Increasing Entrepreneurial Impact in the MENA Region

Victoria Hill, Shahamak Rezaei, and Silvia Carolina Lopez Rocha

Abstract This chapter treats countries of Middle East and of North Africa (MENA) as two similar but culturally distinct sub-regions of MENA. Using data collected by academics and international organisations (e.g. Global Entrepreneurship Monitor, OECD, UNDP), Qatar, U.A.E., Jordan in the Middle East, and Morocco in North Africa, emerge as the countries most likely to have the potential to develop a strong cadre of successful entrepreneurs. All four countries have very high youth population percentages, but MENA also has the world's highest unemployment rates. E.g. in Morocco 49% of youths aged 15–24 are not employed or in school (NEET); in Jordan, more than half the entire population is >25 years of age and 25% of these youths are unemployed. In Qatar and U.A.E., population demographics are similar, but there's greater likelihood their governments and/or foreign direct investment will provide needed resources. While economic development contributes to overall success, the ineffective and outmoded public education systems that currently exist throughout MENA not only prevent the spread of entrepreneurism, but also increase overhead for existing employers. Policies and initiatives that address these deficiencies can increase the size and/or accelerate entrepreneurial impact while improving existing businesses in Jordan and Morocco.

Keywords MENA · Education · Entrepreneurism/entrepreneurial/entrepreneur · NEET · Jordan · Morocco

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N. Faghih, M. R. Zali (eds.), *Entrepreneurship Ecosystem in the Middle East and North Africa (MENA)*, Contributions to Management Science,
https://doi.org/10.1007/978-3-319-75913-5_5

1 Introduction

In most countries today, Entrepreneurship represents an alternative for employment that in most cases puts more free choice and economic opportunity in the hands of the worker (Entrepreneur) than other careers might have done. But more crucially, this is especially necessary in countries with high youth unemployment; most of these countries are in MENA.

While entrepreneurism has been an option for some time in MENA, actual rates of entrepreneurism are quite low compared to other parts of the world. The reasons behind this are not quite clear, although outmoded public education systems are often targeted as playing a very significant role. However, before accepting public education as a major obstacle to entrepreneurism, we considered a variety of hypotheses for other possible causes behind the low rates of entrepreneurism, and with the goal of increasing entrepreneurial impact across the MENA region. This Introduction looks at four potential hypotheses: (1) Influence from cultural values; (2) Influence of necessity-driven vs. opportunity-driven TEAs; (3) Indication of society moving toward knowledge-based society; (4) Cultural factors unique to MENA may provide new insights about entrepreneurism, education and/or youth in MENA.

Development of Hypothesis 1

GEM data can be triangulated with other reliable data collections to better predict the stage of entrepreneurial development in a nation/region. Different attitudes toward entrepreneurism can be identified based on the Inglehart–Welzel Cultural Model (IWCM) found in the World Values Survey. E.g. a significant study of cultural values from the traditional MENA region were compared to a secular-rational, stable—and very successfully entrepreneurial—Denmark. Comparisons made of 17,742 entrepreneurs' gender, age and education in MENA with Denmark found there was a notably higher effect on entrepreneurs' public sphere networks resulting from education: "The effect of education is positive, educated entrepreneurs tend to have larger networks than entrepreneurs with less education" (Ashourizadeh and Schøtt 2013). The significance is that larger networks are associated with greater collaboration and likely lead to improved entrepreneurial success.

But the IWCM can also tell us other things about potential entrepreneurial success. The Global Entrepreneurial Development Index/GEI (Ács, Szerb et al. 2017) utilizes GEM data as the basis for developing its sub-indices scores. This can be extrapolated a step further by analysing what influence the IWCM might have on GEI score outcomes. The IWCM vertical scale measures Traditional values vs. Secular-rational values (as utilized in the Ashourizadeh and Schøtt 2013 study). But it appears there may be several other important linkages related to estimating level of development of entrepreneurism in a country.

For example, the IWCM horizontal scale measures Survival values vs. Self-expression values:

Survival values "emphasize economic and physical security. This dimension represents a relatively ethnocentric outlook and low levels of trust and tolerance" . . ."The largest increase in existential security occurs with the *transition from agrarian to industrial societies*. Consequently, the largest shift from traditional towards secular-rational values happens in this phase" (Inglehart-Welzel 2005).

Self-expression values place a high level of priority on social issues. This dimension is associated with environmental protection, tolerance of out-groups (e.g. foreigners, LGBT community and gender equality) and demands for increased decision-making in economic and political life (Inglehart-Welzel 2005).

"People's priorities shift from survival to self-expression values as their *sense of individual agency* increases or backwards from self-expression values to survival as the *sense of individual agency* decreases" (Inglehart-Welzel 2005). "The largest increase in individual agency occurs with the *transition from industrial to knowledge societies*. Consequently, the largest shift from survival to self-expression values happens in this phase" (Inglehart-Welzel 2005).

Hypothesis 1: Given that individual agency is a surrogate for transition to a knowledge-based society, higher IWCM scores for Self-expression should correlate to higher GEI scores.

In order to test this hypothesis, the most recent set of IWCM values were collected along with two sets of GEI scores; the most recent (2017) and the earliest available (2009). This was to support the goal of capturing any countries that might be transitioning toward/away from Self-expression values. All IWCM Self-expression values from the most recently surveyed year (2014) appear in Table 1. In addition, all Secular-rational values or Traditional values also appear for each country with a Self-expression value. The only MENA country with a Self-expression value was Qatar. All other MENA countries reported preferences that indicate they are experiencing Survival phase with no real *sense of individual agency*; nor is any MENA country in a Secular-rational phase. Each MENA country appears in Table 1 with its Survival value and Traditional value (except Qatar which appears with its Self-expression and Traditional scores). Consistent with the first definition above, the *Inglehart-Welzel* interpretation would see this set of Survival values combined with Traditional values as representative of countries that have not yet made the *transition from agrarian to industrial societies.*[1] This might delay the *transition from industrial to knowledge societies* for the MENA countries. Or it might be possible for the MENA countries to 'leap-frog' to *knowledge societies*.

Table 1 shows the 2017 and 2009 GEI rankings for all countries measured; 2016 GEI data was only available for the 'Top 25'. Nevertheless, all three sets of rankings were included in the table and followed by columns for Survival value, Self-expression value, Secular-rational value and Traditional value. Table 1 is only

[1]As of April 2017, the Jordanian Labour Ministry appealed to young Jordanians to apply for the mainly agricultural jobs (primarily done by immigrants) as there are very few other kinds of jobs available.

Table 1 Top 37 GEI scores plus 12 MENA countries' compared with their IWCM scores

GEI 2017 Rank & Score	Top 25 GEI 2016 Rank & Score	GEI 2009 Rank & Score	Survival value 2014	Self-Expression 2014	Secular-Rational 2014	Traditional Value 2014
1 U.S. 83.4	1 U. S. 86.2	3 U.S. 0.72		**+1.15**		−0.20
2 Switzerland 78.0	8 Switzerland 67.8	7 Switzerland 0.63		**+1.35**	+0.65	
3 Canada 75.6	2 Canada 79.5	2 Canada 0.74		**+2.10**		−0.35
4 Sweden 75.5	5 Sweden 75.9	4 Sweden 0.69		**+2.25**	+1.70	
5 Denmark 74.1	4 Denmark 76.0	1 Denmark 0.76		**+2.20**	+1.55	
6 Iceland 73.5	7 Iceland 68.9	9 Iceland 0.62		**+2.00**	+0.50	
7 Australia 72.5	3 Australia 78.0	11 Australia 0.60		**+1.90**	+0.45	
8 U.K. 71.3	9 U.K. 67.7	14 U.K. 0.56		**+1.50**	+0.20	
9 Ireland 71.0	12 Ireland 65.6	6 Ireland 0.63		**+1.10**		−0.65
10 Netherlands 67.8	13 Netherlands 65.4	10 Neth'lands 0.62		**+1.30**	+1.55	
11 Finland 66.9	18 Finland 61.8	13 Finland 0.56		**+1.25**	+1.25	
12 Germany 64.9	14 Germany 64.6	16 Germany 0.54		**+0.60**	+1.55	
13 France 64.1	10 France 64.4	18 France 0.50		**+1.00**	+0.55	
14 Austria 63.5	15 Austria 62.9	22 Austria 0.45		**+0.60**	+0.65	
15 Belgium 63.0	17 Belgium 62.1	12 Belgium 0.58		**+1.30**	+0.30	
16 Taiwan 60.7	6 Taiwan 69.7	No score	−0.70		+1.25	
17 Israel 59.1	21 Israel 57.4	21 Israel 0.47		**No data**		
18 Chile 58.8	16 Chile 62.1	26 Chile 0.41		**+0.30**		−0.40
19 U.A.E. 58.8	19 U.A.E. 61.4	24 U.A.E. 0.42		**No data**		
20 Lux'mbourg 58.1	23 Lux'bourg 57.2	No score		**+0.95**	+0.45	
21 Qatar 58.0	24 Qatar 56.7	No score		**+0.20**		−2.20[a]
22 Norway 55.9	20 Norway 61.1	8 Norway 0.62		**+2.10**	+1.20	
23 Estonia 55.5	22 Estonia 57.3	No score	−0.75		+1.25	
24 Singapore 52.2	11 Singapore 66.0	15 Singapore 0.56		**No data**		
25 Japan 51.7		29 Japan 0.40		**+0.15**	+1.80[b]	
26 Slovenia 51.5		19 Slovenia 0.49		**+0.12**	+1.10	
27 Korea 50.5		20 Slovenia 0.49	−0.60		+1.00	
28 Lithuania 49.6	25 Lithuania 54.8	No score	−1.20		+1.20	
29 Portugal 47.2		33 Portugal 0.35	−0.10			−0.20
30 Saudi Arabia 47.2		30 Saudi Arabia 0.38		**No data**		
31 Poland 46.6		37 Poland .029		**+0.25**		−0.60
32 Hong Kong 46.4		23 Hong Kong 0.45		**+0.10**	+1.20	
33 Spain 45.3		28 Spain 0.40		**+0.30**	+0.49	
34 Bahrain 44.7		No score	−0.50			−0.10
35 Slovakia 44.1		No score	−0.15		+0.30	
36 Turkey 43.7		43 Turkey 0.27	−0.25			−1.20
37 Oman 43.6	37	No score		**No data**		
39 Kuwait 42.5		No score		**No data**		
42 Tunisia 40.5		58 Tunisia 0.22	−1.65			−0.90
56 Jordan 31.7		51 Jordan 0.23	−1.15			−1.50
63 Lebanon 28.8		No score	−0.75			−0.10
70 Morocco 25.7		59 Morocco 0.22	−1.20			−1.25
73 Algeria 24.7		61 Algeria 0.19	−0.65			−0.80
81 Egypt 22.7		50 Egypt 0.24		**No data**		
Palestine No GEI data		No score	−1.10			−1.00
Iraq No GEI data		No score	−1.10			−0.80
Syria No GEI data for 2014	47	68 Syria 0.16		**No data**		
Yemen No GEI data		No score	−1.18 −1.20	**2014** **2008**		−1.30 −1.35

(continued)

Table 1 (continued)

Source: Author's own. Data compiled from: Ács, Szerb et al. (2017). The Global Entrepreneurship Index Rank of All countries 2017 Table 2.2, Chap. 2, p. 34. *The Global Entrepreneurship Index 2017*. Washington, DC

Notes: (1) 2009 GEI rank "5 New Zealand 0.68"; no current GEI data but +1.75 Self-expression and +0.35 Secular-rational values for 2014. (2) Northern Ireland, (included in Ireland GEI data) but +0.70 self-expression and −0.49 Traditional values for 2014. (3) No GEI score for Malta but +0.40 Self-expression and −1.30 for traditional values in 2014. (4) Andorra, no GEI data but +1.40 Self-expression and +0.80 Secular-rational values for 2014

[a]Qatar's score for traditional values is the highest of all countries

[b]Japan's score for secular-rational values is the highest of all countries

page one; the full table of countries and IWCM data appears in Appendix 1. In addition, all data for MENA countries (regardless of Self-expression scores) were also added to Table 1.

The top 15 of GEI's 'Top 25' countries all have positive Self-expression values. In total there were 44 countries with positive Self-expression values, while two more countries were exactly at midpoint (i.e. ±0.00). All 46 countries were in the GEI 2017 rankings. Only two countries in GEI's 'Top 25' most highly ranked countries did not have a positive Self-expression score (*i.e.* Taiwan and Estonia). There were three countries in the 'Top 25' without data (*i.e*. Israel, U.A.E. and Singapore) so a rate of 90.9% could be associated with a positive Self-expression score. However, if the three countries without data were replaced by the next three with data (*i.e*. Slovenia, Korea, Lithuania), the rate of positive Self-expression scores becomes 84%. This pattern of 'dispersal' of Self-expression scores accelerates the farther the scores are away from GEI's most highly ranked countries. Four MENA countries are at the very bottom of the GEI rankings because they have no current GEI data. However, Yemen is of note due to its IWCM score improvements between 2008 and 2014. It shows that even a poverty-stricken and chaotic MENA country can improve.

Additionally, almost all 'Top 25' were also in the Secular-rational values category. There were only five exceptions in the 'Top 25' that preferred the Traditional values category (*i.e*. U.S., Canada, Ireland, Chile and Qatar). In fact, Qatar had the single 'highest' Traditional values rank amongst all countries in the IWCM—despite having the only positive score for Self-expression amongst the MENA countries. Overall, it appears that valuing Self-expression is a stronger correlation to a high GEI score than the other three IWCM values. Therefore, it can be said that ***Hypothesis 1 is correct: Given that individual agency is a surrogate for transition to a knowledge-based society, higher IWCM scores for Self-expression DO correlate to higher GEI scores.*** That result might be able to be extended to state that countries with Secular-rational values were more likely to have high GEI scores. But, five top-scoring countries (listed above) maintained Traditional values and still ranked very high in GEI. Considering that all MENA countries (with data) were ranked as Traditional, and Qatar had the highest Traditional score of *any* country measured, suggests that MENA countries can retain Traditional values and still become *knowledge-based societies*.

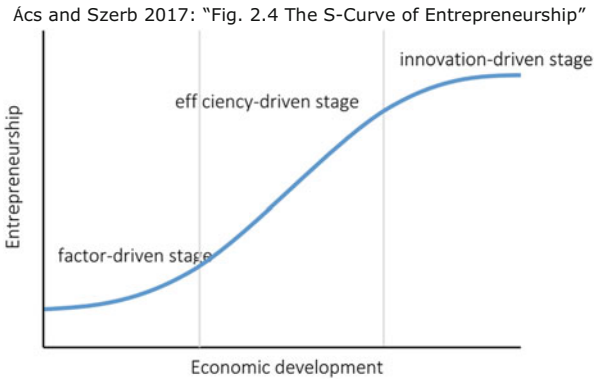

Fig. 1 The S-curve of entrepreneurship. Source: Ács, Szerb et al. (2017)

Development of Hypothesis 2

Although Ács, Szerb et al. (2017) utilise the GEM "individual data" (*i.e*. GEM APS data appears in Table 5.3, p. 79 of *The Global Entrepreneurship Index 2017*) to construct their GEI scores, they consistently argue that 'necessity-driven TEA' is harmful to the growth of 'opportunity-driven TEA'. The GEM Consortium argue that both 'opportunity-driven' and 'necessity-driven TEA' are helpful to populations. But other authors suggest that jobs and economic growth follow a specific development path *from agrarian society to industrial society to knowledge society*. The Inglehart–Welzel Cultural Model (IWCM) basis for the World Values Survey, shows that Qatar, the U.S., Canada, Ireland and Chile are all countries that lean more toward Traditional values than toward Secular-rational values but all are still able to achieve 'Top 25' GEI rankings. While there are secondary drawbacks to individual entrepreneurial success (as found by Ashourizadeh and Schøtt 2013), at a national level it appears Traditional values might not seriously interfere with entrepreneurial businesses' overall national performance. This raises a question of whether other factors (such as an excess of 'necessity-driven TEA' vs. 'opportunity-driven TEA') might be involved.

