Perceptions Towards Entrepreneurship and Intention to Become Entrepreneurs: The Case of Sultan Qaboos University Female Undergraduate Students

Topoyame Moremong-Nganunu, Nthati Rametse, Saeed Al-Muharrami, and Sujeet Kumar Sharma

Abstract This chapter reports the results of a study conducted on Sultan Qaboos University (SQU) female undergraduate students' intentions on becoming entrepreneurs and their perceptions towards entrepreneurship. This study employed predictive modelling to understand and predict the start of own business by female students in a developing country like Oman. The key research question addressed in this chapter is: What factors influence Sultan Qaboos University's female students towards entrepreneurship? Using a questionnaire survey, data were collected from 200 undergraduate female students at the College of Economics and Political Science in 2015. The findings suggest that, while the general perceptions on factors that influence the entrepreneurial aspirations of female SQU undergraduate students are positive, a small portion of these students still hold ambivalent views towards entrepreneurship. This research has important implications for researchers, practitioners, policy makers and entrepreneurship educators.

Keywords Entrepreneurship intent · Role models · Perceptions · SQU undergraduate students

1 Introduction

In a new global economy, entrepreneurship has become important as it contributes to employment, output, and to the size of the overall economy. Youth unemployment rates are a real concern in The Middle East. The lack of jobs in The Middle East has been quoted as cause of political and social instability. In addition, youth unemployment rates in the Middle East and North Africa (MENA) Region are the highest

T. Moremong-Nganunu · S. Al-Muharrami (✉) · S. K. Sharma
College of Economics and Political Science, Sultan Qaboos University, Muscat, Oman
e-mail: muharami@squ.edu.om

N. Rametse
College of Business, School of Management, RMIT University, Melbourne, VIC, Australia

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in the world, (Khaleej Times 2004). More than half of the region's populations are less than 25 years old, and 27.2% of them are unemployed. The World Economic Forum Report (2014) refers to this issue as a "youth liability". Oman is one of the MENA Region where youth represents the highest per cent of the country's population. It is therefore important for Oman to inspire entrepreneurship in order to create innovation, economic productivity and jobs, and expand the economy.

This study tries to assess (SQU) female undergraduate students' intentions to become entrepreneurs and their perceptions towards entrepreneurship. The growing groups of female business graduates who have the potential (in theory) of starting their own businesses have been unrecognised in research. This Chapter tries to fill this research gap. The Chapter focuses on female students for the following reasons. First, studies such as Hisrich and Brush (1985) have confirmed that the woman entrepreneur is not an 'average' woman and that she has problems not encountered by her male peers (Scott 1986, p. 37). These impediments have resulted in women entrepreneurs being 'under-resourced, under-experienced, under-protected and under-productive' (Marcucci 2001, p. 3). Thus, to contribute to the existing body of knowledge, there is a need to understand the various perceptions of female students towards entrepreneurship and their intentions to become entrepreneurs.

Secondly, students are mostly young and governments have acted as protective role models for teachers and parents, so that everyone acts to overprotect, overly support and arrange easy and secure outcomes for Arab youth (The World Economic Forum Report 2014). Moreover, as noted by GUESSS (2008, p. 1) a significant amount of innovative power and entrepreneurial competences are embedded within students and can later lead to successful start-ups. Finally, women represent a minority of entrepreneurs and policy makers must be informed of this situation (Rametse and Huq 2013).

The protective, parental role that MENA governments have created systems and institutions that work against entrepreneurship. The young are groomed to take on government positions that are well-paid and require little personal accountability. Government subsidies make unemployment often preferable to low-paying positions. The educational system is not geared to create independent thinking, critical or creative thinking, or teach problem-solving, management skills and other functional skills needed in the private sector. (The World Economic Forum report 2014). This creates a sense of entitlement amongst the Arab youth, along with dependence, lack of motivation and responsibility, and little desire to take risks.

Oman is no exception, where the serious problem of the lack of employment opportunities has increased in the past couple of years. For instance, the waiting period for jobs ranges between 3 and 5 years for young Omanis after graduation (Al-Lawati 2016). The emergence of this problem can be traced to two key reasons. Firstly, the increased number of graduates who are looking for meaningful employment, which is a direct result of the better access to higher education that the Sultanate of Oman has promoted over the past number of years (Al-Lawati 2016). Secondly, the serious economic problems that Oman is currently experiencing resulted from low oil prices, the main source of income for the country. The low-oil-price crisis creates not only youth unemployment but unemployment for adults.

According to Erlich (2015), this state of Oman's economy provoked some private companies to force their drilling workers to seek other livelihoods and find alternative jobs.

These unemployment problems prompted a call for the diversification of the sources of national income away from oil and gas. The Sultanate developed "Vision 2040" for Oman's Economy. The Vision aims to make the Sultanate a diversified economy by utilising its rich, highly talented, and capable human capital predicated on the development of an innovative culture which is commendable.

Sultan Qaboos University as a premier public institution is dedicated to producing high quality graduates, knowledgeable and skilled in various disciplines offered by nine colleges. Entrepreneurship is considered by researchers as the fourth pillar of economic development, and some even argue, that perhaps entrepreneurship is the only important pillar of economic development in the highly technological twenty-first century. It is hoped that with the country's vision, the issue of "youth liability" will become "youth advantage" for Oman. Hence the key research question addressed in this paper is: What factors influence Sultan Qaboos University's female students towards entrepreneurship?

The rest of the chapter is structured as follows: Sect. 2 sets the country context for Omanis with a focus on the development of entrepreneurship. Section 3 briefly discusses economy of Oman. Section 4 reviews the literature, whereas Sect. 5 focuses the theoretical framework adopted in this study. Finally, Sects. 6 and 7 present the results and conclusions respectively.

2 Development of Entrepreneurship in Oman

As a result of the over-dependence on oil, Oman's economic development has been unbalanced. The consequences have been, and continue to be, high and growing levels of unemployment and over-dependence on imports of goods and services. Entrepreneurship education and training represent a special area of innovative new approaches and initiatives in the world and it is even more important in the Arab world. Hence, entrepreneurship and entrepreneurship education in institutions of higher education have received increased attention in Oman with the hope of alleviating acute unemployment rates and overdependence on imports.

