Distr.
LIMITED
E/ESCWA/TDD/2019/TP.2
22 August 2019
ORIGINAL: ENGLISH

Economic and Social Commission for Western Asia (ESCWA)

Innovation and Entrepreneurship: Opportunities and Challenges for Arab Youth and Women

United **Nations**
Beirut, 2019

19-00938

United Nations publication issued by ESCWA, United Nations House,
Riad El Solh Square, P.O. Box: 11-8575, Beirut, Lebanon.

Website: www.unescwa.org.

Acknowledgement

The present report on “Innovation and Entrepreneurship: Opportunities and Challenges for Arab Youth and Women” was prepared in the framework of the activities of the Innovation Section of the Technology for Development Division at UN-ESCWA for the years 2018-2019, and specifically in its part related to the role of innovation and technology for achieving the 2030 Agenda for Sustainable Development.

This report was prepared under the supervision and guidance of Ms. Nibal Idlebi, Acting Director of the Technology for Development Division (TDD), and Chief of Innovation Section. Ms. Lize Denner, Associate Program Management Officer of the Innovation Section, peer-reviewed and contributed to the preparation of the report.

The study is based on a report prepared by Mr. Souheil Marine, a consultant in the field of information and communications technology (ICT) and science, technology and innovation (STI). Mr. Hassan Ghaziri, Director of the Beirut Research and Innovation Centre (BRIC), also provided input and recommendations to this study.

ESCWA thanks Ms. Rasha Tantawy, Head of Business & Entrepreneurship Support at the Technology Innovation & Entrepreneurship Center (TIEC) in Egypt for her comments and feedback on this document. ESCWA also thanks the members of the Arab Technology Incubators and Techno Parks Network (ARTECNET) for providing success stories on innovation and entrepreneurship from various Arab countries: Ms. Lamiaa Al Rashidy and Mr. Nahel Muhammad Amirah (Egypt), Mr. Amine Maliki (Morocco), Ms. Razan Nasr (State of Palestine), Mr. Mohammed Al Houzimi, Mr. Nawaf Alsahhaf and Mr. Waleed Alsaleh (Saudi Arabia), Ms. Monia Jendoubi and Mr. Jihad Dghais Majustic (Tunisia).

Executive summary

Entrepreneurship in general is one of the possible solutions for youth unemployment in the Arab region. Among women, the number of entrepreneurs is increasing throughout the region. Frontier technologies and new approaches to innovation also offer opportunities for new ways of work and new businesses that can be harnessed to enhance entrepreneurship. However, obstacles remain, making it difficult to exploit the economic development and social inclusion that entrepreneurship offers in general and for women and youth in particular. This study discusses the opportunities available to and the challenges women and youth face when pursuing a career in innovation and entrepreneurship in the Arab region.

Chapter I discusses the labour force participation of women and youth. The outcome shows that women's and youth participation was the lowest among world regions in 2017. The gender gap in labour force participation, for both youth and women, is also the highest in the Arab region. The Not in Education, Employment or Training (NEET) rates, which are indicative of the underutilisation of youth, are also the highest in the world for young women.

Chapter II provides an assessment of the enabling environment for entrepreneurship, specifically in the areas of competitiveness, technological readiness, higher education and training, doing business, entrepreneurship ecosystems and sustainable development goals. The findings indicate that much more still needs to be done to enhance the enabling environment for entrepreneurship in general and for women and youth.

Competitiveness has decreased during the last decades with marked weaknesses in innovation, higher education and training, and technological readiness. Innovation outputs and the use of technologies are lagging, specifically in the production sector. This is compounded by a difficult business climate and weak entrepreneurship ecosystems, despite government programmes and regulations. Although SMEs are the majority of research and development companies, they account for only 4 to 16 per cent of total employment. It is essential to enhance the enabling environment for entrepreneurship so that the sector can fulfil its role as an enabler of the SDGs.

Chapter III analyses issues surrounding Arab women and youth entrepreneurship activities and provides examples of efforts made to advance entrepreneurship. Findings indicate that although women entrepreneurship remains on par with that of men in countries, opportunity entrepreneurship remains important. In youth entrepreneurship some countries have higher numbers; nevertheless, overall, the Arab countries show lower numbers than in Africa and Latin America.

Chapter IV proposes three approaches that can potentially enhance the economic empowerment of youth and women. The approaches discussed are value chain development, social entrepreneurship and frontier technologies.

Chapter V provides the way forward in the form of several recommendations that primarily address governments and lawmakers. However, other stakeholders such as banks, NGOs, regulators, and civil society organizations (particularly those representing women and the youth) have important roles to play in the development and implementation of these recommendations. Consequently, even if governments and lawmakers are 'in the driving seat,' their actions cannot be materialized without the active contribution of other actors. The recommendations are organized in themes, namely policies, entrepreneurship education, infrastructure, leveraging the diaspora, and measurement. Specific recommendations are also made to improve entrepreneurship opportunities for women and youth, respectively, based on the challenges they face. Lastly, recommendations on enhancing entrepreneurship opportunities in specific areas such as frontier technologies and social innovation are included.

CONTENTS

CONTENTS (*continued*)

Page

ANNEXES

List of tables

List of figures

CONTENTS (*continued*)

Page

List of boxes

Abbreviations

AFEM	Association des Femmes chefs d'Entreprises du Maroc
DBI	Doing Business Index
DTF	Distance-to-Frontier
ESCWA	Economic and Social Commission for Western Asia
GCC	Gulf Cooperation Council
GEM	Global Entrepreneurship Monitor
GCI	Global Competitiveness Index
GII	Global Innovation Index
GTCI	Global Talent Competitiveness Index
ICT	Information and Communication Technologies
IFC	International Finance Corporation
ILO	International Labour Organization
MENA	Middle East and North Africa
MSMEs	Micro Small and Medium Enterprises
NEET	Not in Education Employment or Training
NGOs	Non-Governmental Organizations
NRI	Networked Readiness Index
OECD	Organization for Economic Co-operation and Development
PISA	Program for International Student Assessment
SDGs	Sustainable Development Goals
STEM	Science Technology Engineering and Mathematics
TEA	Total Early-stage Entrepreneurship Activity
TVET	Technical and Vocational Education and Training
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Education Science and Culture Organization
WED	Women Entrepreneurship Development
WEF	World Economic Forum
WOE	Women-Owned Enterprises

Introduction

Policymakers worldwide are currently seeking to develop entrepreneurship as one solution to the unemployment problem, particularly among the youth. In the Arab region, a growing number of entrepreneurs are women, but several obstacles still exist that make it difficult for them to bring their innovative ideas to fruition. At the same time the world is witnessing a new scientific and industrial revolution due to the emergence of new frontier technologies. These technologies are changing many established concepts regarding employment and work in general and are advancing innovation and new business and entrepreneurship opportunities.

Against this backdrop, humanity is facing new combined economic development, environmental sustainability and social inclusion challenges that have led the international community, represented by the United Nations, to adopt a new 2030 Agenda for development anchored around its 17 Sustainable Development Goals (SDGs) that seek to address the challenges in an integrated manner. Innovation and entrepreneurship, driven by new technologies, are a way to enhance social inclusion, economic development and address environment sustainability issues.

This study discusses opportunities available to and the challenges faced by women and youth when pursuing a career in innovation and entrepreneurship within the Arab region.

Before discussing the rationale of this focus on youth and women, it is useful to clarify the terms innovation and entrepreneurship from the perspective of this study. Innovation, though certainly linked to scientific development, should be understood in the broader sense whereby it means introducing any new product, service, business process or even a marketing idea within a specific context or market. This broader definition is not intended to 'lessen' or 'demystify' a concept often associated with cutting-edge science, which sometimes it is. It simply indicates that it also (and no less) encompasses any practical application of human ingenuity to introduce something new (be it material or immaterial) within a given context, irrespective if it is based on cutting-edge science.

Entrepreneurship is the action of any person (or group of persons) that, driven by necessity or opportunity, endeavours to create his/her own business activity to earn a living. This broad definition spans a wide spectrum from poor rural dwellers, to street vendors and to doctorate graduates wanting to create their own businesses by exploiting cutting-edge scientific advances. Innovation is without doubt closely associated with entrepreneurship with the importance of the latter as the "vector" through which scientific innovations are introduced as new products or services into the market, a process that constitutes the main engine of economic development for some economists.

Some might argue that an entrepreneur is necessarily an innovative person. This might be true to some extent in developed countries but less so in developing ones. While we do not deny the fact that any entrepreneur – even a street vendor who introduces an innovative way for distributing or advertising his/her products – could potentially be an innovator, the use of the expression 'innovation and entrepreneurship' is more flexible as it does not imply a necessity like the term 'innovative entrepreneurship' that is adopted in some specific contexts when designating entrepreneurship based on technological innovations such as digital start-ups.

The above-discussed terminology becomes more explicit and less abstract when we clarify the object of our study, namely: youth and women within Arab countries. There is no doubt and detailed statistics amply prove that their economic situation is the direst among world regions. The Arab region has the lowest labour force participation rates of women and the highest youth unemployment rate among world regions. There is no exaggeration in the statement that addressing the plight of these two categories will largely contribute to solving a good percentage of the region's problems, and this also includes fulfilling the challenges it faces for fulfilling the SDGs by 2030.

Disenfranchised Arab youth without prospects for a decent life and excluded women account for the tens of millions of people in the region. The exclusion, therefore, of youth and women not only disempowers them but also adversely impacts the economic and social well-being of the region, consequently increasing the burden on the State and creating a vicious circle that harms people, economies and development. This enormous challenge necessitates new approaches. Addressing it through a narrow perspective, reduced to innovative entrepreneurship by digital or any advanced technology start-ups, will neither solve the problem of these large masses nor contribute to the SDGs in this region. As a matter of fact, innovation and entrepreneurship should act on two coordinated fronts. Firstly, they should contribute to economic growth by 'expanding the cake of wealth' through new value-added and wealth creation bringing about much-needed economic diversification away from the dominant natural resources and monopolies rents. Secondly, they should contribute to women and youth economic empowerment within this enlarged wealth creation by providing better entrepreneurship opportunities. For this to materialize, a broad spectrum of issues needs to be addressed. This study aims to shed some light on the most important among those issues and suggest recommendations for Arab policymakers and other stakeholders to consider.

Chapter I sets the scene with an examination of the labour force participation and employment of Arab women and Arab youth. The impact of unemployment on educated youth and Arab women is discussed as they address determinants that also apply to entrepreneurship.

Chapter II provides an assessment of the enabling environment for entrepreneurship, in the context of economic competitiveness in the Arab region and its evolution over recent years, focusing on issues of importance to entrepreneurs, including the status of innovation systems, adoption of digital technologies, skills, the business environment at large, and the entrepreneurship ecosystem in Arab countries. The chapter concludes with the SDGs as an integral part of the enabling environment that provides new opportunities for entrepreneurship.

One cross-cutting issue throughout the whole document at large lies in the scarcity of data from Arab countries. We often rely on assessments carried out by international organizations or through global reports with some Arab countries (particularly those traversing crisis situations) absent from their radar screens. Arab countries also bear responsibility with many not producing – including among their most affluent – timely statistics or properly transmitting them for inclusion within international organizations databases. Irrespective of any specific recommendations raised in the sequel, developing timely statistics is an overarching necessity in order to elaborate and implement policies properly, monitor their impact, and adjust them accordingly. More than in any other region, the famous motto 'what you can't measure, you can't manage' applies to the Arab region.

Chapter III analyses issues surrounding Arab women and youth entrepreneurship activities. The chapter also proposes approaches that can enhance the economic empowerment of youth and women and concludes with a look at frontier technologies and their potential to lead to new entrepreneurship opportunities. It discusses issues related to skills needed to properly master these technologies and achieve a change in work and type of employment they introduce, as well as their impact on the labour market.

Chapter IV looks at the way forward in the form of recommendations: first at the general policy level, and second for initiatives targeting women and the youth to develop and support their entrepreneurship endeavours. Recommendations are also made regarding issues related to the enabling environment and approaches to empower youth and women, while two cross-cutting issues pertaining to the leveraging of Arab Diasporas and improving entrepreneurship measurement of importance to the region are also highlighted.

I. ARAB YOUTH AND WOMEN LABOUR FORCE PARTICIPATION AND EMPLOYMENT

A. LABOUR FORCE PARTICIPATION

The Arab women labour force participation[1] rate stood at 20.9 per cent in 2017 and was the lowest among world regions;[2] it had only marginally improved from its 19.7 per cent value in 2000. Arab women participation rate is 3.5 times lower than the rate for men which stood at 74.1 per cent in 2017. This drags down the region's total labour force participation rate which, at 49 per cent, is the lowest among world regions and far below the world average of 62 per cent.[3] By many estimates derived from studies carried out by international organizations and other private institutions, improving Arab women labour participation rates could significantly boost Arab countries' GDP from 20 to 40 per cent depending on each country.[4]

TABLE 1. YOUTH LABOUR FORCE PARTICIPATION RATES, WORLD REGIONS, 1997 AND 2017

Region	Subregion	LFPR 1997 (*Percentage*)			LFPR 2017 (*Percentage*)			Gender gap (*Male-female, pp*)	
		Total	Male	Female	Total	Male	Female	1997	2017
Africa	North Africa	37.0	52.5	21.1	31.9	46.6	16.6	31.4	30.0
	Sub-Saharan Africa	53.9	57.3	50.6	54.3	56.9	51.6	6.7	5.3
Americas	Latin America and the Caribbean	55.6	69.4	41.7	49.8	59.3	40.1	27.7	19.2
	Northern America	62.5	65.0	59.9	52.3	53.4	51.2	5.1	2.2
Arab States		33.1	51.0	13.9	30.6	46.2	13.5	37.1	32.7
Asia and the Pacific	Eastern Asia	69.7	70.0	69.4	41.4	52.6	50.0	0.6	2.6
	South Eastern Asia and the Pacific	56.5	63.3	49.7	51.3	58.4	43.8	13.6	14.6
	Southern Asia	48.2	66.2	29.0	37.2	52.9	20.1	37.2	32.8
Europe and Central Asia	Northern, Southern and Western Europe	47.7	51.6	43.6	44.4	46.7	41.9	8.0	4.8
	Eastern Europe	42.1	45.5	38.7	35.6	40.0	31.0	6.8	9.0
	Central and Western Asia	47.5	58.3	36.6	43.3	53.6	32.4	21.7	21.2
World		55.0	63.5	46.2	45.7	53.7	37.1	17.3	16.6

Abbreviations: LFPR, labour force participation rate; pp, percentage points.

Source: ILO, 2017d, p. 14.

[1] Despite limitations relating to comparability among countries depending on population and labour force survey methodologies, ILO's labour force participation and employment statistics *include* people working within the informal sector or employed informally within the formal sector. ILO estimates that more than half of labour force and 90 per cent of MSMEs worldwide belong to informal enterprises particularly within developing regions. Available at https://www.ilo.org/global/topics/employment-promotion/informal-economy/lang--en/index.htm.

[2] Only South Asia at 28.5 per cent has comparably low value; all other world regions stood at 50 per cent and above.

[3] All data from World bank database (based on ILO modelled estimates) percentage of population aged 15+. Available at http://data.orldbank.org/ (accessed on 24 August 2018).

[4] See Momani, 2016 for a useful summary.

Youth labour force participation rates (by gender) in different world regions including Arab States[5] and North Africa[6] in 1997 and 2017 are summarized in table 1. Two key observations could be drawn:

(a) Total (and by gender) youth labour participation is the lowest for Arab States and North Africa among world regions for both reference years[7] with the situation slightly improving for both country groups (Arab States and North Africa) between 1997 and 2017 but not for young women particularly in North Africa where it has deteriorated (minus 21 per cent);

(b) As regards the gender gap, both Arab States and North Africa have the highest gap (alongside South Asia) among the regions though one could note a 12 per cent improvement for Arab States (only 4.5 per cent for North Africa) in 2017 over the 1997 value.

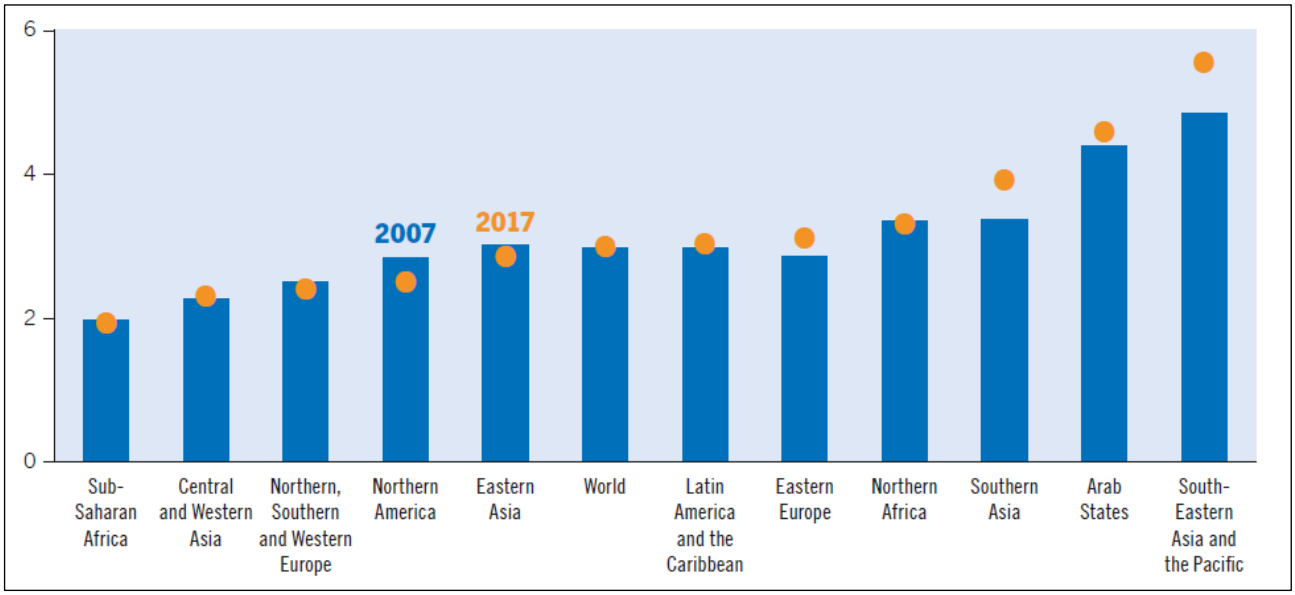
Labour force participation rates for different Arab countries (based on latest available statistics) for both total and youth categories and by gender are summarized in figure 2.

B. Youth unemployment, education impact and NEET

Arab youth unemployment stood at 30.4 per cent in 2017 for Arab States and 29 per cent for North Africa. It is projected to slightly decline to 29.7 and 28.6 per cent respectively by 2018. These are the highest rates among the world's regions and against the backdrop of a global average of 13 per cent.

Youth-to-adult unemployment rates in the Arab States are the second-highest worldwide, and in North Africa standing fourth position among world regions and have not changed since 2007 (figure 1).

Figure 1. Youth-to-adult unemployment rates by region, 2007-2017



Source: ILO, 2017d, p. 16.

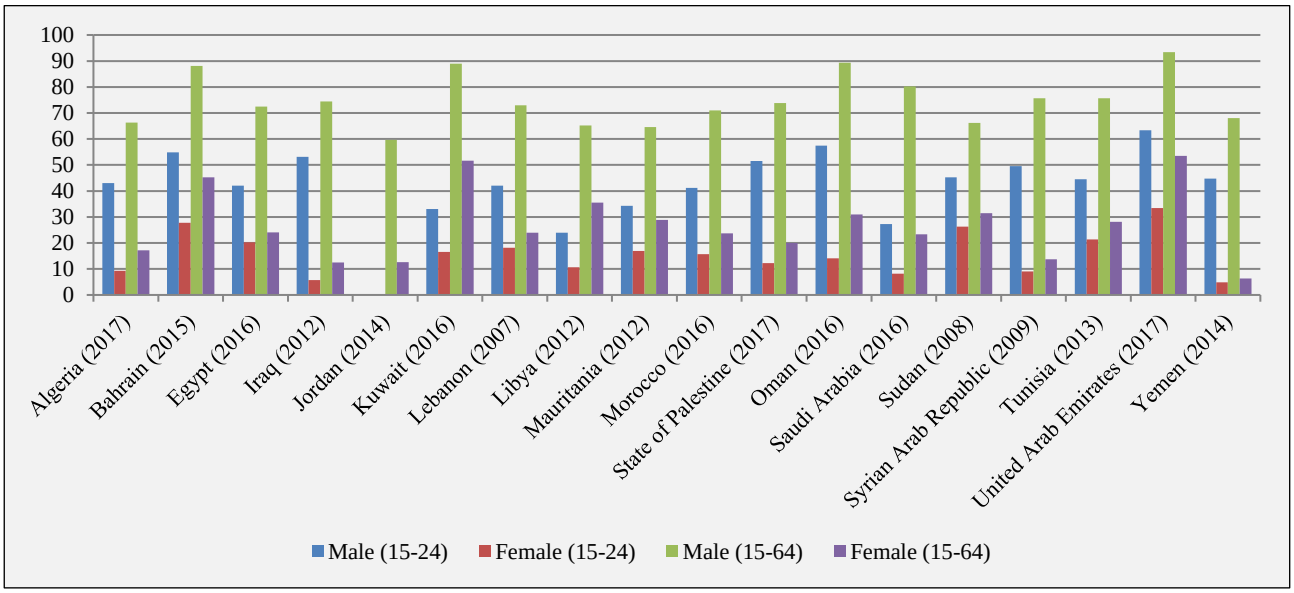
Arab youth (aged 15-24) unemployment rates (total and per gender) in different Arab countries according to the latest available statistics are summarized in figure 3.

[5] Arab States (in ILO grouping) includes only the 12 Arab countries in the Asian continent.

[6] North Africa (in ILO grouping) includes Algeria, Egypt, Libya, Morocco, Sudan, and Tunisia.

[7] One unique exception is Eastern Europe for males which has the lowest rates among all regions for both reference years.

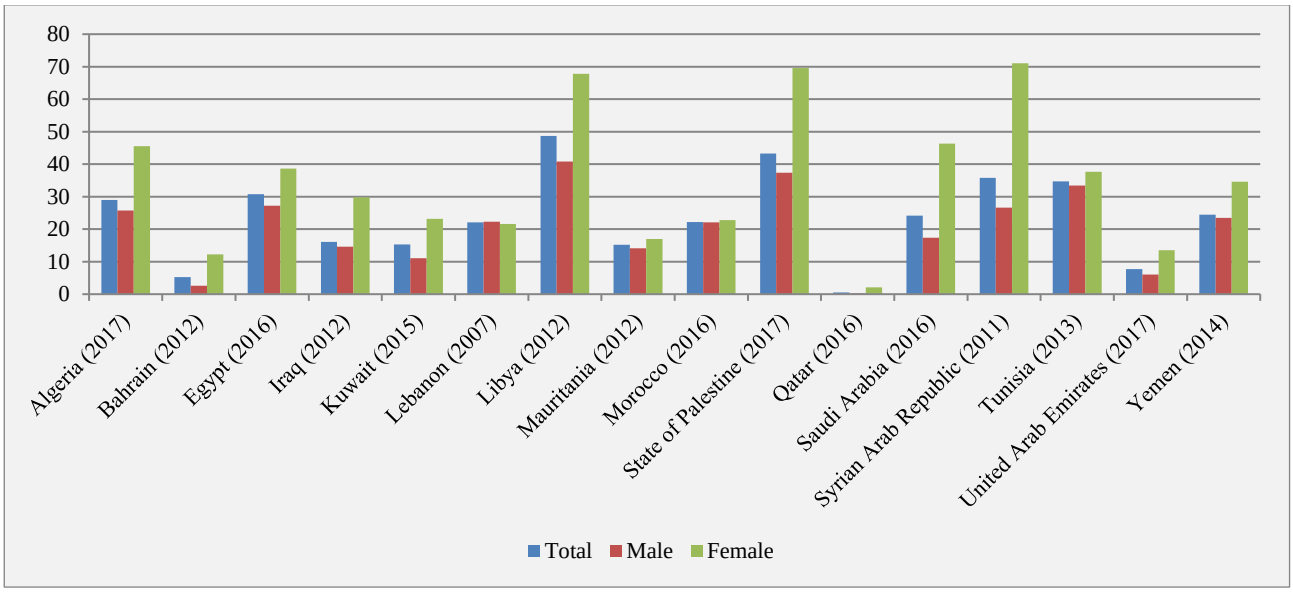
Figure 2. Male and female (youth and total) labour force participation rates, Arab countries (latest available year)



Source: ILO Stat database. Available at https://www.ilo.int/ilostat (accessed on 14 August 2018).