Hypothesis 2: Given the slow pace of tech start-ups in MENA region despite its more than 100 million youth, is it possible that encouraging as many TEAs as possible (regardless whether opportunity-driven or necessity-driven) could be hindering the pace of conversion to 'knowledge societies' across the region?

Ács and Szerb's argument derives from several inputs: The individual data (Table 5.3 described above); Table 5.4, pp. 81–84, *The Distribution of the Sample by Countries and the Calculation of the Individual Variables*; institutional data that Ács, Szerb et al. construct from a variety of institutions (described in Table 5.5 pp. 84–88 of *The Global Entrepreneurship Index 2017*); and from a number of statistical iterations (described in *Missing Variables and Data Imputations* and in *Calculating the Scores* pp. 90–95). Ács and Szerb primarily base their criticism of the spread of necessity-driven TEAs on a particular statistical model they've created: Fig. 2.4 The S-Curve of Entrepreneurship (Fig. 1):

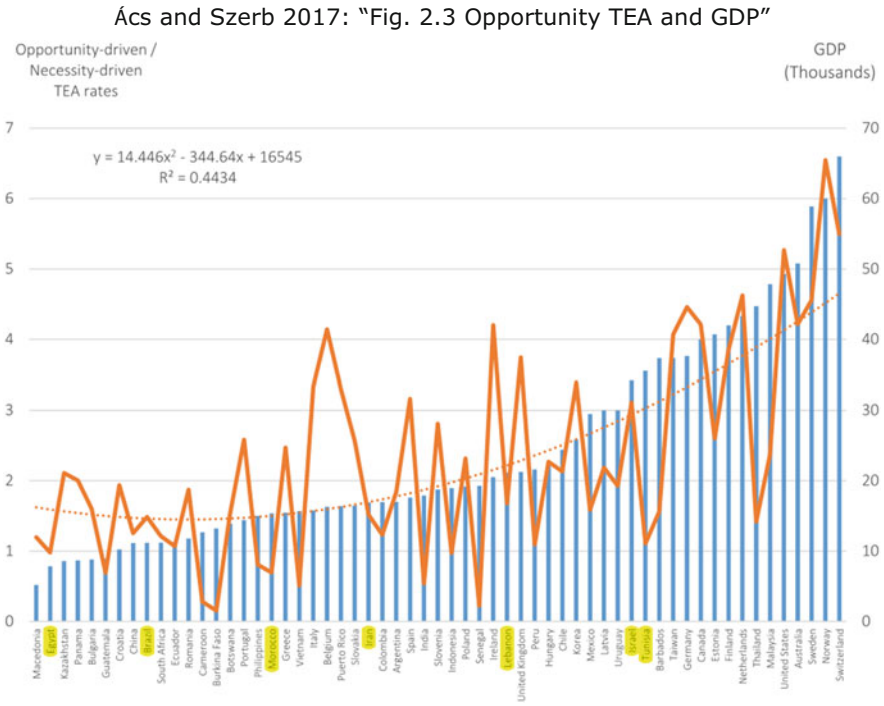

Fig. 2 Opportunity TEA and GDP. Source: Ács, Szerb et al. (2017)

The premise behind this model is that space above the S-curve represents economic loss due to 'necessity-driven TEAs' while space below the curve represents 'opportunity-driven TEAs'. Their argument starts with the premise that self-employment is a necessary outcome of people not finding work. The argument goes on to link this to lack of Innovation that would have come with 'opportunity-driven TEAs', and therefore having more significant impact on the economy and society. While it's not difficult to agree with the logic of Ács and Szerb's S-curve (especially in the Innovation-Driven Phase), MENA countries do not seem to have been adequately represented in the original data used to develop the S-curve.

E.g. the S-curve is based on data displayed in Ács and Szerb's "Fig. 2.3 Opportunity TEA and GDP" (Fig. 2). As Ács and Szerb describe, "Countries that have low necessity entrepreneurship are more developed and countries that have a high level of necessity entrepreneurship have a low level of development. For example, Brazil is at the bottom and Denmark is at the top"; Ács and Szerb write that their "Fig. 2.3 suggests that the relationship between entrepreneurship and economic development is positive, more is better, and that the curve is most likely an S-shaped curve" based on the GDPs seen in the diagram. But among the 50 or so GDPs represented in their Fig. 2.3, there are only four from Arab-MENA (Egypt, Lebanon, Morocco and Tunisia) plus Israel and Iran. Not a single one of the wealthy Gulf countries is included; the four Arab countries selected (and marked in yellow in "Fig. 2.3") are

among the poorest and, excluding Egypt, smallest of Arab-MENA. This isn't likely to be representative of the MENA region in comparison with low and high levels of economic development.

Additionally, there are other discrepancies in Ács and Szerb's "Table 5.4 *The Distribution of the Sample by Countries and the Calculation of the Individual Variables,"* p. 80 and in *Missing Variables and Data Imputations*, p. 90. Following are the exclusions/revisions coming from *Missing Variable and Data Imputations*:

Palestine, Yemen and Syria were excluded due to lack of institutional data;
Libya, Oman and Qatar lacked data from government sources so data from "similar nearby countries provided adequate estimates".

From "Table 5.4", individual variables were developed for institutional data calculations to supplement data that was not available from GEM. There is also a caveat that states "All analyses of countries having data older than 2013 and based on estimation should be handled with caution and cannot be used for any policy suggestions" (Ács, Szerb et al. 2017, p. 80); yet we find the following in pp. 81–84:

Algeria used "data for 2012–2013";
Bahrain, Kuwait, Oman, and Qatar used "Qatar data from 2014" but according to *Missing Variables, etc.* (above) there was no available data for Qatar;
Egypt data was the average of 2012 and 2015, but reported as 2015 in Fig. 2.3 (Fig. 2);
Jordan used "data from 2009";
Lebanon used data from 2015, which seems to indicate suitable data was available;
Libya used "2013 data" but according to *Missing Variables, etc*. there was no data for Libya;
Morocco used data from 2015, which seems to indicate suitable data was available;
Saudi Arabia used "data from 2010";
Tunisia used "data from 2015";
U.A.E. used "data from 2011".

Note: The four countries in bold-face represent the four yellow values for Arab countries, plus Iran and Israel, used in Ács and Szerb's Fig. 2.3; while Ács and Szerb refer to Brazil and Denmark as being opposite ends of the economic spectrum, only Brazil was represented

Essentially, by Ács and Szerb's own guidelines: (1) Data for Jordan, Saudi Arabia and U.A.E. were too old to use; (2) Part of the data for Egypt was also too old to use. As for Bahrain, Kuwait and Oman being represented with Qatari data—even if data were somehow available—these countries are not that similar to Qatar.

Hypothesis 2 is unable to be proven or disproven with the data provided by Ács and Szerb. Additionally, there is no proof that necessity-driven TEAs wouldn't be able to transition to becoming opportunity-driven TEAs. After all, serial entrepreneurs are more likely to be successful than an initial start-up. That should be expected to hold true even if the serial entrepreneur was moving from necessity-driven TEA to opportunity-driven TEA.

Development of Hypothesis 3

Although the GEI utilizes GEM data for most of its analytical work, there are some comparisons made with the GEM data that are unique to GEI. The GEI score itself is based on the sum of points assigned to three sets of entrepreneurial characteristics

that are obtained directly from GEM data and combined with data from Ács and Szerb's "14 Pillars". The combined results are referred to as sub-indices and categorized as Entrepreneurial Attitudes, Abilities and Aspirations.

Entrepreneurial Attitudes (ATT) represents the nation's feelings about entrepreneurs, personally knowing existing entrepreneurs, having a network that can exploit new opportunities. But we also learned from Ashourizadeh and Schøtt (2013) that education itself plays a large role in personally knowing entrepreneurs and participating in large entrepreneurial networks. Entrepreneurial Attitudes also includes GEM data related to Total Early-Stage Entrepreneurial Activity (TEA), Perceived Opportunities and Opportunity-driven TEA results (GEM 2017). GEI extends this data to reflect "cultural support, financial support, and networking benefits" to budding entrepreneurs (Ács, Szerb et al. 2017). Essentially, this sub-index could be considered as a measure of the environment in which the entrepreneur chooses to begin operations, but also the preparation of the would-be entrepreneur to have gained adequate education and developed adequate participation in entrepreneurial networks to derive potential benefit to the entrepreneur's future business(es). In essence, Entrepreneurial Attitudes represents a measurement of the existing foundation for opportunity-driven TEA, both at the business level and at the level of the would-be entrepreneur's preparedness.

Entrepreneurial Abilities (ABT) relate entrepreneurs' training and skills with medium- and high-technology start-ups. While GEI primarily relies on the GEM TEA Opportunity Index, GEI assigns higher qualitative values by considering post-secondary education, spinoffs vs. outright new ventures and the uniqueness of the product/service vis-à-vis the competition. GEI tends to also value Opportunity TEA more highly in that more front-end planning may have taken place when compared with Necessity TEA (Ács, Szerb et al. 2017). This sub-index is similar to what most entrepreneurs are taught to regard as their preparation for success.

Entrepreneurial Aspirations (ASP) is the third GEI sub-index. While Entrepreneurial Abilities focused more on the qualities and skills of the entrepreneurs themselves, the Entrepreneurial Aspirations sub-index sees "product and process innovation, internationalization . . . high growth [and] venture capital potential that is vital for innovative start-ups and high-growth firms" (Ács, Szerb et al. 2017). In terms of gaining customers—and financing—this sub-index is the most likely 'make or break' element.

Worldwide Rankings for Sub-indices:

Within the 'Top 25' for 2017 ranked by Entrepreneurial Attitudes (ATT), three MENA countries were ranked 18, 19 and 25; *i.e.* Saudi Arabia, Qatar and U.A.E., respectively. But a deeper review of the five components that comprise the ATT figures shows that these countries do not compare very evenly with the other nations in the sub-index. E.g. in the category of Risk Acceptance, these three countries have the three lowest scores. With regard to Start-up Skills, U.A.E. ranked 24 and Qatar ranked 25. The next lowest scores were 10–15 points higher. At the same time, though, Saudi Arabia was ranked the seventh highest in that category, just some 15 points below Iceland and the U.S. (the first and second ranked countries).

Within the 'Top 25' for 2017 rankings of Entrepreneurial Abilities (ABT), U.A.E. and Qatar were the only MENA countries included. Although their scores

for Opportunity Start-up were only moderately good, U.A.E. scored higher than the U.S. and Qatar was only ranked sixth lowest in the category. But in Technology Absorption, U.A.E. ranked 23 and Qatar ranked 26, just behind Puerto Rico's rank of 25. The next closest scores were 25 to 30 points higher than U.A.E. and Qatar. But in the Human Capital category, U.A.E. was one of the six countries (Denmark, U.S., Japan, Singapore and Puerto Rico) that tied for a perfect Pillar score of 1.000 while Qatar did quite well at 0.857.

Within the 'Top 25' in 2017 for Entrepreneurial Aspirations (ASP), U.A.E. and Qatar did quite well for Product Innovation with U.A.E. ranking 12th and Qatar ranking 16th. But Process Innovation scores were quite low: Qatar ranked 23rd and U.A.E. ranked 24th. At the same time, U.A.E. and Qatar shared First Place rank for High Growth with four other countries: the U.S., Taiwan, Japan and Singapore. Yet, in the category of Internationalization, U.A.E. ranked 20th position, just above Hong Kong, Taiwan and Qatar (that ranked 23rd) just ahead of Korea and Denmark. In the Risk Capital category, U.A.E. shares First Place with four other countries (the U.S., Switzerland and Canada), while Qatar comes in at second place (just above Australia).

Hypothesis 3: Progress of Opportunity-driven Entrepreneurs in MENA can be tracked using GEI's sub-indices. In particular, the Networking Pillar (that contributes to ASP) may be a surrogate for individual agency and/or self-expression. Given that individual agency is a surrogate for transition from industrial to a knowledge-based society, could this be an indicator for MENA countries that are poised to adapt to a more knowledge-based society?

We can compare each of the MENA countries' individual GEI scores as well as the scores for the three sub-indices (ATT/ABT/ASP). In keeping with the goal of only comparing homogeneous Arab and/or predominantly Arabic-speaking countries, Israel and Iran should be removed from the composite GEI score. In addition, Libya is not representative of a functioning country and its scores skew the results; *i.e*. as seen in line #2 vs. line #1 at the bottom of Table 2. In terms of GEI score, the results show the six GCC countries (at the top of the table) are performing much better than the five non-GCC's (at the bottom of the table in grey shading); while Tunisia, the birthplace of the Arab Spring and not a GCC country, is performing more closely to GCC than to the non-GCC MENA. Meanwhile U.A.E. and Qatar, the top-ranked GCC's, are performing as well as Israel—U.A.E. very nearly matches Israel's GEI score. When the ATT, ABT and ASP scores are considered, U.A.E.'s ABT sub-index exceeds Israel by five points and ASP comes quite close to matching Israel. The situation is similar between Qatar and Israel, and even Saudi Arabia outranks Israel and the other MENA countries for best ATT score.

The five countries with GEI scores shaded in dark grey (*i.e*. Jordan-Egypt) are considerably less wealthy than the GCCs. While some private schools exist, general public education in MENA has been quite authoritarian (*i.e*. not really conducive to entrepreneurism). Very recently, though, Jordan's King Abdullah has issued a decree for *Human Resource Development and Education Reform* effective 15 April 2017 that forbids teaching by rote learning and requires that all courses be taught using critical thinking/deductive reasoning and in-class discussions. In

Table 2 GEI scores and sub-indices

Rank	Country	GEI	ATT	ABT	ASP
17	Israel	59.1	54.5	54.1	68.6
19	United Arab Emirates	58.8	49.9	59.4	67.0
21	Qatar	58.0	55.9	55.6	62.3
30	Saudi Arabia	47.2	56.3	40.6	44.6
34	Bahrain	44.7	45.5	45.0	43.6
37	Oman	43.6	45.4	40.3	45.2
39	Kuwait	42.5	44.9	37.6	44.9
42	Tunisia	40.5	32.7	45.2	43.7
56	Jordan	31.7	39.5	25.1	30.5
63	Lebanon	28.8	25.8	27.9	32.8
70	Morocco	25.7	23.9	20.0	33.1
73	Algeria	24.7	33.2	21.3	19.7
81	Egypt	22.7	16.0	19.9	32.3
85	Iran	22.1	21.3	25.4	19.6
104	Libya	19.2	11.9	26.5	19.3
	Total for 15 MENA countries	569.30	556.7	543.9	607.2
	AVG per MENA country (15 total)	37.9	37.1	36.3	40.5
	Total for MENA less Israel, Iran, Libya	468.9	469.0	437.9	499.7
#1	**AVG for 12 without Israel, Iran, Libya**	**39.1**	**39.1**	**36.5**	**41.6**
	Total for MENA less Israel, Iran	488.1	480.9	464.4	519.0
#2	**AVG for 13 without Israel, Iran**	**37.5**	**37.0**	**35.7**	**39.9**

Source: Author's own adapted from Ács, Szerb et al. 2017's Table 3.3: GEI Ranking of the Middle East and North African Countries. p. 47. ATT = Societal Attitudes; ABT = Entrepreneurs' Abilities; ASP = Aspirations. Those countries whose scores are below MENA averages appear in grey shading; the rest are above MENA averages

July 2017, His Majesty initiated reviews of every university programme in the country and an initiative to allow students to evaluate the performance of their university presidents. It's too soon to measure the effects, but this is the first Arab leader to take such important policy stances. With the exception of the ATT scores for Tunisia and Jordan, all of the poorer MENA countries did not perform as well as the GCCs. Tunisia, while also not a wealthy country and its ATT score notwithstanding, performed nearer to Bahrain's performance. ABT scores do not appear very informative, but ASP scores lead to rankings of the countries that nearly reflect the GEI rankings. This raises a question of whether or not ASP might represent an alternative measurement of IWCM's Self-expression values and/or an indicator of Individual agency.