The government of Oman has taken steps in the promotion of entrepreneurship education at the national level. Efforts to promote entrepreneurship in the country take different forms such as research, expenditure, curriculum development, teacher training and collaboration with Non-Government Organizations (NGOs). Various pilot projects and national, regional or international programmes have been implemented to promote entrepreneurship and to provide entrepreneurship education especially among students, young people generally and the unemployed (Al-Ghassani 2010).

The Government of Oman recognised the role of privatization and liberalization of its policies in accelerating the rate of economic growth. The government encouraged men and women equally to participate in the process of economic development

of the Sultanate "Vision 2020" which emphasises the industrial development of small and medium enterprises (Al-Ghassani 2010).

Many initiatives have been launched nationally to encourage young people to take up independent business options. The SANAD programme, which has been a successful programme all over Oman, promotes the launch of youth business ventures through the provision of loans and expertise to recent graduates. It was started in October 2001 under the Ministry of Manpower with the objective of helping to promote and foster the development of small-scale enterprises in Oman. The program supports individual initiatives for all who are willing to undertake self-employment, through the available mechanisms of training, rehabilitation, funding and technical and administrative follow-up. It is targeted especially for the unemployed youths. The SANAD Incubators Programme helps young entrepreneurs from technical colleges start their own enterprises through monetary and technical support. These young entrepreneurs are expected to build their own businesses with a head start in the business world. The Government has created SANAD offices in each governorate and region that provides technical and administrative support to the beneficiaries (Khan and AL-Moharby 2007).

The Know About Business (KAB) programme is a global package being offered under the aegis of the International Labour Organization (ILO) to empower the young to acquire skills that will help them earn a livelihood. The main focus of KAB is the training of entrepreneurs in management skills for developing an entrepreneurial attitude through entrepreneurship education. The programme seeks to develop the entrepreneurial skills of young people and educate them not only to establish their own businesses at some time in the future, but also to work productively in small and medium enterprises (SMEs) (International Labour Organization 2012). In Oman, this program is being implemented in vocational training centres and colleges of technology.

The "Intilaaqah" program is part of the Shell group worldwide initiative, LiveWIRE. This program helps the young entrepreneurs by providing them the right kind of training, counselling and consultancy services which enable them to start their own businesses. The objective of the training program is to develop the candidate's ability to conceptualize the business environment by enabling him or her to acquire necessary skills to run small businesses professionally as cited in Intilaaqah (2016).

The colleges of technology have also adopted programmes for newly recruited teachers and lecturers focusing on entrepreneurship education in addition to other areas. After recruitment, these teachers are sent abroad for a Master's Degree. They spend a few months working in industry to gain industrial experience and to acquire entrepreneurship skills, followed by a few months of training within the college to learn modern teaching techniques and methods of transferring knowledge and skills to students. In addition to the above initiatives, the government introduced a mandatory entrepreneurship course in all government and private colleges and universities Mohammed al Sami (2014).

In terms of financial support for the prospective entrepreneurs, Oman's government has adopted certain steps in promoting entrepreneurship education. These

include the availability of Oman Development Bank loans, 'incubator' facilities, equity funding by the Youth Fund, and micro-business development facilities offered through the SANAD programme. Oman Development Bank (ODB) promotes entrepreneurship among the youth by providing them with soft loans and reducing bureaucracy (Central Bank of Oman 2015).

Under the SANAD programme, an amount of 5000 Rial Omani (around $13,000) is provided as a loan. ODB disburses the loan amount after approval and recovers it as per the Fund regulations. The period of the loan settlement is 7 years including 1 year as a grace period starting from the date of granting the loan. The fund charges an interest rate of 2% per annum to cover the administrative cost of the loan. The Fund for Development of Youth provides financial and management assistance to young people wishing to embark on business in the private sector. The fund was established with a grant of RO (Rial Omani), 1 million granted by His Majesty and the fund has accumulated RO 5.36 million as equity from private companies. The policy of this fund is to invest in the equity of the small and medium sized projects and to render administrative, financial and technical support. The entrepreneur has the flexibility to buy back the equity in his or her enterprise by paying back to the fund after an exit period of 5 years (Central Bank of Oman 2015).

3 Economy of Oman

The Sultanate of Oman registered a robust overall real economic growth of 5%, in the previous decade prior to the marked drop in oil prices. Prudent fiscal measures ensured high fiscal buffers and the public debt to GDP ratio stood at 5% at end-December 2014. On the external front, gross foreign exchange reserves exceeded 6 months of import according to the Central Bank of Oman's Annual Report (Central Bank of Oman 2015).

The Vision 2020 and successive Five-Year Development Plans pursued the strategy of economic diversification, a greater role for the private sector, an improved business climate for attracting foreign direct investment etc. (Central Bank of Oman 2015). During the previous 10-year period, the share of the non-hydrocarbon sector had increased from 16% to 41% of merchandise exports, while the share of non-oil revenue in public revenue had grown from 14% to 22% (Central Bank of Oman 2015). Over the years, the government of Oman implemented sound macroeconomic policies resulting in strong growth, moderate inflation and a stable financial system.

The sharp decline in the oil price since mid-2014 and the renewed dip in oil price from the end of 2015 to January 2016 have turned the fiscal and external balances into sizeable deficits in 2015 (Central Bank of Oman 2015). In order to contain fiscal metrics within manageable limits, the authorities have implemented fiscal adjustments through spending cuts, augmenting non-oil revenues and undertaking subsidy reforms. An expectation of low oil prices to continue would warrant contingency plans of further spending restraint and revenue measures including expanding non-oil revenue, prioritizing capital expenditure, reducing current expenditure and

enhancing user fees (Central Bank of Oman 2015). On the other hand, gains from a quick recovery in international oil prices would be an opportunity for greater fiscal savings facilitating the restoration of fiscal sustainability in the medium term. With a view to enhancing non-hydrocarbon revenue, additional fiscal measures have been planned. Corporate income tax is expected to be raised from 12% to 15% in 2017 and VAT to be introduced in 2018 (Central Bank of Oman 2015).