Note: Algeria, Morocco, Jordan, and the Sudan data is for population aged 15+; no youth data is available for Jordan.

Figure 3. Youth unemployment (total and by sex), Arab countries (latest available year)



Source: ILO Stat database. Available at https://www.ilo.int/ilostat (accessed on 3 August 2018).

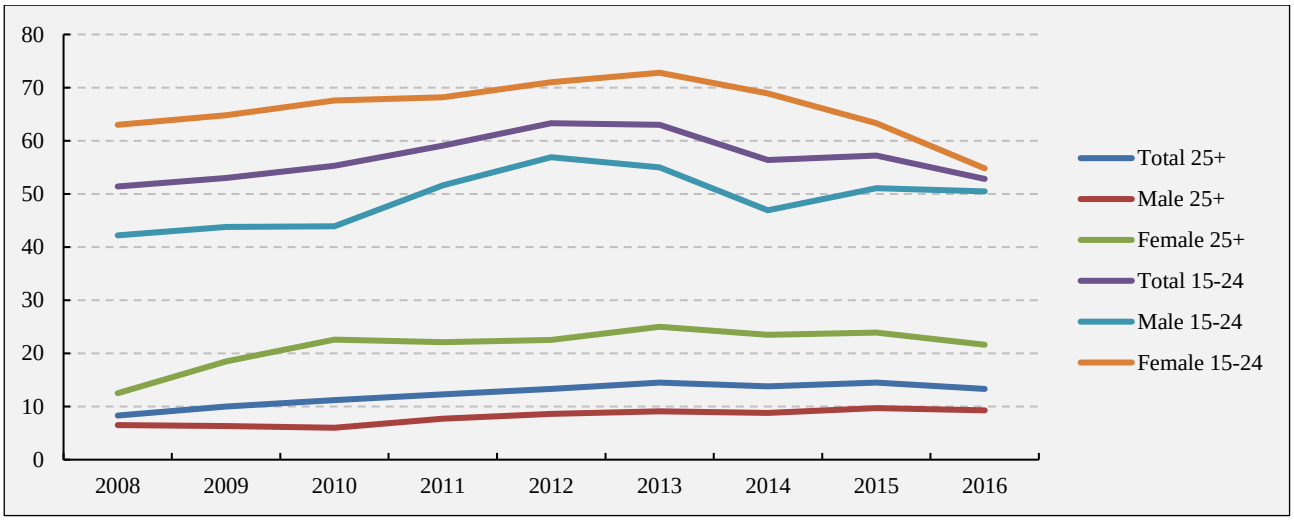
Gender differences in youth unemployment still prevail in many Arab countries sometimes significantly, as highlighted in figure 3. This happens despite undeniable improvements in women's educational attainment in most Arab countries where, in some, females outnumber males in tertiary education. However, it appears that 'Arab women with post-secondary educations are more likely to be unemployed than women who do not have a post-secondary education'.[8] This is only an apparent paradox as women's education (from school age up to the choice of tertiary education specialities), as well as the choice of 'appropriate' employment type,

[8] Momani, 2016.

is strongly gendered in most Arab countries due to social values.[9] In addition, inadequate policy and regulatory factors add limitations to women employment even if they hold advanced degrees;[10] this context should be kept in mind when discussing the enhancement of women entrepreneurship as many factors are common for both employment in general and entrepreneurship in specific.

Figure 4 plots the recent evolution of unemployment among advanced education holders in the most populous Arab country, Egypt. Despite a relative stabilization and decrease for youth (mainly women) after reaching a 'plateau' in 2013, the values still speak.

Figure 4. Unemployment rates, holders of advanced degrees, Egypt, 2008-2016



Source: ILO Stat database. Available at https://www.ilo.int/ilostat (accessed on 23 August 2018).

Finally, it is important to consider the youth (15-24) Not in Education, Employment or Training (NEET) as they are a target population for policies aimed at enhancing opportunities for youth (and women) through entrepreneurship. The NEET rate 'captures the share of youth who are inactive for reasons other than education or skills development, as well as young people who are without work and looking for work (the unemployed)'. Reducing the NEET rate is target 8.6 of SDG 8, by 2020 substantially reduce the proportion of youth not in employment, education or training, and its rate is therefore the associated indicator. It is important to note that NEET is essentially a 'broad measure of the underutilization of youth, who could potentially contribute to national development and growth through their work or by furthering their qualifications in education'.[11]

According to ILO, the global NEET rate stood at 21.8 per cent in 2017. Among world regions, the Arab States and North Africa stood respectively at 18 and 26.2 per cent, with respective female share at 71.8 and 67.6 per cent. Although global female NEET rate has reached 76.9 per cent (driven up by the demographic weight of southern Asia where they represent nearly 89.5 per cent), Arab women NEET rates are among the highest.[12]

Figure 5 summarizes NEET rates for Arab countries by gender according to the latest available statistics. Gender differences are particularly marked in conflict-afflicted countries like Iraq and Yemen but equally in Saudi Arabia. Contrary to unemployment, no Arab country has a women NEET rate that reaches near parity with that of men.

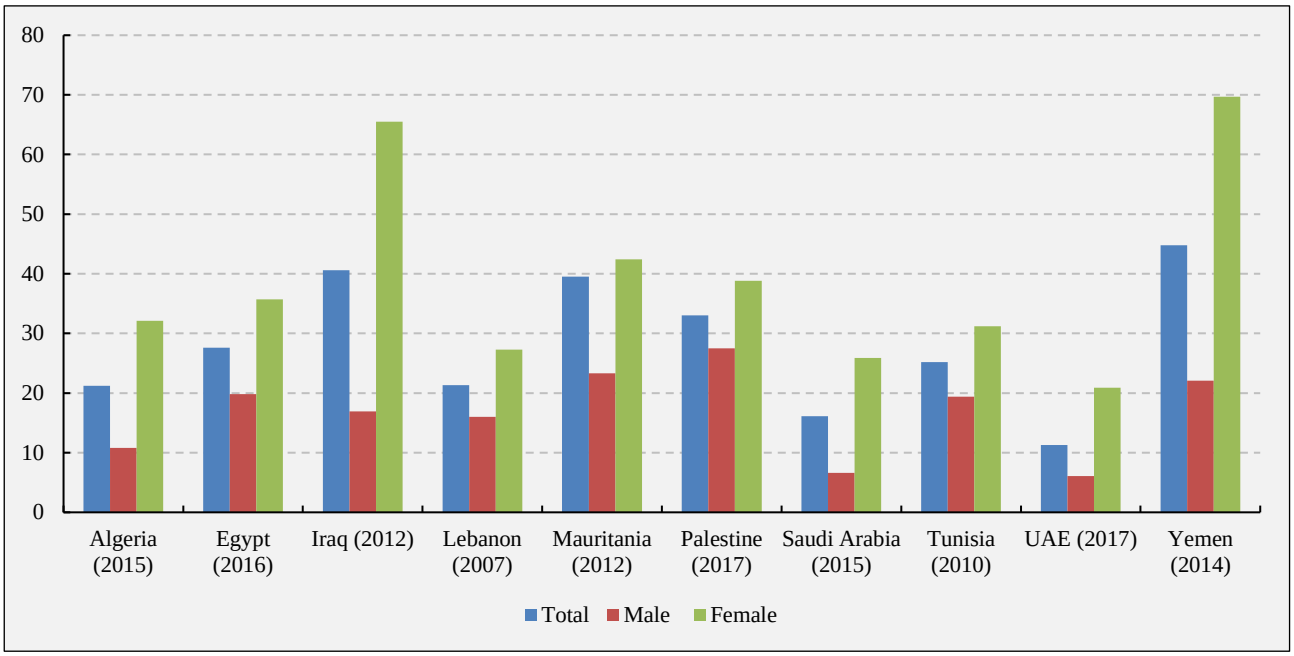
[9] For a more detailed discussion see Momani, 2016.

[10] As discussed in ESCWA, 2012; ESCWA, 2017d; and Momani, 2016.

[11] ILO, 2017d, pp. 21-22.

[12] Ibid., p. 22.

Figure 5. NEET rates (total and by sex), Arab countries (latest available year)



Source: ILO Stat database. Available at https://www.ilo.int/ilostat (accessed on 23 August 2018).

C. STATUS OF WOMEN EMPLOYMENT

In light of the discussion of Arab women entrepreneurship, it is important to look at the relevant indicators that set the background, namely:

(a) The economic sectors (agriculture, industry, services) in which they are employed;
(b) Their status in employment;
(c) Their share of ownership and leadership within established businesses.

Entrepreneurship development is not meant to replicate the existing situation of women's employment as it helps opening opportunities beyond sectors in which (depending on each country's specific situation) they are traditionally employed. However, knowledge of the present situation helps to identify sectors with a good proportion of working women for which targeted policies could be formulated.

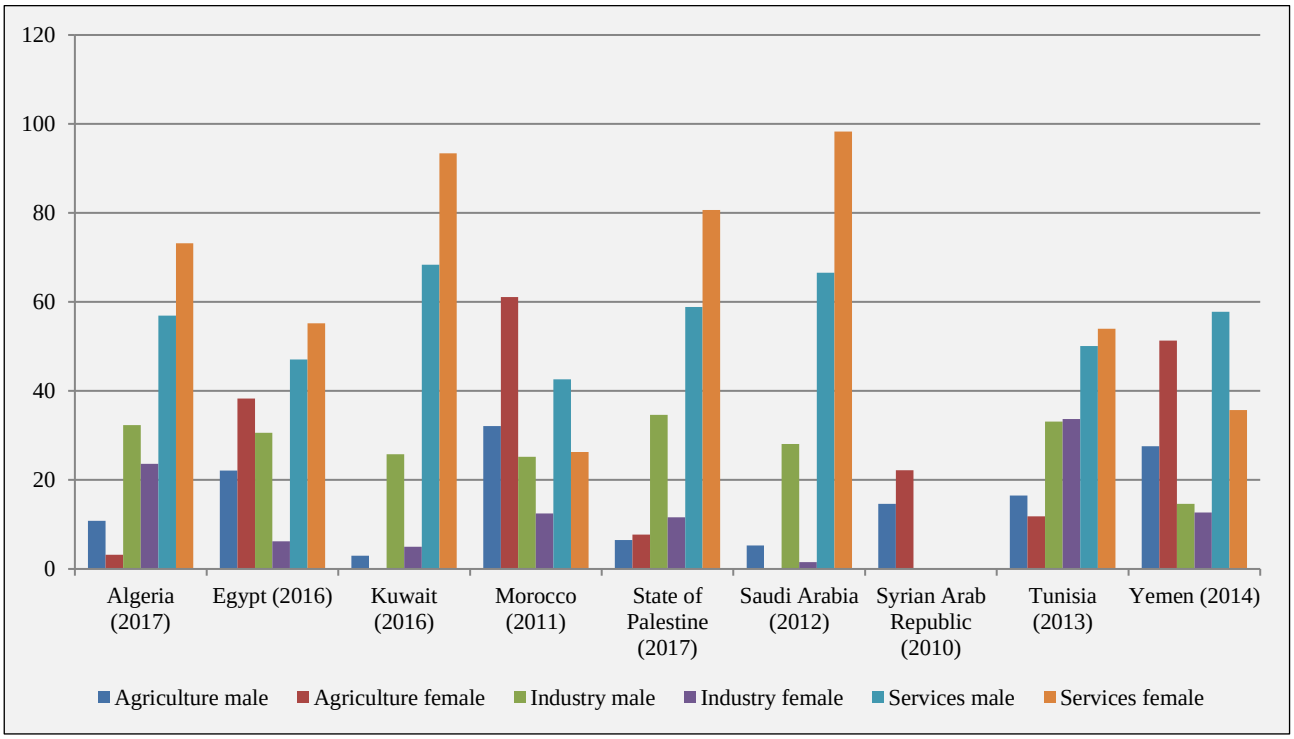
ILO modelled estimates of employment by sector (for year 2017)[13] are not gender-specific, but they provide useful indications on important employment sectors in countries. Agriculture is dominant in only a few Arab countries (Mauritania, Sudan and Yemen)[14] and is significant in others (Egypt, Iraq, Morocco, and Syrian Arab Republic), while in many other Arab countries the services sector is the leading sector with a significant share for industry in some countries like Algeria, the Syrian Arab Republic and Tunisia. Against this backdrop, women's employment in each sector (for Arab countries where data is available see figure 6) seems to enhance the national trend with a significant role for women in agriculture in Egypt, Morocco and Yemen and in services in other countries; women's employment in industry is significant only in Algeria and Tunisia.[15]

[13] ILO estimates are particularly useful when countries' statistics are not always available and help drawing comparisons between countries or group of countries by regional and/or income group.

[14] All three belong to the low-income group.

[15] The data of the Syrian Arab Republic is only available for agriculture.

Figure 6. Male and female's employment per economic sector, Arab countries (latest available year)



Source: ILO Stat database. Available at https://www.ilo.int/ilostat (accessed on 23 August 2018).

The indicator of status in employment can be used to 'answer questions such as what proportion of employed persons in a country (a) work for wages or salaries; (b) run their own enterprises, with or without (own account) hired labour; or (c) work without pay within the family unit?'[16] Interpretation of these percentages is indicative of the status of the economy: 'a high proportion of wage and salaried workers in a country can signify advanced economic development. If, on the other hand, the proportion of own-account workers (self-employed without hired employees) is sizeable, it may be an indication of a large agriculture sector and low growth in the formal economy'. The contributing-family work is particularly common among women and 'where large shares of workers are contributing family workers, there is likely to be poor development, little job growth, widespread poverty and often a large rural economy'. Summing own-account and contributing family workers are indicative of the percentage of vulnerable employment.[17] One should also note that it is among contributing family and to a lesser extent own account status that informality is largely prevalent.

Arab countries' data summarized in table 2 highlights countries where vulnerable employment[18] is significant among women: Yemen has the highest percentage at 67.8 per cent with Morocco at 64 per cent[19] followed by Mauritania (52.1 per cent), the Sudan (46.2 per cent), Libya (43.8 per cent), Jordan (42.9 per cent), the State of Palestine (41.5 per cent), Egypt (31.7 per cent), and Algeria (27.7 per cent) with significant percentages. Own account workers are a stronger component among men (sometimes by large margins) in all

[16] https://www.ilo.org/ilostat-files/Documents/description_STE_EN.pdf.

[17] One should be cautious in the interpretation of the term 'vulnerable' particularly when it concerns 'own account workers' as it includes opportunity entrepreneurs which might not be necessarily at the lower end of income distribution despite the vulnerability of their situation.

[18] Summing own-account and contributing family.

[19] Both have particularly high value for the contributing family workers component.

countries and this could be correlated with lower women entrepreneurship as discussed in chapter III, while contributing family workers have much higher percentages among women than men in many countries with one notable exception (Iraq) where the proportion is reversed.

TABLE 2. MALE AND FEMALE EMPLOYMENT BY STATUS (PERCENTAGE), ARAB COUNTRIES (ILO MODELLED ESTIMATES, 2017)

Country	Employers		Own account workers		Contributing family workers		Employees	
	Male	Female	Male	Female	Male	Female	Male	Female
Algeria	3.4	1.4	26.8	26.2	1.1	1.5	68.7	71.0
Bahrain	1.5	0.5	1.8	0.5	0.3	0.4	96.5	98.7
Egypt	12.6	2.3	12.9	8.4	4.3	23.3	70.2	66.1
Iraq	6.2	1.6	22.9	2.1	9.0	0.3	61.9	96.1
Jordan	7.0	2.3	10.5	14.3	0.4	28.6	82.2	54.9
Kuwait	0.8	0.2	2.4	0.3	0.0	0.0	96.7	99.5
Lebanon	13.8	2.3	25.7	9.8	3.1	5.1	57.5	82.9
Libya	5.8	2.4	26.3	21.9	7.4	21.9	60.5	53.9
Mauritania	3.8	1.5	36.7	42.1	4.8	10.0	54.7	46.4
Morocco	3.7	0.9	33.7	16.5	12.3	47.5	50.3	35.1
State of Palestine	4.8	2.3	33.2	17.7	5.8	23.8	56.3	56.2
Oman	2.3	0.8	8.2	9.6	0.6	0.8	88.9	88.9
Qatar	0.2	0.3	0.2	0.1	0.0	0.0	99.6	99.6
Saudi Arabia	2.2	0.2	3.3	1.2	0.0	0.0	94.6	98.6
Sudan	5.3	2.0	30.4	22.9	8.3	23.3	56.1	51.9
Syrian Arab Republic	4.9	1.0	34.9	7.8	2.3	7.2	58.0	84.0
Tunisia	7.7	2.5	19.8	12.2	2.4	4.5	70.1	80.9
United Arab Emirates	3.1	1.2	0.4	0.2	0.0	0.0	96.6	98.6
Yemen	10.0	4.1	33.5	26.1	9.7	41.7	46.9	28.1

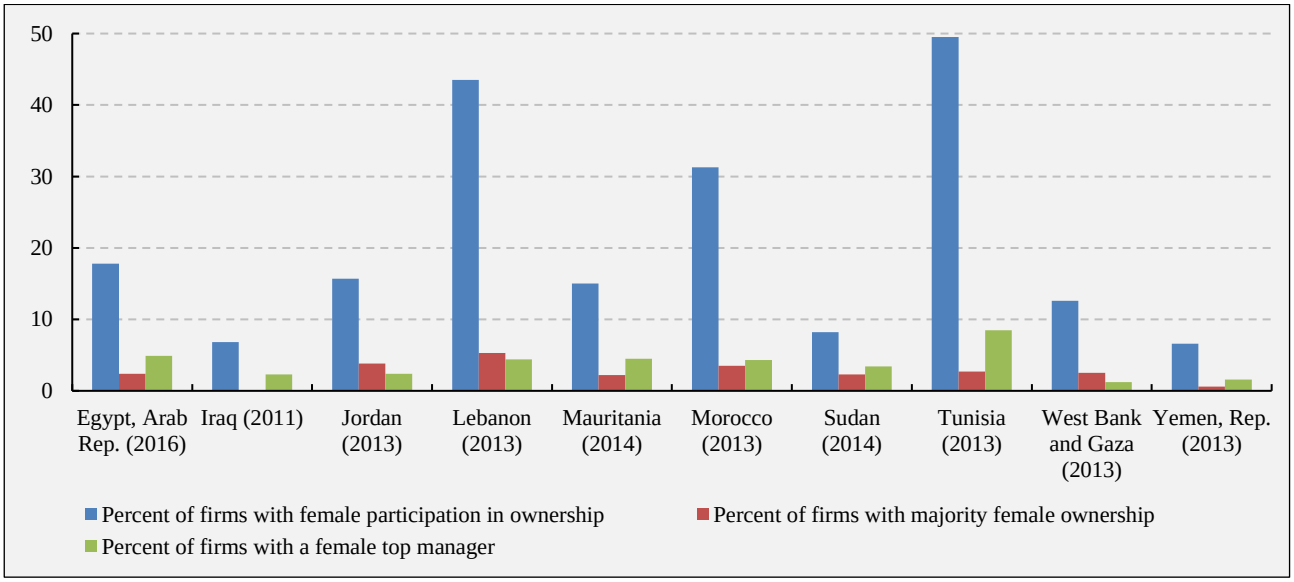
Source: ILO Stat database. Available at https://www.ilo.int/ilostat (accessed on 18 August 2018).

Figure 7 summarizes Arab countries' data from the World Bank Enterprise Survey on issues related to women participation in the ownership and management of established businesses. The data highlights good values for firms with women ownership in Lebanon, Morocco, and Tunisia, but in terms of majority ownership, percentages become much lower in all countries with Lebanon the highest at 5 per cent: this should be compared with a global average of 14.5 per cent and 10.4 per cent in Malaysia with some regional countries like Turkey (0.3 per cent) and Israel (3.1 per cent) faring not much better. Finally, the percentage of firms where a woman holds a top manager position is the highest in Tunisia at 8.5 per cent; the global average is 18.6 per cent, and again Malaysia at 26.3 per cent has a much higher value with Israel and Turkey at respectively 10.3 and 5.4 per cent.

A recent assessment of women's economic empowerment in six Arab countries concluded that 'these countries have among the lowest rates of female entrepreneurship and labour force participation globally, with

large gender gaps. Vis-à-vis men, women are more likely to be in low-paid occupations, whether as employees or entrepreneurs and are less likely to attain leadership positions'.[20]

Figure 7. Women in business ownership and management (latest available year)



Source: Available at http://www.enterprisesurveys.org/data/exploretopics/gender (accessed on 24 August 2018).

A global index assessing human capital in 130 countries with 12 Arab among them[21] has one of its four sub-indexes addressing 'deployment' with four measures of labour force participation, gender employment gap, unemployment and underemployment rates among the population aged 15 and above. Although, globally, no Arab country fares better than the 45th rank (United Arab Emirates) in the index, Arab countries show dismal values and rankings in this deployment sub-index: eight of them rank at below the 115th position with seven from the 121st to the 130th.[22] Only four low-populations GCC among the five scoped (excluding Saudi Arabia) occupy relatively decent positions in this pillar. This speaks volumes as regards the under-utilization of human capital within Arab countries, particularly its youth and women.

[20] OECD, 2017b.

[21] WEF, 2017d.

[22] WEF, 2017d, pp. 8-9.

II. ENABLING ENVIRONMENT: ENTREPRENEURSHIP AND COMPETITIVENESS

Arab countries represent by no means a homogeneous group. Their economic diversity spans a broad spectrum from high-income to upper-middle and lower-middle-income groups as per World Bank sub-division. Their demographic diversity spans from low density to densely populated countries; their social diversity spans different levels of openness and attitudes towards youth and, particularly, women; and their natural resource endowment spans countries still relying on agricultural activities to those relying on mining and extraction.

Throughout the chapter, we rely on indexes built from national statistical data but equally, and no less importantly, on assessments and surveys carried out by international organizations. Although these allow painting a picture of the situation, this picture is far from complete. Lack of data regarding significant portions of economic activity (often relegated to informality) is a common feature affecting most Arab countries, even those belonging to the upper-income group. This issue is central to our subject as, often, youth and women – particularly those who are 'down in the ladder' – heavily populate this informal sector. One objective of leveraging innovation and technology for the benefit of youth and women is to bring them under the light of formal endeavours, thereby reducing the amount of grey and unknown zones.