If the five least wealthy countries (Jordan-Egypt) are compared to Ács, Szerb et al. 2017's *Fourteen Pillars*, a more detailed comparison emerges and two important outcomes appear: MENA as a whole outpaces World scores (with the exceptions of Technology Absorption and Competition); the five selected MENA countries do not share that much in common (Table 3).

The results have the following characteristics:

MENA (as a group) has no Pillar that ranks 15 points or lower (*i.e.* dark grey) than the World Pillars. In fact, there are only two areas where MENA ranks below World data: Technology Absorption and Competition.

The five countries (from left to right) are still in their GEI ranked order. It's possible to see that the highest ranked country (Jordan) 5 areas where it performs as well, or better, than the MENA group. The next highest ranked country (Lebanon) has

Table 3 Fourteen Pillars compared to all MENA and to five selected countries

	Fourteen Pillars	World	MENA[a]	Jordan	Lebanon	Morocco	Algeria	Egypt
ATT factors (below):								
1	Opportunity Perception	0.41	0.43	0.45	0.18	0.30	0.34	0.23
2	Start-up Skills	0.37	0.40	0.58	0.71	0.14	0.28	0.14
3	Risk Acceptance	0.30	0.30	0.12	0.02	0.33	0.39	0.07
4	Networking	0.39	0.51	0.62	0.49	0.27	0.51	0.09
5	Cultural Support	0.38	0.48	0.62	0.22	0.21	0.32	0.32
ABT factors (below):								
6	Opportunity Start-up	0.40	0.50	0.35	0.38	0.39	0.17	0.16
7	Technology Absorption	0.33	0.32	0.08	0.14	0.23	0.25	0.25
8	Human Capital	0.41	0.58	0.34	0.36	0.13	0.31	0.24
9	Competition	0.35	0.32	0.34	0.43	0.10	0.16	0.19
ASP factors (below):								
10	Product Innovation	0.39	0.43	0.42	0.38	0.44	0.22	0.18
11	Process Innovation	0.37	0.38	0.31	0.41	0.65	0.10	0.45
12	High Growth	0.40	0.58	0.52	0.19	0.25	0.20	0.46
13	Internationalization	0.38	0.38	0.20	0.66	0.16	0.20	0.26
14	Risk Capital	0.37	0.62	0.26	0.37	0.39	0.31	0.50

Source: Author's own data

[a]MENA in this chart includes scores for Israel, Iran and Libya. Light red equal to or higher than MENA group; Dark grey 15 points or more lower than MENA group

four areas that outperform the MENA group. These are followed by Morocco that has three areas that outperform MENA, Algeria that has two areas that outperform MENA, while Egypt has just one area that outperforms MENA.

While results for Jordan-Algeria are consistent in that each has three areas that are neither high nor low, yet Egypt has five like that. Egypt also has two scores below 0.10 (*i.e*. 0.07 and 0.09) while Jordan and Lebanon only have one score each that falls below 0.10, and neither Morocco nor Algeria has scores below 0.10.

When the 14 Pillars are considered in terms of ATT, ABT and ASP, it's easy to see that Jordan performs extremely well in ATT (although Risk Acceptance needs improvement) and that Algeria and Egypt have problems with all of ASP and ATT, respectively.

There is, however, one particular pillar that should be considered independently:

> Pillar 4: Networking combines an entrepreneur's personal knowledge with their ability to connect to others in a country and the whole world. This combination serves as a proxy for networking, which is also an important ingredient of successful venture creation and entrepreneurship. Entrepreneurs who have better networks are more successful, can identify more viable opportunities, and can access more and better resources. We define the basic networking potential of a possible entrepreneur by the percentage of the population who personally know an entrepreneur who started a business within 2 years (Know Entrepreneurs). The connectivity variable has two components: One that measures the urbanization (Urbanization) of the country and the other measuring the quality of the transport infrastructure (Infrastructure) (Ács, Szerb et al. 2017, p. 79).

The Pillar 4 Networking definition contains remarks very similar to the findings of Ashourizadeh and Schøtt (2013). The Networking definition expands the findings to also suggest support for individual agency: "Entrepreneurs who have better networks are more successful, can identify more viable opportunities, and can access more and better resources." Whether or not the Networking definition supports Self-

expression isn't directly stated, but it is at least suggested: "Networking combines an entrepreneur's personal knowledge with their ability to connect to others in a country and the whole world."

Hypothesis 3 suggested that progress of Opportunity-driven Entrepreneurs in MENA can be tracked using GEI's sub-indices; this was shown to be correct. In particular, the Networking Pillar (that contributes to ASP) may be a surrogate for individual agency and/or self-expression. This also appears to be correct. As individual agency is a surrogate for a culture moving toward a more knowledge-based society, MENA countries should be able to use this as an indicator of when their own countries have moved in this direction.

Development of Hypothesis 4

Although GEM data, GEI developmental index and the IWCM data tell a lot about the MENA countries, they don't clarify why MENA youth are doing so much worse than other nations' youth. Another possible source of understanding might come from Hofstede's Cultural Dimensions Theory.

Hofstede's original work compared preferences of national cultures based on data collected between 1967 and 1973 from groups of IBM managers with similar organizational preferences in more than 70 countries. Since the original data was released, additional studies have been done in other countries and with other groups of interviewees.

Hypothesis 4: Given that Hofstede's Cultural Dimensions reflect national cultures, could these dimensions provide new insights about entrepreneurism, education and/or youth in MENA?

General Remarks Concerning Use of the Hofstede Cultural Dimensions

The original four dimensions Professor Hofstede developed have been proven repeatedly to be statistically representative of dimensions of national cultures. These are:

Low Power Distance (PDI) versus High Power Distance
Individualism versus Collectivism (IDV)
Masculinity versus Femininity (MAS)
Weak Uncertainty Avoidance (UAI) versus Strong Uncertainty Avoidance

In 1991 an additional dimension of Long-Term Orientation (LTO) vs. Short-Term Orientation was added to reflect an important characteristic of Confucian-based societies.

In 2010 a new dimension was created to represent Indulgence (IND) vs. Restraint.

The scales used for measuring the dimensions have all been normalized now to 0-to-100. Scores that are less than 50 indicate that the preference is for the lower end-point and scores higher than 50 indicate a preference for the upper end-point. A score closer to the end-point (whether zero or 100) is considered a higher preference than scores nearer to 50. Each of the dimensions can be considered in terms of Entrepreneurism, Education systems and/or Youth. Correlations to Anglo-Saxon countries and Israel are noted following each explanation of a Hofstede Dimension.

The rationale is that Professor Hofstede himself did the interviews, interpreted the data for these particular countries. Newer country additions have been surveyed and analysed by other researchers; sometimes with agreement of Professor Hofstede, and sometimes not. By focusing on countries that are similar, have relatively close rates of entrepreneurism and have been surveyed and assessed by Professor Hofstede himself, this allows a frame of reference to be developed that is as reliable as possible.

Entrepreneurship and Hofstede's Cultural Dimensions

1. Power Distance Index (PDI)

   This dimension expresses the degree to which the less powerful members of a society accept an unequal distribution of power. "The fundamental issue here is how a society handles inequalities among people. People in societies exhibiting a large degree of Power Distance accept a hierarchical order in which everybody has a place and which needs no further justification. In societies with low Power Distance, people strive to equalise the distribution of power and demand justification for inequalities of power" (Hofstede et al. 2010). Therefore, it's possible to consider a **Low PDI-culture as one more likely to support Entrepreneurs**. Some examples of Low PDI scores are: US 40; UK 35; Australia 36; Canada 40 (however the Canada score is blended with Quebec, measured at 54). The lowest PDI was Israel with a very low 13 points.
2. Individualism versus Collectivism (IDV)

   Individualism represents the upper scores of this dimension. "Individuals are expected to take care of only themselves and their immediate families. Its opposite, collectivism, represents a preference for a tightly-knit framework ... in which individuals can expect their relatives or members of a particular in-group to look after them in exchange for unquestioning loyalty. . . . This dimension is reflected in whether people's self-image is defined in terms of *I* or *we*" (Hofstede et al. 2010). **Cultures with High IDV are more likely to encourage entrepreneurs than 'we'-type societies.** Some examples of High IDV scores are: US 91; UK 89; Australia 90; Canada 80 (however, the inclusion of Quebec at 73 lowers Canada's overall score). Israel has a very low 54 points, indicating a blend of individualist and collectivist.
3. Masculinity versus Femininity (MAS)

   The upper side of this dimension represents "a preference in society for achievement, heroism, assertiveness and material rewards for success. Society at large is more competitive. Its opposite, femininity, stands for a preference for cooperation, modesty, caring for the weak and quality of life. Society at large is more consensus-oriented" (Hofstede et al. 2010). **Cultures with a High MAS are more entrepreneurial than those in the Low FEM category.** Some example scores: US 62 and "a society that aims for success and being the winner; UK is 66; Australia is 61; Canada is 52 (but that includes Quebec at 45). Israel with a score of 47 is neither a clear Masculine nor Feminine society; it exhibits both characteristics".
4. Uncertainty Avoidance Index (UAI)

The "Uncertainty Avoidance dimension expresses the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity. The fundamental issue . . . is how a society deals with the fact that the future can never be known: should we try to control the future or just let it happen? Countries exhibiting strong UAI maintain rigid codes of belief and behaviour and are intolerant of unorthodox behaviour and ideas. Weak UAI societies maintain a more relaxed attitude in which practice counts more than principles" (Hofstede et al. 2010). **Weak UAI is likely to be more entrepreneurial than Strong UAI.** Example scores: US is 46; UK is 35; Australia is 51, indicating no preference; Canada is 48 (including Quebec is 60). Israel is among the stronger UAI countries at 81.

5. Long Term Pragmatic Orientation versus Short Term Normative Orientation (LTO)

   "Every society has to maintain some links with its own past while dealing with the challenges of the present and the future. Societies prioritize these two existential goals differently. Societies who score low on this dimension, for example, prefer to maintain time-honoured traditions and norms while viewing societal change with suspicion. Those with a culture which scores high, on the other hand, take a more pragmatic approach: they encourage thrift and efforts in modern education as a way to prepare for the future. In the business context this dimension is related to as "(short term) normative versus (long term) pragmatic" (Hofstede et al. 2010). The example scores: US is 26; UK is 51, or no clear preference; Australia is 21; Canada is 36; Israel is 38.

6. Indulgence versus Restraint (IND)

   "Indulgence stands for a society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun. Restraint stands for a society that suppresses gratification of needs and regulates it by means of strict social norms" (Hofstede et al. 2010). High scores would be beneficial to entrepreneurs – both in terms of support for creativity but also in terms of a market of consumers who are open to ideas that offer new possibilities for fun. The example scores: US is 68; UK is 69; Australia is 71; Canada is 68; no score for Israel.

7. Effects of Some Combined Scores:

   7a. However, when **Low UAI is combined with the very individualistic High MAS**, it indicates "an acceptance for new ideas, innovative products and a willingness to try something new or different, whether it pertains to technology, business practices or food" (Hofstede et al. 2010). This combination indicates **a highly individualistic and curious nation with a high level of creativity and strong need for innovation.** When the example scores are reconsidered to show both UAI and MAS, we see US at UAI of 46 and MAS of 62; Australia at UAI at 51 and MAS of 61; Canada at UAI of 48 and MAS of 52; Israel at UAI of 81 and MAS of 47; the UK at UAI of 35 and MAS of 66 (indicates UK sees entrepreneurism more favourably than the US, Australia, Canada and Israel): "Planning horizons will also be shorter.

What is different is attractive! This emerges throughout the society in both its humour, heavy consumerism for new and innovative products and the fast, highly creative industries it thrives in—advertising, marketing, financial engineering" (Hofstede et al. 2010).

7b. **Low PDI and High IDV** also indicates a preference for entrepreneurial behaviours. When the example countries' scores are revisited, it can be seen that the US scores of low PDI 40 and high IDV of 91 would be considered as a preference for entrepreneurial behaviours. The same can be said for the UK (with low PDI of 35 and high IDV of 89), Australia (with low PDI of 36 and high IDV of 90) and Canada (with low PDI of 40 and high IDV of 80). Israel's scores are less similar to the other countries: "VERY low PDI at 13 and a nearly neutral score of just 54 for IDV, indicating a blend of individualist and collectivist" (Hofstede et al. 2010).

An Example of Hofstede's Cultural Dimensions Applied to Education and Diversity

A recent study from the Netherlands, (*The Two Sides of Diversity—Schools as a Means for Integration*) highlights the differences in cultural expectations between Dutch teachers and Iranian immigrant parents. The study most likely represents the initial shock individuals feel when encountering very diverse cultures: "The majority of positions claim that diversity is a good thing. For the economy and business. It is said to be a good thing for innovation, creativity, for progress. . . . Immigration and diversity have long-term benefits. And short-term hurdles. Schools play a key role. . . . [As an example of the school role,] 'Ali's Iranian parents expect a school environment with strict discipline; teacher controlled learning situations; and respect enforced by the teachers and school management. The principles of independence and joined responsibility strongly rooted in the culture of the teacher are difficult to relate to for people like Ali's parents. In their culture, 'teachers always have all the answers and where students are not to initiate communications or give suggestions. Therefore, Ali's parents may conclude that their son is attending a school with a poor education level and without discipline.' . . . Different cultures have different views on learning styles, expectations, and norms" (Fadronc and Lauridsen 2008).

What follows are Iranian scores and their interpretations by Professor Geert Hofstede; Dutch scores are placed alongside by way of comparison and as can be seen, the Dutch data is more similar to the examples (above) for US, UK, Australia and Canada than to Iran:

58 PDI—***the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally.*** "Iran receives an intermediate score of 58 on this dimension so it is a hierarchical society. This means that people accept a hierarchical order in which everybody has a place and which needs no further justification. Hierarchy in an organisation is seen as reflecting inherent inequalities, centralisation is popular, subordinates expect to be told what to do and the ideal boss is a benevolent autocrat." [The Netherlands score 38 PDI.]

41 IDV—The fundamental issue addressed by this dimension is ***the degree of interdependence a society maintains among its members.*** **"**Iran, with a score of 41 is considered a collectivistic society. This is manifest in a close long-term commitment to the member 'group', be that a family, extended family, or extended relationships. Loyalty in a collectivist culture is paramount, and overrides most other societal rules and regulations. The society fosters strong relationships where everyone takes responsibility for fellow members of their group. In collectivist societies offence leads to shame and loss of face, employer/employee relationships are perceived in moral terms (like a family link), hiring and promotion decisions take account of the employee's in-group, management is the management of groups." [The Netherlands score 80 IDV.]

43 MAS—"***The fundamental issue here is what motivates people, wanting to be the best (Masculine) or liking what you do (Feminine).*** Iran scores 43 on this dimension and is thus considered a relatively Feminine society. In Feminine countries the focus is on "working in order to live", managers strive for consensus, people value equality, solidarity and quality in their working lives. Conflicts are resolved by compromise and negotiation. Incentives such as free time and flexibility are favoured. Focus is on well-being, status is not shown". [The Netherlands score of 14 MAS, meaning very Feminine, is not at all similar to Iran—or US, UK, Australia and Canada.]

59 UAI—"***The extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these*** is reflected in the score on Uncertainty Avoidance. Iran scores 59 on this dimension, and thus has a high preference for avoiding uncertainty. Countries exhibiting high uncertainty avoidance maintain rigid codes of belief and behaviour and are intolerant of unorthodox behaviour and ideas. In these cultures there is an emotional need for rules (even if the rules never seem to work), time is money, people have an inner urge to be busy and work hard, precision and punctuality are the norm, innovation may be resisted and security is an important element in individual motivation". [The Netherlands score 53 UAI.]

14 LTO—"This dimension describes ***how every society has to maintain some links with its own past while dealing with the challenges of the present and future***, and societies prioritise these two existential goals differently. Iran's very low score of 14 indicates that it has a strongly normative cultural orientation. People in such societies have a strong concern with establishing the absolute Truth; they are normative in their thinking. They exhibit great respect for traditions, a relatively small propensity to save for the future, and a focus on achieving quick results". [The Netherlands score of 67 LTO is not at all similar to Iran—or US, UK, Australia and Canada.]