The Ninth Five Year Development Plan (2016–2020) seeks to achieve higher economic growth through focused investment in five sectors namely, manufacturing, logistics, tourism, fisheries and mining. It is intended that the private sector would play a significant role in the expansion of activity in these sectors. The government and the Central Bank of Oman have instituted policies and programs to support entrepreneurship and the SME sector (Central Bank of Oman 2015).

4 Literature Review

4.1 Benefits of Entrepreneurship

Entrepreneurship is a difficult concept to define in clear terms. In common usage, the word 'entrepreneurship' is linked to enterprise creation, but the term has a wider application (Martins 2007). Some researchers (Li et al. 2012) believe that entrepreneurship can be used more specifically to identify individuals who stimulate economic progress by finding new and better ways of doing things. Blackman and Hindle (2007) have enhanced Klyver's (2005) model that describes Davidsson (2004) classification of the two principals 'schools' of definitional emphasis in the entrepreneurship literature: (1) "the emergence perspective", and (2) "the opportunity perspective". The "emergence perspective" emphasises the dynamics of new organization creation whether or not the venture includes innovation "the development of new means-ends relationships as a core component" (Blackman and Hindle 2007). The 'opportunity perspective' suggests that entrepreneurial opportunities involve the discovery and evaluation of new relationships between means and ends, irrespective of whether this involves the creation of a new venture or not. Entrepreneurship, in this perspective, is defined as "the discovery, evaluation and exploitation of opportunities whatever the organizational mode of pursuit" (Shane and Venkataraman 2000). These two perspectives are illustrated in Table 1.

The empirical work performed for this paper does not, as it were, 'take sides' in the debate regarding definitions. The philosophical stance adopted in this paper is inclusive and eclectic enough to take a broad view of entrepreneurship i.e. any activity that could be classified in any of quadrants A, B and C (Table 1).

The European Union Green Paper on Entrepreneurship (European Commission 2003) set out a range of benefits that can be associated with entrepreneurship. These benefits include contributing to economic growth by job creation and growth; fostering social and economic cohesion particularly in less developed regions; being crucial to competitiveness and productivity improvements; unlocking personal

Table 1 Two main perspectives of entrepreneurship research

		Principal action focus	
		Creation of new means and ends relationships	Maximising existing means and ends relationships
Organizational context	New organizations	(A) Innovation oriented venture creation	(B) Non-innovation oriented venture creation
	Existing settings	(C) Innovation oriented venturing in existing contexts (e.g. corporate venturing; licensing via markets etc.)	(D) Traditional management

Sources: Klyver (2005), Blackman and Hindle (2007)

potential and satisfying a range of social interests, by making wealth, jobs and diversity of choice available for citizens. Thus, through entrepreneurship, the call is made for nations to have new ways of doing things; to be innovative and creative; to have the willingness to take calculated risks—in terms of time, equity or career; to recognise opportunities and evaluate them and to possess many other essential ingredients of entrepreneurship. Encouraging entrepreneurship therefore is viewed as a central key to creating jobs and to improving competitiveness, social integration and economic growth, especially in developing countries and this can only be done though changing their mindsets through entrepreneurial education and training which is relevant to their situations.

Entrepreneurship education poses a definitional problem. Literature abounds (Blenker et al. 2006) that indicates that there is no common agreement over what constitutes entrepreneurship education or how it is taught (Kirby 2007). The nature of entrepreneurship education is made even more complicated by the fact that there is not much clarity about what the outputs are designed to be. The lack of clarity about the intended outputs leads to significant diversity surrounding the inputs (Pittaway and Cope 2007). As Kroy (2005) notes, approaches to entrepreneurship education are likely to vary between continents and between countries as well as according to the target group. Oman, like most countries, gives priority to supporting entrepreneurship through education and training of existing and prospective entrepreneurs.

It is important for Oman to diversify its economy (Al-Shanfari 2012) affirms that "Oman's main export has been oil, which is still the backbone of the economy and constitutes around 80% of total government revenue", and the fact that "Oman has less than 20 years of oil reserves left" (AL-Shanfari 2012) calls for Oman to benefit from the advantages that entrepreneurship brings. Low oil prices in Oman have led to acute youth unemployment. In its 2004 Human Development Report, the United Nations Commission on the Private Sector and Development asserted that alleviation of youth unemployment requires a strong private sector. The private sector is seen as the source of growth, jobs and opportunities for the unemployed and the poor. Accordingly, there is a clear need for an economic climate that encourages private-sector investment and thus economic growth, as in the UN Human Development Report (2014).

Entrepreneurship is essential to promote and achieve economic growth, development and the creation of wealth and employment (Nieman 2001). Entrepreneurship is defined as the process by which opportunities to create future goods and services are discovered, evaluated and exploited (Shane and Venkataraman 2000), thus, to focus on developing entrepreneurship in Oman is important for several reasons.

First, entrepreneurship drives innovation and technical change, and therefore generates economic growth (Schumpeter 1934). Second, entrepreneurial action is the process through which supply and demand are equilibrated (Kirzner 1997). Third, entrepreneurship is an important process by which new knowledge is converted into products and services (Shane and Venkataraman 2000). Fourth, entrepreneurship has become an important vocation and we need to understand its role in the development of human and intellectual capital (Zahra and Dess 2001). According to Fayolle (2000, p. 2) countries with a high level of entrepreneurial activity are those which have the most developed and complete entrepreneurial teaching and training programs. Therefore, teaching entrepreneurial skills represents one powerful means of achieving economic development (Fayolle 2000).

Many initiatives have been designed to foster entrepreneurship development in Oman; they aim to inspire, encourage, and prepare Omani youth to succeed in a global economy. Hence, the number of young Omanis prepared to start entrepreneurial ventures is expected to increase. However, despite all these initiatives and incentives, many Omani youth still hesitate to start their own businesses. For instance, in the year 2003, fewer than 2 in 100 young Omanis started a new business, compared to 1 in 10 in the US" (Al-Shanfari 2012).