A. ARAB COUNTRIES COMPETITIVENESS AND ENTREPRENEURSHIP

Shortly after the Arab uprisings of 2011, an International Monetary Fund (IMF) expert noted in her blog that these events "taught us that even rapid economic growth cannot be maintained unless it is inclusive, creates enough jobs for the growing labour force and is accompanied by policies that protect the most vulnerable. And the absence of transparent and fair rules of the game will inevitably undermine the development process".[23] Such a view was compounded by the publication in the same year of a book[24] by a development economist arguing in broader terms that the causes behind nations' wealth (or its absence) are inherently political in the sense that they determine how, and how much, wealth is created and to the benefits of whom. It is revealing that the beginning of this book highlights claims of Arab uprising participants (particularly youth and women) essentially demanding an open political system and society, less corruption and oppression, and better education for enhanced economic prospects for all.

The situation depicted by the IMF expert is characterized by red tape,[25] rigid labour markets[26] and a weak role of the private sector, notably Micro, Small and Medium Enterprises (MSMEs) which are largely relegated to informality. The result is high youth unemployment rates (the highest in the world) which still prevail despite efforts by some Arab governments to address them.[27]

A recent assessment of Arab countries' competitiveness carried out by the World Bank and the World Economic Forum[28] highlighted two major issues that need to be addressed, namely improving their economic diversification away from the natural resources (and associated rent-driven economies) and strengthening the role of the private sector, particularly entrepreneurship and innovative start-ups. Addressing these matters will create opportunities for the youth and the labour force of the future and provide the capabilities needed for the fourth industrial revolution while improving the innovation ecosystem.

---

[23] https://blogs.imf.org/2012/05/10/making-sure-middle-east-growth-is-inclusive/.

[24] Acemoglu, 2012.

[25] A major source feeding nepotism and corruption.

[26] Which fail to "protect" those they are presumed to protect, those people often underemployed, and trapped in low-skills/low-pay situations.

[27] Specific measures still have limited effects as they avoid addressing well-entrenched interests that benefit from the existing socio-economic order.

[28] WEF, 2018.

Improving the prospects of the Arab youth and women in relation to innovation and entrepreneurship requires an understanding of the socio-economic system prevailing in Arab countries (see section 2). The improvement of the key socioeconomic determinants is central to enhance competitiveness and inclusive wealth creation and, consequently, create a better future of Arab youth and women.

Assessing Arab countries' competitiveness through the lenses of the Global Competitiveness Index (GCI) of the World Economic Forum[29] highlights that Arab countries' competitiveness has globally decreased over the last decade.[30] The assessment further identifies three GCI pillars where the countries showed particular weaknesses relative to developed OECD countries, namely innovation, higher education and training, and technological readiness (table 3).

Among the sub-group of resource-poor Arab countries, the macroeconomic environment pillar is equally an issue of concern. This includes government budget balance and debt, inflation, savings, and the country credit rating,[31] which would certainly influence the entrepreneurial climate.

TABLE 3. ARAB COUNTRIES RELATIVE STRENGTH VERSUS OECD COUNTRIES IN GCI PILLARS, 2007 AND 2017

	All countries		Resource rich		Resource poor	
GCI pillar	2007-2008	2017-2018	2007-2008	2017-2018	2007-2008	2017-2018
Institutions	-7.8	-2.8	-5.8	1.4	-12.7	-12.6
Infrastructure	-18.6	-10.4	-15.4	-6.4	-26.0	-19.8
Macroeconomic environment	4.3	-14.1	14.7	-6.9	-19.8	-30.8
Health and primary education	-9.1	-7.4	-8.0	-5.5	-11.6	-11.9
Higher education and training	-22.1	-18.9	-21.1	-15.0	-24.6	-27.9
Goods market efficiency	-11.5	-6.6	-9.9	-4.6	-15.3	-11.1
Labour market efficiency	-10.6	-14.4	-5.6	-10.7	-22.2	-22.8
Financial market development	-16.5	-10.4	-13.4	-8.8	-23.7	-14.0
Technological readiness	-28.8	-20.6	-25.4	-15.4	-36.7	-32.6
Market size	-21.4	-5.9	-24.0	-5.1	-15.4	-7.8
Business sophistication	-16.0	-13.3	-14.9	-11.3	-18.7	-18.0
Innovation	-25.5	-21.9	-25.4	-18.8	-25.9	-29.0

Source: Compiled by ESCWA based on WEF, 2018, p. 6.

Notes: All values are *percentages* relative to the reference OECD countries group with (-) sign indicating that value is lower. 'All countries' represents a *constant sample* of 10 Arab countries (the six GCC plus Algeria, Egypt, Jordan and Morocco), 'resource poor' represents the latter three, while 'resource rich' represents GCC and Algeria.

[29] The Global Competitiveness Index (GCI) is a yearly flagship publication of the WEF since the seventies of the last century; its last edition is (WEF, 2017c). This index is built from 114 indicators organized under 12 pillars to assess countries' competitiveness. Among those indicators, 82 (72 per cent) are drawn from the *executive business survey* carried out in each country. This is a useful tool particularly in the absence of hard data statistics on many complex issues (sometimes both in developed and developing countries alike). However, exclusive use of the business community point of view and seeking opinion on issues as complex as the 'quality of education system' or 'technological readiness' or 'technology transfer' leads to results that must be considered with caution. In our discussion of the issues raised by this comparison we try to complement, whenever possible, with other measures based on statistical indicators to highlight specific issues faced by Arab countries.

[30] Arab countries offer a contrasting picture. All outside of the GCC have lower GCI scores over the last decade and some countries under or emerging from conflict like Iraq, Libya, the Syrian Arab Republic and Yemen were removed from the comparison. Among GCC countries, only Bahrain, Oman, and the United Arab Emirates significantly improved their score (the three combined represent barely 5 per cent of total Arab countries' population).

[31] As an exception to the GCI rule, none of the 5 indicators making this pillar is a survey indicator.

B. Innovation and technological readiness

Innovation and technological readiness are closely related. The situation in Arab countries indicates that, despite relatively good infrastructure development and good levels of spending on education, the region essentially lags in terms of innovation outputs and the effective use of technologies in their production systems. More troubling, however, is that the Global Innovation Index (GII) shows that the situation in Arab countries (including GCC countries) seems to have deteriorated over recent years (table 4).[32]

Table 4. Global Innovation Index evolution, Arab countries, 2011 and 2018

Country	GII 2018		GII 2011		Delta 2018-2011	
	Value	Rank	Value	Rank	Value	Rank
United Arab Emirates	42.58	38	41.99	34	1.39 per cent	-4
Qatar	36.56	51	47.74	26	-30.58 per cent	-25
Kuwait	34.43	60	36.64	52	-6.42 per cent	-8
Saudi Arabia	34.27	61	36.44	54	-6.33 per cent	-7
Tunisia	32.86	66	33.89	66	-3.13 per cent	0
Oman	32.80	69	35.51	57	-8.26 per cent	-12
Bahrain	31.73	72	37.80	46	-19.13 per cent	-26
Morocco	31.09	76	28.73	94	7.59 per cent	+28
Jordan	30.77	79	38.43	41	-24.89 per cent	-38
Lebanon	28.22	90	37.11	49	-31.50 per cent	-41
Egypt	27.16	95	29.21	87	-7.55 per cent	-8
Algeria	23.87	110	19.79	125	17.09 per cent	+15
Yemen	15.04	126	20.72	123	-37.77 per cent	-3

Source: Compiled by ESCWA based on INSEAD, 2018a and 2011.

Despite the central importance of entrepreneurship, spending on research and development remains weak in Arab countries, particularly within the production sector. The region is also characterized by a weak link between its education, research centres (where essential research takes place) and its production system. Despite efforts of some Arab governments to encourage innovative start-ups, the business climate (see below) does not encourage innovation among entrepreneurs.

As gauged by the GCI, technological readiness includes four indicators related to the development of digital technologies[33] and three other survey questions on the availability of the latest technologies, firm-level technology adoption, and the impact of Foreign Direct Investment (FDI) on technology transfer. As one might observe, digital technologies play an important role in this assessment.[34] In table 6, the digital status of the Arab countries is summarised based on the Networked Readiness Index (NRI).[35]

[32] The GII is dedicated to innovation measurement, based on 80, mostly statistical indicators. This is a better measure of the innovation landscape in Arab countries than the seven indicators of the GCI innovation pillar (six of which are survey indicators) and highlights detailed issues, such as the innovation ecosystem in Arab countries. More information is available at http://globalinnovationindex.org.

[33] These are: Internet users, Fixed and Mobile Broadband subscriptions (percentage population), and available international bandwidth per Internet user.

[34] ESCWA, 2017c, provide a detailed review of the Arab Digital Economy.

[35] Launched in 2001 by the WEF, the NRI is based on 53 indicators related with digital technologies enabling environment, deployment, use and impact. Half of its indicators are drawn from the afore-mentioned Executive Business Survey, but the second half is borrowed from other organizations (essentially data indicators).

Table 5 shows that the business and innovation environment (outside of the GCC), business use, and economic impact are below expectation moving towards weakness within a significant number of Arab countries. The bright spots in the assessment are in infrastructure, with a few exceptions, it is considered decent to excellent. The same is found in individual skills.

TABLE 5. NETWORKED READINESS INDEX (GLOBAL AND PER PILLAR RANK), ARAB COUNTRIES, 2016 (139 COUNTRIES SURVEYED)

Country	Environment		Readiness			Usage			Impact	
	Political and regulatory	Business and innovation	Infrastructure	Affordability	Skills	Individual	Business	Government	Economic	Social
United Arab Emirates (26)	**25**	**13**	28	*116*	22	**19**	27	**2**	26	**2**
Qatar (27)	**18**	**15**	29	*120*	**5**	**23**	25	**5**	28	**10**
Bahrain (28)	36	**26**	31	40	31	**14**	37	**3**	*48*	**13**
Saudi Arabia (33)	29	**25**	36	*101*	49	**21**	42	**11**	40	36
Oman (52)	53	58	46	*96*	76	**39**	*94*	**34**	*95*	46
Jordan (60)	**39**	**38**	*92*	*94*	59	*70*	**41**	**47**	61	53
Kuwait (61)	63	72	**30**	*89*	77	**32**	72	81	*102*	*84*
Morocco (78)	70	87	*102*	**20**	*110*	67	*105*	**41**	*110*	59
Tunisia (81)	*90*	*112*	82	**24**	85	78	*107*	**55**	*93*	78
Lebanon (88)	*126*	**49**	*77*	*109*	**55**	**46**	*97*	*124*	83	*114*
Egypt (96)	*102*	*113*	97	**47**	*111*	**80**	*129*	**67**	**58**	*103*
Algeria (117)	123	*133*	**80**	99	89	103	*133*	*130*	124	*132*
Mauritania (136)	135	135	136	118	138	118	135	134	116	134

Source: Compiled by ESCWA based on WEF, 2016.

Notes: Weak points in Arab countries are printed in bold, while strong points are printed in italic.

The realisation of new innovation approaches, such as social, inclusive, frugal and grassroots innovation is still nascent in the region. Social innovation, for example, is an approach that focuses on generating novel solutions or systems to fulfil a specific social need that delivers new products and services better than the existing ones. It is a vital factor among the solutions addressing SDG's as they work on existing social, cultural, environmental, and economic challenges for the good of the community and environment. At core, social innovation builds on and develops social values, social cohesion and integration.[36]

Data and measurement of social innovation aim to gauge the extent of its prevalence in countries as well as the way it is encouraged and enabled. The Regional Social Innovation Index (RESINDEX) was developed as a research project by SINNERGIAK Social Innovation (UPV/EHU). The purpose is to build dimensions and indicators that form the index and can be used for the assessment of social innovation. The index distinguishes between the potential and realized capacity for innovation with a focus on assessment of social innovation at the organizational level. The pilot study conducted in the Basque Country (2013) showed a significant gap between potential and realized social innovations. The social innovation index 2016 included 45 countries assessed across four pillars, namely policy and institutional framework, financing, civil society and entrepreneurship. The United States of America scored the highest in 2016, while South Korea (12th overall) was the leader in the Asia-Pacific region. From the Arab region, the 2016 assessment included

[36] ESCWA, 2017f.

only Saudi Arabia with an overall ranking of 43rd. The country ranked low in three of the pillars, namely policy and institutional framework (45th), financing (41st) and civil society (29th). Nonetheless, it ranked 7th in terms of its entrepreneurship potential.[37]

C. Higher education and training

The GCI pillar addressing this issue includes two well-known data indicators, namely the percentage of students enrolled in secondary and tertiary education provided by UNESCO. However, the pillar also considers seven other indicators whereby the business community judges the quality of the education system and staff training beyond school age.

Table 6. GTCI and selected indicators, Arab countries, 2017 (119 countries surveyed)

Country	GTCI Global Score and Rank	Reading, maths, and science *(Median score, rank)*	Vocational enrolment *(Percentage)*	Relevance of education system to the economy (1-7)	Skills matching with secondary education (1-7)	Skills matching with tertiary education (1-7)	Brain retention (1-7)	Brain gain (1-7)
United Arab Emirates	68.88 (17)	432.6 (46)	NA	5.32	4.78	5.42	5.60	6.08
Qatar	61.90 (23)	407.3 (58)	0.70	5.59	5.69	5.92	5.54	5.76
Bahrain	50.16 (38)	NA	7.21	4.64	4.24	5.19	4.43	4.57
Saudi Arabia	49.61 (41)	NA	5.39	4.18	3.58	4.37	4.73	4.72
Jordan	44.70 (50)	399.0 (60)	3.77	4.58	4.06	4.77	3.69	3.52
Oman	43.93 (56)	NA	0.04	3.57	3.52	4.25	4.17	4.26
Lebanon	41.91 (60)	376.4 (64)	15.67	5.10	4.16	5.21	2.82	2.57
Kuwait	40.85 (65)	NA	2.54	3.38	2.97	3.69	3.30	3.12
Tunisia	36.40 (83)	371.4 (65)	6.15	3.10	3.14	3.69	2.79	2.27
Morocco	31.86 (98)	NA	6.09	2.81	3.20	3.79	3.20	3.37
Algeria	29.45 (101)	361.7 (67)	8.33	3.39	2.74	3.99	2.67	2.24
Egypt	28.42 (104)	NA	21.04	2.14	NA	NA	2.94	2.70
Yemen	16.10 (119)	NA	0.66	2.00	2.16	2.95	1.92	2.04

Source: Compiled by ESCWA based on INSEAD, 2018b.

Note: The ranking in reading, math and science is for countries (total 68) that participated in the latest (2015) PISA test.

[37] Unceta and others, 2016; Kondo, 2016.

The Global Talent Competitiveness Index (GTCI) provides a detailed assessment of the broader issue of talent development and talent retention in countries (table 6).[38]

One might note that only Jordan and Lebanon obtained a good global score alongside some GCC countries. The low scores of Algeria, populous Egypt and Morocco are a source of concern. About the quality of the school education system gauged through the OECD PISA test,[39] only six Arab countries participated in it and received low scores even among their best-in-class. Relevance of the education system to the economy is judged relatively well with some notable low scores, like in Egypt. The majority of non-GCC countries face difficulties to retain their talent or attract others. One should finally note that only Egypt and Lebanon have significant vocational enrolment rates.

D. Doing business

The business climate in most Arab countries is characterized by a dominance of state-owned and/or well-connected large private sector companies benefiting from good political connections and a rent/monopoly situation. The majority of Arab MSMEs are relegated to the informal sector, as they are not encouraged, and some (particularly among the micro and small) are even afraid of entering formality. Despite focused initiatives to support start-up innovators, the overall business climate in Arab countries is challenging as summarized by the Doing Business Index (DBI) of the World Bank (table 8). The global ranking of Arab countries and their Distance-to-Frontier (DTF)[40] score, as well as five index pillars that have an impact on entrepreneurship, are summarized in table 7.

It is striking that, among the 190 countries surveyed by DBI, 13 of the 19 Arab countries listed on the table (including two GCC) fall in the lower half of the table with only one country (United Arab Emirates) within the first quintile. Getting credit is by far the most problematic issue in Arab countries with only the State of Palestine not included in the second half (if not the last quintile) of the table. This reflects a well-documented situation where credit in Arab countries is not properly channelled to the productive sector, as MSMEs lack strong insider connections. Another less problematic issue is resolving insolvency, which is particularly critical for innovative start-ups and acts as a strong deterrent: an indebted entrepreneur caught in insolvency might simply end up in prison in most Arab countries.

Starting a business is good only in Morocco, Oman and Mauritania and the regional leader, the United Arab Emirates; notably, there are also good levels of protection for minority investors in Saudi Arabia and the United Arab Emirates. Finally, trading across borders is only good in Jordan and the State of Palestine, and this is once again an important deterrent for Arab entrepreneurs wishing to distribute their goods and services in other countries, particularly fellow Arab countries.[41]

[38] The GTCI provides a holistic vision as regards the capability of countries to enable, grow, attract and retain skills with additional focus on Vocational and Technical (TVET) and Global Knowledge skills. It is based on 67 Indicators; some of them are borrowed from the WEF Business Survey though not used in the GCI index such as brain retention and gain.

[39] The Program for International Student Assessment (PISA) is a triennial global test organized by OECD but open to non-OECD countries. Available at http://www.oecd.org/pisa. It assesses each participating country students' (aged 15) skills in reading, mathematics and science with rotating focus on each area.

[40] DTF is a percentage relative to the best-in-class country score globally or under the given pillar.

[41] In this discussion the remaining five pillars are not mentioned, but enforcing contracts is no less a problem in the remaining registering property, getting electricity, dealing with construction permits and paying taxes; only in the latter is Arab countries' average significantly above the median line.

TABLE 7. DOING BUSINESS INDEX: GLOBAL SCORE AND SELECTED PILLARS, ARAB COUNTRIES, 2018

Country	Global DBI score		Starting a business		Getting credit		Protecting minority investors		Trading across borders		Resolving insolvency	
	Rank	DTF	Rank	DTF	Rank	DTF	Rank	DTF	Rank	DTF	Rank	DTF
United Arab Emirates	21	78.73	51	91.16	90	50	10	75.00	91	71.50	69	49.80
Bahrain	66	68.13	75	87.87	105	45	108	50.00	78	75.97	90	44.42
Morocco	69	67.91	35	92.46	105	45	62	58.33	65	81.12	134	34.03
Oman	71	67.20	31	92.85	133	35	124	46.67	72	79.39	98	42.40
Qatar	83	64.86	89	86.00	133	35	177	26.67	90	71.51	116	38.41
Tunisia	88	63.58	100	85.02	105	45	119	48.33	96	70.50	63	54.53
Saudi Arabia	92	62.50	135	80.04	90	50	10	75.00	161	49.59	168	0
Kuwait	96	61.23	149	77.21	133	35	81	55.00	154	54.24	110	39.44
Jordan	103	60.58	105	84.4	159	25	146	40.00	53	85.93	146	30.53
State of Palestine	114	58.68	169	69.59	20	80	160	38.33	49	86.67	168	0
Egypt	128	56.22	103	84.53	90	50	81	55.00	170	42.23	115	38.89
Lebanon	133	54.67	143	78.17	122	40	138	41.67	140	59.71	147	29.42
Mauritania	150	50.88	43	91.80	159	25	108	50.00	138	60.30	168	0
Algeria	166	46.71	145	77.54	177	10	170	33.33	181	24.15	71	49.24
Iraq	168	44.87	154	75.87	186	0	124	46.67	179	25.33	168	0
Sudan	170	44.46	159	73.51	173	15	186	23.33	185	19.16	154	26.39
Syrian Arab Republic	174	41.55	133	80.43	173	15	89	53.33	176	29.83	163	21.44
Libya	185	33.21	167	71.72	186	0	183	25.00	118	64.66	168	0
Yemen	186	33.00	163	72.68	186	0	132	43.33	189	0	156	26.14

Source: Compiled by ESCWA based on World Bank, 2017.

Note: 190 countries were surveyed.

Table 8 revisits Arab countries' situation in the Doing Business Index focusing on their evolution since the Arab uprisings of 2011 for the index and three selected pillars. Arab countries are classified according to the global income group they belong to; the median rank and standard deviation of the global income group are shown for reference.

Only Morocco and the United Arab Emirates showed significant improvement over the period and are best in class among Arab countries while being significantly above the median of their respective income groups. Except for Jordan and Tunisia, all Arab countries are above the median rank of their group, and even median plus standard deviation. One should note a significant regression over the period for Saudi Arabia, all upper-middle group countries, and particularly the Syrian Arab Republic and Yemen due to conflict.

TABLE 8. DOING BUSINESS AND SELECTED PILLARS: ARAB COUNTRIES' EVOLUTION, 2011-2018

Country	2011 DTF	2014 DTF	2018 DTF	2018 Rank	Delta DTF 2011-2018 (*Percentage*)	Getting credit 2014-2018 (*Percentage*)	Resolving insolvency 2011-2018 (*Percentage*)	Starting a business 2011-2018 (*Percentage*)
High-income countries		**Global income group median rank is 33 Standard. deviation is 37**						
Bahrain	66.26	67.31	68.13	66	2.82	28.57	4.37	15.76
Kuwait	59.40	60.67	61.23	96	3.08	0.00	18.83	14.40
Oman	65.06	68.11	67.20	71	3.29	0.00	12.89	31.78
Qatar	64.48	67.82	64.86	83	0.59	16.67	26.27	9.60
Saudi Arabia	68.00	68.09	62.50	92	-8.09	0.00	NS	9.82
United Arab Emirates	70.91	75.22	78.73	21	11.03	25.00	62.37	9.02
Upper-middle income countries		**Global income group median rank is 87 Standard deviation is 47**						
Algeria	48.80	49.19	46.71	166	-4.28	0.00	-10.01	6.69
Iraq	46.57	48.57	44.87	168	-3.65	0.00	NS	6.69
Lebanon	61.33	61.95	54.67	133	-10.86	0.00	-11.25	5.39
Libya		35.43	33.21	185	-4.71	0.00	NS	0.50
Lower-middle income countries		**Global income group median rank is 115 Standard deviation is 42**						
Egypt	57.33	59.45	56.22	128	-1.94	0.00	107.19	-0.04
Jordan	57.13	57.98	60.58	103	6.04	25.00	5.42	1.53
Mauritania	42.78	46.23	50.88	150	18.93	150.00	NS	77.94
Morocco	59.85	64.17	67.91	69	13.47	12.50	13.09	7.14
State of Palestine	49.58	52.88	58.68	114	18.35	128.57	NS	65.85
Sudan	48.95	51.05	44.46	170	-9.17	0.00	-18.47	3.70
Syrian Arab Republic	50.64	46.41	41.55	174	-17.95	0.00	-27.47	33.56
Tunisia	67.32	67.85	63.58	88	-5.56	28.57	-2.08	0.05
Yemen	56.66	56.00	33.00	186	-41.76	0.00	-0.27	-7.57

Source: Compiled by ESCWA from http://www.doingbusiness.org (accessed on 10 September 2018).

Notes: Getting Credit comparison is with year 2014 due to methodology change in computing its value by the World Bank; Libya's comparisons are only for the period of 2013-2018 as the country was not scoped in earlier editions.

Global improvement is noticeable in the run-up to the start of a business, indicating increased awareness among governments in the region as regards the importance of entrepreneurship at large. However, except for four GCC countries (except Kuwait and Saudi Arabia), Mauritania and Morocco, all Arab countries rank above 100 for this pillar. This liberalization of the regulatory environment, while definitely diminishing 'many rent-seeking advantages granted to crony capitalists' in the region, has yet to materialize effectively: as a matter of fact, 'while many Arab states have reformed laws on paper, they still struggle when it comes to enforcement, deterring real change'.[42]

[42] Momani, 2017, pp. 6-7.