40 IND—"This dimension is defined as ***the extent to which people try to control their desires and impulses***, based on the way they were raised. Relatively weak control is called 'Indulgence' and relatively strong control is called 'Restraint'. Cultures can, therefore, be described as Indulgent or Restrained. The low score of 40 in this dimension means that Iran has a culture of Restraint. Societies with a low score in this dimension have a tendency to cynicism and pessimism. Also, in

Table 4 Hofstede cultural dimensions across MENA

Country	1) PDI	2) IDV	3) MAS	4) UAI	5) LTO	6) IND
Iran	58	41	43	59	14	40
Algeria	No data	No data	No data	No data	No data	No data
Bahrain	No data	No data	No data	No data	No data	No data
Egypt	70	25	45	80	7	4
Iraq	95	30	70	85	25	17
Jordan	70	30	45	65	16	43
Kuwait	90	25	40	80	No data	No data
Lebanon	75	40	65	50	14	25
Libya	80	38	52	68	23	34
Morocco	70	46	53	68	14	25
Qatar	No data	No data	No data	No data	No data	No data
Saudi Arabia	95	25	60	80	36	52
Syria	80	35	52	60	30	No data
Tunisia	No data	No data	No data	No data	No data	No data
U.A.E.	90	25	50	80	No data	No data
Yemen	No data	No data	No data	No data	No data	No data

Source: Author's own based on Hofstede scores and interpretations. Green shading represents pro-Entrepreneurism/Education/Youth; Red opposed. Grey is neutral

contrast to Indulgent societies, Restrained societies do not put much emphasis on leisure time and control the gratification of their desires. People with this orientation have the perception that their actions are Restrained by social norms and feel that indulging themselves is somewhat wrong". [The Netherlands score 68 IND.]

Given that Iran represents a distinctly different set of cultural standards than the Netherlands, it might be assumed that Iran is much more similar to MENA–particularly related to education and the treatment of youth in society. But despite the stark differences with the Netherlands, Iran appears much more 'liberal' compared with the Arab Middle East. While some data in Table 4 is unavailable, the differences are very clear: (1) All Arab MENA countries have much higher preference for Power Distance than Iran; (2) Only Lebanon shares a similar score with Iran's Collectivist preference while Morocco reflects something closer to Individualism. The very low Arab MENA scores (indicating very strong preference for Collectivism) possibly reflect their own strong tribal roots; (3) Iran's (MAS) preference for 'working to live' is shared with more of Iran's Arab neighbours than any of the other cultural dimensions; the big differences are with Iraq, Lebanon and Saudi Arabia who all strongly prefer 'wanting to do their best'; (4) Only Syria and Lebanon are close to sharing Iran's moderate preference for Certainty. The other MENA countries want a much higher level of Certainty than Iran; (5) Several countries share Iran's level of preference for maintaining traditions: Jordan, Lebanon and Morocco. Saudi Arabia and Syria prefer maintaining traditions but possibly more liberally than Iran; (6) In

terms of Indulgence vs. Restraint, all of Arab MENA (except Saudi Arabia) preferred an even greater level of Restraint than Iran.

Hypothesis 4: Given that Hofstede's Cultural Dimensions reflect national cultures, could these dimensions provide new insights about entrepreneurism, education and/or youth in MENA?

While Hofstede's scores reflect national cultures, and Table 4 indicates that Arab countries' scores mostly represent the same general direction as Iran's scores—but much more strongly than Iran—shows that Iran's cultural preferences are actually more similar to Western countries than they are to Arab countries' scores. ***Therefore, yes, it's correct that these dimensions provide new insights about entrepreneurism, education and/or youth in MENA. At the same time these results introduce a new question of whether the educational system in MENA is capable of producing world-class entrepreneurs; and what change(s) would be needed to ensure that MENA will be able to produce more entrepreneurs that succeed and hire more people? In other words, what should be done to increase entrepreneurial impact in MENA?***

1.1 Benefits of Entrepreneurism in General

The benefits of entrepreneurism are well documented:

Entrepreneurism can lead to the creation of large-scale innovative products that grow into large, wealthy companies; certainly Intel, Dell, Microsoft, Hewlett-Packard, Apple, Google are just a small example of the kinds of wealth that hardware/firmware/software creations have generated. Not only have these companies had a profound effect on their users, they have created jobs for many people and benefitted their investors and founders, as well.

Although job creation is one of the key benefits from the standpoint of labour economists, from an individual's perspective it represents an income and an autonomous workplace that may in and of itself be more attractive to the entrepreneur than the conventional "9-to-5" weekly rigours of a traditional job—and boss.

While the above points represent the two poles of entrepreneurial success, most entrepreneurs will fall somewhere in-between. They are likely to have tried to establish an entrepreneurial venture more than once or will try multiple times in the future. There's evidence that this activity leads to better performance each time (Minniti and Bygrave 2001). There is also evidence that investors are likely to value "...successful repeat founders' initial valuations ... to be over 50% higher" than first-timers (First Round 2015). These studies suggest that early entrepreneurial experience could be viewed as a rehearsal for that 'really big' future entrepreneurial success. Other research indicates that multiple business ownerships are a strong factor in success—but not when done sequentially: "Entrepreneurs who own more than one business simultaneously (portfolio

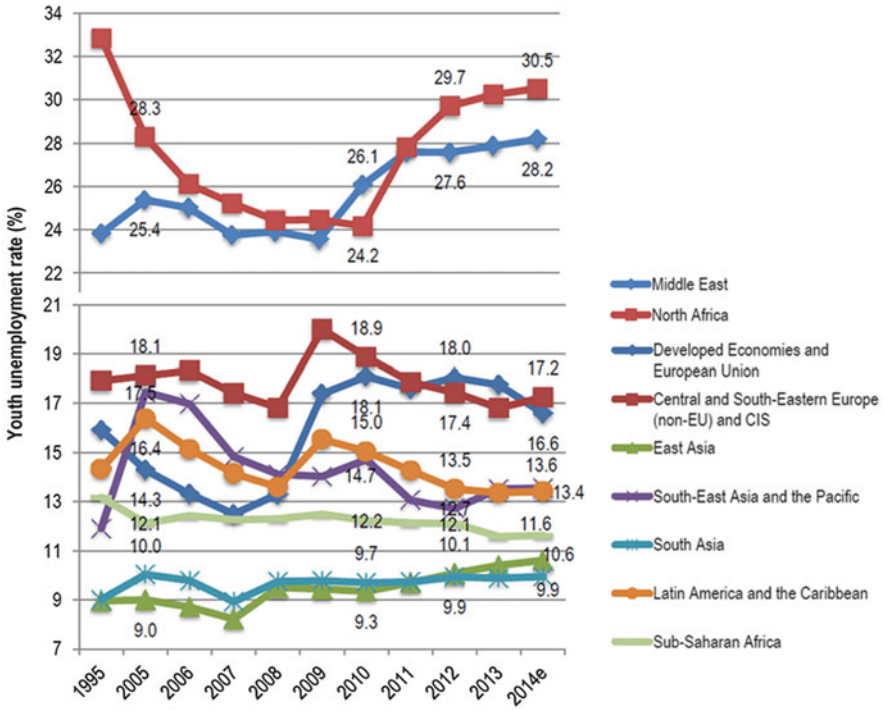

Fig. 3 Worldwide unemployment of youths. *Source*: ILO, Trends Econometric Models, April 2015; *e*=estimate

entrepreneurs) seem to perform better, in general, than . . . serial entrepreneurs" (Wright 2013). There is also evidence that even entrepreneurial games ('faux businesses') played by young children lead to better likelihood of future entrepreneurial success (GEM 2016).

But none of these benefits of entrepreneurism is unknown to labour economists in MENA, nor to most university professors of entrepreneurship. Yet, compared to all other regions of the world, young people in MENA are the least likely to become entrepreneurs. At the same time young people in MENA have the highest rates of unemployment in the world (ILO 2015) (Fig. 3).

Conventional thinking might come to a conclusion that unemployed youth would be the *most* interested people in becoming entrepreneurs. But that's not happening in MENA. This chapter looks at various factors influencing new entrepreneurs. For purposes of comparison, only countries of the region which are predominantly inhabited by Arabic-speakers and Arab and/or Amazigh/Imazighen ethnicities are considered because they represent the single largest homogeneous group in MENA. It's likely that 'lessons learned' regarding this large group might also apply to neighbouring countries.

While the benefits of entrepreneurism are now widely seen as achievable for any economy, they are primarily based on successes in North America/Western Europe. When entrepreneurism is advocated for MENA, there are tacit assumptions made about the ease of replicability from Western countries to MENA. As GEM data has shown, early entrepreneurial experiences, ongoing entrepreneurial education during school and continuing entrepreneurial training are closely tied to more rapid success. The North American system, in particular, includes each of these stages. It's rare to find such programmes in schools in MENA, although recently both U.A.E. and Qatar have begun to provide in-school and post-school entrepreneurial education at levels exceeding those of the U.S. (GEM 2016).

While insufficient access to each of these stages of entrepreneurial education is a serious barrier to becoming a successful entrepreneur, an even more fundamental issue is the lack of modern teaching methods for public education in general. Teaching in public education hasn't changed very much in the past 30 years or more, with the exception of private schools. Classes are large by North American standards which suggest there might not be adequate numbers of teachers and/or schools. Regardless, there are a number of other issues related to provision of education and learning outcomes.

What are these specific issues impacting education across MENA? Here's the top four.

Issue 1: National Spending for Public Education

A closer look at national spending for education compared with TIMSS and PISA exam outcomes shows some unexpected correlations. It's very difficult, though, to collect up-to-date figures for expenditures for education in MENA. Based on the use of snowball research methodology, we found that the topic of Education has become somewhat controversial in that the individual MENA countries are now quite sensitive to how their educational expenditures are represented. Some countries provide data regularly, others don't report it at all (e.g. U.A.E) and still others continually revise their educational expenditure data (Table 5).

We found several misplaced causes behind this problem: (1) Probably the most frequent cause, and possibly the most damaging, is a lack of understanding of how to utilise the data (one's own data and that of other countries) as part of a toolset for policy planning. Rather than making comparative assessments with other countries' policy successes or failures, the data is treated as some sort of achievement if percentage expenditures are higher than other specific MENA countries. (2) While a sense of competitiveness is one issue, another factor is continual requests for changing already-reported data (i.e. "data challenges"); this may be related to the authoritarian leadership styles still in place in a number of MENA countries. While Heads of State and Ministers often represent more modern leadership styles, the opportunity for up-to-date training hasn't always 'trickled down' through the hierarchy. Fear of displeasure from higher-ups also contributes to concerns over which figures to make public. (3) In addition there is an issue of budget constraints, both on the reporting and publishing sides of maintaining such an extensive database.

Table 5 Table of educational expenditures for selected MENA countries and U.S.

Country	2006	2007	2008	2009	2010	2011	2012	2013	2014
GCC countries									
Bahrain: % of GDP	2.87	2.58	2.50				2.64		2.40
% of govt. expenditure	11.92	11.03	10.56				8.95		–
Kuwait: % of GDP	3.76						3.80		
% of govt. expenditure	13.37						–		
Oman: % of GDP	3.86			. 4.19			4.30	5.01	
% of govt. expenditure	11.22			10.95			–	11.08	
Qatar:% of GDP	2.70	2.45	4.23	3.41	4.54	4.01	3.47	4.00	3.55
% of govt. expenditure	9.31	8.63	15.06	14.84	13.82	13.11	12.31	13.15	12.74
Saudi Arabia: % of GDP	5.89	6.40	5.14				5.60		
% of govt. expenditure	21.60	19.26	19.26				–		
U.A.E.: % of GDP	No data	Note: Although no data was reported to World Bank, U.A.E. reported spending for education of 21.2% of the 2016 govt. budget.							
% of govt. expenditure									
Other Eastern Mediterranean									
Iraq: % of GDP	No data								
% of govt. expenditure									
Jordan: % of GDP	(1999) No data							3.50	
% of govt. expenditure	14.20							9.70	
Lebanon: % of GDP	2.81	2.61	2.04	1.78	1.63	1.65	2.19	2.57	
% of govt. expenditure	7.69	7.34	5.87	5.50	5.53	5.73	7.11	8.58	
Palestine: % of GDP					1.80	1.59	1.33	1.47	
% of govt. expenditure					–	–	–	–	
Syria: % of GDP	5.35	4.87	4.60	5.13		5.10			
% of govt. expenditure	20.05	18.93	20.04	19.18		–			
Yemen: % of GDP		5.20	4.56			5.20	5.20		
% of govt. expenditure.		–	12.49			–	–		
North Africa									
Algeria: % of GDP			4.34				4.30		

(continued)

Table 5 (continued)

Country	2006	2007	2008	2009	2010	2011	2012	2013	2014
% of govt. expenditure			11.43				–		
Egypt: % of GDP	4.00	3.68	3.76				3.80		
% of govt. expenditure	10.60	10.45	10.51				–		
Libya: % of GDP	(1999) No data								
% of govt. expenditure	8.14								
Morocco: % of GDP			5.34	5.26			5.40		
% of govt. expenditure			17.47	17.30			–		
Tunisia: % of GDP	6.44	6.47	6.27	6.53	6.25	...	6.25		
% of govt. expenditure	27.14	27.22	25.35	26.40	24.40	...	20.65		
United States: % of GDP	5.39	5.25	5.30	5.25	5.42	5.22	5.19	4.94	
% of govt. expenditure	15.16	14.54	13.98	12.89	13.06	12.93	13.39	13.29	

Sources: World Bank Ed. Stats (2015), UIS UNESCO (2016) and UNDP (2015). U.A.E. www.export.gov

There are some characteristics, though, that even the 'lack of data' (in Table 5) shows. *I.e.* Nearly all countries are spending less than they did nearly a decade ago; one notable exception is Qatar which appears to be increasing the percentage of government expenditure earmarked for education. Likewise, countries which seem to have reduced spending have much poorer TIMSS test results (e.g., Saudi Arabia, Kuwait and Egypt).

The lack of financial support for the public education system in MENA has directly impacted youth. This is highlighted in the following comments from the United Nations Development Programme (UNDP), "Overall, the quality of education is poor. Standardized international tests in education such as the Trends in Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment [PISA] show Arab countries scoring well below the average even if results are adjusted for per capita income, particularly in the rich Gulf countries" (UNDP 2016a). These poor test results are linked to other issues (discussed in the following sections) that could result in diminished performance as an entrepreneur.

Issue 2: The Trends in International Mathematics and Science Study (TIMSS) Results

The TIMSS exams are administered to fourth and eighth graders in 39 countries, reflecting students' abilities to solve mathematics and science problems. As an

example, mathematics scores specifically related to Cognitive Mathematics Domains are indicative of three capabilities (Knowing, Applying and Reasoning[2]) that would be significant for critical thinking. Not only is critical thinking an important life-skill, it's a very necessary skill for entrepreneurs.

The TIMSS midpoint for eighth graders[3] across 39 countries was 500 in Overall Mathematics in 2015. To put this in perspective, the U.S.—not known for its high mathematics scores—achieved a mean of 518. Any national mean up to 5 points higher, or lower, than the Overall midpoint (*i.e.* ≥ 505 or ≤ 495) is considered to be a significantly higher or lower score. The Overall Midpoints are consolidated scores that include the Cognitive Domains. An analysis of scores from all students tested showed that 84% of students achieved or surpassed the 'Low' score of 400; some 62% were able to reach/surpass the 'Intermediate' score of 475; some 26% reached/surpassed the 'High' score of 550; and just 5% were able to reach the 'Advanced' level ranging from 551 to a perfect score of 625.

When these four categories are considered against what the tests measured: the 'Low' category required "basic knowledge of whole numbers and basic graphs"; 'Intermediate' could "apply basic mathematical knowledge in a variety of situations"; 'High' could "apply understanding and knowledge in a variety of relatively complex situations"; and 'Advanced' could "apply and reason in a variety of problem situations, solve linear equations, and make generalizations".