5 Influential Motivators of Entrepreneurial Aspirations

In order to encourage entrepreneurship, we must ask ourselves "what shapes career aspirations toward self employment" (Scott and Twomey 1988). These researchers believe that the motivation is a significant factor in the start-up and success of the business. They conducted one of the earliest studies on university students entrepreneurial intentions by studying the intentions of the university students in the United States. They found that only 24.8% of US university students aspired to become entrepreneurs. The results of their study indicated that, students whose parents owned businesses showed the highest preferences for self employment. Thus, parents must have acted as role models.

A study which was conducted by Bhandar (2006) in India administered a 62 item questionnaire on university students on their career intentions. The results indicated that 92.35% of the respondents had the intention to venture into entrepreneurship activities upon university completion. The fact that Indians are generally believed to be good business people may explain the high positive result of students aspiring to become entrepreneurs upon completion of their studies. The cooperativeness of Indians is conducive to entrepreneurial success and thus, this is bound to motivate students to venture into businesses.

Researchers in the area of career theory continuously identify role models as an influential determinant of a student's career choice. The presence of entrepreneurial role models had been identified as one of the most significant socio-cultural factors to play a role in entrepreneurship (Fornahl 2003). Earlier studies stem from the social learning theory (Bandura 1977) and the cognitive developmental theory (Kohlberg 1966), that assume that children imitate adults, in particular, parents who are regarded as role models (Dryler 1998). Shapero (1985) assert that role models influence entrepreneurial intentions.

In their study of factors influencing the entrepreneurial engagement Thurik et al. (2010) concluded that having at least one self-employed parent increased the odds of being engaged in entrepreneurial activity. This concurs with Scott and Twomey's study on predisposing factors. Rametse (2013) researched into the attitudes of women students' and barriers to business ownership in Botswana. Her results confirmed that a majority of the women aspired to start their businesses when they completed their studies. The study indicated that women students' involvement in their family members' businesses influenced their desire to start their businesses thus confirming Scott and Twomey's findings about predisposing factors in particular, the importance of parents as role models.

Since Scott and Twomey's work, a number of other studies have been conducted and have highlighted a steady increase in the percentage of students aspiring to become entrepreneurs. Another study conducted by Moi et al. (2011) also suggested that the number of role models (family, friends or colleagues) was positively related to entrepreneurial intention.

Ferreira et al. (2017) sought to identify attitudes and intentions of university students towards starting their own businesses. The objective of their study was to identify the students' intentions toward entrepreneurship, their personal characteristics and future plans. They found that most of the students did not want to undertake entrepreneurial activities immediately after graduation but postponed it to a distant future. Perhaps this could have been because students wanted to gain hands-on work experience before starting their own businesses. Lack of initial capital could also have contributed to students' decisions to defer entrepreneurial activities to a distant future.

Scott and Twomey (1988) indicated that "predisposing" (background, personality, perception); "triggering" (situational) factors and having a business idea acted both independently and together to shape students' career aspirations. While predisposing factors are long-term, triggering factors are situational and short-term in nature and they include "the effects of looking for work, career advice received and the prospects of unemployment' (Scott and Twomey 1988).

There is a paucity of literature on the intentions of female university students' with regard to entrepreneurship in the Gulf Community Countries (GCC) and Middle Eastern and North African (MENA) countries. Hatten and Ruhland (1995) and Kent (1990) examined the entrepreneurial knowledge, preferences and perceived barriers among business students in the Middle East. Other studies were conducted by Gallant et al. (2010). Hossan et al. (2013) studied entrepreneurial knowledge and preferences of female businesses students in Abu Dhabi and their

study found that students had greater interest in starting new ventures but did not know where to get help regarding starting their new businesses.

In Oman, the attitudes of Omani college students towards entrepreneurship were assessed by Segumpan and Zahari (2012). Their research also attempted to determine any significant differences in respondents' attitudes when grouped by gender. Sixty one (61) university students who were enrolled on the International Business course took part in the study. In relation to differences in entrepreneurship attitudes by gender, their study found that male students had higher entrepreneurial orientation than their female colleagues. However, all in all, their findings indicated positive attitudes by Omani students towards entrepreneurship.

In another Omani study, Thresi and Hamadi (2012) assessed the entrepreneurial intentions of Sohar University students. Their study tested for the presence and strength of four traits associated with entrepreneurship; the need for achievement, autonomy, risk-taking and self confidence. Their results indicated a high number of students who intended to engage in entrepreneurial activities upon university completion.

Both the Omani studies indicate students' positive attitudes towards entrepreneurial activities. This could be due to the influence of many government and non-governmental programs that are aimed at encouraging youth entrepreneurship in Oman.

No study has been conducted in Oman regarding role models and family background as influential motivators of entrepreneurial aspirations of female students in higher education.

6 Theoretical Framework

The analysis of this research is predominantly based on the Scott and Twomey (1988) model, which describes factors that influence students' career aspirations (see Fig. 1). This framework has been chosen because its conceptual dimensions are widely covered by the literature (Scott and Twomey 1988; Orhan and Scott 2001; Rametse and Huq 2014) and meet the research objectives of our study. These factors are represented by three broad variables comprising of predisposing factors, triggering factors and possessing a business idea (Scott and Twomey 1988). Scott and Twomey (1988) explain predisposing factors as background/personality/perception factors that develop over several years or more. For this study, these include family background, in particular small business owners within the immediate or broader family as role models. However, it should be noted that our paper discusses only the predisposing factor of parental role models and career preferences.

