEs that are less than five years old are vulnerable to economic fluctuations, especially in an oil-dependent economy such as the UAE (Hvidt, 2013). Our study revealed that Emirati female entrepreneurs are engaged in limited manufacturing, retail and services sectors because of high competition. Similar concentrations of the women's enterprises were testified in various GCC studies, including the UAE (Madichie and Gallant, 2012; Tlaiss, 2015), Oman and Saudi Arabia (Ahmad, 2011; Danish and Smith, 2012). Hence, it is suggested that they should be encouraged in diverse sectors that will minimize the competition and provide them better

chances for survival, growth, innovation and development. Furthermore, the respondents emphasized major policy changes in the areas such as employment laws, simplification of registration procedures, financial support arrangements at various business levels. "Too much of paper work and formalities in starting the business or getting approval for further growth" (Mouza, Emirati female entrepreneur, Aged 28 years, Service Sector).

"I opened my business 4 years back and I wish I could get consultation assistance in my venture growth" (Arwa, Emirati female entrepreneur, Aged 34 years, Retail Sector).

The ISM model developed in this research helps us to identify variables that are of strategic importance in improving entrepreneurial behavior among females in the UAE. The most influential enablers (as indicated by Figure 2) are "government support" and "community involvement". Explicit and exclusive governmental support programs are needed to motivate Emirati women entrepreneurs. The government should take affirmative steps, such as supporting banks, to provide easy credit, and simplify tax procedures. It should also recognize women's success in their entrepreneurial efforts, with positive acknowledgement and appreciation entailing financial and non-financial rewards (Modarresi et al., 2016). The ISM model suggests that special financial schemes are an important enabler as females tend to be risk-averse, cautious about traditional bank financing owing to its high costs and experience difficulties in accessing bank and external credit (Iakovleva et al., 2013). The simplification of procedures that lie at the bottom of the hierarchy-based ISM model are also an important enabler as complicated procedures such as tax regulations were found to be a major obstacles to female entrepreneurship (Welsh et al., 2016).

Family support is a variable with high driving power and, thus, a significant enabler in improving entrepreneurial behavior among women. This outcome is supported by previous scholars (Mari et al., 2016) who suggested that the strategic support (that includes soft and hard business-related skills, already established and consolidated relationships with suppliers and customers) from family and others positively affects the performance of female-owned businesses. Further, in a country with traditional Islamic society, such researchers as Modarresi et al. (2016) suggest female entrepreneurship has not been able to make remarkable change in social values and gender discriminations. Thus, there is an urgent need to sensitize citizens with the value of female participation in economic activities at the national level. In the case of the UAE, successful female entrepreneurs need to be recognized by the society. Here, universities can play a major role by organizing community seminars, whereby these women entrepreneurs interact with budding entrepreneurs, thereby reducing the biases toward women.

The model further shows that enablers on Level III, such as "exclusive entrepreneurial training for females", "joining professional networks" and "actively participating in social networks" have neither very high nor low driving power and neither high nor low dependence. These enablers are considered important as success of women entrepreneurs is achieved by taking advantage of experiences gained from previous employment, education and/or local networking to access necessary resources for creating and owning entrepreneurial ventures (Kimbu and Ngoasong, 2016). Further, to bring women to join more professional and social networks, technology can be a major facilitator. Ameen and Willis (2016) have identified new ways in which the most widely available technology (mobile phones) can be used specifically to help female Arab entrepreneurs to start and run their businesses successfully. The last group of variables, consisting of "sustainable competitive advantage", "haventuring in new business areas" and "quality customer service" form the top level of the model. These enablers have a high dependence and thus to improve these the top management need to work on lower level enablers influencing these enablers. This

implies that to build a sustainable competitive advantage by an entrepreneur, there is a need to improve the lower level variables.

The most important contribution of this research is the argument that to motivate UAE females toward entrepreneurship, there is a need to understand the interrelationships among the enablers that facilitate female entrepreneurship. This has prompted the authors to identify the enablers using literature review and refine it through an exploratory study. Further, the interrelationships and hierarchy among these enablers is ascertained using the ISM modeling technique.

Conclusions

Fourteen enablers to improve female entrepreneurial behavior were identified, and contextual relationships between them were established using ISM methodology. While significant progress has been made in empowering Emirati females, who currently represent 59 per cent of the total work force in the government (El-Sokari *et al.*, 2013), more robust initiatives linked with personal, institutional and societal development are needed to make entrepreneurship a more attractive option for Emirati females.

The study's findings will help policymakers and related associations in formulating strategies toward a conducive business environment for Emirati female entrepreneurs. The study also stresses the importance of gender equality in the UAE, which is a moral and economic imperative to create more sustainable societies. The research study suggests designing specialized programs/courses in synergy with higher educational institutions in the UAE, which will help the female entrepreneurs in enhancing their management skills and competencies for further growth and development.

As an extension of this study, the ISM model developed in this research can be statistically validated using empirical methodology with a large data set. This would require developing suitable hypothesis and then testing the hypothesized model. The methodology would necessitate use of covariance-based structural equation model that can be solved using AMOS software. However, if the sample size is small, as it is difficult to collect data related to female entrepreneurs, partial least squares (PLS) method using PLS-graph or Smart PLS software can be used to validate the path relationships. Both of these methods would be helpful in analyzing data collected through a questionnaire-based study and confirm the relationships among the variables as developed using ISM. In addition, the set of variables considered in the model can be expanded by taking a slightly different approach. This can be done by adding some variables that might be inadvertently neglected, or in another case, few variables that are seemingly very similar could be combined in a new setting that can be subsequently prioritized quantitatively using the fuzzy–analytic hierarchy process. This would provide relative importance of the variables and help policymakers focus on those areas that are accorded the highest priority.

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