When the skillsets needed to reach each of the four achievement categories are compared to the Cognitive Domains, the following pattern emerges: Doing well at 'Knowing' would be enough to reach an Overall score of at least 400; skill in 'Applying' would be necessary to reach an Overall score of at least 475; skill in 'Reasoning' would be needed to reach an Overall score of at least 550; and skills needed to reach an Overall score between 550 and (highest possible) 625 would require skills not usually taught at the 8th grade level. As could be expected, just a handful of students were able to reach the Advanced level with a score between 550–625; all were from five East Asian countries (i.e. Singapore 621, Republic of Korea 606, Chinese Taipei 599, Hong Kong SAR 594 and Japan 586).

No MENA country approached the midpoint score of 500. The highest scores were U.A.E. (465), Bahrain (454) and Lebanon (442), followed by Qatar (437) and Oman (403). But the scores for the other MENA countries were so low that questions of statistical reliability were automatically generated; *i.e.* scores were separated into two levels of probability, those that were 15–25% lower than all other countries tested and another group that were at least 25% lower than other countries. The

[2]*Knowing* involves recall of a variety of mathematical concepts from number convention to symbolic representation to solve entire classes of problems. *Applying* measures problem-solving skills and the student's ability to apply mathematical concepts to equivalent representations in language. *Reasoning* is the most complex of the cognitive skills, and involves independent, systematic thinking and the ability to make rule-based logical deductions. Appendix 2 contains more detailed explanations of Knowing, Applying and Reasoning.

[3]Eighth graders are usually 13 to 14 years old.

international benchmark for TIMSS lowest reliable mathematics score was 400; five MENA countries could not meet this level.

TIMSS eighth grade mathematics results are shown for 2015 and 2011 (Table 6). E.g. the 2015 Midpoint for Overall Math is a composite of scores for multiple mathematical topics (in addition to those seen in Table 6). Generally speaking, most countries performed better in 2015 than in 2011; but three countries performed more poorly: Jordan performed 20 points lower; Lebanon performed just seven points lower; and Saudi Arabia scored 26 points lower in 2015 than in 2011, and worse, Saudi Arabia had the lowest scores of all 39 countries tested. At the same time, it can be seen that some countries like Bahrain, Oman and Qatar made substantial gains at +45, +37 and +27, respectively. In fact, Bahrain made the greatest gains of any single country for eighth grade mathematics with a gain of +45 points from 2011 to 2015.

What do the TIMSS mathematics scores tell us about the MENA countries?

The 2015 TIMSS scores not only provide information about youths' knowledge of mathematics but also show patterns of learning in each country. The *Knowing* score requires less knowledge of mathematics than the other two Cognitive Domains, so its score is higher and is expected to be a country's highest eighth grade mathematics score. Using the U.S. as an example, the Midpoint is 518 and the *Knowing* score is 528, or ten points greater. The *Applying* score is expected to be less than or equal to *Knowing* and within 10 points of the Midpoint. The U.S. example is 515, or three points lower than the Midpoint and less than *Knowing* because of the difficulty of *Applying*. *Reasoning*, as discussed above, is likely to have the lowest score because it is the most difficult domain. For the U.S., the score is 514, or four points lower than the Midpoint and lower than *Knowing* and *Applying*. All of these scores taken together are compatible with the overall performance patterns (discussed above).

Using the logic applied to the U.S. scores, we can see other countries that match the same pattern (Group 1); these are Bahrain, Oman, Qatar, U.A.E., Egypt, Jordan and Morocco. But scores in other countries' (Group 2) *i.e*. Kuwait, Saudi Arabia and Lebanon are very inconsistent with the expected pattern, and all are most inconsistent in the *Reasoning* score. E.g. Kuwait's scores were within 6 points of the Midpoint, but *Reasoning* was 18 points lower; Saudi Arabia which had the lowest Midpoint of all countries had a *Reasoning* score that was higher than its Midpoint and Lebanon had a *Reasoning* score 36 points less than its Midpoint. Then there are two more groupings: (Group 3) a set of countries, Bahrain, Oman, Qatar, U.A.E. and Morocco who scored higher in 2015 than in 2011; (Group 4) is a set of countries, Saudi Arabia, Jordan and Lebanon, who scored lower in 2015 than in 2011.

Group 1 countries appear to have reliable data; Group 2 have questionable test results (as the TIMSS statistics noted; Group 3 countries all performed better in 2015 than in 2011; Group 4 appeared to perform more poorly in 2015 than 2011, however, two of the three countries (Saudi Arabia and Lebanon) were among the countries with questionable data. When Groups 1 through 4 are compared to the public educational expenditures (Table 5) some possible indications of spending and impact on education appear:

Table 6 Average TIMSS eighth grade mathematics test scores 2015 and 2011 for MENA and US

Country	Midpoint for overall math 2015	Midpoint for overall math 2011	Change from 2011 to 2015	Cognitive mathematics domains 2015			Notes re cognitive domains 2015
				Knowing	Applying	Reasoning	
TIMSS midpoint	500	500	–	–	–	–	–
GCC countries							
Bahrain	454[a]	409	**+45**	463	445	452	All within ±9 of mean
Kuwait	392[a,b]	No data	No data	398	389	**374**	Know & Apply within ±6 of mean; **Reason −18**
Oman	403[a,b]	366	**+37**	401	401	402	All within ±2 of mean
Qatar	437[a,b]	410	**+27**	440	435	431	All scores within ±6 of mean
Saudi Arabia	**368**[a,c]	394	**−26**	359	364	**374**	**Lowest Mean; Only instance of Reasoning > mean**
U.A.E.	465[a]	456	**+9**	476	457	461	All within ±11 of mean
Eastern Mediterranean							
Jordan	386[a,c]	406	**−20**	391	378	380	All within ±8 of mean
Lebanon	**442**[a]	449	**−7**	456	439	**406**	Know & Apply within ±14 of mean; **Reason −36**
North Africa							
Egypt	392[a,b]	No data for 2011; 391 for 2007	No data; possibly +1?	399	385	379	Know & Apply within ±7 of mean; **Reason −13**
Morocco	384[a,c]	371	**+13**	382	385	374	Know & Apply within ±2 of mean; **Reason −10**
United States	518[d]	509	**+9**	528	515	514	**Know & Apply within ± 10 of mean**; **Reason −4**

Source: IEA et al. (2016)

[a]Country average significantly (<5 points) lower than TIMSS midpoint

[b]Reliability concerns because percentage of students with achievement too low for estimation exceeds 15% but does not exceed 25%

[c]Reliability concerns because percentage of students with achievement too low for estimation exceeds 25%

[d]Country average significantly (>5 points) higher than TIMSS midpoint

Group 1: Bahrain increased its educational spending in 2012 by just 0.14% of GDP and by 2015 achieved the greatest gain of any of the 39 countries worldwide. In 2012 and 2013, Oman began spending more; Qatar consistently spent for education every year and increased spending in 2013 and 2014; U.A.E. provided no expenditure data; Egypt didn't spend in 2009–2011 and then spent in 2012; Jordan appears to have only spent in 1999 and 2013; and Morocco only spent in 2008, 2009 and 2012.

Group 2: Spending was very erratic. Kuwait spent in 2006 and 2012; Saudi Arabia spent in 2006–2008 and 2012; and Lebanon spent every year from 2006 through 2013 but cut spending in 2009–2011 to roughly half.

Group 3: All countries (Bahrain, Oman, Qatar, U.A.E. and Morocco) scored higher in 2015 than in 2011; and all were included in Group 1. Although the U.A.E. doesn't report data, and also Morocco was unable to keep up regular spending, all of the other countries were increasing their spending.

Group 4: Of the three countries, only Jordan seemed to have results that corresponded to spending. Like Morocco, Jordan had reduced spending which appears to have had a downward effect on its results, but the test results appear to have been accurately measured. As mentioned previously, Saudi Arabia and Lebanon's results are inconsistent with other countries and their spending was also erratic.

Summary: The TIMSS mathematics scores tell us that government spending on education appears to directly impact students' test results.

Issue 3: Governance of Public School Systems

What do the OECD's Programme for International Student Assessment (PISA) science scores tell us about the school systems in MENA?

According to the OECD, the PISA programme was designed "…for evaluating the quality, equity and efficiency of school systems. By identifying the characteristics of high-performing education systems, PISA allows governments and educators to identify effective policies that they can then adapt to their local contexts" (OECD 2016a). PISA fulfils its goal of being an objective tool for comparison between school systems. The most effective educational systems are publicised, and in theory, less successful educational authorities could learn from them. Whether they do or not, and particularly in MENA, is not quite certain.

More than half a million 15-year-olds took part in the 2015 examinations. PISA focuses on Science, Reading and Mathematics (SRM); all three topics are necessary for successful entrepreneurs. PISA results are considered as comparative scores (for SRM), along with data that represents educational equity of each national system. E.g. the OECD average mean score was Science (S = 493), Reading (R = 493) and Mathematics (M = 490). The U.S. scores were S (496), R (497) and M (470).

In MENA, scores were consistently lower than the OECD average or U.S. scores; and more consistent with Latin America and Southeast Asia. But there are also differences within MENA itself. E.g. Qatar's scores for S (418), R (402), M (402) and U.A.E.'s scores for S (437), R (434), M (427) are certainly lower than the OECD averages and U.S. scores, but are considerably better than the reciprocal SRM scores

in the Eastern Mediterranean and North Africa: *i.e*. Jordan's scores of S (409), R (408), M (380); Lebanon's scores of S (386), R (347), M (396); Algeria's scores of S (376), R (350), M (360) and Tunisia's scores of S (386), R (361) and M (367). Essentially, all of the MENA scores were below OECD averages and the U.S.

It could be noted that the overall MENA results for PISA are very similar to those of TIMSS. While the PISA and TIMSS results raise concerns about preparedness for future entrepreneurs, in the present, these educational deficiencies haven't gone unnoticed by employers in the MENA region: "The limited skills among the workforce are another indicator of poor human capital endowments and highlight a mismatch between supply and demand. More than a third of employers in the Middle East and North Africa region have zeroed in on inadequate skills as a major impediment to business growth, the highest such share worldwide" (UNDP 2016a).

The observations of the business community across MENA are consistent with OECD findings that link certain types of public educational systems to certain levels of PISA Science results. As Fig. 4 shows, the more distant the educational authority is from the students, the poorer the Science performance. The best results are obtained when the individual school's principal takes responsibility for school governance (OECD 2016a).

The OECD correlations are related to five specific school governance responsibilities. These can be categorized as: Resources, Curriculum, Disciplinary policies, Assessment policies and Admissions policies. As seen in Fig. 4, when all five responsibilities are managed by the administrator in the nearest proximity to the students, (*i.e*., School principal), the students perform best. The opposite is true when a National education authority takes charge of the five policy areas. All of the MENA countries that participated in PISA received poor scores for Science performance. When matched with their system of educational governance, the following patterns emerge:

U.A.E. score of 437. Ministry of Education oversees the public schools. "Currently, the private school sector dominates the education landscape with 89% of Dubai's students enrolled in private schools, out of which 58% is Emirati." Source: U.S. Dept. of Commerce ITA 2016. **Result:** Consistent with OECD **National education authority** correlations.

Qatar score of 418. Supreme Education Council (SEC) oversees all independent schools and Ministry of Education (MOE) provides support to private and public schools. Both SEC and MOE are centralized bodies. Source: http://www.edu.gov.qa/en/Pages/Home.aspx. **Result:** Consistent with OECD **National education authority** correlations.

Jordan score of 409. Ministry of Education holds sole legal responsibility for education. However, "In practice, there is an effective communication between the Ministry, Governorates and local government units to implement education policies and programmes" [1]. **Result:** Consistent with OECD **National education authority** correlations.

Lebanon score of 386. Ministry of Education and Higher Education is the central authority with regional education offices that supervise the public schools while

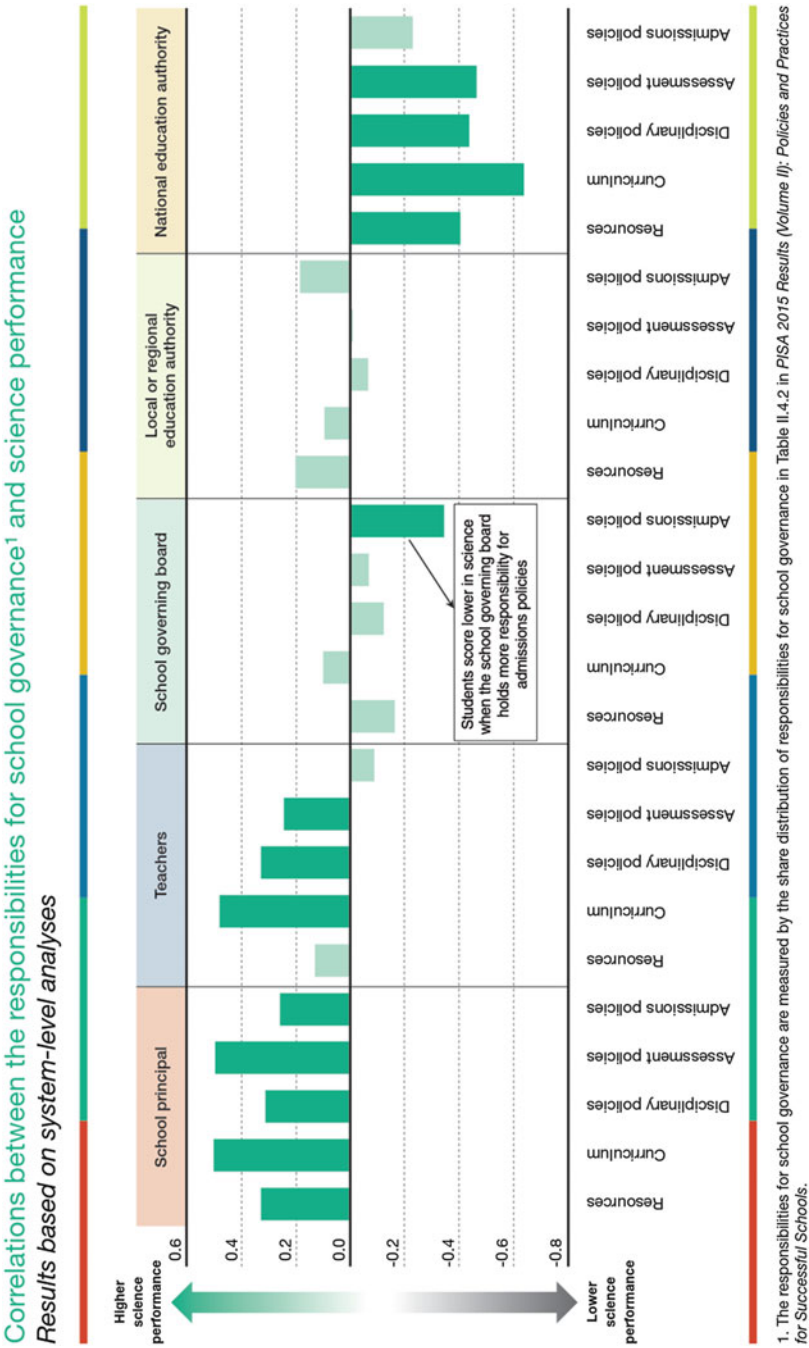

Fig. 4 School governance versus science performance. Notes: Results based on 70 education systems. Statistically significant correlation coefficients are shown in a darker tone. Source: OECD, PISA 2015 Database

acting as an interface between the schools and the Ministry headquarters in Beirut. "Decisions are routed to these departments and then passed on to the schools [1]. Localized authority permits municipal councils to establish, manage, finance or support the public schools in their area. The Councils "give their consent to the creation, transfer or closure of public schools" [2]. Crucially, provision of learning resources and curriculum development remain with the central Ministry. **Result:** Consistent with a combination of OECD **National education authority and School governing boards**. Student scores reflect those OECD correlations. **Tunisia score of 386**. Ministry of Education holds authority holds all authority over education and research. Regional commissioners of education have financial autonomy under the authority of the Ministry to implement state education policy. Local authorities have no "competencies" (granted rights) in the area of education [1]. **Result:** Although Regional commissioners exist, the role of the Ministry of Education is consistent with OECD **National education authority** correlations. **Algeria score of 376**. Ministry of Education and Higher Research. While regional authorities are responsible for construction, upkeep and maintenance of secondary schools; local authorities have similar responsibilities for kindergarten and primary schools. However, overall educational authority remains with the Ministry of Education [1]. **Result:** Consistent with OECD **National education authority** correlations.