Other broad variables, which are situational and short-term, are triggering factors. These are the reasons why the students are interested in setting up businesses. These include "the effects of looking for work, career advice received, and the prospect of unemployment" (Scott and Twomey 1988, p. 6). Another factor that may influence women students to start their businesses is possession of a business idea, which may

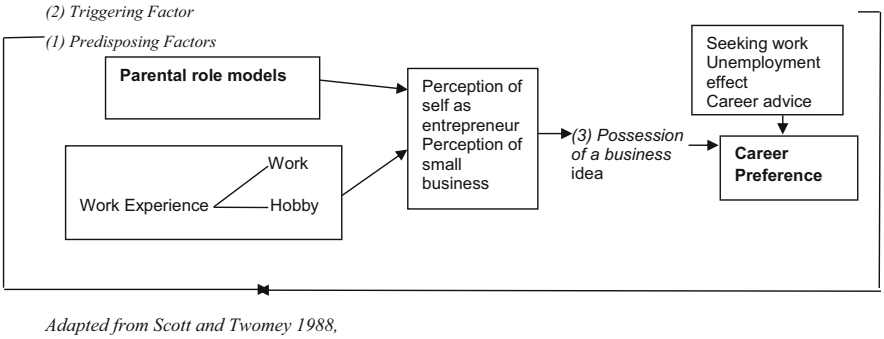

Fig. 1 Main factors influencing career aspirations

be instigated by both predisposing and triggering factors. Thus, these factors may generate a business idea, leading on to setting up a business as an ultimate career preference. Thus, possession of a business idea alone may "pull" women students into entrepreneurship.

7 Research Methodology

This research attempts to answer the above stated question: *What factors influence female students at Sultan Qaboos University towards entrepreneurship?*

7.1 Participants

Data was collected between January and March, 2015, from a sample of 210 undergraduate female students from the College of Economics and Political Science at Sultan Qaboos University in Oman. Out of the 210 participants, 200 respondents remained in the sample after eliminating the unusable questionnaires.

7.2 Measurement/Instruments

Building upon Rametse and Huq (2015), we adapted and developed a survey questionnaire, titled, Female Students Entrepreneurial Motivations Questionnaire (FSEMQ), for the purpose of this study.

This instrument was piloted on five female students and five academics for their comments and suggestions, and to determine its validity. Problematic questions were identified and refined. Semi structured survey questionnaires were used as they are

cost effective and more reliable. Additionally, questionnaires can be distributed to a large sample of people to get their different attitudes and views at once and they are suitable for gathering data quickly and in a short time. The main disadvantage was lack of in-depth answers from respondents. When designing a questionnaire, sub-questions were formulated to address the research question and the hypotheses to be evaluated.

The self-administered questionnaire—FSEMQ was divided into four sections. The questions were devised based on the adapted theoretical framework. The first section of the questionnaire required respondents to provide their personal details and family background including parents' occupations; if respondents were involved in a business or had any business experience and whether they had a relative who was an entrepreneur. This information was needed to investigate how demographic factors affected students' perceptions towards entrepreneurship.

The second section required students to provide information on their prospective career options upon university completion. They were required to rank their options with a measurement scale of a Five-point Likert-scale, with 1 = Very unattractive and 5 = Very attractive. In this section, respondents were further asked to rank the amount of influence they got (from family, friends, university teachers, and the media) towards their career choices. With 1 = No influence and 5 Strong influence.

The third section was designed to investigate participants' attitudes towards entrepreneurship, their intentions as well as their experience of business ownership. Questions related to women attitudes towards entrepreneurship as their career options were also included. Questionnaires contained several open-ended questions with the last section of the questionnaire requesting for respondents' general views on barriers preventing women to partake in entrepreneurship ventures in Oman. Responses were appropriately coded for analysis using a Statistical Package for the Social Sciences (SPSS).

7.3 Procedure

On the basis of the pilot, the FSEMQ was distributed randomly to the undergraduate female students (N = 210) in 2015, generating 200 responses. The purpose was to identify the factors that motivate students in their aspirations to start businesses. Data was collected after ethics clearance by Sultan Qaboos University.

7.4 Statistical Procedure

The Statistical Package for Social Sciences (SPSS) 23.0 was used for the survey to compute descriptive statements and some cross-tabulations. In addition to using SPSS 23.0, Artificial Neural Network (ANN) was used to predict female students' interest in starting their own businesses.

7.5 Artificial Neural Network

Artificial Neural Network (ANN) is gaining importance in business research as it can handle data without normality conditions and can capture linear as well as non-linear relationship among decision variables. ANN is considered one of the most advanced statistical techniques. ANN can be defined as "a massively parallel distributed processor made up of simple processing units, which have a neural propensity for storing experimental knowledge and making it available for use" (Haykin 2001). The functioning of artificial neural network is similar to the human brain in the sense of knowledge gathering through learning. ANN is made up of three layers namely input layers, hidden layers, and output layer. These layers are connected through synaptic weights for adjusting using recursive learning process (Leong et al. 2013). There are two ways of learning in artificial neural networks namely supervised learning and unsupervised learning. ANN has been employed in various domains of businesses such as insurance, operations management, retail, marketing, telecommunications, eLearning, banking and finance sector (Smith and Gupta 2000). The performance of ANN has been proved to perform better than other advanced statistical models such as multiple linear regression, discriminant analysis, logistic regression, structural equation modelling and others. The "black box" approach of neural network model is one of its shortcomings and it cannot be used to test research hypotheses it can be done with regression based statistical models.

8 Results

8.1 The Respondents' Profile

Table 2 presents a distribution of personal details. A majority of female students (99.3%) were in the age range 18–25 years. Around 99% are single. A majority (55%) were from a nuclear family set-up. Around 50.8% and 49.2% had a level of

Table 2 Profile of respondents

Variables	Sample
Age	n = 145 (99.3%), ranged from 18 to 25 years n = 1 (0.7%), ranged from 26 to 30 years
Marital status	n = 145 (99.3%), single; n = 9 (6.9%), married
Type of family set-up	n = 68 (55.6%), = nuclear family; n = 55 (44.4%), = joint family
Level of studies	n = 67 (50.8%), = Junior (<2 years); n = 65 (49.2%), = Senior (>2 years)
Education qualification	n = 74 (51.7) Bachelor; n = 44 (30.8) Diploma; n = 12 (8.4) Basic education; n = 11 (7.7) Post basic education; n = 2 (1.4) Masters
Monthly income (bread winner)	n = 92 (65.7%) <5000 OMR; n = 37 (26.4%) 5001–20,000 OMR; n = 9 (6.4%) 20,001–35,000 OMR; n = 2 (1.4%) >35,000 OMR

Table 3 Type of business interest

Industry	n (%)
Retail	8 (12.9)
Service	31 (50)
Manufacturing	10 (16.1)
Others	13 (20.9)

studies of junior and senior respectively. Regarding qualifications, 51.7 % studied for Bachelor's Degree and 30.8% for a Diploma. A majority (65.7%) were from the lower level of income (less than OMR 5000).