Of concern for entrepreneurs is getting credit which has dramatically stalled over the period, except for Mauritania and the State of Palestine. Only Egypt and the United Arab Emirates managed to stand slightly above the hundredth rank with many Arab countries at the bottom of the table. This is an indication that, despite regulations enacted in some countries in favour of financing SMEs and innovative start-ups,[43] and certain dynamism in innovative start-up early-stage funding in a handful of Arab countries,[44] funding entrepreneurship at large is still problematic in most countries. It is noted that for the most populous Arab country, "there is a heavier emphasis on funding high-tech entrepreneurial ventures in Egypt and less interest in sectors such as manufacturing and agriculture. Similarly, financing in the region tends to focus on supporting technology firms, specifically in the areas of information and communications".[45]

Finally, on resolving insolvency, five Arab countries have no known practice (they, therefore, are at the bottom of the ranking); improvement can be noted in Egypt though from a very low base in 2011 with the country still ranking 115th globally with only five Arab countries ranking above a 100, while there is a strong Arab presence at the bottom of the pillar on getting credit. This again points to a critical factor for entrepreneurs in the region: not only do they lack access to proper financing but, in case of bankruptcy, they might possibly end up in prison if indebted. No doubt that this constitutes a major hindrance, irrespective if they are innovative or not, and are equally a big 'incentive' particularly for small entrepreneurs to stay in informality.

E. Entrepreneurship ecosystems in the Arab region

The GEM expert panel in each country assesses nine framework conditions[46] needed to support (or, their ineffectiveness, might hinder) entrepreneurship (chapter III). Figure 8 summarizes Arab countries average scores for each framework condition compared with advanced OECD countries' average. Values are also highlighted for GCC (Qatar, Saudi Arabia, and United Arab Emirates) and non-GCC (Egypt, Lebanon, and Morocco) countries.

The figure highlights the weaknesses of Arab countries in government programmes aimed at supporting entrepreneurship, particularly among non-GCC. Research and Development transfer and financing for entrepreneurs also seem to be problematic in the region compared to developed economies. As noted by the GEM report, 'among individual economies, a few are notable for high ratings across most components of the entrepreneurial framework conditions'. Among Arab countries only the United Arab Emirates has high rating conditions in four out of 12 framework conditions. On the opposite side, Egypt and Morocco are among the group of countries that 'need to address as many as 4-7 of the twelve' framework conditions. The GEM report draws attention to "that even with the most accommodating context, it may take time until the full impact of the ecosystem becomes apparent".[47]

[43] Two notable examples are circular 331 of 'Banque du Liban' (central bank) enacted in 2013 to encourage the Bank's financing of innovative start-ups and Egypt's recent announcement in 2016 that, by 2020, 20 per cent of Bank loans should be channelled to finance SMEs. At the time of writing, the former measure seems to have had a tangible impact on the innovative start-up financing ecosystem in Lebanon (see ESCWA, 2018d).

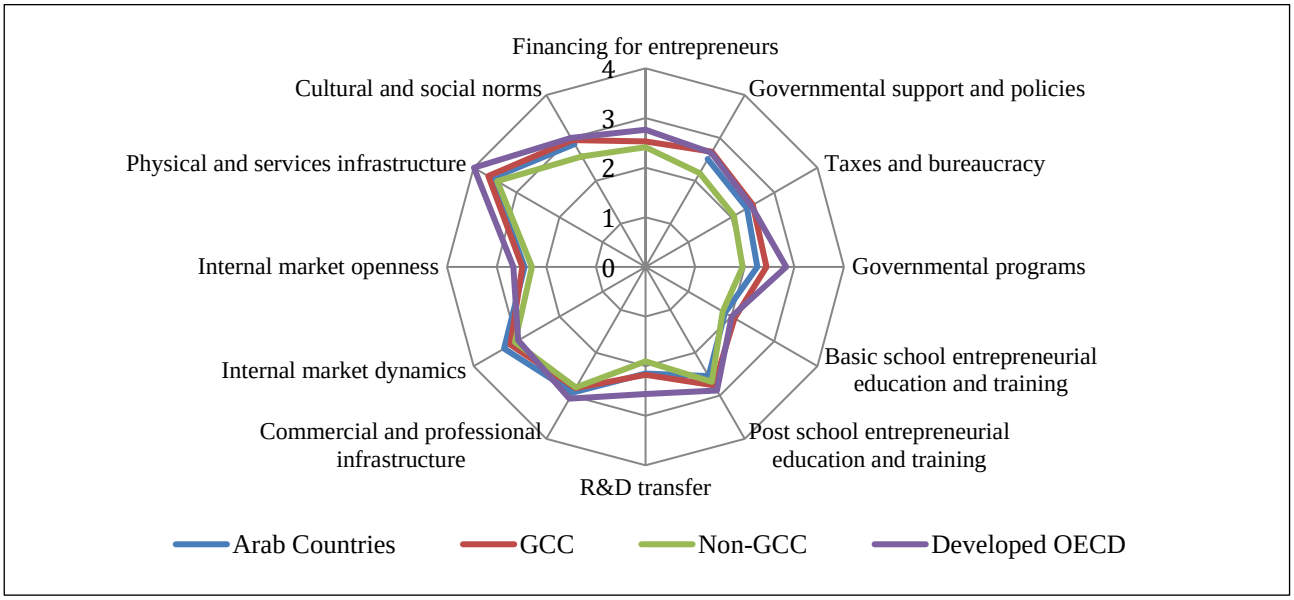
[44] Essentially Jordan, Lebanon and the United Arab Emirates, and to a lesser extent due to their respective economic and demographic weight, Egypt and Saudi Arabia (see ESCWA, 2018d).

[45] Momani, 2017, p. 8.

[46] The GEM report states that each framework condition is noted on a scale from 1 (highly insufficient) to 9 (highly sufficient); however, most countries (even the most advanced) obtain scores no higher than slightly above 4 and only for some few conditions! We are unable to draw conclusions if this indicates poor framework conditions at global scale or a badly conceived scale. To the very least, if only to ease comparability among countries or group of countries, it would be useful to re-normalize the scores to the full 1-9 scale.

[47] GEM, 2017a, p. 27.

Figure 8. Entrepreneurship framework conditions, Arab versus developed OECD countries, 2017



Source: Compiled by ESCWA from https://www.gemconsortium.org/data/key-nes (accessed on 22 August 2018).

Note: For consistency, only the six Arab countries with 2017 data were considered.

TABLE 9. GLOBAL ENTREPRENEURSHIP INDEX SCORES AND RANKINGS FOR ARAB COUNTRIES, 2016-2018

Country	2018 rank	2018 score	2017 rank	2017 score	2016 rank	2016 score
Bahrain	35	45.1	34	44.68	29	52.4
Egypt	76	25.9	81	22.74	89	27.3
Jordan	49	36.5	56	31.70	64	33.5
Kuwait	39	42.8	39	42.47	39	45.6
Lebanon	59	31.5	63	28.81	50	39.9
Libya	104	18.9	104	19.20	79	28.9
Mauritania	136	10.9	134	11.56	129	13.2
Morocco	65	29.2	70	25.68	78	29.5
Oman	33	46.9	37	43.60	38	45.9
Qatar	22	55	21	57.95	24	56.7
Saudi Arabia	45	40.2	30	47.16	36	47.8
Tunisia	40	42.4	42	40.53	62	34.4
United Arab Emirates	26	53.5	19	58.80	19	61.4

Source: Compiled by ESCWA from https://thegedi.org/global-entrepreneurship-and-development-index/.

The Global Entrepreneurship Index measures the health of entrepreneurship ecosystems in 137 countries, including 13 Arab countries, providing another viewpoint on entrepreneurship in the Arab region. The Arab countries included in the index are Bahrain, Egypt, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Tunisia and the United Arab Emirates. Data is collected on entrepreneurial attitudes, abilities and aspirations of the local population, which is then weighed against the social and economic infrastructure. The index shows that between 2016 and 2018 the regional score shifted from 39.7 in 2016 to 36.8 in 2018. Between 2016 and 2017, all Arab countries, except Qatar and Tunisia,

showed reduced scores. Between 2017 and 2018 most of the countries increased their scores. However, Libya and Mauritania, Saudi Arabia, and the United Arab Emirates further reduced scores, and Qatar also reduced its score. Only Tunisia showed steady increases between 2016 and 2018 (table 9).[48]

For any entrepreneurship ecosystem to thrive and develop within a given country, framework conditions as discussed above are necessary but not enough (box 1). Entrepreneurship needs actors drawn mostly from innovative start-ups that start as small or micro-enterprises.

Box 1. Entrepreneurship ecosystem stakeholder perspectives from Lebanon, Morocco and Oman

In 2017, ESCWA conducted a study on the entrepreneurship ecosystem in the Arab region. As part of the study focus group, discussions were conducted in three countries: Lebanon, Morocco and Oman. The focus groups included stakeholders from entrepreneurs, investors, universities and public authorities.

The objectives of the focus group discussions were to:

- Gain a better understanding of the legal and regulatory environment for entrepreneurship;
- Gain insight into the real-life experience with the entrepreneurial ecosystem;
- Better understanding of the conditions of the entrepreneurial ecosystem, specifically the support given to entrepreneurs, particularly venture capitalists;
- Provide new perspectives on the challenges Arab entrepreneurs face.

The discussion focused on four elements related to the entrepreneurship ecosystem, namely access to finance, access to talent, ease of launching, maintaining and closing a business, and relationship with public authorities. The table below presents a summary of the outcome of the focus group discussions held in the three countries.

Summary of the outcome of the focus group discussion by country and stakeholder

Stakeholder	Lebanon	Morocco	Oman
Entrepreneurs	• Changing the risk-averse attitudes of VCs; • Modernising VC models to become more adaptive to start-up needs; • Promoting a spirit of entrepreneurship among the youth; • Promoting mentorship; • Addressing infrastructural barriers (water, electricity, telecom and transport); • Diversifying sector-orientated ecosystem support mechanisms, giving more support to social initiatives not only to tech; • Updating laws and regulations to reflect the current reality and needs of start-ups; • Promoting public-private partnerships.	• Facilitating government procedures to reduce bureaucracy and restrictions on starting, maintaining and closing a business; • Allocating more funding for research and development; • Strengthening support structures to access competent and talented human capital; • Enhancing the uptake/absorption of start-ups in the market (industry-start-up collaboration).	• Reducing restrictions on the mobility of human capital, especially for hiring and registering talent; • Enhancing intellectual property protection laws and regulations; • Facilitating access to finance for start-ups from government agencies, reducing payment delays and bureaucratic procedures.

[48] Global Entrepreneurship and Development Institute, 2017; Global Entrepreneurship and Development Institute, 2016; Acs, Z.J. and others, 2016.

Stakeholder	Lebanon	Morocco	Oman
Investors	• Establishing more seed-orientated VC funds; • Promoting regulations for the establishment of SAS, which are more beneficial to entrepreneurs than traditional SARLs or SALs; • Increasing access to low-cost services and support mechanisms such as ICT, networking and coding; • Establishing bankruptcy laws; • Promoting more hardware-orientated facilities and services (for example fab labs and prototyping labs); • Enhancing IP laws and regulations, specifically more protection for entrepreneurs; • Engaging the Lebanese Diaspora more; • Connecting with other regional entrepreneurial ecosystems to bridge the networking gap; • Lobbying for the establishment of a Ministry of Innovation; • Streamlining company creation and registration procedures.	• Establishing a "City of Innovation" to follow up on research and development (for example possible patents); • Enhancing Strengthening inter-agency coordination at the ministerial level (for example between the Ministry of Industry and the Ministry of Economy and Finance).	• Enhancing bureaucratic procedures to facilitate company registration and overall ease of doing business; • Reducing/eliminating sanctions on start-ups, especially concerning acquiring and retaining talent (enhancing mobility of human capital); • Enhancing bankruptcy laws; • Promoting a national agenda for innovation and entrepreneurship; • Introducing key performance indicators to enhance accountability, especially among government authorities.
Universities	• Encouraging entrepreneurship at school and university level; • Mainstreaming a culture of failure among the youth to reduce its stigma and societal pressure on entrepreneurs; • Protecting the intellectual property of student and faculty entrepreneurs.	• Promoting mechanisms for technology transfer; • Facilitating the procedures for university staff to establish spin-off companies and/or start-ups; • Promoting student entrepreneurship by granting students entrepreneurial-academic status (for example Statut Etudiant Entrepreneur).	• Promoting research and development and access to finance from government agencies; • Opening to collaboration from other Arab countries to promote shared research and development interests.

Stakeholder	Lebanon	Morocco	Oman
Public authorities	• Amending intellectual property rights laws and regulations; • Promoting a reforms package for SMEs by the Ministry of Economy and Trade (bankruptcy laws, codes of commerce, amendments to Investment law 360, insolvency laws, e-payment); • Increasing coordination among governmental authorities to reduce duplication of efforts to further meet entrepreneurs' needs; • Preparing and training lawyers on the specificities of the entrepreneurial ecosystem, especially with VCs; • Raising awareness among upcoming lawyers about entrepreneurship – collaboration with the Beirut Bar Association; • Establishing a recommendation committee within a government unit responsible for innovation, technology and entrepreneurship.	• Promoting the participation of large corporations in the entrepreneurial ecosystem – integrate more innovation and entrepreneurship in company strategies; • Reducing the risk-averse attitude of investors to promote deal flow; • Enhancing public-private partnerships and strategies; • Setting up a technology transfer law; • Supporting doctoral students in their pursuits of entrepreneurship ventures – facilitate regulations; • Promoting practical and hands-on work experience for prospective student entrepreneur.	• Reducing government restrictions, strict regulations, and institutional (bureaucratic) barriers; • Fighting corruption and conflict of interest at the level of the government, and some private sector entities.

Source: ESCWA, 2018d.

The global underlying conditions prevalent in most Arab countries (with limitations due to lack of reliable statistics) indicate that SMEs represent the majority of companies' categories in the region (about 80-90 per cent) but only account for 30 per cent of private-sector employment and 4 to 16 per cent of total employment (total public and private sector combined).[49] These low contributions are largely due to informality in which most Arab SMEs are relegated. A recent assessment of informal employment outside agriculture in 13 Arab countries, most of which are outside the GCC, reveals that it is above 50 per cent for both total and women categories (except for Algeria and Tunisia) reaching values up to 80 per cent in Mauritania and Yemen.[50] Evidence has been established that informality is often associated with low, if any, innovation, and low-pay/low-skill employment for the vast majority of employed people.

[49] World Bank, 2012, pp. 5-6.

[50] ESCWA, 2018c.

Finally, as regards ecosystem support for innovative start-ups in the Arab region, recent studies[51] reveal that it is emerging (particularly in venture financing) in a handful of Arab states (Jordan, Lebanon, the United Arab Emirates and to, much less extent considering the size of their economies, Egypt and Saudi Arabia) and still embryonic to non-existent in all other Arab countries.

F. SDGs AND ENTREPRENEURSHIP

Entrepreneurship is explicitly mentioned in two SDG goals, namely:

(a) Goal 4: Target 4.4: By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship. This target stresses on the development of relevant skills for youth and adults with an emphasis on technical and vocational skills to access employment and decent jobs, including entrepreneurship;

(b) Goal 8: Target 8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including access to financial services. This target is a call for policies aimed at inclusive economic growth with specific emphasis on the formalization of MSMEs (with specific emphasis on the issue of their access to financial services), and innovation for the same outcome as the previous target: development of decent jobs.

One might conclude that the language and spirit of the SDG text points to decent job creation as an overarching objective of entrepreneurship with two main challenges identified to achieve this goal: skills development for youth but equally for women and marginalised groups; and the formalization of MSMEs that are mostly informal in a majority of developing countries, trapped in low-innovation and low-productivity activities and, consequently, essentially offering low-skills/low-pay jobs. This goal cannot be achieved without an ecosystem favouring entrepreneurship and ad-hoc supporting initiatives targeting youth and women.[52]

As highlighted by the report[53] prepared for the last United Nations General Assembly Resolution on Entrepreneurship for Sustainable Development,[54] entrepreneurship has an impact beyond the two mentioned SDGs, with explicit mentions in:

(a) Goal 2 on hunger primarily target 2.3 on agricultural productivity;

(b) Goal 5 on gender equality and the empowerment of women and girls;

(c) Goal 7 on energy particularly its targets linked to the development of renewable energy;

(d) Goal 9 on resilient infrastructure about targets related to the enhanced role of MSMEs (target 9.3), encouraging innovation and enhancing productivity (target 9.5);

(e) Goal 10 on reducing inequality within and among countries;

(f) Goal 12 on sustainable consumption and production patterns where entrepreneurs have the potential of introducing new technologies for climate change mitigation;

(g) Goal 17 on implementation and global partnership for development, where the role of the private sector – with entrepreneurship playing a central role in its formalization and development particularly in developing countries' context – is central to the achievement of SDGs.

---

[51] ESCWA, 2018d.

[52] United Nations, 2015.

[53] United Nations, 2016.

[54] United Nations, 2017. This is the *third* resolution adopted by the UN GA on entrepreneurship for development in the span of only five of its sessions (the first two were adopted respectively during the 2012 and 2014 sessions) highlighting the importance and centrality of this issue in the international agenda.

For all these goals, entrepreneurship plays an important role as an enabler to achieve the stated outcomes either directly or indirectly. For instance, agricultural productivity can benefit from new technologies introduced by entrepreneurs that optimize seeds, pesticides and water provision to plants (box 2). Leveraging new technologies through entrepreneurial ventures can dramatically contribute to Goal 12 by reducing waste production and optimizing transport and manufacturing due to the leveraging of the Internet of Things. These are only some examples of the potential of entrepreneurship to address the SDGs.

Box 2. CUBII improved food production

In 2009 CUBII was founded in Egypt with the ideal to provide innovative industrial solutions for local small and medium factories. The idea was borne out of the food contamination problem faced by small manufactures resulting in the exclusion of their products from big supermarkets. Today the company focuses on helping small food manufacturers to increase their productivity, develop new products and boost exports.

Since its beginning, the company has been providing customised solutions for dairy factories in the Delta Region. In 2012 it developed a complete industrial solution for dairy factories which included floor design, two tanks, pipelines, a refrigerator, working tables, trays, trolleys and a simple sanitation system. In 2014, after exhibiting at the first APEX Exhibition, the company expanded its operations to other governorates across Egypt and began exporting its solutions to Iraq, Jordan, Saudi Arabia and the Sudan in 2017. In Egypt the company expects to cover 20 per cent of existing small and medium-sized factories that will impact the quality and health of food products in about 4,000 plants.

From the beginning, with only two founders, the company today employs 32 people intending to increase the number of employees to 59 by the end of 2019.

Source: https://cubii.co/.

It is important to take note of the UNCTAD Entrepreneurship Policy Framework, structured under six axes, namely:

(a) Formulating National Entrepreneurship Strategy;
(b) Optimizing the Regulatory Environment;
(c) Enhancing Entrepreneurship Education and Skills Development;
(d) Facilitating Technology Exchange and Innovation;
(e) Improving Access to Finance;
(f) Promoting Awareness and Networking.[55]

Many international organizations have entrepreneurship support programmes for developing countries under the themes of this framework; however, few Arab countries[56] are included when mentioning such activities in the report.[57] Regarding the important issue of measurement, frameworks like the Global Entrepreneurship Monitor (GEM) and the OECD Entrepreneurship Indicators Programme (mentioned in the previous chapter) can provide some insight, but an entrepreneurship measurement framework suitable for developing countries remains to be developed.[58]

[55] UNCTAD, 2012.

[56] Under enhancing entrepreneurship education and skills, Jordan is mentioned for a new innovation and entrepreneurship centre at the University of Jordan that provides pre-incubator facilities along with mentorship, financial resources and assistance in securing patents; Tunisia is mentioned for a UNIDO-led program to improve the design of technical and vocational education and training curricula that better respond to market needs. Under Improving access to Finance, Tunisia is equally mentioned in a UNIDO-led program, 'Souq At-tanmia' that allows young entrepreneurs to leverage small grants as a form of equity to access larger financial resource (United Nations, 2016, p. 12; p. 15).

[57] The review of these activities forms the central material of the report; (United Nations, 2016, pp. 8-17).

[58] The document (dated July 2016) announce a forthcoming white paper of UNCTAD, OECD and Kaufman foundation on 'measuring entrepreneurship for development' but, two years on, it doesn't seem to have yet seen the light.

The outcome document of the last Arab Forum on Sustainable Development (AFSD)[59] highlighted many challenges related to SDGs achievement in the region where innovation and entrepreneurship (when not already explicitly mentioned) can undeniably be part of the solution. The issues of concern are related to water, sustainable energy, environment, economic diversification, resilient and inclusive cities, women's empowerment and the role of young people. Leveraging advanced technologies through innovation and entrepreneurship can provide direct contributions to the solutions of these issues, such as:

(a) Arab countries are facing water security issues due to their geographic location in a dry and arid region; a situation compounded by rapid demographic growth and rampant urbanism over the last few decades, and inefficient use of water in agriculture. 'Innovative technologies that promote development of non-traditional water resources' are solutions. Modern technologies like solar desalination and the Internet of things to optimize irrigation are not only useful but are likely to generate innovative entrepreneurship for enhanced water security in the region;

(b) Economic diversification is also challenging with a call for the Arab region 'to benefit from the continuing industrial revolution by investing in science and technology' stressing the 'importance of active participation in the Fourth Industrial Revolution and new jobs' and 'promoting science and technology, harnessing them to ensure creativity and entrepreneurship'. As discussed in the previous chapter, one of the most critical factors behind Arab countries' low levels of economic diversification is their low innovation; and the fact that most of them don't possess a properly functioning national innovation system allowing technological innovations to be appropriately used by the production system actors, primarily the entrepreneurs among them;

(c) Planning for inclusive, resilient and sustainable cities that 'make cities healthier, by adopting an integrated approach that includes all sectors and stakeholders to develop ideas, identify priorities and monitor progress,' might at first glance seem far from technology. However, the Smart City paradigm blending emerging Internet of Things and Artificial Intelligence technologies can be a potent tool for alleviating many of the Arab cities' problems of congested traffic, under-optimized public transportation, problematic waste collection, and water distribution to name but a few. Public-private partnership schemes between cities and an entrepreneurial and innovation-driven private sector can dramatically help address them.

For all issues highlighted above, youth and women potentially have a central role as active actors and/or as primary beneficiaries. It is helpful to remember that sustainable economic growth is closely linked to the social and environmental pillars of the SDGs, and is inter-related and inter-dependent as already shown by the first Arab sustainable development report.[60]

[59] ESCWA, 2018a.

[60] ESCWA, 2015.

III. ENTREPRENEURSHIP IN THE ARAB REGION

The Global Entrepreneurship Monitor (GEM) is an international tool which measures entrepreneurship activity in countries through population surveys[61] to evaluate peoples' entrepreneurship aspirations (or fears) and related activities. An expert panel survey also evaluates the framework conditions necessary for entrepreneurs within each country. The GEM offers a rich dataset[62] that helps to understand the entrepreneurship phenomenon in countries and allows for useful comparability between countries. It is limited, however, by the relatively narrow scope of surveyed countries (only 50-60 each year, with some – particularly among developing countries – not surveyed on a regular basis). Table 10 summarizes indicators of selected Arab countries resulting from the latest 2017 GEM Survey, as well as data from Arab countries surveyed in earlier GEM rounds.