Data sources for the educational systems of the six MENA countries:
European Committee of the Regions Division of Powers website: https://portal.cor.europa.eu/divisionpowers/
Lebanon:
[1] International Association of Universities, Lebanon: Structure of Higher Education System, available at the following address: http://www.iau-aiu.net/sites/all/files/Lebanon_LB_0.pdf (EN).
[2] Decree-law No 118 of 1997 governing municipalities, available at the following address: http://www.moim.gov.lb/ui/moim/PDF/LoiMunicipalites_versionFr.pdf (FR).
Tunisia:
[1] Authority granted to Regional commissioners is according to Article 2 of **Law No 2010-14 of 9 March 2010 on regional commissionerships of education.**
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Tunisia-Education.aspx. EU Committee of the Regions 2010.
Algeria:
[1] https://portal.cor.europa.eu/divisionpowers/Pages/Algeria-education.aspx.

Summary: The OECD correlation between school governance responsibilities and PISA science scores showed that governance by National education authorities and students' poor quality PISA science scores exist in each of the six MENA countries.

Despite the overall poor PISA results, there were hopeful indications in the national laws governing education in Jordan and Morocco (who doesn't participate in PISA tests, but governs education with devolved powers for Regional and Local subgroups):

Jordan

What is very unique with Jordan is the objectives set out by the government before defining the bodies that should be entrusted to carry out the law The objectives of laws governing education should be directed at developing responsible citizens

based on the constitution and democratic relationships; develop an understanding of natural, social and cultural environments while building a sense of individual responsibility; "develop pupils physically, socially, mentally, and emotionally, taking individual differences into consideration"; to improve health standards of individuals and of groups; to raise individual economic standards and to increase national income; and perhaps most importantly, "To develop such skills as effective communication, critical and creative thinking, logical reasoning, orderly thinking, the ability to use scientific methods of investigation, and the proper engagement of relationships with others" (https://portal.cor.europa.eu/divisionpowers/Pages/Jordan-Education.aspx).

The Higher Education Council was founded in the Law of Higher Education No. 23 of 2009 and given the following responsibilities:

"Cooperation with EU on issues of higher education via programmes such as Tempus, Erasmus Mundus and Marie Curie Action;

Establishing and administering public schools at all levels and supervising private schools;

Providing health and counselling services;

Encouraging educational research;

Enhancing educational relations inside the kingdom and with other Arab and Islamic countries;

Establishing adult education centres;

Furthering cultural and scientific development through libraries and museums, radio and television, lectures, societies, and appropriate magazines."

Morocco

Education in Morocco is more devolved than in any other MENA country. At the national level seven different bodies oversee various aspects of learning and research, these are:

Ministry of National Education and Vocational Training: Sets education guidelines, develops laws and implements policy for preschool, primary and secondary education and oversees private schools;

Moroccan Foundation for the Promotion of Pre-School Education (Non-profit foundation created by the government): elaborates, supports and subsidizes Moroccan preschool education;

Minister for Higher Education, Scientific Research and Executive Training: Determines policies/direction and guidelines for higher education and scientific research, oversees the14 state universities plus some 200 non-university higher education institutions of which 107 are private;

Ministry of Youth and Sports: Supports early childhood development, builds daycare centers and nurseries, licenses private day care centers, keeps training development and staff training up-to-date, and upgrades equipment/infrastructure in established centers;

National Agency for Assessment and Quality Assurance in Higher Education and Scientific Research: Assesses public/private higher education, research

institutes, doctoral study centres, training courses for accreditation, assesses effectiveness of evaluation programmes and academic cooperation projects in education/scientific research;

National Center for Scientific and Technical Research: Supports scientific research and capacity for innovation;

Ministry of Habous and Islamic Affairs: Supports study of Arabic language.

At the regional level, there are 12 different bodies (nine in Mainland Morocco and three in the Southern Provinces of Morocco). The regions are subdivided into a local government network comprised of 13 prefectures and 62 provinces. Those prefectures with metropolitan areas are further divided into *arrondissements*, other municipalities are divided into c*ommunes urbaines* and rural areas become districts (usually on the outskirts of *arrondissements*).

The local governments are responsible for implementing national, regional and local programmes to fight illiteracy; building/maintaining schools, nurseries and places of primary education.

Both of these countries are considered absolute monarchies, but in many respects they function as constitutional monarchies. In an era when the Arab Spring ushered in much unrest and even wars, Jordan and Morocco have hardly even had street demonstrations. In both countries the monarchs are well-educated, young men and genuinely well-liked by their populations. While both are criticised for not enough power-sharing at the top government levels, that criticism cannot be made when discussing their treatment of their populations. Both monarchs—as well as Queen Rania of Jordan—do all possible to improve people's lives. (Queen Rania has worked tirelessly for several years to improve teacher education, having already retrained several thousand teachers). The laws discussed above are examples of governments that care about education for their youth. It's particularly interesting that no other MENA governments have similarly population-focused laws. Although Qatar and U.A.E. offer economic opportunity for their populations, there doesn't appear to be the same degree of personal interest in outcomes for the public that's seen in the Jordanian and Moroccan educational laws.

Issue 4: Quality of Education

There are a variety of theories about why quality of public education is so poor across MENA. Some look to history as the cause: "After the fall of colonialism and in the context of modernization, Arab governments created national education systems, which helped to promote national identity and social cohesion. They also aimed to produce employees with the skills to work in state-owned enterprises and to develop the growth of national industries and services" (Heyneman 1997). Others point out that "…education has come to serve a broader economic purpose of developing citizens that would contribute human capital to the development of their respective nations".

The UNDP also goes on to describe the causes behind this situation, "Over the past four decades, many Arab governments have implemented numerous policies

and established many institutions to foster quietism and obedience among populations. Autocrats, patriarchs, mosques, schools, the media and the *mukhabarat* (intelligence agencies) became instruments for the suppression of disagreement and independent expression of opinion and, together, managed to deliver over 30 years of political stability despite limited economic growth except in the [oil-rich] GCC, often unpopular foreign policies, rising corruption and repression of civic and human rights" (UNDP 2016a). Within the education system, these policies translated to a very different kind of teaching than what a student would be exposed to in North America/Western Europe. As seen in the following comment from 1993, quality of education has been a long-term problem. ". . . in the MENA region, despite intensive governmental investments in education in order to improve the efficiency of education and raise the level of academic achievement, the quality of education remains a problem" (Heyneman 1993).

Why is quality of education so different than other countries or regions?

Typically, all students in North America—even primary school students—are encouraged to raise questions and participate in classroom discussions. This is not the case across MENA in public schools and some private schools, as well. For the most part, students are told not to ask questions or they risk being sent out of class. Learning is by rote. Teachers hand-out a written version of their lectures and students are expected to memorize the text. Exams are based on the same memorized material but as 'true-false' or multiple-choice questions; i.e. no essay questions or opinions expressed. This continues through secondary school and university. Even when nationals become university professors and have studied in Western countries, they return to their home countries and teach the 'old way' (Hill 2009–Present). Similar observations are described by an English teacher in Saudi Arabia who is now pursuing a PhD in Language Education, "Another factor driving teaching strategies was that memorization was highly emphasized in the Saudi national curriculum and communication was historically of very little importance; thus, teachers had little experience in this [immersion] style of teaching leading to students getting limited L2 [Level 2] practice and learning opportunities. This is the main reason touted by many as to why, after so many years of English instruction within the Saudi educational institutions, students had very little communication competence" (Francisco 2013). Other academics have noted the same:

> There remains a pressing quality problem in terms of educational outcomes in the region, with pedagogical methods remaining largely focused on rote memorization rather than applied problem solving and assessment methods (Hassan and Dyer 2017).

Memorization *does* have a role in North American schools, as well, but is limited to specific topics (e.g., the meaning/spelling of English words as well as foreign languages, significant historical documents, course-specific necessities such as the periodic table of elements). But other more important differences are found in the tertiary level of education in MENA. In North American universities, students are encouraged to actively participate and to experiment. Additionally, in business and engineering schools, the students are now pushed to work in teams and taught using Active Learning methods; not surprisingly, the pressure is coming from business/

industry that see teamwork as a priority for new hires (Prince, M. 2004). To teach effectively using Active Learning with teams and be able to support ad hoc questions/discussion generally requires class size be limited to 25–30 students. This will be very difficult to establish in MENA. It's not only the difference in mindsets, but the logistics involved in teaching the sheer volume of students. Today, for the most part, tertiary class size in MENA ranges from 100 to 300 students with the teacher reading out the memorization assignment using a bullhorn to be heard across the classroom. Some tertiary business programmes in Morocco, to their credit, have introduced small workshops of 12 to 20 students that also discuss the specific issues coming from the large lectures (Hill 2016).

Despite the large discrepancy between Western educational quality and that of MENA, rote learning is not the only problem in quality of education in MENA: "Inequality in educational attainment is greater in the region than in any other group of countries. . . . children in poor households and children in rich households do not have an equal opportunity to attend school and the probability of ever attaining or even attending secondary education depends significantly on family background. . . .educational systems of the Arab countries have supported a rapid rise in average years of schooling, but have failed to ensure that students secure good results on international standardized tests." (UNDP 2016e).

2 Global Entrepreneurship Monitor (GEM) Perspective on MENA

The Global Entrepreneurship Monitor (GEM) data suggests that innovative entrepreneurs may be more a product of longer entrepreneurial experience than of just creating a breakthrough innovation. GEM data shows striking differences between highly developed Western economies and MENA countries; in particular, early entrepreneurial skill-building experience is seriously lacking in most of MENA. These experiences aren't just 'early' in the student's life but in the U.S., for example, the institutions themselves providing these experiences are more than a century old. E.g., each year in 4-H, some 6 million children (as young as five, but up to eighteen) participate in experiential learning across a diverse set of activities. The organization was originally founded in 1902 to teach young people in rural communities farming and livestock raising skills. Over the years 4-H has expanded to suburban areas and cities, but it is still the youth development programme of the U.S. Cooperative Extension System and U.S. Department of Agriculture. Topics today include agriculture, but many other subject areas have been added ranging from entrepreneurship, STEM technologies, leadership, citizenship, *et al*. to more personal contemporary topics such as dealing with bullying or learning how to avoid childhood obesity (4-H 2017). 'Volunteer' programmes exist in schools in MENA. But unlike 4-H, they are not actually volunteer and students risk a bad grade for not attending or poor participation during these programmed events. Currently there is

no equivalent for public school students to experience the early entrepreneurial experiences that GEM research shows to be so vital.

2.1 Entrepreneurial Role Models in MENA Vs. Internationally

Another source of motivation for becoming an entrepreneur is closely linked to successful role models. Today with Internet and television, nearly all young people are acquainted with entrepreneurial success stories (Google, Facebook, Uber, Amazon). By and large these are all North American success stories. But MENA does have some role models.

2.1.1 MENA's Role Models

Probably the earliest and most famous entrepreneur from MENA was Jesse Aweida, a Palestinian immigrant to the United States and executive with IBM. In 1969, Aweida left IBM and formed Storage Tek. By 1971, Storage Tek went public on the New York Stock Exchange. At its peak, Storage Tek had 10,000 employees, was worth $1.58 billion; by 1991 it was the 239th ranked company in the Fortune 500 list. By 2004, the company was owned by Oracle, renamed Oracle Storage Tek with 7000 employees and valued at $2.2 billion. Aweida holds an M.S. degree in Engineering from the University of Colorado. Today Aweida and his brother, Dan, are venture capitalists in Colorado, mostly specialising in high-tech companies.

A more recent and most famous entrepreneur from MENA is Fadi Ghandour, a Lebanese who in 1982 co-founded Aramex International, an air courier and logistics company, with Bill Kingson (now deceased). Although Ghandour was a Political Science graduate from George Washington University, he was later a Management graduate at Wharton School of the University of Pennsylvania. Wharton is a school consistently ranked in the "top 5" by Financial Times, US News and World Report, *et al*. Not only is Wharton a top-ranked business school, it was an early founder (1973) of entrepreneurial training. Today, Wharton hosts the Center for Entrepreneurship and Innovation (Wharton 2016).

Ali Ghandour, Fadi's father, attended New York University and was a Senior Advisor to King Hussein of Jordan and was the founder of Royal Jordanian Airlines. It would seem likely his father would've been a strong influence on career choices. While Fadi Ghandour might have succeeded as an entrepreneur independently of his education, it has to be assumed that studying at one of the top 5 business schools in the world, and one that emphasizes entrepreneurship and innovation, could have had a significant influence on his success. This raises the question of "to what degree might other people, especially the youth population, in MENA benefit from an exposure to the courses that usually comprise entrepreneurial training?"

2.1.2 International Role Models

If we return to the international role models and look at the education of some especially well-known and successful entrepreneurs (*i.e.* Phil Knight of Nike, Howard Schultz of Starbucks, Jeff Bezos of Amazon, Sergey Brin and Larry Page, of Google and now the holding company, Alphabet, and Elon Musk of Tesla Motors and SpaceX), did university education play a significant role in the success of each of them? Certainly this was the case for Sergey Brin and Larry Page, who both have PhD's from Stanford University. Phil Knight had an MBA from Stanford University. Howard Schultz holds a Bachelor's in Communication from Northern Michigan University. Elon Musk completed two Bachelor's degrees simultaneously in just 3 years, one in Economics at Wharton and one in Physics at University of Pennsylvania. Jeff Bezos earned a degree summa cum laude in computer science and electrical engineering at Princeton University. Stanford University ranks in the "top 3" universities in the world; Princeton ranks in the "top 8". Northern Michigan University is ranked number 79 from a list of regional universities in the U.S. Although the university is not in the same overall league as Wharton, Stanford and Princeton, it should be noted that Schultz's degree in 'public speaking' would have also been very useful to an entrepreneur with a business model that depends on attracting franchisees.

A more scientific approach to the relationship between high-quality education and entrepreneurial success can be seen in a study carried out by First Round, an investment firm that specializes in technology start-ups, but also invests in promising consumer company start-ups. (One of their most prominent investments was Uber). In an analysis of the factors that influenced success over a 10-year period in some 300 companies they had invested in, a key element to success was whether or not one or more of the founders had attended one of the Ivy League schools or Stanford, MIT or Caltech: ". . . 38% of the companies we've invested in had at least one founder that went to one of those schools. And, generally speaking, those companies performed about 220% better than other teams!" (First Round 2015). Princeton and University of Pennsylvania are both considered amongst the eight Ivy League schools. The other Ivy League members are Brown University, Columbia University, Cornell University, Dartmouth College, Harvard University and Yale University (Wikipedia 2017).

The American Association of Collegiate Schools of Business (AACSB) is a quality assurance body that awards its certificate to business schools that have achieved certain benchmarks for quality (e.g. teaching staff, choice of curriculum, teaching by use of business cases). Wharton, Stanford, and Northern Michigan are all examples of AACSB-accredited business schools. Computer and other science programmes are accredited by the Accreditation Board for Engineering and Technology (ABET). University of Colorado, Stanford and Princeton all have ABET-accredited programmes. Essentially, all of these entrepreneurs-including Aweida and Ghandour-could be considered very well-prepared for the entrepreneurial

paths they chose. But they managed to do this by getting their educations outside of MENA.

2.2 Summary

While it's not impossible, it would certainly be very rare to succeed as a high-growth start-up without a very specific level of education. In essence, there is a need for world-class business and/or high-tech university education systems in MENA. An initial step is gaining accreditation from AACSB or ABET, as the schools mentioned above have done.

3 MENA's World-Class Business and/or High-Tech University Programmes

MENA is not devoid of internationally accredited institutions. But as the following sections show, they're not available throughout all of MENA.

3.1 AACSB and/or ABET Programmes

If graduating from an AACSB and/or ABET programme improves chances of entrepreneurial success, where are the AACSB and ABET schools in MENA? Table 7 shows the AACSB schools and Table 8 shows schools with one or more ABET programmes, effective 01 October 2016.