As shown in Table 3, respondents were largely interested in service business (50%). Thus, it seems female students in Oman are more attracted to service industry.

8.2 Family Background

In an effort to investigate how demographic factors affected students' perceptions towards entrepreneurship, we further requested information from female students on their family background. These included parents' occupations, whether respondents were involved in a business or had any business experience and whether they had a relative who was an entrepreneur.

Table 4 shows that around 82% of respondents' fathers were employed, 13.8% were in business and 4% were farmers. A majority of the participants' mothers (26%) had no education as compared to their fathers (11.6%). However, many

Table 4 Parents' employment status and their level of education

Variables	N	%
Father's occupation		
Farmer	4	4.0
Business	14	13.8
Job	83	82.2
Father's education		
No education	16	11.6
Basic	37	26.8
Post basic	25	18.1
Diploma	16	11.6
Bachelors	28	20.3
Masters	15	10.9
Mother's education		
No education	36	26.1
Basic	52	37.7
Post basic	14	10.1
Diploma	19	13.8
Bachelors	16	11.6

participants' mothers (37.7%) had basic education, while 26% reported that their fathers had basic education. Additionally, a majority of female students (20%) reported that their fathers had a Bachelors degree. Around 11% said their mothers had a Bachelor Degree. Thus, female students' fathers were more educated than their mothers.

8.3 Predisposing and Triggering Factors

8.3.1 Involvement in Business

Table 5 shows 75% of the participant's families were already involved in business broken down as follows—parents (39.3%), uncles (21.4%), siblings (18.8%) and at least one spouse (1%). Few of the participants (14.3%) were themselves already involved in business. This suggests that they wanted to concentrate on their studies in an effort to earn more money in government and the private sector. Moreover, as indicated earlier on in this paper, this may support the assertion that in Oman, young people are groomed to take on government positions that are well-paid and require little personal accountability, hence the low level of involvement in business.

8.3.2 Employment Preference

Respondents were requested to indicate their employment preference upon graduation. Table 6 shows that most female students found it very attractive to work for a large business in the private sector (48.3%) or a government organization (41.3%). Only 28.2% want to start their own businesses, and had little interest in the sectors of

Table 5 Distribution of family involvements in business

Variables	n	%
Does/did any of your family members operate own business?		
Yes	112	74.7
If yes,		
Parents	44	39.3
Siblings	21	18.8
Uncles/aunts	24	21.4
Cousins	15	13.4
Grand parents	5	4.5
Spouse	1	0.9
In-laws	2	1.8
Are/were you involved in the business in any way?		
Yes	17	14.3
No	102	85.7

Table 6 Distribution of participant's employment preference after the graduation

Variables	Attractive				
	Very attractive n (%)	Attractive n (%)	Undecided n (%)	Unattractive n (%)	Very unattractive n (%)
Govt. organization	50 (41.3)	40 (33.1)	16 (13.2)	10 (8.3)	5 (4.1)
Private sector, large business	57 (48.3)	32 (27.1)	18 (15.3)	6 (5.1)	5 (4.2)
Private sector, small business	6 (12.8)	15 (12.8)	49 (41.9)	30 (25.6)	17 (14.5)
Own business	33 (28.2)	29 (24.8)	30 (25.6)	11 (9.4)	14 (12.0)
Joint family business	20 (17.5)	28 (24.6)	20 (17.5)	29 (25.4)	17 (14.9)

Table 7 Factors influencing to choose the preference of employment

Variables	Influence				
	Strong n (%)	Moderate n (%)	Undecided n (%)	Somewhat n (%)	No n (%)
Parents	60 (49.6)	34 (28.6)	21 (17.6)	2 (1.7)	2 (1.7)
Siblings	17 (16.7)	32 (31.4)	26 (25.5)	15 (14.7)	12 (11.8)
Friends	18 (15.1)	29 (24.4)	43 (36.1)	18 (15.1)	11 (9.2)
The media	21 (17.9)	38 (32.5)	28 (23.9)	20 (17.1)	10 (8.5)
University (courses, teachers)	30 (27.5)	37 (33.9)	31 (28.4)	8 (7.3)	3 (2.0)
Work experience	40 (41.7)	27 (28.1)	18 (18.8)	7 (7.3)	4 (4.2)
Relatives	7 (10.1)	14 (20.3)	23 (33.3)	18 (26.1)	7 (10.1)
Spouse	9 (20.5)	5 (11.4)	13 (29.5)	8 (18.2)	9 (20.5)

small private business (12.8%) and joint family businesses (17.5%). The female students were attracted to work for large private companies due to the well-known factor of security in terms of resources and high remuneration. (Rametse and Huq 2015) This issue had earlier been confirmed by Huq and Moyeen (1999) who showed that working for large private sector organizations is associated with status, attractive salary and prestige. As confirmed by Rametse and Huq (2015) working for government organizations was less appealing for female students, probably due to bureaucratic red tape in the public sector.

Participants were requested to indicate the level of influence they think parents, siblings, friends, the media, university, work experience, relative and spouses had on their choice of preferred employment. Table 7 shows parents (49.6%), work experience (41.7%), spouse (20.5%) strongly influence the choice of preferred employment while there is only a moderate influence from the University (33.9%), media (32.5%), siblings (31.4%). Also, there is moderate influence from friends (36%) and relatives 26.1%. This high figure for the influence of parents supports the social learning and the cognitive developmental literature that the family is one of the most influential contexts of socialisation in childhood and adolescence (Kohlberg 1966; Bandura 1977; Dryler 1998).