TABLE 10. ENTREPRENEURSHIP INDICATORS, ARAB COUNTRIES (2017 OR INDICATED YEAR)

Country	Perceived opportunities	Perceived capabilities	Fear of failure rate	Entrepreneurial intentions	Total early-stage Entrepreneurial Activity (TEA)	Established business ownership	Motivational index	Innovation
Egypt	43.51	46.60	30.20	55.45	13.25	5.69	0.63	25.26
Lebanon	59.18	74.61	17.02	32.52	24.13	33.20	1.09	46.91
Morocco	37.70	49.64	52.90	26.64	8.76	10.43	1.58	18.68
Qatar	45.59	41.07	41.86	15.69	7.43	1.26	3.94	37.94
Saudi Arabia	79.47	71.82	34.35	30.85	11.45	3.16	1.15	27.60
United Arab Emirates	35.45	64.79	61.08	56.33	8.97	5.63	3.37	18.67
Jordan (2016)	30.52	48.36	44.34	16.39	8.20	2.70	1.90	23.90
Tunisia (2015)	48.79	59.93	40.25	28.80	10.13	5.02	3.56	32.17
Algeria (2013)	61.86	55.51	32.95	36.02	4.89	5.45	2.92	11.48
State of Palestine (2012)	46.14	59.37	40.19	35.61	9.84	2.98	0.63	21.48
Syrian Arab Republic (2009)	54.20	61.85	18.14	54.02	8.46	6.71	NA	NA
Yemen (2009)	14.02	63.55	65.40	8.96	24.01	2.90	NA	NA

Source: Compiled by ESCWA from https://www.gemconsortium.org/data/key-aps (accessed on 22 August 2018).

Before discussing each indicator shown on the table, it is worth noting that in the context of the GEM Survey, entrepreneurship should be understood in a broader sense, spanning from a poor urban dweller who decides to become a street vendor by necessity up to a technology graduate launching his/her own tech start-up that involves a great deal of research and innovation. The term innovation means the introduction of something new to a specific market that is not necessarily related to cutting-edge research or any at all.[63] What is relevant, therefore is the diversity of situations captured by these indicators, including for women and youth.[64]

[61] Surveys are carried out on samples aged 18-64; no methodological details on the sample choice and composition are provided but the yearly GEM report contains a list of national institutional and individual partners who presumably organized surveys and formed national expert panel for assessing framework conditions. The size of population survey sample is in the order of few thousands while it is claimed that no less than 36 experts should participate to a national panel assessing framework conditions.

[62] The detailed dataset of a given year survey is made publicly available only three years later.

[63] For more details on Innovation and its definition see ESCWA, 2017a.

[64] Two Women related indicators from the GEM will be discussed in section 3 of this chapter as well as some data on youth entrepreneurship drawn from earlier surveys.

The percentage of population aged 18-64 who sees good opportunities to start a firm in the area where they live shows good rates in most Arab countries representing a majority of respondents particularly in Saudi Arabia but equally in Algeria and Lebanon; likewise the same can be said for those who believe they have the required skills and knowledge to start a business (capabilities) particularly in Lebanon, Saudi Arabia and the United Arab Emirates; the percentage of those who have intentions to embark on entrepreneurial activity (excluding those who are already engaged in this process) drops to lower averages in some countries but still shows optimism in many countries like Egypt, the Syrian Arab Republic, and the United Arab Emirates before the crisis.

However, the percentage of those who are either nascent entrepreneurs or owner-managers of new businesses (Total Early-Stage Entrepreneurial Activity – TEA) drops to significantly lower values in the orders of 10 per cent in most countries with only Lebanon and Yemen (pre-crisis) leading the pack with about a quarter of respondents. This might be due to high rates of fear of failure in many countries with high values in resource-rich Saudi Arabia and the United Arab Emirates but equally in Lebanon and above (or slightly below) half the respondents in all remaining countries.

Equally worrying are the low rates of established business ownership (i.e., those who are currently owner-managers of established businesses) with Lebanon leading and Morocco and all other countries in the margins of 5 per cent and below.

Motivation Index measures the ratio among those involved in TEA between those who engage in entrepreneurship because they see opportunities, TEA Opportunity, to those who engage out of necessity, TEA Necessity. In some countries like Egypt and the State of Palestine and even in dynamic Lebanon and Saudi Arabia, necessity seems to be at least as important as opportunity; only in high-income Qatar and the United Arab Emirates and in Algeria and Tunisia[65] opportunity seems to dominate but not in large margins as seen in some other countries.[66]

Lastly, in Arab countries the percentages for entrepreneurs that believe their product or service is new (to at least some customers) and that few/no businesses offer the same product are better than those in many other developing regions. It is also only marginally lower than the percentages for Europe. Lebanon leads the pack with almost double the region's average. This hints towards an encouraging fact confirmed by a dedicated GEM report for the MENA region that 'the MENA region tops the ranks, by a substantial margin, in terms of the use of both latest and new technology'.[67] Lebanon and Tunisia, for instance 'exhibit a high technology orientation, with over 60 per cent of entrepreneurs in these two countries having access to latest technologies'.[68]

A. Women entrepreneurship

Arab women entrepreneurship can be gauged through recent ILO assessments carried out in four Arab countries (Algeria, Egypt, Morocco and Tunisia)[69] These follow the ILO Women's Entrepreneurship Development (ILO-WED) framework organized under six major conditions.[70] This framework was introduced in 2006 and amended to include Information and Communication Technologies (ICT) as an essential component for enhancing women's entrepreneurship.[71]

[65] For the latter two countries, likely because TEA is primarily concentrated in the high-end opportunity sector.

[66] In Malaysia for instance this ratio reaches 9.2 and in the United States it is at 7.2 with many other developed countries at around 5. GEM, 2017a.

[67] GEM, 2017b, p. 7; this and other detailed findings from this study borrowed in the sequel are presumably taken from the detailed GEM database not yet made publicly available.

[68] Ibid., p. 7.

[69] ILO, 2017a-c; ILO, 2018a.

[70] ILO, 2016a.

[71] UNCTAD, 2014.

The six WED framework conditions are evaluated following a methodology based on women entrepreneurs' survey, key informants interviews, and focus groups with women entrepreneurs; these come in addition to initial preliminary data and a desk review.[72] For each framework condition, sub-conditions identify critical issues for women entrepreneurs under the specific domain addressed by the condition (table 11).

TABLE 11. THE ILO WED FRAMEWORK CONDITIONS AND THEIR SUB-CONDITIONS

1. Gender-sensitive legal and regulatory system that advances women's economic empowerment
A. Labour laws and regulations
B. Business registration and licensing regulations and procedures
C. Property and inheritance rights
2. Effective policy leadership and coordination for the promotion of WED
A. WED as a national policy priority
B. Presence of a government focal point for the promotion and coordination of WED and support actions
3. Access to gender-sensitive financial services
A. Women entrepreneurs' participation in generic financing programed
B. Financing programs specifically targeted to women-owned enterprises
4. Access to gender-sensitive business development support services (BDS)
A. Women's access to mainstream BDS services
B. Mainstream BDS services respond to the needs of women entrepreneurs
C. Presence of women-focused BDS services
5. Access to markets and technology
A. Export promotion for women entrepreneurs
B. Government procurement programs actively targeting women's enterprises
C. Supply chains and linkages that integrate women-owned enterprises
D. ICTs and technology access of women entrepreneurs
6. Representation of women entrepreneurs and participation in policy dialogue
A. Representation and "voice" of women in business/ sector membership associations
B. Presence of women entrepreneurs' associations and networks
C. Participation of women entrepreneurs in public-private sector policy dialogue and influence on outcomes

Source: Compiled by ESCWA based on ILO, 2016, p. 4.

For each sub-condition, the country evaluation process assesses the degree of its fulfilment. A score value of (1-5) is given to the country according to its situation for each sub-condition (it is precisely the aim of the surveys, focus groups and informants to consolidate views and reach consensus on this situation). An example of a situation description (and the resulting score value) for the sub-condition of framework condition 5 on 'ICTs and technology access' is shown in table 12.

The score obtained for each framework condition is the arithmetic mean of its sub-conditions scores, and the WED score, in turn, is the arithmetic mean of the six conditions. Scores obtained by the four Arab countries under each framework conditions and their resulting global score are summarized in table 13.

[72] ILO, 2016, p. 5.

TABLE 12. ASSESSMENT OF FRAMEWORK SUB-CONDITION ON ICTS AND TECHNOLOGY ACCESS OF WOMEN ENTREPRENEURS

1	2	3	4	5
Women-owned enterprises (WOEs) are generally operating with rudimentary technology, limited in their use of ICT for business development, and no efforts are being made to improve their related know-how and skills.	Initial efforts are being made to improve the digital literacy skills of women entrepreneurs through training and to provide them with advice and counselling on updating their use of technology.	Initiatives are in place to introduce women entrepreneurs to technological innovations and the opportunities for developing businesses in technology-driven sectors (e.g. ICT, bio-medical, environmental and renewable.	WOEs are targeted for inclusion in technology upgrading and modernization programs and programs focused on the integration of ICT-enabled solutions (e.g. management information systems, online marketing, e-commerce, etc.); access to financing is available to help them modernize their operations in these areas and to pursue technology innovations.	Government grants are available to WOEs to defray the cost of investing in updated and new technologies; WOEs are making use of ICT in many of their business operations; women entrepreneurs are actively encouraged and supported to start businesses in higher-technology and innovative sectors of the economy, including the ICT sector.

Source: ILO, 2017a, p. 49.

TABLE 13. WED ASSESSMENT, ARAB COUNTRIES, MOROCCO, 2017 AND 2018

Country	WED overall score	C1: Gender-sensitive legal and regulatory system	C2: Effective policy leadership and coordination for the promotion of WED	C3: Access to gender-sensitive financial services	C4: Access to gender-sensitive BDS services	C5: Access to markets and technology	C6: Representation of women entrepreneurs and participation in policy dialogue
Egypt	2.4	2.5	2.0	2.5	3.0	2.0	2.3
Morocco	2.1	2.3	2.0	2.0	2.7	1.8	2.0
Tunisia	1.9	2.8	1.5	1.0	2.7	1.5	2.0
Algeria	1.7	2.5	2.0	1.0	1.3	1.0	2.3
Average	2.0	2.5	1.9	1.6	2.4	1.6	2.2

Source: Compiled by ESCWA based on ILO, 2017a-c and 2018a.

Except for few framework conditions, Arab countries barely reach – and are often at below – the median value of 2.5 and all have a resulting overall WED score of less than 2.5: from 2.4 for Egypt to 1.7 for Algeria. The four countries appear to obtain their weakest scores in 'gender-sensitive financial services' and 'access to market and technology'.

For the latter condition, under the ICT indicator highlighted above, three countries obtained the score of only 'two' while Algeria received a score of 'one'. For access to gender-sensitive financial services only Egypt obtained the score of 'three' meaning that 'there are credit programmes targeting women-owned enterprises (WOEs) of different sizes and at different stages of their development (from start-up to expansion), but are primarily accessible in only a certain part of the country (i.e. urban centres); there is no evidence of women-

focused equity (seed and venture capital) programs'. Morocco obtained the score of 'two' for this indicator in the sense that 'there is evidence of a few women-focused loan programs, but primarily for women with microenterprises,' while Algeria and Tunisia got only 'one' meaning that 'there are no specifically targeted financial services for WOEs/ women entrepreneurs'.[73]

The Global Entrepreneurship Monitor discussed earlier provides two important gender indicators related to the TEA ratio of women to men engaged in an early entrepreneurship activity and the women to men opportunity-Driven TEA ratio, table 12 summarizes Arab countries' values for these two indicators. These offer a complementary view of women entrepreneurship in other Arab countries.

Women's participation in TEA is lower than that of men in all countries. Although there are encouraging signs of near parity in high-income GCC countries, in most other countries it is below 0.5 (meaning there are two male entrepreneurs for every female entrepreneur) reaching as low as 0.21 in the State of Palestine (4:1) with only Lebanon and Yemen reaching values above 0.5;[74] however, for the latter, no data is available (as for the State of Palestine and the Syrian Arab Republic) concerning their motivation.[75] On overall women/men TEA rate in MENA countries – on the basis of data from the previous 2016 GEM Survey – is significantly lower (at an average of 0.52) compared with Africa (0.84) and Latin America (0.81).[76] Various organizations in the region have made efforts to further develop women entrepreneurship among Arab women (box 3 and box 4).

Box 3. The Blessing Foundation: empowering women entrepreneurs in Lebanon

Founded in 2012, the Blessing Foundation focuses on providing an online trade platform where women can list and sell their products. It also provides other services to empower women, including coaching, mentoring and networking.

The mission is to create opportunities, have community impact, foster institutional transformation, and promote environmental growth by connecting and promoting women entrepreneurs in Lebanon and across the MENA region, including underserved communities.

By 2017 the network included more than 200 women, and the foundation had created more than 150 successful mentoring relationships, many of which have resulted in long-lasting partnerships among the women involved. 31 women from the network had participated in international events with some becoming a part of international networks.

Source: The Blessing Foundation, 2017. Available at http://www.theblessingfoundation.com/about-us; ESCWA, 2018d, pp. 69-70.

Table 10 highlights the fact that opportunity entrepreneurship is more important (except in Egypt and the State of Palestine) in most Arab countries, sometimes by good margins (as in Algeria, Qatar, Tunisia and United Arab Emirates). The share of Arab women in opportunity entrepreneurship reaches near parity with men in a good number of countries as shown in table 14, sometimes even slightly surpassing men as in Algeria and Morocco. Women opportunity-driven entrepreneurs in the MENA region represent a majority (71.5 per cent) higher than Africa (64 per cent) and Latin America (66 per cent) in the 2016 GEM Survey.[77]

[73] See ILO, 2017a, p. 34; for the statements and ILO, 2017a-c; ILO, 2018, for countries' scores.

[74] Both countries have the highest TEA rates at about 25 per cent.

[75] Although compared to low-income countries averages as in sub-Saharan Africa, it is likely more driven by necessity than opportunity.

[76] GEM, 2017b, p. 32; this MENA average includes Iran as well as Arab countries, but Iran's 0.54 value doesn't significantly alter the resulting average which remains representative of Arab countries.

[77] GEM, 2017b, p. 33; same remark concerning Iran (whose percentage is 66.8 per cent) applies here.

TABLE 14. FEMALE TO MALE TEA AND OPPORTUNITY TEA RATIOS
ARAB COUNTRIES (2017 OR INDICATED YEAR)

Country	Female/male TEA	Female/male opportunity TEA
Egypt	0.40	0.69
Lebanon	0.69	0.75
Morocco	0.37	1.03
Qatar	0.99	0.92
Saudi Arabia	0.83	0.79
United Arab Emirates	0.89	0.99
Jordan (2016)	0.26	0.78
Tunisia (2015)	0.36	0.93
Algeria (2013)	0.51	1.08
State of Palestine (2012)	0.21	NA
Syrian Arab Republic (2009)	0.23	NA
Yemen (2009)	0.65	NA

Source: Compiled by ESCWA from https://www.gemconsortium.org/data/key-aps (accessed on 22 August 2018).

Box 4. Berytech

Created in 2001 by Beirut's Saint-Joseph University, Berytech fosters an entrepreneurial community in Lebanon and supports the economy by creating jobs and retaining talent in the country. It achieves this by providing a dynamic ecosystem for the creation and development of start-ups and small and medium-sized enterprises (SMEs) by promoting innovation, technology and entrepreneurship. Berytech has established three business development centres across Lebanon, where project holders and young start-ups benefit from various support programs, events and the help of a qualified team of professional business counsellors and mentors who accompany them throughout their incubation period. Since its inception, Berytech has housed more than 300 businesses, assisted more than 3,000 entrepreneurs, created more than 1,600 job opportunities, granted more than $600,000 to start-ups and invested more than $70 million in Lebanese technology companies.

Berytech particularly promotes women's entrepreneurship and empowerment by collaborating with the Lebanese League for Women in Business on several interventions. As an example, it organizes the annual Female Francophone Entrepreneur (FFE) competition and takes part in regular focus groups and work committees looking at the experiences of women in SMEs or the workplace. Berytech also provides services and networks that are specially designed to meet women's needs, considering for example that women entrepreneurs tend to spend more time than men validating their business ideas and getting product validation before they launch.

The rural economy and access to value chains for innovative SMEs in agriculture are other important aspects of Berytech's activities resulting in the Agrytech program. This program addresses the need to create jobs and opportunities for young people and women in the agri-food sector.

From surveys conducted in the context of the FFE, a couple of gender-related recommendations have emerged: compared to men, more women entrepreneurs are willing to improve their soft skills and attend training workshops. Therefore, Berytech decided to include more structured training and support for women at the ideas stage in its programs.

Another area where women are found to request support is access to capital. IM Capital (a Berytech subsidiary), in partnership with the Lebanese League for Women in Business, has recently introduced the Lebanese Women Angel Fund, an impact program redefining the role of women in business beyond social and economic boundaries and empowering women to become seed investors. It is an angel mechanism, with funding passing from women to women, and seeks to address women's integration in business by engaging them in the funding space on the one hand and encouraging female entrepreneurs on the other, thereby creating opportunities for women to both give and receive funds.

Source: Compiled by ESCWA based on ILO, 2018c.

In 2015 the Global Entrepreneurship and Development Institute brought out a report on conditions that foster high-potential female entrepreneurship. Data was analysed for 77 countries and included four Arab countries, namely Egypt, Saudi Arabia, Tunisia and the United Arab Emirates. The report defines high-potential female entrepreneurs as people who exhibit characteristics associated with high growth outcomes, and are therefore 'market expanding, export-oriented, and innovative' entrepreneurs. In this context, the United Arab Emirates was rated at 27, followed by Saud Arabia (49th), Tunisia (61st) and Egypt (66th). The report supports the view of TEA, stating that there are environmental conditions to consider when evaluating women entrepreneurship that can impact their ratio as well as their ability to make use of the entrepreneurship opportunity. Issues such as family-related institutions, training and education should all be considered. However, it is important to understand that the context within each country differs and that women entrepreneurship can be impacted by local conditions such as freedom to work and travel, equal legal rights, access to education, networks, technology, capital, social norms, values, and expectations, and laws and regulations that govern the business environment that may affect business stability and growth.[78]

B. YOUTH ENTREPRENEURSHIP

Reliable data on Arab youth entrepreneurship is scarce[79] even from the GEM Survey which doesn't disclose age-related TEA data for each specific country for the most recent surveys.[80] From the latest GEM Survey, it is only clear that North America has the highest TEA rate among population aged 25-34 and Latin America for youth aged 18-24 at respectively 23.4 and 16.5 per cent of each age class.[81] However, age class data for Arab countries for the 2016 GEM Survey is available from a recent GEM MENA report as summarized in table 15.

TABLE 15. TEA DISTRIBUTION BY AGE CLASS, ARAB COUNTRIES (2016 OR INDICATED YEAR)

Country	18-24 years	25-34 years	35-44 years	45-54 years	55-64 years
Egypt	16.2	17.7	15.4	9.3	5.5
Jordan	6.0	9.0	10.3	8.4	7.0
Lebanon	18.7	27.6	28.2	14.8	12.0
Morocco	3.2	8.4	7.1	4.5	3.5
Qatar	6.3	8.3	8.8	6.0	7.4
Saudi Arabia	11.7	14.3	10.0	9.7	4.9
Tunisia (2015)	6.5	14.9	10.1	10.6	4.4
United Arab Emirates	2.6	4.6	6.3	11.4	5.5

Source: GEM, 2017b, p. 33.

Note: Percentages refer to age category, not population (e.g., 16.2 per cent of youth aged 18-24 are engaged in TEA in Egypt).

For the 18-24 and 25-34 age categories, entrepreneurship reaches good levels in Egypt, Lebanon and Saudi Arabia. However, Arab countries' averages for both age categories are lower than those of Africa and Latin America and even North America and are only comparable to Europe's although it is undeniable that youth in the latter region have other alternative employment options than entrepreneurship.

[78] Terjesen and Lloyed, 2014.

[79] This applies even to developed countries. The joint OECD-Eurostat Entrepreneurship Indicators Program (EIP) barely contains significant data on youth entrepreneurship while it is rich as regards women's entrepreneurs as witnessed in its last *Entrepreneurship at a Glance* publication, (OECD, 2017c).

[80] Only in the detailed dataset made public only with a three-year delay, as indicated above, could one find age-related data per country.

[81] GEM, 2017a, p. 15.

In order to foster creativity and innovation among the youth, some initiatives have been developed (box 5). Such initiatives can have valuable implications for youth entrepreneurship development in the Arab region.

Box 5. The Syrian Arab Republic: Creativity and Innovation Forum

On the World Creativity and Innovation Day, the Junior Chamber International (JCI) of Damascus, under the supervision of the International Chamber of Commerce (ICC) Syria, organized a youth forum in Damascus. The forum was born out of the need to address issues hindering progress in the achievement of the SDGs through dialogue.

The forum served as a communication platform and a collaborative meeting to look at innovation in the city and identify the challenges that community groups, especially the youth, face. The objective of the forum was to foster partnerships between and empower efforts of those working on innovative products, policies, youth-based programmes and the SDGs.

Participants were encouraged to analyze local needs and challenges related to creativity and innovation. A set of recommendations were formulated to foster creativity and innovation in the Syrian Arab Republic. These recommendations include:

- Establish a collaborative network, with JCI Damascus as a driving force, to formulate and implement strategies and projects for positive change in communities;
- A guide that helps with patents applications and ownership rights, with an e-platform to facilitate the processes. Consideration should be given to reformulate intellectual property laws;
- Consider the development of incubators, national start-up accelerators, crowdfunding programmes, and training programmes;
- Consider changing current academic curriculums, increasing the number of research centres (private and public), and using cultural centres in different Damascus neighbourhoods;
- Consider a new youth incentive system, a media platform, a Syrian governmental platform, and regular exhibitions for innovation.

Source: Brief on Creativity and Innovation Forum, 2019, 5 May.

IV. POTENTIAL OPPORTUNITIES TO ENHANCE ENTREPRENEURSHIP AMONG YOUTH AND WOMEN

Enhancing innovation and entrepreneurship is a complex issue which may be addressed through a variety of approaches. Three approaches have been identified to have potential for enhancing youth and women's economic empowerment and can also contribute to the broader agenda of the region's economic system change. These are value chain development, social entrepreneurship, and digital platforms and content that enable new forms of work and entrepreneurship. The rationale of each approach is discussed,[82] focusing on its impact on innovation and entrepreneurship with illustrative examples drawn – when available – from the region.

These approaches are in addition to a workable National Innovation System (NIS), which ensures that Research and Development efforts – carried out by universities, public research centres and, most importantly, the productive sector – are transformed into new products and services, creating wealth and jobs.[83]

A. VALUE CHAIN DEVELOPMENT

A value chain 'describes the full range of activities that are required to bring a product or service from conception, through the intermediary phases of production and delivery to final consumers, and final disposal after use'.[84] For instance, if one takes a simple product like milk, once it is produced by a farmer, it can pass through a collector/chiller, transporter, processor, and retailer before reaching the end consumer (box 6). Each actor adds value (and margins that translate into an additional cost) and, although roles can possibly be grouped into a single large company, they might be potentially spread among many actors (with intermediaries in-between) and, in the context of globalization, be even spread among several countries.

Box 6. Toters: transport for local business

Toters launched its first application in 2017. It is a digital and logistics company providing delivery services for local businesses. Founded in Lebanon, it has since expanded operations to Iraq and Saudi Arabic and currently provides delivery services in 6 cities. At the centre of the company is the in-house developed Toter's mobile application, which people use to order products from local stores partnered with the company.

The focus has primarily been on food and beverage delivery, but the company has recently added specialty products to its service including home accessories, flowers, and convenience items. Beginning with two founders, the company has since grown and in 2017 employed 40 people.