3.2 Obstacles to Becoming a World-Class Entrepreneur

There are several obstacles to becoming a world-class entrepreneur in MENA. One is lack of opportunity (discussed in the following section)—regardless whether preparatory education was public or private. Another is lack of funding. While families will collectively help to send a talented young relative abroad to university, there is less prestige/cachet associated with funding a local university education.

Table 7 AACSB-accredited business schools

AACSB international accreditation	Country
University of Bahrain[a]	Bahrain
The American University in Cairo	Egypt
Gulf University for Science and Technology	Kuwait
Kuwait University	
American University of Beirut	Lebanon
Lebanese American University[a]	
Qatar University	Qatar
King Abdulaziz University	Saudi Arabia
King Fahd University of Petroleum and Minerals	
King Saud University[a]	
College of Business and Economics in Qassim University	
Abu Dhabi University	United Arab Emirates
American University of Sharjah	
United Arab Emirates University	
University of Dubai	
Zayed University	

Source: Author's own based on data available via the World Wide Web at http://www.aacsb.edu/accreditation/accredited-members/global-listing. (Accessed 20 November 2016)
[a]Accredited in 2016

3.2.1 Insufficient Opportunity

When the possible chance of a student born in MENA country 'X' and being within the youth age group is compared to the number of AACSB-business schools (Table 7) and ABET engineering programmes (Table 8), the relative likelihood of simply finding an open slot in one of the schools is determined by dividing Total AACSB and ABET programmes (Table 9) by the youth population (results appear in Table 9 right-most column). There are several observations that can be made: Students in MENA have a roughly 5% chance of a slot being available in an AACSB-school or ABET engineering programme. By sub-region, the chances become very slight, except for the Gulf Cooperation Council (GCC) countries that can reach as high as a 72% chance of a slot being available. However, none of MENA reaches the roughly 84% chance that U.S. students might find.

3.2.2 Legacy of University Investments Matched to 'Historical' Rather than 'Future' Needs

Tables 7 and 8 show that MENA governments have made substantial investments in high-quality education, but there are questions that could be raised about investment focus. E.g.:

Table 8 ABET-accredited programmes

ABET-accredited programmes	Programmes	Country
AMA International University	3 with Bachelor	Bahrain
University of Bahrain[a]	9 with Bachelor	
Arab Academy for Science and Technology and Maritime Transport (Alexandria) [b]	7 with Bachelor	Egypt
Arab Academy for Science and Technology and Maritime Transport (Cairo)[b]	5 with Bachelor	
American University of Cairo	5 with Bachelor	
Jordan University for Science and Technology	6 with Bachelor	Jordan
Princess Sumaya University for Technology	4 with Bachelor	
University of Jordan	3 with Bachelor	
American University of Kuwait	1 with Bachelor	Kuwait
College of Technological Studies	3 with Diploma	
Gulf University for Science & Technology	1 with Bachelor	
High Institute of Energy	14 with Diploma	
The Higher Institute of Telecommunication & Navigation	2 with Diploma	
Kuwait University	8 with Bachelor	
American University of Beirut	6 with Bachelor	Lebanon
American University of Science and Technology	3 with Bachelor	
Beirut Arab University[c]	2 with Bachelor	
Holy Spirit University of Kaslik	1 w/ Diploma & 8 with Bachelor	
Lebanese American University[d]	6 with Bachelor	
Notre Dame University—Louaize	4 with Bachelor	
Al Akhawayn University in Ifrane[e]	1 with Bachelor	Morocco
Sultan Qaboos University	8 with Bachelor	Oman
An-Najah National University	9 with Bachelor	Palestine
Qatar University[f]	7 with Bachelor	Qatar
Texas A&M University at Qatar	4 with Bachelor	
Al Imam Mohammad Ibn Saud Islamic University	3 with Bachelor	Saudi Arabia
Jubail Industrial College	6 w/ Associate & 4 with Bachelor	
King Abdulaziz University[g]	17 with Bachelor	
King Fahd University of Petroleum and Minerals	4 w/ Associate 17 with Bachelor 4 with Masters	
King Faisal University[h]	6 with Bachelor	
King Saud University	12 with Bachelor	
Majmaah University	1 with Bachelor	
Prince Mohammad Bin Fahd University	2 with Bachelor	
Prince Sattam Bin Abdulaziz University	3 with Bachelor	
Qassim Private Colleges	1 with Bachelor	

(continued)

Table 8 (continued)

ABET-accredited programmes	Programmes	Country
Qassim University, KSA	6 with Bachelor	
Taif University	5 with Bachelor	
Umm Al-Qura University	5 with Bachelor	
Yanbu Industrial College	4 w/ Associate & 6 with Bachelor	
Abu Dhabi University	5 with Bachelor	United Arab Emirates
Al Ain University of Science and Technology	2 with Bachelor	
Al Ghurair University	1 with Bachelor	
ALHOSN University	3 with Bachelor	
American University in Dubai	4 with Bachelor	
American University of Ras Al-Khaimah	2 with Bachelor	
American University of Sharjah	6 with Bachelor	
Khalifa University of Science, Technology & Research	6 with Bachelor	
Rochester Institute of Technology (Dubai)	2 with Bachelor	
The Petroleum Institute	5 with Bachelor	
United Arab Emirates University	7 with Bachelor	
United Arab Emirates University, College of IT[i]	1 with Bachelor	
University of Dubai	1 with Bachelor	
University of Sharjah[j]	6 with Bachelor	
Zayed University	2 with Bachelor	

Source: Author's own based on data available via the World Wide Web at http:// main.abet.org/aps/Accreditedprogramsearchaspx. (Accessed 20 November 2016)
[a]Two programmes being reassessed in 2016
[b]All programmes being reassessed in 2016
[c]One programme being reassessed in 2016
[d]All programmes being reassessed in 2016
[e]Programme being reassessed in 2016
[f]All programmes being reassessed in 2016
[g]Fourteen programmes were reviewed 2014–2015, no results reported yet
[h]Two programmes being reassessed in 2016
[i]Only programme is being reassessed in 2016
[j]Four programmes being reassessed in 2016

1. A general lack of attention to business programmes across MENA; just 16 schools exist for a youth population of 61 million. The ratio in North America is 539 schools for a youth population of 49 million.
2. Although the wealthy GCC countries have the majority of the 16 business programmes (13 for a population of nearly 8 million), this figure is dwarfed by the GCC investment in engineering programmes: 219 are in the GCC and only 70 in the rest of MENA. North America has nearly 6 times (5.8) as many engineering programmes as business schools; yet the GCC has nearly 17 times (16.8) as many engineering programmes as business schools. This suggests a lingering cultural bias toward science rather than business. Not only is it difficult

Table 9 Youth (15–24 years) in MENA and in North America

Region	Total youth population (millions)	Youth population as share of national[a]	Total AACSB and ABET Programmes	AACSB	ABET	Student 'Chance' per Local Programme
MENA Total	**61.021**	**–**	**305**	**16**	**289**	**4.998279**
North Africa:	15.033	–	1	0	1	0.066520
Morocco	5.796	17.22%	1	0	1	0.172533
Algeria	6.422	15.95%	0	0	0	0.00
Libya	1.139	17.41%	0	0	0	0.00
Tunisia	1.676	15.05%	0	0	0	0.00
Eastern Mediterranean:	32.510	–	72	3	69	0.090306
Egypt	18.214	19.24%	18	1	17	0.988251
Lebanon	1.044	16.73%	32	2	30	30.651341
Syria	3.377	19.65%	0	0	0	0.00
Palestinian Territories: West Bank Gaza	 0.582 0.372	 21.56% 21.21%	9	0	9	9.433962
Jordan	1.647	20.12%	13	0	13	7.893139
Iraq	7.274	19.07%	0	0	0	0.00
GCC members:	7.682	–	232	13	219	30.200469
Kuwaiti only (immigrants = 69%)	0.429	15.16%	31	2	29	72.261072
Bahraini only (immigrants = 50%)	0.217	15.76%	13	1	12	59.907834
Qatari only (immigrants = 88%)	0.285	12.62%	12	1	11	42.105263
UAE: Emirati only: (immigrants = 85%)	0.802	13.53%	58	5	53	72.319201
Saudi Arabia only (35% immigrants)	5.308	18.85%	110	4	106	20.723436
Omani only (40% immigrants)	0.641	19.11%	8	0	8	12.480499
Yemen:	5.796	21.16%	0	0	0	0.00
North America:	49.440	–	3674[b]	539	3135	74.312298
Canada	4.285	12.12%	22	22	0	5.134189
US	43.613[c]	13.46%[c]	3652	517	3135	83.736501
US indigenous	1.800	21.46%	–	–	–	80.417502

Source: Author's own interpretation of Tables 7 and 8

Notes: Col. 1 is calculated from Col. 2 and nat'l pop

[a]Data from Index Mundi and CIA World Factbook *The World Factbook* 2013–14. Washington, DC: Central Intelligence Agency, 2013 https://www.cia.gov/library/publications/the-world-factbook/index.htmleffective July 2016

[b]Worldwide National Congress of American Indians (http://www.ncai.org/about-tribes/demographics). Combined = 45,413 million; Data for AACSB and ABET are taken directly from their websites (see References)

[c]Does not include indigenous population

for a student to find an opening in a high-quality business school, it's likely to be considered a less prestigious career choice.

3. While it appears that educational investment policies favoured engineering programmes, there seems to be very little encouragement for advanced engineering education. Throughout MENA there is only one university with accredited MSc programmes and no accredited PhD programmes in engineering (Table 9).

3.3 Addressing the Need for Increased Entrepreneurial Training and Skill Development

GEM research has shown the importance of early entrepreneurial training in primary school, continuing classes and other activities in all school grades and post-secondary entrepreneurial training. GEM's survey of national experts examines nine different criteria, but two of these are directly related to 'entrepreneurial education'. These criteria refer to education and training at basic school (i.e. primary and secondary) and/or training at post-secondary levels (i.e. vocational, college, business schools and other tertiary schools).

Today, most students in MENA—as well as North America—are not formally introduced to entrepreneurial training until the post-secondary school level (Table 10). The table includes GEM national experts' evaluations from 2012 through 2016. In every entry, post-secondary education and training outweighs that available during primary and secondary school. Yet other data (as discussed previously in this chapter) tells us that 'the earlier that entrepreneurial training begins the better'. However, an interesting development seems to be happening in Qatar, the U.A.E. and Lebanon. In all three countries, not only is there a commitment to increased entrepreneurial training (year on year), but the levels of offerings in both categories, basic school and post-secondary, seem to be reaching equilibrium. Although both Morocco and Jordan were off to rather slow starts, there does seem to now be a commitment to improvement. There is a possibly negative effect beginning to happen across North America, though, where it appears that interest may be tapering off or perhaps offerings are beginning to reach saturation point.

While Table 10 expresses the need for early entrepreneurial training experiences, it doesn't address the basic teaching problems in schools across MENA at all school levels. Despite this obstacle, there are examples from other countries on early entrepreneurial training.

3.3.1 Empirical Data on the Benefits of Early Entrepreneurial Experiences

The effectiveness of early entrepreneurial education has been discussed in two interesting studies:

1. The first is an ongoing longitudinal study of the effects of out-of-school activities on positive youth development. The study began in 2002 with 5th grade students and ended in 2010 having followed more than 7000 students in 42 U.S. states, when the students had reached 12th grade. Out-of-school activities also include some early entrepreneurial training as well as some activities that would be supportive of entrepreneurial success (e.g. leadership skills, civic engagement). The students are active in the U.S. national 4-H organization. Each year the

Table 10 GEM National Expert Survey for Entrepreneurial Education in MENA and North America 2012 through 2016

	2016		2015		2014		2013		2012	
	B	P	B	P	B	P	B	P	B	P
Algeria	–	–	–	–	–	–	2.45	3.16	2.19	3.32
Egypt	1.20	1.82	1.16	1.83	–	–	–	–	1.28	1.82
Jordan	1.47	1.85	–	–	–	–	–	–	–	–
Kuwait	–	–	–	–	1.52	2.57	–	–	–	–
Lebanon	2.61	3.11	2.58	2.98	–	–	–	–	–	–
Libya	–	–	–	–	–	–	1.41	2.30	–	–
Morocco	1.33	2.41	1.21	2.01	–	–	–	–	–	–
Palestine	–	–	–	–	–	–	–	–	1.69	2.44
Qatar	2.70	3.46	–	–	2.72	3.33	–	–	–	–
Saudi Arabia	1.44	2.26	–	–	–	–	–	–	–	–
Tunisia	–	–	1.15	2.01	–	–	–	–	1.44	2.78
U.A.E.	2.68	2.84	–	–	–	–	–	–	–	–
Canada	2.04	2.82	2.51	3.19	2.32	3.14	2.20	2.67	–	–
United States	1.96	2.75	2.15	2.70	2.21	2.87	2.19	3.08	2.15	3.04

B = Basic School Entrepreneurial Education; P = Training Post School Entrepreneurial Education and Training

Source: Author's own data based on Global Entrepreneurship Monitor 2017. Available via the World Wide Web at http://www.gemconsortium.org/data/key-nes. (Accessed 25 February 2017)

research team (led from Tufts University but including 21 other universities) has analysed the development of the cohort. There are some very interesting results:

The students were found to be "…nearly 4 times more likely to make contributions to their communities (Grades 7–12); …are about 2 times more likely to be civically active (Grades 8–12); …nearly 2 times more likely to participate in Science, Engineering and Computer Technology programs during out-of-school time (Grades 10–12); …girls are 2 times more likely (Grade 10) and nearly 3 times more likely (Grade 12) to take part in science programs compared to girls in other out-of-school time activities; … nearly 2 times more likely to make healthier choices (Grade 7)" (Lerner et al. 2009).

2. This study evaluated early entrepreneurial training (5th grade, 10 year-olds) taking place across the Netherlands based on a teaching programme from the U.S., *BizWorld*. [N.B. This same programme was one of several being used by the 4H groups discussed previously.] The researchers conducted "…a randomized field experiment to evaluate a leading entrepreneurship education program that is taught worldwide in the final grade of primary school …pupils' development of entrepreneurship knowledge and a set of non-cognitive skills relevant for entrepreneurial activity. The results indicate that knowledge is unaffected by the program. However, the program has a robust positive effect on non-cognitive entrepreneurial skills. This is surprising since previous evaluations found zero or negative effects. Because these earlier studies all pertain to entrepreneurship education for adolescents, our result tentatively suggests that **non-cognitive**

> **entrepreneurial skills are best developed at an early age**." [N.B. Emphasis added by author.] "*BizWorld* aims to teach children aged 11 or 12 the basics of business and entrepreneurship and to promote teamwork and leadership in the classroom through an experiential learning program that takes five days (within a time span of 2 to 4 weeks)." . . . The study authors conducted their research "in 63 different primary schools (118 classes; 2751 pupils) in the western part of the Netherlands that voluntarily signed up for the *BizWorld* program in 2010 and/or 2011" (Huber et al. 2012).

Currently the academic systems across most of MENA don't support even the basic training needed to 'create' entrepreneurs. Most schools across the region (including business schools) don"t teach critical thinking/analysis, teamwork skills, classroom discussions with open questions, or the study of business cases with exams based on essay questions rather than rote learning with exams based on true/false or multiple choice questions. Without teaching students how to analyse and assess opportunities–including analysis of real business cases and development of potential solutions–how can they be expected to become successful entrepreneurs? But one potential answer may lie in the work of 4H and the research of the Tinbergen Institute in the Netherlands. Students older than 11 or 12 years of age may require more time to adapt to a new way of learning. Adaptation by Bachelor and Master's students generally requires a semester-long course in Entrepreneurship (or other related subjects) just to adapt to a new way of learning, expressing themselves and working in teams (Hill 2009-Present).