Table 8 Perception towards business ownership

Variables	n	%
How did/do you want to set-up the business		
By myself	52	63.4
With friends	30	36.6
If you are to start your own business would your friends support your decision?		
Yes	86	84.3
No	16	15.7
Did you try/Are you trying to set up the business?		
Yes	19	22.9
No	64	77.1
It has been found that women often face additional problems before setting up business		
Yes	31	34.8
No	58	65.2

Table 8 shows that most of female students prefer to start businesses by themselves (63.4%) when compared to starting with their friends (36.6%), hoping their friends (84.3%) will support them. Some of the 23% of participants tried/are trying to start a business, and 35% of them agree that women are facing additional problems. Starting businesses by themselves support the view by Rametse and Huq (2015) that women students' see themselves as well-educated and confident enough to succeed in venture creation.

8.3.3 The Importance of Role Models

Participants believe parents (48.9%), friends/peers (23.3%), siblings (23.1%), media (22.1%) will contribute strong influence while starting their own business. Only 7% were influenced by other relatives (See Table 9). Ranking parents high amongst others, in influencing female students to start their own enterprises confirms the significance of socialization and parental role models (Dryler 1998). Additionally,

Table 9 Distribution of the family members influences while starting the business

	Influence				
Variables	Strong n (%)	Moderate n (%)	Undecided n (%)	Somewhat n (%)	No n (%)
Parents	45 (48.9)	23 (25.0)	12 (13.0)	5 (5.4)	7 (7.6)
Siblings	18 (23.1)	21 (26.9)	20 (25.6)	9 (11.5)	10 (12.8)
Friends/peers	21 (23.3)	35 (38.9)	21 (23.3)	6 (6.7)	7 (7.8)
The media	19 (22.1)	24 (27.9)	28 (32.6)	7 (8.1)	8 (9.3)
University (courses, teachers)	16 (18.6)	29 (33.7)	21 (24.4)	9 (10.5)	11 (12.8)
Relatives	7 (4.7)	17 (11.3)	24 (35.8)	10 (14.9)	9 (13.4)
Spouse	5 (13.5)	4 (10.8)	10 (27.0)	11 (29.7)	7 (18.9)

studies (for example, Scott and Twomey 1988) have confirmed that students whose parents owned businesses were more motivated to start their own businesses.

8.3.4 Artificial Neural Network Analysis

The back propagation neural network was employed to analyze data using IBM SPSS 23.0. The back propagation involves the weighted inputs to be added and processed by activation function and transferred to the next layers of neurons (Chong 2013). The activation function used in this model was hyperbolic tangent trigonometric function. This neural model is commonly used in business research because of its ease of use and effectiveness in predicting outcome variables using predictors. In this model, predictors namely influence, setup business, bussSetup, workholic, wealthy, friend-sup and outcome variable chosen was "interest to start own business". In Fig. 1, DV = 1 represents the value of dependent variable "Yes" whereas DV = 2 represents "No". A three layer namely input layer, hidden layer, and output layer is shown in Fig. 2. The neural network model is mapping input onto output the learning process (Chong 2013). The key objective of learning process is to minimize the difference between actual value of outcome variable and its predicted value.

8.3.5 Validation of Neural Network Model

The artificial neural network model was trained using the multilayer perceptron training algorithm. In order to minimize over-fitting and simplification of the neural network model, cross validation was performed. The cross validation was employed using 1–10 hidden nodes. In the neural network model, there were six predictors, one hidden layer, and one outcome variable with two possible outcomes "Yes" and "No". The prediction accuracy of the neural network model was determined with the help of Root Mean Squared Error (RMSE). In the tenfold cross validations, 80% of the data points were used to train the proposed neural network models whereas 20% data points were used to validate the same. The average RMSE for the training the neural network model was 0.092 with standard deviation 0.004 and for the testing the neural network model was 0.086 with standard deviation 0.007. These descriptive statistics of RMSE support the reliability of the proposed neural network model in this research. The results of this research were compared with the results of multiple linear regression for benchmarking purpose. The RMSE value of linear regression was 0.269. Hence, performance of the neural network model was better than multiple linear regression.

8.3.6 Sensitivity Analysis

The sensitivity analysis was performed to rank the importance of the predictors influencing the interest of female participants towards starting their own business

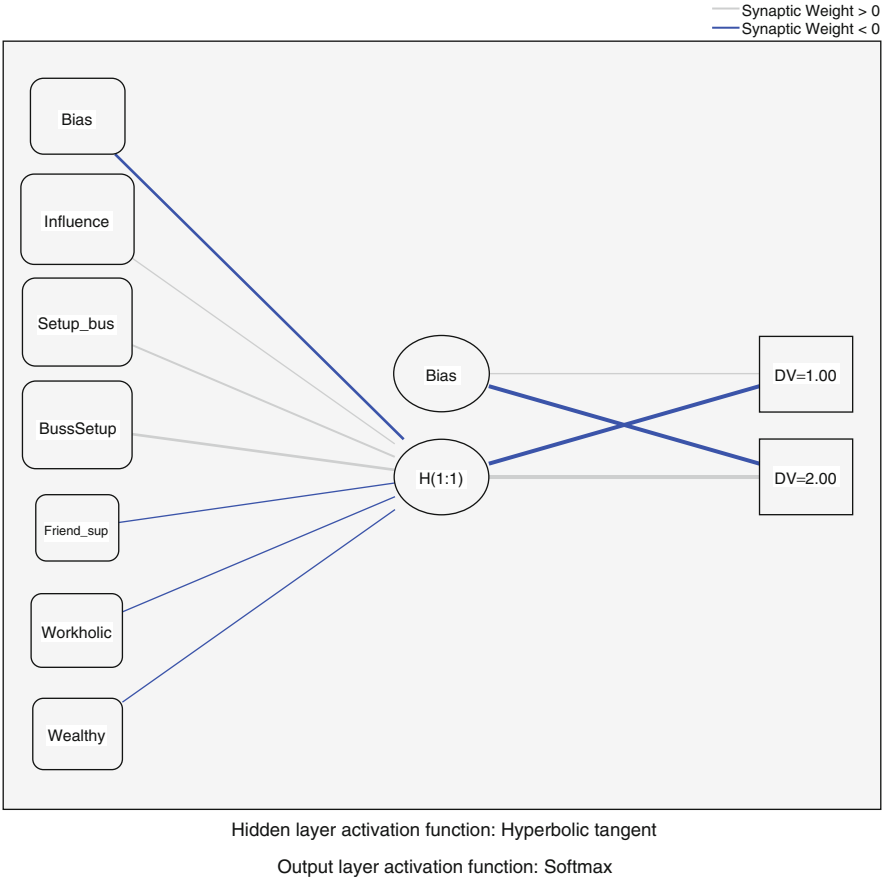

Fig. 2 Artificial neural network model

(see Table 10). The importance of predictors shows how the predicted values by the neural network model influence the different values of the outcome variable (Chong 2013).