Source: https://mailchi.mp/fd4f08db6a09/meet-our-newest-entrepreneurs-tamim-khalfa-nael-halwani?e=5d2ae6daba.

One issue facing many small producers in developing countries (where youth and women are largely represented particularly in the agricultural sector) is that their choices are seldom equitable when entering value chains. They also experience difficulties when they want to carry out an entrepreneurial endeavour that could place them higher in the chain (to remain in the milk example, the production of dairy products) because they do not have access to reliable transportation or a retailer willing to deal with them directly.

[82] These by no means represent introductory primers on each subject. On value chain development, (ILO, 2016b) offers a good methodological introduction and guide for policy intervention; (World Bank, 2018a-b) offers an excellent overview of social innovation and entrepreneurship in different socio-economic domains with examples drawn from many regions (notable are the very few – if any – examples drawn from the Arab region!); and finally (ESCWA, 2017c) and (ESCWA, 2018b) offer a comprehensive overview of Digital economy in Arab countries.

[83] ESCWA, 2017a.

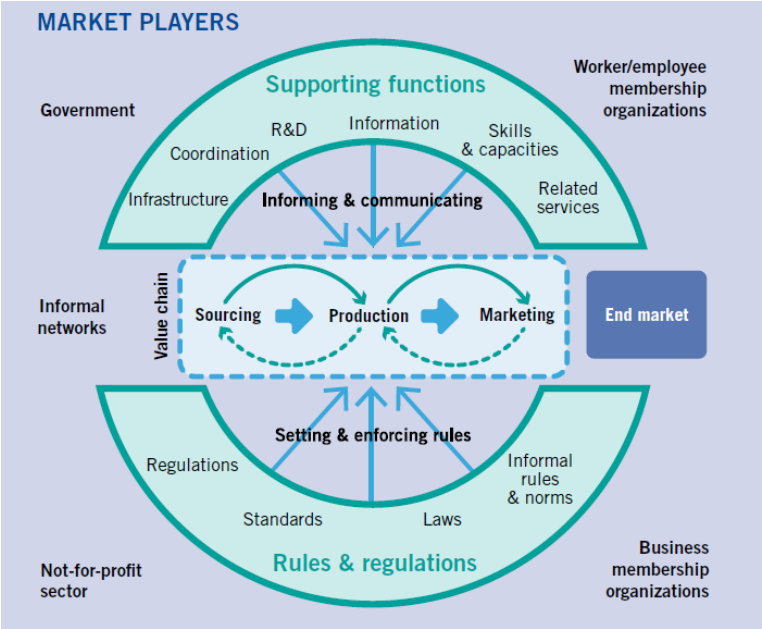
[84] ILO, 2016d, p. 3.

The same logic applies to small retailers or service providers (repair, personal services) at the other end of the chain (i.e., closer to end consumers) where one can equally find a large concentration of micro-enterprises (largely informal) in developing countries. As for the other production end, the bargaining power and capabilities of these actors to innovate and climb up the value-chain are constrained by limits imposed on their choice to get their raw products or regulation that does not ease their control of distribution channels or access to end producers.

As a matter of fact, a value chain does not operate in a vacuum but within a market system, as shown in figure 9. "A well-functioning market system includes a number of actors providing 'supporting functions' to businesses in the core value chain, as well as actors who set and enforce 'rules' about how value chain actors operate. In a dysfunctional market system, these supporting functions and rules may be absent or weak".[85] It is precisely when the market system surrounding a given value chain is dysfunctional (as is the case for many economic sectors in developing countries) that the value chain actors are limited in their capacity to enhance added-value leading to more profitable businesses and embark on innovative entrepreneurship.

An example of dysfunctional value chain resulting from weak support functions is often seen in most developing countries' agricultural sectors, such as a lack of efficient transport infrastructure often inhibits on-time transport of fresh produces to market, resulting in significant losses and low productivity for producers. Regulations are no less, if even more, critical, for example, 'if property rights are not guaranteed, this may lower the performance of businesses at several points in the chain'.[86]

Figure 9. The market system surrounding a value chain



Source: ILO, 2016d, p. 7.

Value chain development is an important tool used in development actors' interventions aimed at creating decent work opportunities, particularly for disadvantaged populations. At the same time, it can address the environmental impact of their interventions. However, evidence shows that value chain development also contributes to innovation and entrepreneurship. Improved support functions, rules and capabilities and the internal sector functioning naturally lead to enhanced innovation and entrepreneurship opportunities. Value chain development is particularly important in the agricultural sector, which is important for women and youth

[85] ILO, 2016d, p. 4.

[86] Ibid., p. 5.

in many Arab countries and could stir innovation and entrepreneurship opportunities for these two categories (box 7).

Box 7. Value chain development in the agricultural sector

Challenges remain in enabling small-scale farmers (less than 2 hectares; estimated at 84 per cent of all farms or 570 million worldwide) and low-skilled rural youth to integrate into local and global agricultural value chains and move up the ladder to meet the quantity and quality standards required for both national and export markets. Examples, however, abound where interventions at the local level can help integrate rural youth into the agricultural value chain and provide them with employment and entrepreneurship opportunities.

- In **Ghana**, Agro Mindset (http://www.agromindset.com) is a mission-driven firm specializing in agribusiness ventures. The focus of the group is to run highly profitable farm-based enterprises with long-term growth potential and to showcase this know-how to the youth and private sector in an industry-relevant manner. The company emphasizes sustainable development, value chains, entrepreneurship and "farming as a business" which lends support services to entrepreneurs in the valuation and planning of value-added agriculture;
- Still in Ghana, SavaNet owned by a young graduate with previous experience in agricultural development, aims to support young farmers. It creates platforms that connect farmers with both agricultural experts and fellow farmers, obtaining up-to-date information about farming. The majority of the SavaNet farmers are aged between 15 and 35. SavaNet's engagement with young farmers has led to the creation of farmer groups that are contributing immensely in actively engaging young people in farming as a business and sustainable livelihood;
- Sooretful (http://www.sooretful.com), which means "it's not far" in Wolof, is an online sales platform in **Senegal** that sells locally produced and processed food. The platform connects small scale producers and agro-processing enterprises with the increasingly demanding middle class Senegalese. The website started with 150 agri-food products, and within a few years of launching, it was offering over 300 selections.

These examples highlight two broad approaches for creating value chains and market linkages, also associated with social innovation approaches (see a broader discussion of this concept below), namely:

- **Direct-from-Farm Market** Models: whereby technology is used *to improve market linkages* for smallholder farmers and meet the growing demand for fresh farm produce from consumers. Internet (e-commerce) and mobile (m-commerce) based platforms allow marketing fresh farm products directly to consumers;
- **Multi-stakeholders Platforms**: with electronic and digital platforms connect farmers, input suppliers, agriculture experts, finance providers, logistics companies, processors, distributors, government entities and NGOs. These platforms enable streamlined forward and backward linkages along the value chain, facilitating information flows and business transactions.

It is notable – and concerning – that, in both sources, compiling tens of examples drawn from different developing regions, barely any Arab country example is mentioned.[a]

Source: Compiled by ESCWA based on OECD, 2018, pp. 45-70; World Bank, 2018a, pp. 211-274.

Note: [a] (OECD, 2018) although including four Arab countries (Egypt, Jordan, State of Palestine and Tunisia) in its scope, when reviewing initiatives and projects, mentions Egypt (pp. 54-56) once in the context of a 'Save the Children' and 'Master Card Foundation' initiative aimed at supporting rural out-of-school youth aged 12-18 in five African countries.

B. Social entrepreneurship

Social enterprises fill gaps in many developing countries and countries under crisis where large parts of the population do not have adequate access to basic services. They also contribute to improving dysfunctional market systems in traditional sectors trapped in low productivity and informality, as highlighted in the previous section for the agricultural sector. Social enterprises are also a favourable place for applying new technologies to address SDGs (box 8).

Box 8. Nafham: education for all through online social enterprise

Established in 2012, Nafham is an online educational platform that targets school going students (primary, preparatory and high school) under the Egyptian public curriculum. The founders developed the idea as an answer to the need of the country's growing youth population for education, where the education system is fraught with challenges, too few spaces, classroom over-crowding, and money lost to black-market tutors.

Nafham provides access to crowd-sourced, online videos of 5 to 20 minutes via the website or mobile application. The videos are lessons related to the Egyptian curriculum and are categorized by grade, subject and semester, then sorted by the academic schedule. The platform also provides an interactive service so that students can follow-up with teachers, while parents can follow-up on their children's progress.

Apart from providing options to youth seeking access to education, the online platform also provides students with a simple pressure-free environment where multiple methods are designed and employed to encourage learning, foster understanding, broader application and experimentation. Currently, Nafham provides access to more than 23,000 videos which are accessed by more than 50,000 students every month.

The Egyptian curriculum remains the focus of the platform, but it also includes, partially, curriculums of Algeria, Kuwait, Saudi Arabia and the Syrian Arab Republic. The goal is to extend this partial inclusion to 18 Arab countries by 2021.

Source: https://www.nafham.com/.

Box 9. Social entrepreneurship models

A global report addressing social entrepreneurship identifies 19 innovative business models for social entrepreneurship under education, health, energy, water and sanitation, and waste sectors. These are:

- Education
  - ☐ Providing low-cost private schooling to the poor;
  - ☐ Improving learning outcomes by bringing innovation to the classroom;
  - ☐ Evaluating schools and helping school management improve education;
  - ☐ Expanding access to employment and higher education opportunities through rapid IT skilling;
  - ☐ Making tertiary education possible for low-income students.
- Health
  - ☐ Reaching the poor through community health workers;
  - ☐ Using telemedicine to treat patients in underserved areas;
  - ☐ Serving the healthcare needs of the poor with specialized clinics;
  - ☐ Ambulatory services for the last mile;
  - ☐ Changing the lives of women and girls through affordable feminine hygiene products;
  - ☐ Using mobile technology tools to provide quality, low-cost health services.
- Energy
  - ☐ Bringing solar home systems to off-grid communities and;
  - ☐ Electrifying rural and remote areas through mini-grids;
  - ☐ Water and Sanitation;
  - ☐ Bringing clean, affordable water to poor communities through decentralized water treatment kiosks;
  - ☐ Meeting the sanitation needs of the poor with serviced toilets.
- Waste
  - ☐ Collecting waste in low-income areas;
  - ☐ Converting waste to energy;
  - ☐ Providing decentralized wastewater treatment.

Source: Compiled by ESCWA based on World Bank, 2018b.

‘Social enterprises use market-driven methods to advance their social mission to serve “the last mile”. Because of their strong presence and understanding of the local communities they serve, they often develop a business model that is faster and more cost-effective in providing basic, quality services and products. More importantly, the poor are their clients, not just beneficiaries’.[87]

Social enterprises impact many sectors, especially those related to basic services like education, health, energy, water and the environment. All try to combine three essential objectives which consist of: (a) providing a public good; (b) ensuring profitability (or at least financial sustainability for non-profit models); and (c) sparking acceptance and adoption at scale by concerned target populations. Evidently, all business models, as shown in box 9, are not equally successful nor applicable in all contexts. These models, however, outline a potential that remains highly untapped in most Arab countries.

In association with emerging frontier technologies,[88] social innovation has the potential to improve public services and introduce useful social services in all Arab countries, particularly those traversing conflict situations or hosting refugees.

Despite the lack of data on Social Entrepreneurship in Arab countries from global resources, a recent regional study of this phenomenon analyses 22 Social Enterprises and 9 Social Enterprise Support (SES) organizations in four Arab countries (Egypt, Jordan, Lebanon and State of Palestine).[89] The study also highlights some social enterprise projects in the region as illustrated in box 10.

Box 10. Social entrepreneurship examples in Arab countries

Social enterprises have started to play an innovative role in providing employment and project funding opportunities for Syrian refugees. NaTakallam helps identify refugees who are qualified to teach Arabic but also serves as a payment hub for the Syrian tutors.

Jordan-based 3D MENA and Refugee Open Ware (ROW) are for-profit organizations using technology, such as robotics, artificial intelligence, and 3D printing, to aid refugees at the humanitarian and economic level.

Lebanon-based NGO Basmeh wa Zeitouneh has set up community centres which provide vocational training for refugees. One program is in embroidery, with over 200 women getting training at its four centres: products are sold to a SE in Germany and at fairs. That money goes to the women, to projects and to sustain the program.

Recycle Beirut is indicative of a social enterprise that is innovative in solving a local problem caused by government inaction, like many others in the region; doing so with a global model. The Lebanese for-profit company collects, sorts, processes and sells recyclable materials from homes and offices around Greater Beirut. Like many emphasizes investing in their employees rather than in fixed assets to improve their livelihoods and bolster productivity. A quote from one of the company’s four founders is worth a highlight: “One thing that has been reinforced for me is how much more productive female workers are than males, at least twice as productive”.

Source: Compiled by ESCWA based on Halabi and others, 2017.

Arab social entrepreneurs are overwhelmingly young, ambitious and overpoweringly male, with over 70 per cent of those interviewed under the age of 35 and only 28 per cent female. It is striking that all have tertiary degrees (with 72 per cent master and 9 per cent doctorate).[90] Enterprises that participated in the study define the social enterprise concept through a broad spectrum spanning from a purely commercial entity, which is profit-driven and solely accountable to its shareholders, to non-profit actors, who are almost exclusively concerned with addressing a particular social ill and are accountable only to their donors.

[87] World Bank, 2018b, p. xi; Italics highlights added.

[88] For a detailed discussion on new innovation approaches’ potential in the Arab region (see ESCWA, 2018e). ESCWA, 2017e also addresses the same subject from the view of community-based innovation for improved social well-being.

[89] Halabi and others, 2017.

[90] Halabi and others, 2017, p. 26.

Since there are no regulatory provisions to match the dual financial and social purposes of social enterprise in the Arab region, except for a few Arab countries like Tunisia (not scoped by this study), founders should choose between the for-profit or non-profit models. A vast majority (86 per cent) adopted the for-profit model either as a registered company (LLC 59 per cent or sole owner 14 per cent) or others (cooperative 4 per cent or even unregistered entity 9 per cent), while of the non-profit models 9 per cent are registered as NGOs and 5 per cent as foundations.

Although 63 per cent of social enterprises reported that they measure their social impact, a culture of social impact measurement is only beginning to take hold in the region. Social enterprises which measure the components of their impact often do so using industry-specific metrics. The number of local jobs created and clients/beneficiaries reached are standard metrics among social enterprises attempting to measure impact. Social enterprises that operate exclusively online also use digital metrics to measure their social impact. However, the study found that some social enterprises grow reliant on loose tools such as social media feedback to showcase – rather than report on – their impact on social issues.

Social enterprises face an uphill struggle against entrenched cultures and practices in their respective fields or sectors and consequently must recur to innovation. While 68 per cent of social enterprises use model innovation essentially adopting a model that has proven viable elsewhere and introducing it in the region (for instance, online health social enterprises in the region resemble internationally-renowned online health websites, but with Arabic content), the remaining 32 per cent that use product or service innovation engage in home-grown research and development are perhaps the best examples of how social enterprises can make a qualitative difference to affect social impact in their sectors.

Major challenges faced by social enterprises lie in regulations and financing and, as a second-tier, human resources and sustainability. Funding poses a consistent concern for social enterprises in the region, especially during early-stage development. Many of the interviewed social enterprises said that attracting institutional investors is an overly complex process because the latter is principally interested in return on investment rather than social impact. This pushes social enterprises to seek out donor funding, even if this funding is driven by donor agendas and timelines, rather than the growth plans of enterprises. One of the greatest challenges facing social enterprises in their development is attracting the right kind of human resources. Social enterprises and support organizations feel there is a generally low supply of expertise, such as practical, soft and on-the-job skills. As a result, social enterprises feel they often lose out to multinationals that can afford greater compensation.[91]

The study concludes with a dismal statement that despite ‘the noticeable uptake in the number of NGOs and (more recently) social actors whose primary mission is to intervene, alleviate and/or redress in the presence of diminishing public services,’ ‘for a variety of reasons – ranging from the Arab state’s capriciousness and antipathy, to the absence of impact investors, to a disconnect between international donor agendas and local imperatives – Arab social entrepreneurship’s has yet to catch up with its potential’. The same reference goes on arguing that ‘rhetoric of change is easy to articulate, but execution is palpably trickier in the absence of a commitment to audacious reform by major movers [meaning, states, investors or even donors] in this sphere’.

This rather pessimistic conclusion gives way to an optimistic observation that ‘only within the relatively small, albeit growing, entrepreneurial space, peppered that it is with visionary investors and young innovators, do we catch a glimpse of those who appreciate and embrace the promise of social entrepreneurship. And only when we observe local governments, do we see public representatives and social actors (24/7 electricity in Zahle, Lebanon, is one such example) successfully pursuing shared interests’. Consequently, it is ‘within these spaces [those of entrepreneurial space on one side and social actors with local government (when favourable) on the other] that action plans for SEs have to be conceived and rolled out’.

[91] Ibid., p. 27.

C. Digital platforms and content

Digital technologies and the Internet have the potential to lower barriers to entrepreneurship and facilitate business start-up, development and management. Start-ups could leverage the Internet to lower fixed costs and stay agile and responsive to the market. The Internet also contributes to lowering transaction costs, increasing price transparency and improving competition. Improved communication also leads to the emergence of new and transformed business models with emerging digital platforms and content development playing a key role in this respect.

Box 11. Digital platform examples from the Arab region

BasharSoft: reducing unemployment through digital platforms

BasharSoft was founded in 2009 with four employees and a goal to reduce unemployment in Egypt while helping businesses find the talent they need. The products of the company connect people with jobs and career opportunities. It has grown steadily and currently has 270 employees and is expanding services to the Gulf countries.

The company offers two main products, namely WUZZUF and Forasna. WUZZUF is an Online Recruitment Platform which targets white-collar and highly educated professionals. Forasna is also an online recruiting platform, but its focus is on blue-collar recruitment, helping connect the middle and basic educated workforce with jobs.

BasharSoft has also launched various initiatives to increase the skills of the Egyptian people through these two products. Under WUZZUF, it focuses on social change and education with initiatives such as coaches, internships and meet-ups. In Forasna the focus is on promoting manual work as well as craft and trades encouraging people in these fields to find work.

Wala Plus: incentives and rewards for improved productivity

Wala plus is based in Riyadh and was launched in 2015. It provides a platform from which companies can provide incentives or rewards to their staff. The types of promotions or rewards are discounts, coupons or points added to their account on the platform. Employees of participating companies can then use these points to purchase different items.

Wala plus focuses on motivating employees by promoting such incentives and rewards for staff while providing companies with a new market segment. The company has a team of 9 people and already has about 200,000 platform users from 25 local companies in Saudi-Arabia benefit from using it.

Jobs.ps: connecting job seekers with potential employers in the State of Palestine

Jobs.ps Ltd is a careers portal in Ramallah, the State of Palestine. Established in 2008, the company provides an online platform that can connect job seekers with employers. It has two main services:

- For employers, it offers job postings, headhunting services and human resources consulting services, such as writing job descriptions;
- For job seekers it offers job matching services as well as CV writing services and career counselling. The company is exclusive to the State of Palestine and targets jobs that require an academic degree with a minimum qualification of a diploma.

As part of its services, Jobs.ps provides an SMS alert platform that job seekers can use to keep up to date on latest job postings. This service has been found to be very useful for those in Gaza where intermittent electricity can cause interruption of Internet access, but mobile phones remain accessible.

Jobs.ps has 4 full-time employees and 3 as part-time.

Shobiddak.com

Shobiddak.com (Shobiddak min falastine, referred hitherto as Shobiddak) is the largest web platform that specializes in classified ads and E-commerce in the State of Palestine. Shobiddak means “What do you want?”. It was established in August 2008 with two people (Ubaida Zahda and Shuaib Zahda).

Shobiddak serves around half million Palestinians every month in all sectors. It has more than 12 million page views every month.

The discussion in this section addresses more 'established' developments witnessed in the Arab region particularly over the last decade, resulting in the emergence of entrepreneurial endeavours by digital start-ups associated with services via mobile platforms (i.e., primarily the so-called 'apps' for smartphones) and other ad-hoc Digital platforms (essentially e-commerce) as well as the development of Digital content particularly in the Arabic language (box 11).[92]

Despite the dynamism witnessed in some Arab countries that have seen the emergence of significant Arab Digital platforms (like 'Souq.com' for e-commerce and Careem for taxi riding), their development remains limited in the Arab region.

Arabic Digital Content (amid undeniable improvements over the last decade) equally doesn't match the number of Arabic language users who still predominantly access to global digital platforms not necessarily in their native language: in all Arab countries, the top three sites are, with few exceptions, Google, Facebook and YouTube.[93] Of course, the aim is not to mimic and directly compete with global platforms, however, despite the shared language among 400 million Arabs and borderless nature of the Internet, most Arab platforms are still limited in their use to national or, at best, sub-regional scope limited to only some few countries. The fact that, for instance, there is no real Arab economic integration and free circulation of goods and services – this is discounting some political issues among countries resulting even in physical border closures – Arab Digital entrepreneurs and Arab platforms are limited in their potential to scale.

Contrary to China, which developed digital platforms that compete with global platforms as regards user's adoption in nearly all domains, the Arab region still lags apart from the two successes mentioned above.[94] Arab Digital platforms don't stand comparison with global and Chinese platforms (table 16) in terms of users' numbers. This is to say nothing that there are simply no Arab equivalents to the most used platforms, as shown in the figure.

TABLE 16. MAJOR DIGITAL PLATFORMS: MIDDLE EAST, GLOBAL AND ASIA

Digital lifestyle	Middle East offering	Users (*Millions*)	Global leaders	Users (*Millions*)	Asian leaders	Users (*Millions*)
Search	-	-	Google	1 400	Baidu	300
Social media	-	-	Facebook	1 712	Tencent	812
Communication	-	-	WhatsApp	1 000	WeChat	1 120
Video	-	-	YouTube	1 000	Youku	500
Music	Anghami	4	Spotify	100	QQ Music	800
E-commerce	Souq.com	6	Amazon.com	304	Alibaba.com	434
Payment	CashU	1	PayPal	179	AliPay	300
Online fashion	Namshi	5	Zalando	18	Zalora	5
Travel and hospitality	-	-	Airbnb	50	Tujia	40
Job market	Bayt	18	LinkedIn	450	Daije.com	32
Transport	Careem	4	Uber	8	Didi Chuxing	250
Education	Skill Academy	8	Cousera	17	-	-
Social commerce	Cobone	3	Groupon	50	Meituan.com	20

Source: ESCWA, 2017c, p. 63.

[92] For a discussion of Arab countries' eco-system for such Digital start-ups (see ESCWA, 2018d); although it is by no means representative of all activities, the Arabnet database of start-ups reveals a high clustering of Arab Digital start-ups in e-commerce and mobile applications and essentially in few Arab countries: Lebanon, Saudi Arabia and United Arab Emirates. Available at https://www.arabnet.me/english/startups (accessed on 10 October 2018).

[93] ESCWA, 2018b.

[94] ESCWA, 2017c, p. 82; one might also note that Souq.com has been purchased by Amazon.

The development of national digital platforms in China played a major role in the development of women entrepreneurship as highlighted in box 12.