4 Concluding Remarks

School authorities in MENA should address several issues that are counter-productive to creating more entrepreneurs:

1. Retraining of teachers to assure Active Learning methods are being used when teaching. This includes more practice in critical thinking/analytical skills, teamwork, helping students to develop the skills needed to answer essay questions and to respond with solutions to 'open book' business cases, as well as to develop presentation skills;
2. Curriculum changes to include early entrepreneurial education in primary and secondary schools;
3. Encourage and/or reward tertiary schools that implement Active Learning-based teaching and a Post-secondary entrepreneurial curriculum;
4. Implementation of a MENA-wide virtual entrepreneurial ecosystem.

Appendix 1

Full version of Table 1: GEI scores compared to IWCM scores

GEI 2017 Rank & Score	Top 25 GEI 2016 Rank & Score	GEI 2009 Rank & Score	Survival value 2014	Self-Expression 2014	Secular-Rational 2014	Traditional Value 2014
1 United States 83.4	1 United States 86.2	3 United States 0.72		**+1.15**		−0.20
2 Switzerland 78.0	8 Switzerland 67.8	7 Switzerland 0.63		**+1.35**	+0.65	
3 Canada 75.6	2 Canada 79.5	2 Canada 0.74		**+2.10**		−0.35
4 Sweden 75.5	5 Sweden 75.9	4 Sweden 0.69		**+2.25**	+1.70	
5 Denmark 74.1	4 Denmark 76.0	1 Denmark 0.76		**+2.20**	+1.55	
6 Iceland 73.5	7 Iceland 68.9	9 Iceland 0.62		**+2.00**	+0.50	
7 Australia 72.5	3 Australia 78.0	11 Australia 0.60		**+1.90**	+0.45	
8 United Kingdom 71.3	9 United Kingdom 67.7	14 United Kingdom 0.56		**+1.50**	+0.20	
9 Ireland 71.0	12 Ireland 65.6	6 Ireland 0.63		**+1.10**		−0.65
10 Netherlands 67.8	13 Netherlands 65.4	10 Netherlands 0.62		**+1.30**	+1.55	
11 Finland 66.9	18 Finland 61.8	13 Finland 0.56		**+1.25**	+1.25	
12 Germany 64.9	14 Germany 64.6	16 Germany 0.54		**+0.60**	+1.55	
13 France 64.1	10 France 64.4	18 France 0.50		**+1.00**	+0.55	
14 Austria 63.5	15 Austria 62.9	22 Austria 0.45		**+0.60**	+0.65	
15 Belgium 63.0	17 Belgium 62.1	12 Belgium 0.58		**+1.30**	+0.30	
16 Taiwan 60.7	6 Taiwan 69.7	No score	−0.70		+1.25	
17 Israel 59.1	21 Israel 57.4	21 Israel 0.47		**No data**		
18 Chile 58.8	16 Chile 62.1	26 Chile 0.41		**+0.30**		−0.40
19 U.A.E. 58.8	19 U.A.E. 61.4	24 U.A.E. 0.42		**No data**		
20 Luxembourg 58.1	23 Luxembourg 57.2	No score		**+0.95**	+0.45	
21 Qatar 58.0	24 Qatar 56.7	No score		**+0.20**		−2.20[a]
22 Norway 55.9	20 Norway 61.1	8 Norway 0.62		**+2.10**	+1.20	
23 Estonia 55.5	22 Estonia 57.3	No score	−0.75		+1.25	
24 Singapore 52.2	11 Singapore 66.0	15 Singapore 0.56		**No data**		
25 Japan 51.7		29 Japan 0.40		**+0.15**	+1.80[b]	
26 Slovenia 51.5		19 Slovenia 0.49		**+0.12**	+1.10	
27 Korea 50.5		20 Slovenia 0.49	−0.60		+1.00	
28 Lithuania 49.6	25 Lithuania 54.8	No score	−1.20		+1.20	
29 Portugal 47.2		33 Portugal 0.35	−0.10			−0.20
30 Saudi Arabia 47.2		30 Saudi Arabia 0.38		**No data**		
31 Poland 46.6		37 Poland .029		**+0.25**		−0.60
32 Hong Kong 46.4		23 Hong Kong 0.45		**+0.10**	+1.20	
33 Spain 45.3		28 Spain 0.40		**+0.30**	+0.49	
34 Bahrain 44.7		No score	−0.50			−0.10
35 Slovakia 44.1		No score	−0.15		+0.30	
36 Turkey 43.7		43 Turkey 0.27	−0.25			−1.20
37 Oman 43.6		No score		**No data**		
38 Latvia 43.0		32 Latvia 0.36	−0.85		+0.90	
39 Kuwait 42.5		No score		**No data**		

(continued)

GEI 2017 Rank & Score	Top 25 GEI 2016 Rank & Score	GEI 2009 Rank & Score	Survival value 2014	Self-Expression 2014	Secular-Rational 2014	Traditional Value 2014
40 Czech Republic 42.2		25 Czech Republic 0.42		**±0.0**	+1.20	
41 Puerto Rico 40.6		17 Puerto Rico 0.54		**No data**		
42 Tunisia 40.5		58 Tunisia 0.22	−1.65			−0.90
43 Cyprus 38.5		No score		**No data**		
44 Colombia 37.3		41 Colombia 0.28		**+0.90**		−1.90
45 Romania 37.1		48 Romania 0.25	−1.00			−0.40
46 Italy 37.0		27 Italy 0.41		**+0.40**	+0.20	
47 Hungary 36.3		47 Hungary 0.25	−0.65		+0.60	
48 China 36.3		40 China 0.28	−1.00			−1.25
49 Greece 34.6		34 Greece 0.32		**+0.09**	±0.00	
50 Uruguay 34.6		35 Uruguay 0.30		**+0.70**		−0.30
55 South Africa 32.6		42 South Africa 0.28		**+0.12**		−0.25
56 Jordan 31.7		51 Jordan 0.23	−1.15			−1.50
57 Azerbaijan 31.1		No score	−1.20			−0.60
58 Costa Rica 30.0		No score		**No data**		
59 Croatia 30.8		38 Croatia 0.28	−0.20		±0.00	
60 Namibia 30.7		No score		**No data**		
61 Montenegro 30.2		No score	−0.70		+0.35	
62 Kazakhstan 30.1		63 Kazakhstan 0.18	−0.75			−0.20
63 Lebanon 28.8		No score	−0.75			−0.10
64 Macedonia 28.7		49 Macedonia 0.24	−0.15			−0.10
65 Thailand 27.1		56 Thailand 0.22		**±0.01**		−1.20
66 Ukraine 26.9		No score	−1.40		+0.50	
67 Peru 26.8		39 Peru 0.28		**±0.00**		−1.15
68 Panama 26.2		52 Panama 0.23		**No data**		
69 India 25.8		53 India 0.23		**±0.00**	±0.00	
70 Morocco 25.7		59 Morocco 0.22	−1.20			−1.25
71 Mexico 25.7		44 Mexico 0.27		**+1.25**		−1.65
72 Russia 25.4		57 Russia 0.22	−1.25		+0.50	
73 Algeria 24.7		61 Algeria 0.19	−0.65			−0.80
74 Trinidad 24.6		No score		**+0.25**		−1.80
75 Gabon 24.6		No score		**No data**		
76 Philippines 24.1		70 Philippines 0.13		**+0.30**		−1.40
77 Georgia 24.0		No score	−0.80			−0.70
78 Dominican Republic 24.0		45 Dominican Republic 0.26		**No data**		
79 Serbia 23.1		62 Serbia 0.18	−0.85		+0.60	
80 Albania 23.0		No score	−1.00		+0.20	
81 Egypt 22.7		50 Egypt 0.24		**No data**		
82 Bulgaria 22.7		No score	−1.40		+0.90	
83 Argentina 22.2		36 Argentina 0.30		**+0.40**		−0.40
84 Armenia 22.1			−0.90			−0.80
85 Iran 22.1		65 Iran 0.17		**No data**		
86 Ghana 22.0		No score	−0.30			−2.05
87 Vietnam 22.0		No score	−0.05			−0.20
88 Swaziland 21.8		No score		**No data**		

(continued)

GEI 2017 Rank & Score	Top 25 GEI 2016 Rank & Score	GEI 2009 Rank & Score	Survival value 2014	Self-Expression 2014	Secular-Rational 2014	Traditional Value 2014
89 Moldova 21.3		No score	−1.20		+0.10	
90 Indonesia 21.2		46 Indonesia 0.26				
91 Ecuador 21.1		66 Ecuador 0.17		**+0.50**		−1.85
92 Kyrgyzstan 21.0		No score	−0.15			−0.45
93 Jamaica 21.0		No score		**No data**		
94 Sri Lanka 20.9		No score		**No data**		
95 Tajikistan 20.7		No score		**No data**		
96 Zambia 20.5		No score	−0.70			−0.70
97 Bolivia 20.4		67 Bolivia 0.16		**No data**		
98 Brazil 20.1		54 Brazil 0.23		**+0.25**		−0.80
99 Bosnia-Herzegovina 19.9		64 Bosnia 0.18	−0.80		+0.20	
100 Nigeria 19.9		No score	−0.20			−1.40
101 El Salvador 19.8		No score		**No data**		
102 Senegal 19.7		No score		**No data**		
103 Rwanda 19.6		No score	−0.40			−0.10
104 Libya 19.2		No score		**No data**		
105 Laos 18.7		No score		**No data**		
106 Honduras 18.2		No score		**No data**		
107 Kenya 18.2		No score		**No data**		
108 Guatemala 17.9		69 Guatemala 0.15		**+0.02**		−1.60
109 Ethiopia 17.8		No score	−0.30			−0.50
110 Suriname 17.5		No score		**No data**		
111 Paraguay 16.7		No score		**No data**		
112 Ivory Coast 16.6		No score		**No data**		
113 Belize 16.6		No score		**No data**		
114 Cambodia 16.5		No score		**No data**		
115 Gambia 16.1		No score		**No data**		
116 Cameroon 16.0		No score		**No data**		
117 Guyana 15.9		No score		**No data**		
118 Tanzania 15.8		No score		**No data**		
119 Mali 15.6		No score		**+0.10**		−1.25
120 Myanmar 15.6		No score		**No data**		
121 Liberia 15.6		No score		**No data**		
122 Pakistan 15.2		No score		**+0.10**		−1.20
123 Mozambique 15.1		No score		**No data**		
123 Madagascar 14.3		No score		**No data**		
125 Angola 14.1		No score		**No data**		
126 Uganda 13.2		71 Uganda 0.10		**No data**		
127 Benin 13.0		No score		**No data**		
128 Venezuela 13.0		55 Venezuela 0.22		**No data**		
129 Nicaragua 12.7		No score		**No data**		
130 Malawi 12.5		No score		**No data**		

(continued)

GEI 2017 Rank & Score	Top 25 GEI 2016 Rank & Score	GEI 2009 Rank & Score	Survival value 2014	Self-Expression 2014	Secular-Rational 2014	Traditional Value 2014
131 Guinea 12.1		No score		No data		
132 Burkina Faso 11.9		No score	−0.30			−1.30
133 Bangladesh 11.8		No score		No data		
134 Mauritania 11.6		No score		No data		
135 Sierra Leone 11.4		No score		No data		
136 Burundi 11.4		No score		No data		
137 Chad 8.8		No score		No data		
Palestine No GEI data		No score	−1.10			−1.00
Iraq No GEI data		No score	−1.10			−0.80
Yemen No GEI data		No score	−1.18			−1.30
Syria No GEI data for 2014		68 Syria 0.16		No data		

[a] Qatar's score for Traditional values is the highest of all countries.

[b] Japan's score for Secular-rational values is the highest of all countries.

2009 GEI rank "5 New Zealand 0.68"; no current GEI data but +1.75 Self-expression and +0.35 Secular-rational values for 2014.

Northern Ireland, (included in Ireland GEI data) but +0.70 self-expression and -0.49 Traditional values for 2014.

No GEI score for Malta but +0.40 Self-expression and -1.30 for Traditional values in 2014.

Andorra, no GEI data but +1.40 Self-expression and +0.80 Secular-rational values for 2014.

Yemen, no GEI data but -1.2 self-expression and -1.35 traditional values for 2008.

Palestine, Iraq and Syria: No IWCM data.

Source: Author's own. Data compiled from:

Ács, Szerb *et al*. 2017. The Global Entrepreneurship Index Rank of All Countries 2017 Table 2.2, Ch. 2 p. 34. *The Global Entrepreneurship Index 2017*. Washington, D.C.

Appendix 2

Examples of TIMSS assessment of Mathematical Knowing, Applying and Reasoning Mathematics cognitive domains for Eighth grade students.

Knowing

Facility in applying mathematics, or reasoning about mathematical situations, depends on familiarity with mathematical concepts and fluency in mathematical skills. The more relevant knowledge a student is able to recall and the wider the range of concepts he or she understands, the greater the potential for engaging in a wide range of problem-solving situations.

Without access to a knowledge base that enables easy recall of the language and basic facts and conventions of number, symbolic representation, and spatial relations, students would find purposeful mathematical thinking impossible. Facts encompass the knowledge that provides the basic language of mathematics, as well as the essential mathematical concepts and properties that form the foundation for mathematical thought.

Recall	Recall definitions, terminology, number properties, units of measurement, geometric properties, and notation (e.g., $a \times b = ab$, $a + a + a = 3a$).
Recognize	Recognize numbers, expressions, quantities, and shapes. Recognize entities that are mathematically equivalent (e.g., equivalent familiar fractions, decimals, and percents; different orientations of simple geometric figures).
Classify/Order	Classify numbers, expressions, quantities, and shapes by common properties.
Compute	Carry out algorithmic procedures for +, −, ×, ÷, or a combination of these with whole numbers, fractions, decimals, and integers. Carry out straightforward algebraic procedures.
Retrieve	Retrieve information from graphs, tables, texts, or other sources.
Measure	Use measuring instruments; and choose appropriate units of measurement.

Procedures form a bridge between more basic knowledge and the use of mathematics for solving problems, especially those encountered by many people in their daily lives. In essence, a fluent use of procedures entails recall of sets of actions and how to carry them out. Students need to be efficient and accurate in using a variety of computational procedures and tools. They need to see that particular procedures can be used to solve entire classes of problems, not just individual problems.

Applying

The applying domain involves the application of mathematics in a range of contexts. In this domain, the facts, concepts, and procedures as well as the problems should be familiar to the student. In some items aligned with this domain, students need to apply mathematical knowledge of facts, skills, and procedures or understanding of mathematical concepts to create representations. Representation of ideas forms the core of mathematical thinking and communication, and the ability to create equivalent representations is fundamental to success in the subject.

Problem solving is central to the applying domain, with an emphasis on more familiar and routine tasks. Problems may be set in real-life situations, or may be concerned with purely mathematical questions involving, for example, numeric or algebraic expressions, functions, equations, geometric figures, or statistical data sets.

Determine	Determine efficient/appropriate operations, strategies, and tools for solving problems for which there are commonly used methods of solution.
Represent/Model	Display data in tables or graphs; create equations, inequalities, geometric figures, or diagrams that model problem situations; and generate equivalent representations for a given mathematical entity or relationship.
Implement	Implement strategies and operations to solve problems involving familiar mathematical concepts and procedures.

Reasoning

Reasoning mathematically involves logical, systematic thinking. It includes intuitive and inductive reasoning based on patterns and regularities that can be used to arrive at solutions to problems set in novel or unfamiliar situations. Such problems may be purely mathematical or may have real-life settings. Both types of items involve transferring knowledge and skills to new situations; and interactions among reasoning skills usually are a feature of such items.

Even though many of the cognitive skills listed in the reasoning domain may be drawn on when thinking about and solving novel or complex problems, each by itself represents a valuable outcome of mathematics education, with the potential to influence learners' thinking more generally. For example, reasoning involves the ability to observe and make conjectures. It also involves making logical deductions based on specific assumptions and rules, and justifying results.

Analyze	Determine, describe, or use relationships among numbers, expressions, quantities, and shapes.
Integrate/Synthesize	Link different elements of knowledge, related representations, and procedures to solve problems.
Evaluate	Evaluate alternative problem solving strategies and solutions.
Draw Conclusions	Make valid inferences on the basis of information and evidence.
Generalize	Make statements that represent relationships in more general and more widely applicable terms.
Justify	Provide mathematical arguments to support a strategy or solution.

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