The normalized importance of the predictors was computed by dividing the importance values by the highest value of the importance and finally multiplied by 100 to get the importance in terms of percentage for easy understanding. The normalized importance of the predictors is also shown in Fig. 3. Table 10 summarizes the importance of all the predictors for all 10 neural networks. On the basis of the artificial neural network models results, it is concluded that the most important predictor of "Interest to start own business" was "influence" which is defined as the "Business-ownership made you think of having your own business" followed by "How did/do you want to set-up the business?", "Trying to set up the business?", "Business-owner means "all work and no play".", "Business owners earn a lot of money.", and "Friend supports your decision to start business?"

Table 10 Predictor importance

Predictors importance		
Predictors	Importance	Normalized importance (%)
Business-ownership made you think of having your own business	0.259	100.0
How did/do you want to set-up the business?	0.247	95.4
Trying to set up the business?	0.233	89.7
Friend supports your decision to start business?	0.048	18.3
Business-owner means "all work and no play"	0.110	42.3
Business owners earn a lot of money	0.103	39.8

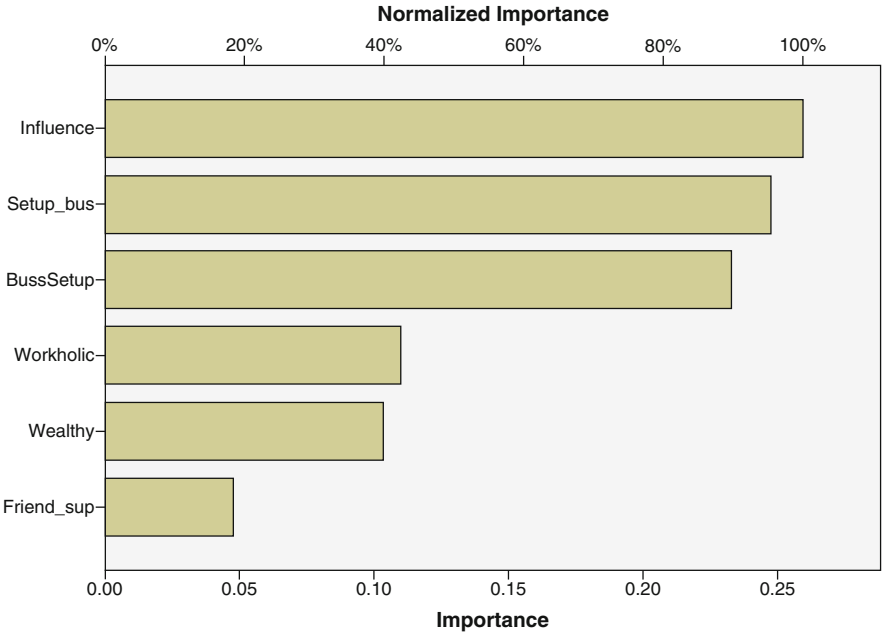

Fig. 3 Normalized importance

9 Conclusions and Implications

This study has attempted to answer the following research question:

What factors influence Sultan Qaboos University' female students towards entrepreneurship? Findings of this study suggest that while the general perceptions toward business start-up are positive among female undergraduate students, a small portion of them still hold ambivalent views towards starting their businesses. Although a majority of female students' families were already involved in business,

this did not influence many of them to be involved in business. Female students ranked the influence of their parents high in terms of their aspirations to start their own businesses when they graduate. A majority of female students also aspired to work for private large organisations. The influence is attributable to prestige, job security, more resources and higher salary. However, due to a fear of bureaucratic red-tape, the public sector is less appealing than the private sector for female students. Female students also aspire to start their businesses by themselves, suggesting the high confidence they have due to their higher level of education.

Findings of this study suggest that female students are indecisive about their aspirations for venture creation upon their graduation. Thus, in Oman, entrepreneurship courses should be developed both at early stage of high school and university level (Rametse and Huq 2015). Capstone courses, industry engagement relating to entrepreneurship, role models and the use of the Activator need to be seriously considered by universities in their curriculum development to prepare the student to undertake entrepreneurial activities when they graduate. The Activator will enable female students to be empowered through collaboration, advice and knowledge in the creation and development of their entrepreneurship ideas.

This study employed predictive modelling to understand and to predict starting up of businesses by female students in developing country like Oman. The predictive modelling is being preferred over traditional statistical models like regression models and structural equation models because it has power to detect non-linear relationship among decision variables in addition to detecting linear relationship among decision variables. On employing predictive modelling in this chapter, it was revealed that the key factors influencing female students to start a business were the "Business-ownership made you think of having your own business" These findings show that Omani students are willing to start their own businesses. However; there is a lack of information about how to set up a business among female students. It is imperative that female students should be given training and opportunities during their school as well as college days. In recent times, it has been observed that leadership in Oman is working towards empowerment of women in general. This chapter will be useful to researchers, academics, and decision makers to develop suitable strategies to prepare appropriate platforms for budding female entrepreneurs in Oman.

The limitation of this study was lack of soliciting qualitative information to substantiate the quantitative data obtained, as well as triggering factors, which encompass the socio-cultural factors confronting women in Omani. This is particularly important for a country with such a rich culture. Thus, a focus group discussion with the same group of female students is suggested.

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