Box 12. China's female entrepreneurs in e-commerce and tech fields

As well as having one of the highest female labour force participation rates in the world, and more women than men in professional and technical jobs, China also has a solid base of powerful female entrepreneurs in its dynamic e-commerce industry and technological fields. A 2015 Chinese government white paper on gender equality and women's development reported that women establish about 55 per cent of new internet businesses. Data from Alibaba's Taobao platform indicate that 49.4 per cent of individual Tmall store[a] owners are female, and female-owned stores account for 46.7 per cent of total sales. Data from the Global Entrepreneurship Monitor indicate that China has one of the highest female-to-male ratios of information and communications technology (ICT) entrepreneurs in the world at 1.22, compared with a global average of 0.43.

Several factors may explain the relative success of female entrepreneurs in e-commerce and technology in China, including:

- Access to new business models or markets: e-commerce and technology businesses are creating new business models, and markets are enabling new players, including female business owners, to enter the market;
- Access to finance and lower finance requirements: start-up costs in the e-commerce and technology sectors can be far lower than in traditional businesses, and this could unlock opportunity for women. China's growing investment in digital technologies may also create further opportunities for women. China's venture capital sector snowballed from just $12 billion, or 6 per cent of the global total in 2011-2013, to $77 billion, or 19 per cent of the global total in 2014-2016, with much of the investment focused on digital technologies;
- Support networks and supporting societal views: An increasing number of female incubators and female-led venture capital firms are focused on women in tech. TechBase is China's first technology incubator for women. Beijing-based H Capital is the largest venture capital fund ever raised by a woman. General support for entrepreneurs has a positive impact on the number of female entrepreneurs; for example, China ranks fourth out of 64 countries for media attention to entrepreneurship;
- Digital sectors leverage a highly educated and increasingly global female population: The rapid expansion and scale of the Chinese market are providing greater opportunities for the country's highly educated female workforce. China has seen a huge increase in the number of students studying overseas: a total of almost 550,000 (in 2016), the largest number of foreign students of any country in the world. It is estimated that 80 per cent of these students return to China to work, bringing with them skills and expertise that benefit their home country. Given the higher proportion of women enrolled in tertiary education, many of these returning students are female, and they can use their experience to forge new networks and develop business ideas that may not already exist in China;
- Flexibility and autonomy: By their nature, e-commerce and technology-based businesses tend to offer more flexibility and autonomy, which can help women to overcome the challenge of balancing home responsibilities and work.

Source: Compiled by ESCWA based on McKinsey, 2018b, pp. 86-89.

[a] Tmall.com, formerly Taobao Mall, is a Chinese-language website for business-to-consumer (B2C) online retail, operated in China by Alibaba Group. It is a platform for local Chinese and international businesses to sell brand name goods to consumers in mainland China, Hong Kong, Macau and Taiwan. Being one of the world's biggest e-commerce websites, it has over 500 million monthly active users, as of February 2018. It is also one of the world's top 20 most visited websites, according to Alexa. Available at https://en.wikipedia.org/wiki/Tmall (accessed on 5 September 2018).

The role of digital technologies for empowering women has been recognized since the early inception of ICT for development[95] discussions in the nineties of the last century[96] Concrete actions to achieve this objective were called for by the World Summit on Information Society (WSIS) political declarations and agendas adopted during its two phases in 2003 and 2005.[97]

Many issues regarding women empowerment and ICT identified more than a decade ago, remain valid to date. Of particular interest for the scope of this document is the need to address the root social and economic causes of gender imbalance and enhance overall competitiveness and productivity for enhanced access and use of ICT by women to lead to any tangible results.[98] The China example highlighted in box 10 could not have materialized without favourable social values towards women and a global context of productivity and competitiveness enhancement of the whole country.

Digital content plays an important role in women's development, whereby relevant content could help them solve a wide range of problems, particularly in rural contexts.[99] E-commerce also helps women entrepreneurs to identify niches for their product/services and provides a neutral medium that facilitates women's participation in the economy.[100] No less important, young women's career choices are equally determined by many social stereotypes that could be addressed with focused initiatives, as discussed in the example of box 13. Although women representation among young Arab entrepreneurs (especially in digital technology-related start-ups) is relatively good in few Arab countries, Arab women, as highlighted in the previous chapter, are 'encouraged' to seek tertiary education in humanities, education-related specialties and care; enhancing young women's embrace of technology areas[101] can lead to enhanced potential for innovation and entrepreneurship among them. The situation of Arab women who have reached near parity (if more) in tertiary education enrolment in many Arab countries but still significantly lag in economic participation and top-management positions is only an apparent paradox.[102]

One of the six ILO WED framework conditions (table 10) for assessing women's concerns is access to markets and technology. ICT plays a key role for one of its four sub-conditions as detailed in table 11, but equally, and of no less importance, is its contribution to the remaining three sub-conditions, which also enlightens the potential of digital technologies to enhance women's entrepreneurship, namely:[103]

---

[95] The term ICT was frequently used until a few years ago when the issue of access to Telecommunications Infrastructure and the Internet was dominant in most developing countries. Thanks to the development of Mobile infrastructure – including its mobile Broadband component – and the widespread use of Smartphones even in developing countries, the issue of access has now lesser importance and new challenges associated with effective use and economic impact of Internet use and digitization of all kinds of services are higher on the agenda. Thus, the term digital economy better reflects current challenges faced by developing and Arab countries. Here we use the term ICT because it was widely if uniquely adopted during the referred period and by the reference we quote.

[96] ESCWA, 2005, pp. 3-7.

[97] http://www.itu.int/wsis.

[98] ESCWA, 2005, pp. 11-12.

[99] Ibid., p. 17.

[100] Ibid., p. 20; in the meantime – since 2005 – many additional opportunities enabled by Digital platforms emerged for women and are related with e-education or e-work in general to name but few.

[101] One irony is that in the OECD's led program for international student assessment (PISA) that measures boys and girls (aged 15) skills in reading, math and science, among the six participating Arab countries, girls got better mean scores in science and math in four countries contrary to the global OECD average where boys slightly surpass girls in these two disciplines. For a more detailed discussion (see ESCWA, 2017c, p. 44).

[102] ESCWA, 2012.

[103] UNCTAD, 2014, pp. 20-21.

(a) Access to Markets: ICT enable women entrepreneurs to obtain market information and help them sell their products and services. They also help them access to sustainable growth sectors and expand and create jobs even if they are micro-entrepreneurs;

(b) Access to business opportunities from governments: Public procurement contracts when associated with policies targeting women's entrepreneurship particularly in the domain of ICT (as has happened in one Indian State) can be an essential tool for the development of women-led MSMEs;

(c) Linkages and global supply chains: Large foreign and domestic enterprises play a prominent role in including MSMEs within their supply chains upstream (suppliers and subcontractors) or downstream (distributors). Linkage with Digital platforms plays a central role in allowing women-led enterprises to integrate into these global supply chains.

Digital platforms have the potential to lower the transaction costs between people seeking goods and services and those who can provide them.[104] This has led to a new form of employment particularly sought after – by choice or necessity – by the youth. Despite the advantages and flexibility these new forms of employment offer for youth, they raise important issues: are people engaged with this form of work independent workers/entrepreneurs (as most digital platform providers claim they are) or are they disguised salary of the platform without any of the benefits (such as social and medical coverage and pension) associated with this status (as many governments are concerned about)? The issue is complex and far from being settled to date, even in developed countries (box 14). Arab countries – even if the phenomenon is still nascent in most of them – should carefully observe developments associated with the new phenomenon and adjust their legal and regulatory arsenal such that it will not lead to further inequalities and gender imbalances.

Box 13. Girls got IT in Lebanon

Girls got IT is an initiative launched in 2016 by the Lebanese League for Women in Business (LLWB) in partnership with four other organizations. The initiative aims to encourage girls and youth in tenth and eleventh grade in public and private schools across Lebanon to experience the potential of Information Technology (IT) and STEM subjects. It provides participants with knowledge and awareness to break gender stereotypes related to career choices.

As of December 2017, five events took place in different Lebanese regions and involved a total of 2,000 girls from public and private schools and marginalized communities. Topics included coding, robotics, smart agriculture, animation, social media marketing, graphic design, gaming and programming. Over 20 keynote and guest speakers across sectors took part in these events and shared their experience and success stories.

Source: Compiled by ESCWA based on Zein, 2017.

[104] ESCWA, 2017c, pp. 22-23.

Box 14. Crowd work and 'Giggers' in the platform economy

An important new form of employment is crowd work, whereby work is posted on internet platforms to the "crowd" and is delivered or managed through a digital platform. Crowd work is characterized by low hourly earnings which vary significantly depending on the country in which such workers are located. Wage rates for crowd workers are often below the prevailing minimum wage, but hourly wages for young people in crowd work are around 18 per cent higher than those for workers aged 30 or older. This is because young people's wage rates from crowd work increase with experience more rapidly than those of older workers.

Young people tend to learn crowd work tasks faster than older workers and become more productive more quickly. This is not related to educational attainment; it is primarily because, on average, they are more comfortable with technology and faster at learning-by-doing. However, there is also a significant gender gap as young women earn around 22 per cent less than young men.

Giggers are those who offer services through a digital platform mediation that match them with clients; a well-known example is taxi rides, but others include meal delivery, home care service, or a night stay in their own home.

Data on the extent of internet-related employment, including crowd work and the gig economy, is scarce. Reliable estimates are hard to come by, partly because such employment is often not an individual's primary source of income and thus not reflected in survey data. Nonetheless, it appears to involve a rapidly growing proportion of the labour force in high-income countries. Internet-related work is less prevalent in developing and emerging countries than in others.

Non-standard forms of employment, when appropriately regulated, have the potential to provide decent work. More flexible hours can improve work-life balance and offer greater independence and self-reliance. For some, especially younger workers based in low- and middle-income countries, the earnings opportunities offered by crowd work may be attractive, given the relative paucity of alternative sources of stable employment and income. On the other hand, the inherent uncertainty regarding the next work assignment can cause stress. These types of work environments also offer new opportunities for women, especially if they are unable to physically participate in the work environment. However, the mentioned gender gap in income will have to be addressed.

Source: Compiled by ESCWA based on ILO, 2017d, pp. 69-70.

D. Potential and challenges of frontier technologies

Emerging frontier technologies – a reflection of no less than an ongoing industrial revolution – have potential not only to address SDGs but equally generate economic growth and open new opportunities for the youth and women entrepreneurs. Below is a list of these technologies, including a very brief presentation of the technology and some selected concrete application potential that are prone to generate entrepreneurship opportunities.

Three clarifications should be raised here concerning the technologies:

(a) The choice of technologies is only illustrative and not meant to cover all potential technologies; also, the description of each technology is brief and is not meant to constitute in any way a comprehensive primer on the issue;

(b) Some of these technologies are still emerging and have not reached scale and large-scale use even in developed countries; however, it is expected that entrepreneurs in developing and Arab countries could leapfrog to these technologies provided that the proper enabling environment exists and potential markets and demands for these innovations are created; these issues will be discussed in the next chapter;

(c) Lastly, the discussion of potential applications of these technologies is not meant to introduce a business case for potential entrepreneurs. The case for using a specific technology within a specific context and application and the economic viability of this endeavour should be carried out on a case by case basis. The potential applications presented here are only intended to be illustrative examples.

This section includes a discussion of challenges posed by emerging frontier technologies, primarily their impact on job displacement (like all previous industrial revolutions) and the need for new skills development particularly for the younger generations but equally for the older ones.

1. *Big data, Internet of Things and Artificial Intelligence*

These are three separate developments of digital technologies, but when grouped together have the potential of introducing impact and 'advanced and intelligent control' in all kind of services.

Big data is the result of generalization of Internet access and production of massive data by end-users through, for instance, their mobile phones connected to the Internet and eventually all kinds of sensors (see also Internet of Things). 'It is predicted that data will grow exponentially from 3 zettabytes in 2013 to approximately 40 zettabytes in 2020'.[105] Value could be created by big data analytics that detects 'hidden patterns' and creates new insights about people and organizations' behaviour unknown (or unconscious) to the concerned organizations and persons. It thus helps to offer optimized services though, privacy and risk of algorithmic control of lives should be carefully watched for (box 15).

Box 15. RedCrow: real-time intelligence for humanitarian projects

RedCrow was founded in the State of Palestine in 2015 with three employees born from an observation that there is a rising need in the MENA region for real-time intelligence in the form of risk assessment for individuals, corporations, and non-governmental organisations at diplomatic missions.

A platform was developed to use new technologies, such as social media and other available data technologies, for enhanced situational awareness and forecasting. The company, therefore, focuses on enhancing the safety and security of humanitarian projects in the MENA region by using data to expose potential risks and provide early warnings.

In 2018 RedCrow had 13 employees with plans to add additional 12 employees in 2019 in the areas of marketing, operations and development.

Source: https://www.redcrow.co.

The Internet of Things (IoT) allows the conditions and actions of connected objects and machines to be monitored and managed. In IoT, objects could exchange data with other connected objects, systems and users through the Internet. IoT devices could control home appliances or monitor soil conditions to improve agricultural productivity. As for big data, it is expected that the number of such devices rises from 15 billion in 2015 to 50 billion by 2020, a third of them being computers, smartphones, televisions and mobile devices.[106]

Artificial Intelligence, though the initial inception of the concept and research dates back to 1956, is now coming of age thanks to 'machine learning' or 'deep learning' algorithms that allow machines to 'understand' and apprentice, by themselves, complex issues that were hitherto limited through 'standard algorithms' where man instructs the machine what to do. A landmark and well-publicized achievement of deep learning came when Google's AlphaGo AI program defeated the best human player of the board game Go in 2017, believed to be hard, if ever possible, to program computers to play it properly using standard algorithms.[107] More usefully, 'Artificial Intelligence now includes image recognition that exceeds human capabilities and has proved more accurate diagnoses some cancers'.[108]

[105] UNCTAD, 2018, pp. 7-8.

[106] Ibid., p. 8.

[107] Chess does not fall into the same category, and computer programs based on standard algorithms (whose principle was laid by Claude Shannon equally back in 1956) using modern computing power regularly beat humans for at least two decades. What is striking, however, is a recent development where a deep learning program "AlphaChess" developed by the same company that designed "AlphaGo" managed in the time span of *only 4 hours* to 'learn' the game of chess and beat one of the best chess-playing programmes based on a standard (i.e., non-AI) algorithm.

[108] UNCTAD, 2018, p. 8.

Big data and IoT could contribute to improving health care by allowing treatments to be personalized, clinical data to be collected beyond the occasional patient-doctor visit, disease progression to be detected earlier (at the individual and community levels) and treated proactively, and more effective cures to be found for intractable conditions. For example, data on a typhoid outbreak in Uganda in 2015 were analysed using a visualization tool to get fine-grained information about the outbreak and determine clusters of infections. This helped in the assessment for decision-making regarding the allocation of medicine and mobilization of health teams.[109] Big data also have the potential to improve government and business decision-making for better industry development and service delivery (box 16).

Box 16. Quant: big data analytics for better decision-making

Quant Data and Analytics is a company that specializes in data science, data analysis, using big data. Founded in August 2015 in Saudi Arabia, the company offers data analytics, business intelligence, data quality management, data collection and analytics training. The purpose is to provide data analysis to businesses, organizations and government to enhance decision making and empowering their clients to achieve their stated goals.

The company currently employs 13 people.

Source: http://www.quant.sa.

In manufacturing, sensors can be used to track machinery and provide real-time updates on equipment status, decreasing downtime; as well as tracking trucks and pallets to improve supply chain management, reducing inventory levels and optimizing the flow of materials. In agriculture, sensors measure soil moisture, temperature and stress in plants, and gather information about how water moves through a field to optimize irrigation schedules and fertilizer use.[110]

Water management can be improved by IoT devices such as sensors, meters and mobile phones and facilitate the production and efficient distribution of water. In Bangladesh, for instance, IoT technologies are used to monitor and address issues related to water quality due to Arsenic contamination in the populous Ganges Delta region.[111]

2. *Blockchain*

Blockchain is essentially one type of a distributed and trusted digital ledger which does not rely on any central authority.[112] This allows an array of peer-to-peer transactions without the need for a 'trusted third party', thereby dramatically reducing transaction costs and efficiency without jeopardizing security.

Blockchain comes at a cost. It is based on a complex system of mathematical proofs and cryptography where each contributor to the chain should run a complex (and rather costly) calculation in order to reach global consensus as per the consistency of the shared ledger – without recurring to any central authority validation – which is the cornerstone of the system. 'Every participant therefore works to build a single public ledger of transactions and constantly verifies its validity. The blockchain thus works through a competitive process whereby the first to successfully validate a block of transactions and broadcast the solution to the network wins a monetary reward'.[113]

[109] Ibid., pp. 9-10.

[110] Ramalingan and others, 2016, pp. 66-67.

[111] UNCTAD, 2018, p. 11.

[112] Blockchain technology got quite an 'unhelpful' fame thanks to the Bitcoin currency based on it. Bitcoin is often associated with illicit transactions and the so-called 'dark net'; this is not to speak about speculations and swings in its value – reaching a height of more than $16,000 per Bitcoin in late 2017 and currently (August 2018) trading at about only $7,000 – all without any government control. This dark face should not hide the undeniable positive potential of the technology itself.

[113] DESA, 2018, p. 37; this situation is, however, one of the crypto-currencies Blockchain-based application; one could envisage other kinds of 'rewards' if technology is applied in other domains. Still, being part of a blockchain has a cost.

Blockchain could have a tremendous impact in developing countries by allowing, for instance, recognized identification for people (with an estimated 1.5 billion people lacking it), proper land and property registration, and reduced settlement time and cost of financial transfers.

Estonia, for example, offers citizens a digital identity card based on blockchain, which allows citizens to access public, financial and social services, as well as pay taxes. Countries like Ghana, Georgia and Sweden are using blockchain for land registration. In the Arab region, the World Food Program (WFP) has piloted the technology in a humanitarian aid project of cash and food assistance transactions in Jordanian and Syrian refugee camps. The aim was to reduce overhead, improve security and speed up aid in remote areas.[114]

3. *3D Printing or additive manufacturing*

Additive manufacturing (AM), better known as 3D printing, is not new, and its early inception dates to the eighties of the last century. Contrary to traditional manufacturing where products are generally created from raw materials using a conventional subtractive process such as machining or injection moulding, in AM, goods or parts are constructed layer by layer, according to the instructions of a digital file.[115] Despite strong growth since 1989, the total value of AM products reached about $7.3 billion in 2017; compared to nearly $14 trillion for the total manufacturing industry worldwide. It thus still represents less than 0.1 per cent of the total.[116] Some forecasts limit AM to represent eventually only 5 per cent of total manufacturing. This would still represent more than 50-fold increase from the current situation.

Despite savings in material and reduced waste, there are still issues with AM in the cost of raw material; for example, Titanium powder used in AM costs 125/250 $/Kg while it costs only $57 per kilogramme in traditional manufacturing. Also, the cost of polymers and plastics for industrial AM is between $40 and $250 per kilogram, compared with $2-3 per kilogram for materials used in injection moulding.[117] Another issue is that AM needs qualified operators, and often the produced parts need re-tooling and quality test for high precision parts with stringent specifications.

Despite the above limitations, AM can produce parts that are impossible with other methods and is being adopted by many industries such as aerospace. It also offers opportunities for entrepreneurs in developing countries. It is reported, for instance, that when General Electric launched an international competition to redesign a bracket for a jet engine using AM, the winning entry was submitted by an engineer from Indonesia.[118] According to recent research by Delft University of Technology, by 2050, AM could lead to a 5 to 27 per cent reduction in global energy use with potential energy savings of 5-25 per cent in aerospace and 4 to 21 per cent in construction.[119]

Application domains or market segments of AM include rapid prototyping allowing designers and architects to flexibly create and improve product designs and prototypes, or quickly produce moulds that are used in conventional manufacturing, or in digital manufacturing to produce final components and whole products, such as lightweight parts for aircraft, or tailored dental implants, or for personal fabrication. Personal fabrication is the latest trend and is still in a very early stage of development, whereby entrepreneurs and individual consumers use AM to print, share and use or commercialize their own products.[120]

---

[114] UNCTAD, 2018, pp. 20-21.

[115] EIU, 2018, p. 7.

[116] Ibid., pp. 4-5.

[117] EIU, 2018, p. 11.

[118] Ibid., p. 9.

[119] Ibid., p. 13 quoting the original source https://doi.org/10.1016/j.enpol.2017.10.034.

[120] Ramalangan and others, 2016, p. 41.

3D printing could help developing countries leapfrog into manufacturing and produce large numbers of products on-demand with retooling while using recycled materials and less costly infrastructure. The 3D printing process has the potential to transform business, especially in manufacturing, opening opportunities for lower-cost production than conventional factories in developing countries. Experimentation is underway with the use of 3D printing as a rapid and inexpensive means of constructing buildings. A five-story house has been constructed in an industrial park in Jiangsu Province in China using printing with glass, steel, cement and recycled construction waste. In Tanzania, the innovation think tank Buni Hub is in the process of establishing a FabLab with 3D. They plan to recycle the tons of e-waste generated annually into 3D printers and to use 3D printers to create teaching aids for primary and secondary schools.[121]

4. *Advanced materials and nanotechnology*

Nanomaterials are materials manufactured and used at an infinitesimal scale, on the order of one billionth of a meter, which behave differently from their larger counterparts, for example in terms of resistance, conductivity or chemical reactivity. They encompass a wide range of organic and inorganic materials, including nanocrystals and nanocomposites.[122]

Nanotechnology is a general-purpose technology with multiple applications, which has the potential to revolutionize many industrial sectors. Applications are as diverse as water remediation and purification, through nano-filtration membranes used to treat wastewater in water-scarce countries; precise control of the release of agrochemicals, improving seed germination and reducing toxicity in the agriculture process, increasing agricultural yields and reducing environmental impacts; medical applications such as the use of gold nanoparticles in the detection of targeted sequences of nucleic acids, and of nanoparticles as a delivery mechanism for medications. Nanotechnology is also being used to improve the preservation of agricultural produce in food security projects in many developing countries. A nanoparticle-based spray slows down the ripening of fruit and extends its storage life.[123]

5. *Renewable energy technologies*

Using smart grids, big data and IoT technologies can lead to reduced energy consumption, balance energy demand and supply, and ensure and improve the management of energy distribution, while increasing the role of renewable sources by allowing households to feed surplus energy from solar panels or wind turbines into the grid. Costs of solar panels have dramatically decreased (in terms of price of crystalline silicon photovoltaic cells in $/watt from $76.67 in 1977 down to only $0.74 in 2013). The costs of batteries are also falling dramatically, mainly driven by the need for, and efficiency of, continuous energy supply from intermittent renewable technologies. This also impacts electric cars with many developed (United Kingdom, France) and developing (China and India) countries planning an eventual phasing out of gasoline and Diesel cars between 2032 and 2040.

6. *Virtual reality and 3D animation*

Virtual reality and augmented reality technologies have been around for 30 years; however, their use was mainly restricted to military applications, such as flight simulators, and later became a part of the gaming world. Virtual reality is an interactive computer-generated experience which takes place in a simulated environment by incorporating auditory and visual feedback. Augmented reality is a type of virtual reality and blends the real world with computer-generated images, thereby enhancing the real-world elements in the visual. Due to high development costs, it did not enter the commercial arena for businesses or personal use until recently. Smartphones have provided another avenue to provide access to virtual reality. In 2016,

[121] UNCTAD, 2018, p. 15.

[122] Ibid., pp. 17-18.

[123] Ibid., p. 18.

Pokémon Go provided the first augmented reality application via a smartphone. Most applications are game-based, but businesses have also begun using this technology as a service (box 17) or to improve a customer's service experience.[124]

3D animation is the animation of objects in a three-dimensional space, normally computer-generated. Although mainly associated with 3D animation movies (box 17), it is also at the heart of the creation of virtual reality.

Box 17. 3D virtual reality and 3D animation

Voxel uses virtual reality technology to reconstruct environments digitally. This allows them to create 3D virtual tours, virtual reality and augmented reality solutions that can be explored via smartphones, tablets, computers or virtual reality devices. The idea originated from the possibility of helping real estate developers in Saudi Arabia to better market their properties enabling people to visit and walk-through a space digitally, and open house services can be made available 24/7, while explanatory notes can be included to clarify characteristics.

The company's services have also been extended beyond the scope of real estate. It also develops other services such as training modules working with augmented reality tools and maintenance and remote assistance devices. Using 3D scanning the company can produce high-resolution aerial data of agriculture activities helping with issues such as plant checks and the detection of weeds and/or diseases, while 3D mapping services can help with surveying earthwork projects.

Established in 2017, the company currently has nine employees.

Dragon Studios is a content creation factory in the State of Palestine. The company focuses on animation, video production, children's content creation, educational content creation and television commercials, a sector that is still relatively new in the Arab region. Dragon Studios serves TV networks, telecommunication companies, international non-government as well as government institutions. They currently employ between 8 and 15 people.

[a] http://www.3dvoxel.xyz.

[b] http://dragonvfx.com.

Many more frontier technologies are either coming to fruition or are still in their infancy and are still being developed, especially in the context of entrepreneurship. Many of these technologies are offering new service delivery options, especially among entrepreneurs, making it possible to reduce costs by making use of available technologies (box 18).

Box 18. Dook: cloud platform for better delivery operations

Dook is an innovative distribution management platform for business owners and delivery services providers such as restaurants, supermarkets, pharmacies, flower vendors and delivery companies. It was founded in 2015 and currently employs 15 people.

Developed as a cloud application service or Software as a Service (SaaS). It enables business owners to follow-up on drivers while they are out on delivery and evaluate their performance. The purpose is to help business overcome delivery problems such as loss of orders, delays in delivery, lack of information and weak communication, resulting in poor service and the ultimate loss of customers. Businesses receive the order through the platform and can then identify locations, the nearest driver and the estimated time required to complete the delivery. Dook automates the delivery operations of businesses helping them to increase their service delivery and contribute to their success.

Source: www.getdook.com.

[124] What's next for augmented and virtual reality technology? How close are we to mass adoption? 2 May 2018. Available at https://medium.com/iotforall/whats-next-foraugmented-and-virtual-reality-technology-83fc154f467b.

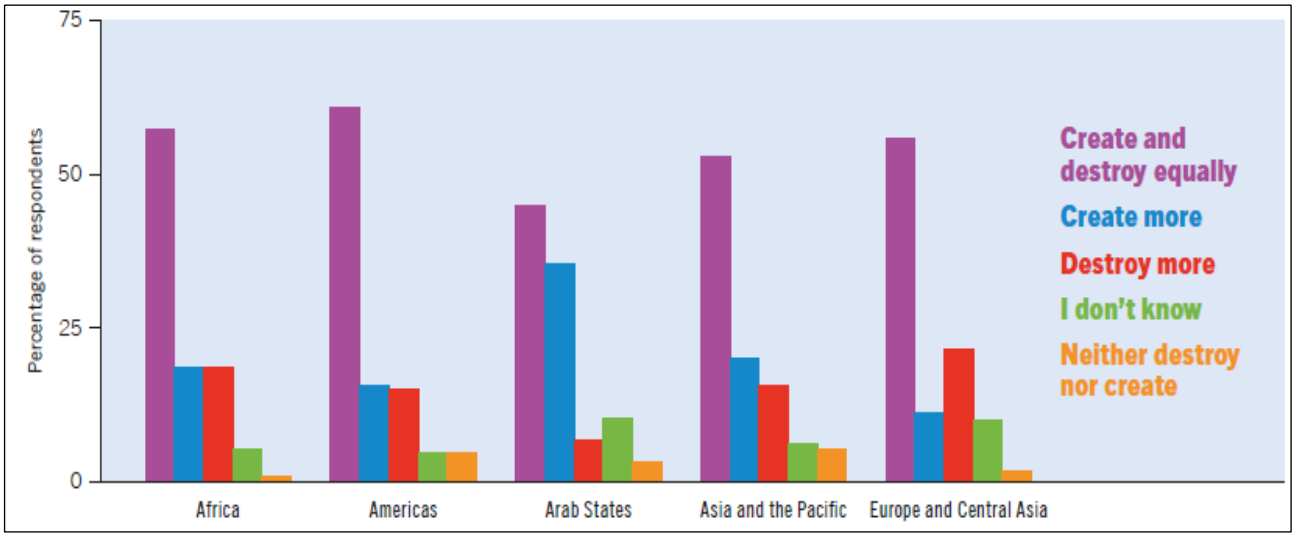
7. *Challenges raised by Frontier Technologies: Jobs Displacement and Skills*

A recent McKinsey study[125] estimated that, by 2030, from 400 to 800 million jobs could be displaced worldwide due to automation. The institute itself carried out a regional mapping exercise limited to six Arab countries[126] – Egypt and five GCC countries – concluding that the regional impact in terms of job displacement will be sensibly no different than the world's average.

Such a view could be challenged because applying mapping models and methodologies for developed countries in developing countries is an exercise marred with extreme methodological risks, as the job structure and the industrial base varies between Arab countries and developed regions. It is certain however that new automation technology is bound to displace many of the low-skill jobs (mainly occupied by migrant labour in GCC) in favour of higher-skill occupations. This might likely open opportunities (in terms of jobs and entrepreneurship) for nationals in GCC and, more generally, for all unemployed skilled labour in the region.

Arab youth more than in any other region (figure 10) seem to believe more in their potential to create than destroy jobs: this is likely a result of low enrolment in private sector (formal) employment and belief/expectation that technology change might bring new opportunities. However, for this optimistic outlook to materialize, new skills and a change in the economic model are needed.

Figure 10. Perceived effects of technological change on jobs (ILO Survey of youth aged 15-29)



Source: (ILO, 2017d), p. 71.

Note: Arab states in ILO terminology designates the 12 Arab states belonging to the Asian Continent.

Box 19 details the first among three change agendas that help countries 'adapt' to the challenges resulting from frontier technologies: transforming the educational ecosystem, facilitating the transition to a new world of work, and advancing the care economy.

[125] McKinsey, 2017.

[126] McKinsey, 2018a.

Box 19. Transforming the education ecosystem

With most education systems based on models put in place a century ago, at a time where life-long careers were the norm, new approaches are needed to enhance learning efficiency. Key action areas might include (a) expanding access to early-childhood education; (b) ensuring the 'future-readiness' of curricula; (c) investing in developing and maintaining a professionalized teaching workforce; (d) early exposure to the workplace and career guidance; (e) investing in digital fluency and ICT literacy skills; (f) providing robust and respected technical and vocational education and training (TVET); (g) creating a culture of lifelong learning; and (h) openness to education innovation.

All of the above areas are relevant for the Arab region: its early childhood education remains weak with low enrolment rates at pre-primary levels (despite recent improvements); forward-looking macro-level skill supply and demand estimation (carried out with private sector) should precede and inform curriculum design; the teaching profession, where it has been undervalued, needs investment to become a high-quality, high-productivity role; internships, mentoring, access to employer networks and site visits, can contribute to the work-readiness of young people, helping them envision a variety of career paths and equipping them with the relevant competencies; and finally, simply increasing the number of science, technology, engineering and mathematics (STEM) graduates is insufficient as the way they are taught focuses on theory over application and experiential learning: even within STEM-specific fields, employability depends in part on strong creative, critical thinking and non-cognitive skills.

Source: WEF, 2017a-b.

The remaining two agendas are equally relevant for Arab countries,[127] but it must be noted that, first and foremost, Arab countries must change their economic system from the one based on rent distribution and monopolies (bought with influence) to the benefit of a restricted elite[128] to one based on innovation and entrepreneurship and open for all (particularly the excluded youth and women). The rent system is incompatible with frontier technologies (as they will likely change the nature of work and most business activities) and maintaining it will inevitably lead to increased backwardness and heightened dependency of Arab countries on foreign technologies.

[127] See (WEF, 2017a) for details though it is likely that improving transition to a new world of work needs some adaption for Arab countries' context as the key priority for these countries is to create formal sector job opportunities that do not altogether exist (even for nationals within GCC). As for the care economy, social entrepreneurship that will be discussed in the next section covers a wider and more relevant scope for most Arab countries that might include the care economy. No wonder that the document addressing the Arab region (WEF, 2017b) essentially focused on the education agenda.

[128] Even for an advanced technology sector like Mobile and the Internet, the experience of this century shows that, in most Arab countries, this infrastructure is controlled by quasi-monopolies – irrespective of their public or private status – well-connected with political power. This results in uncompetitive prices and low quality service in many countries. For more details on this issue see ESCWA, 2017c.

V. WAY FORWARD

The discussion of the previous chapters highlighted many issues related to leveraging innovation and entrepreneurship for the empowerment of youth and women in the Arab region. In this chapter, recommendations are made to address these issues, and possible actors are identified that could implement them.

A. POLICIES

Recommendations primarily address governments and lawmakers but involve other stakeholders like banks, NGOs, regulators, and civil society organizations, particularly those representing women and youth. In fact, even if governments and lawmakers are 'in the driving seat' for implementing these recommendations, their actions cannot be materialized without the active contribution of other actors.

(a) Implement regulatory reforms that favour entrepreneurship in close coordination with beneficiaries and all stakeholders to ensure effective implementation and follow-up. Enforcement is essential to ensure change;

(b) Develop and implement an ecosystem for pursuing entrepreneurship in most Arab countries. It is mostly private firms or NGO-led organizations that has made some contributions to the entrepreneurship ecosystem, although it remains modest in most cases. The success of the entrepreneurship ecosystem in supporting initiatives largely depends on active support by policymakers;

(c) Access to credit for innovative entrepreneurs should actively involve the banking sector and support endeavours in all economic sectors, particularly those with high job-generation potential. Although there are existing initiatives for financing innovative start-ups in the Arab region, their impact remains limited. The Arab region needs to impact millions of youth over the coming years. A financing effort of new scale and nature is thus needed;

(d) Weak competition is an issue of concern for entrepreneurs in many Arab countries. Arab countries should take effective measures to ensure fair competition. This includes effective measures to eliminate state-owned or other established monopolies, reduce barriers to entry, such as needless licenses or price controls, paying close attention to the abuse of dominant market positions and horizontal price-fixing agreements (cartels).

B. WOMEN ENTREPRENEURSHIP

(a) Raise women's awareness about property and inheritance rights, particularly in rural areas, and ensure that women effectively benefit from inheritance and property and that equal rights for the inheritance of family-owned enterprises by women are important issues to address. This is a key obstacle facing women's independent entrepreneurship;

(b) Provide incentives to growth-potential women-owned enterprises to move their business to the formal economy, such as tax exemptions, access to export markets, access to public procurement, access to better financial and non-financial services;

(c) Sensitize women engaged in informal economy about the advantages of moving to the formal and introduce specific encouragement measures for formalization of women-owned enterprises. Although women-owned enterprises share the common plight of informality prevailing among most MSMEs in the region, proper sensitization and efforts towards their formalization are needed because informality is even more harmful for women due to other prevailing social values;

(d) Increase awareness among women employers about employment rights, labour laws, compliance requirements, and business registration through seminars in the urban and rural areas and develop online business registration portals to increase the number of business registrations and provide women entrepreneurs with training on their use;

(e) Tackle credit constraints that impede women in their attempts to start and grow a business systematically;

(f) Enhance access to markets, networks and technologies for different types of women entrepreneurs;

(g) Support women's voices in policy dialogue and strengthen the mainstreaming of gender issues into policies and programs. Annex I provides further policy recommendations formulated by ILO and OECD to stimulate the development of women entrepreneurship.

C. YOUTH

As for women entrepreneurship, supporting young entrepreneurs entails a similar triad of improving access to finance, providing business assistance and support and optimizing the regulatory framework. Policymakers could sometimes be in the driving seat for these recommendations (particularly as regards setting the regulatory environment), but their role might often simply be limited to encouraging NGOs and/or the private sector-led initiatives aimed at providing financing or business development support.

(a) Improving access to finance can be done by employing a variety of mechanisms to support young entrepreneurs depending on the amounts involved and stage of development of their endeavour. These include:

- Grants and free money (particularly for early-stage) through start-up grants, temporary allowances, or prize and awards to name some;
- Soft loans, guaranteed loans or alternative forms of guarantee/collateral like solidarity group guarantees as instruments for debt financing at later stages;
- Venture capital, angel investors or impact investments as maturity equity financing mechanisms;
- Information and counselling on access to finance and funding through entrepreneurship centres or incubators, development of financial literacy (banks and NGOs can play a key role here), and one-stop-shop services that banks could establish to assist young entrepreneurs with the application package and issuance of related documents;
- Improve the regulatory environment for start-up finance by reducing the threshold to start a business (i.e., capital requirement), encouraging youth to open bank accounts and manage savings or provide youth with tax relief or incentives to increase their personal savings and subsequently their chances of having enough start-up capital;

(b) Providing business assistance and support entails different possible options, among them:

- Providing information, advice and counselling by raising youth awareness on existing support mechanisms and disseminating information through the Internet and youth social networks, among others;
- Building business networks involving a variety of mechanisms from informal business mentoring from experienced professionals, business networks platforms (led by chambers of commerce, financial institutions or even youth-led), or clusters linking young entrepreneurs to financial investors, and help spread technology and innovation by facilitating knowledge exchange, product promotion and research commercialization and of course opening youth access to business incubators (often restricted in access to highly innovative start-ups) and developing alternative mini-incubators such as shared workspace models;

(c) Optimizing the regulatory framework

- Simplifying administrative procedures by, inter alia, facilitation of business registration procedures, simplification of tax filing requirements and of accounting methods for determining entrepreneur's tax liabilities, and review of bankruptcy laws to make young entrepreneurs more tolerant to risk-taking and business failures;

- Making the business regulatory environment more predictable by avoiding frequent changes and informing young entrepreneurs early enough about them, making competition law more effective, and reducing corruption by implementing reforms aimed at increased transparency and accountability, including in the provision of financial services;
- Providing assistance and advice on regulatory issues to youth whether taxes, or administrative processes (for example a step-by-step checklist of administrative processes during the registration phase) and disseminating information on procedures and ongoing changes in the regulatory environment.

D. Entrepreneurship education

The formal schooling system should integrate comprehensive entrepreneurship education into the national curriculum at all levels to embrace an entrepreneurship career path. Set out below are specific recommendations targeting each education level and vocational training and general recommendations.

(a) Develop comprehensive curricula on technical, non-cognitive and life skills and entrepreneurial behaviours (e.g. confidence, flexibility, negotiation, opportunity seeking, resilience, leadership, network building, risk-orientation);

(b) Improve/adapt training for educators and trainers to equip them with innovative, learner-centred and active learning methods conducive to entrepreneurship training;

(c) Promote networks of trainers (mechanisms to facilitate good practices exchange and resource sharing); and develop public/private cooperation (e.g. networks, shared-facilities, apprenticeships);

(d) At the primary level, skills, knowledge and attitudes conducive to entrepreneurial behaviour should be introduced. This can be enhanced by promoting entrepreneurial extracurricular activities and experimental and learning-by-doing methodologies;

(e) At the secondary level, more interactive, hands-on and experiential teaching methods such as team-based activities, role-playing, simulations and games should be encouraged, while still promoting entrepreneurship through diverse extracurricular activities and promoting the use of technology. This should be enhanced by integrating entrepreneurship into the curriculum, such as optional courses or afterschool activities;

(f) At the tertiary level, develop effective curricula that provide students with the basic skills for starting and operating a business, including basic accounting. Consider creating entrepreneurship schools and centres that integrate the field with traditional subjects, provide specific training, R&D and follow-up services for students. Networking and exchange among universities should also be facilitated and encouraged;

(g) In vocational training:

- Include business development skills and real-world knowledge and focus less on the formal business plan;
- Create separate schools for entrepreneurship development that are affiliated but distinct from vocational schools (to learn simultaneously entrepreneurial and vocational skills);
- Create more effective engagement with entrepreneurs and engage private-sector firms to supply curriculum guidelines and materials.

E. Infrastructure

Internet access, despite many improvements over the last two decades, remains broadly limited in capacity and quality and relatively expensive particularly in its fixed broadband variant (the latter applies even to GCC).

(a) Without a universal and quality Internet access that results from effective national digital strategies coordinated with innovation strategies, one could not envisage any large-scale application of Digital frontier technologies like the Internet of things, for instance. Although this is primarily a government-led endeavour, it cannot effectively work without all stakeholders' participation;

(b) Another issue relates to the limits that could be imposed on intrusion into privacy. One specific concern for the region is that some authorities might view big data associated with effective AI-based algorithms as a panacea for effective surveillance and social control before any useful services. It befalls on civil society and entrepreneurs to control for the former and publicize for the latter the logic of algorithms used for analysing data; what patterns do they help detect and to whom this information is addressed, particularly if data is not anonymized.

F. Leveraging the Diaspora

A recent survey of Arab Diaspora by the World Bank shed an instructive light on the role it could play for developing entrepreneurship in the Arab region. The main survey concluded that the Diaspora would like to support the economic development of their home countries, but they distrust institutions and need change.[129] Therefore it is important that:

(a) Governments engage strategically with small groups of diaspora overachievers in an elite program to benefit the country;

(b) Governments should help to establish knowledge exchange networks so that the skills of diaspora members can be tapped into more easily;

(c) Government and private sector-led entrepreneurship initiatives should systematically call on the professional diaspora and business angels to provide seed financing and mentorship to high growth entrepreneurs, especially in early-stage seed deals.

G. Measurement

(a) In the issue of measuring youth entrepreneurship for which there is a scarcity of data for Arab countries, a possible approach is to use as a first step raw data from linked labour force-enterprise surveys as they allow building a comprehensive listing of businesses and identify own-account workers and employers. As a second step, the sample of businesses extracted from the first phase is to conduct a second-phase enterprise-type survey. While the first phase is used to identify entrepreneurs and document their main individual, household and job characteristics, the second phase is used to analyse business characteristics as well as entrepreneurial behaviours and perceptions of the entrepreneurs identified in the first phase. Finally, a third phase focuses on household consumption expenditure and allows an analysis of poverty;

(b) Arab countries should consider implementing indicators suggested by the UNCTAD Entrepreneurship Policy Framework and Implementation Guidance (annex II). Arab countries are encouraged to improve their data for monitoring entrepreneurial activities (in general and by youth and women in particular) in order to elaborate better and appropriate policies;

(c) Countries should improve information sharing with specialized international organizations; this not only makes their data readily available for better comparability with other countries but equally provide an incentive for these organizations to include more Arab countries in their assessments and studies;

(d) Consider using the indicators from the SDGs under goals 4 and 8 where entrepreneurship is explicitly mentioned or other indicators where it has an indirect impact, as a first step to measure entrepreneurship impact on SDGs.

[129] Malouche and others, 2016, pp. 12, 40.

H. Potential opportunities to enhance entrepreneurship

1. *Innovation for development*

All Arab countries – to a certain extent – lack a well-functioning National Innovation System (NIS), a requirement for the development or adaptation of frontier technologies by academia, research centres, and, most importantly, the private sector in advanced economies.

(a) Governments and stakeholders should work on efforts to develop properly functioning national innovation systems so that they have the capacity to deal with the frontier technologies;

(b) New inclusive innovation approaches that focus on pro-poor, inclusive, frugal, grass-roots and social innovation should be considered for their complementary role that can open the potential for young and women entrepreneurs;

(c) The new innovation approaches are not well documented in the Arab region, and it is necessary that organizations conduct a detailed assessment of the Arab region with specific recommendations to overcome factors (most likely social, cultural, and political) that block their adoption in the region;

(d) Although frontier technologies offer many options, it is important that entrepreneurs first seek to understand the problem that they want to solve, before the technology is applied. Stakeholders should help entrepreneurs to better clarify the real problem to solve and how benefits from solving might lead to a concrete and sustainable revenue flow for entrepreneurs, particularly if they embark on a relatively risky endeavour of providing a solution through a new technology solution when that has not been yet tested at large scale. The government should likely consider establishing safety nets for entrepreneurs that test new technologies in case of failure.

2. *Value Chain Development*

Although value chain development and optimization do not primarily address entrepreneurship development, innovative entrepreneurs seeking to enhance the value they extract from their position within a given value chain could enhance their opportunities for achieving such a result.

(a) Policymakers and development actors' (i.e., international organizations, NGOs, local authorities) interventions aimed at value chain development design their interventions within specific economic sectors alongside the concerned stakeholders. Such interventions aim to introduce primarily a sustainable change that persists beyond the intervention time. It is, therefore, necessary for Arab countries to encourage such value chain development interventions, perhaps focused on local value chains in sectors and areas affected by high levels of informality and low productivity;

(b) Value chain development in rural areas is important, especially regarding agriculture, as many youth and women find themselves in this sector. It is, therefore, necessary to develop and/or improve local value chains to provide decent jobs and enhance food security. Possible options are to integrate procurement chains of supermarkets distribution, enhancing sustainable use of local resources and implementing measures to reduce food loss.

3. *Social Entrepreneurship*

(a) Governments should facilitate the regulatory framework for social enterprises and, as important, open up opportunities for social entrepreneurs to play their role in providing public good and service by allowing innovative public-private partnership models;

(b) Investors and donors should consider investments in social enterprises as an important avenue to fulfil their mandate;

(c) Civil society and local authorities should engage in an active dialogue with potential social entrepreneurs to develop social enterprise initiatives to the benefit of their population;

(d) Social entrepreneurs should leverage opportunities offered by frontier technologies and technological innovation to address more efficiently and at lower cost critical challenges of, inter alia, water treatment and sanitation, preserving the environment and addressing the sustainability of cities through 'smart service delivery'.

4. *Digital Platforms and Content*

(a) Government and policymakers could contribute to ecosystem improvement by acting on business environment issues and easing access to credit, particularly through the banking system;

(b) Governments might consider providing financial support for innovative Digital start-ups, while incubation through the operational role is better left to the concerned stakeholders (private sector and academia). Cross-country investments (particularly for early-stage VC) should be encouraged and facilitated;

(c) Governments should also open access for digital services and products in their countries; it is only thus that Arab talent and efforts could be mutualized, resulting in scale digital platforms able to compete globally. The success of Souq.com, for instance, owes much to its capability to operate its business in many Arab countries;

(d) Digital platforms that address issues of local concern to populations should be developed and not seek to just replicate and compete with global platforms with a narrow focus on the most affluent Arab population;

(e) Civil society and NGOs should closely monitor the safety of platform user's data to avoid malevolent theft or diversion of personal data;

(f) Content developers should seek to provide confirmed, factual information that brings local added value. Digital media platforms, whether associated with a traditional media or standalone, play an important role in this respect and will gain audience and respect (and become able to monetize their services) only after having established such a reputation;

(g) Arab governments should remove online content restrictions and filtering and encourage initiatives (from individual bloggers to institutional media) aimed at providing quality online content. This will necessarily contribute to the creation of a favourable ecosystem for digital content entrepreneurship.

VI. CONCLUDING REMARKS

This study reviewed the situation of Arab countries based on their competitiveness at large, focusing on factors that impact entrepreneurship. It issued recommendations in view of better leveraging innovation and entrepreneurship to the benefit of the youth and women. Besides the recommendations, some global observations and remarks were also mentioned.

First and foremost, rent-based economic systems of Arab countries have proved to be likely responsible for the high unemployment rate among youth and their modest entrepreneurship activities in a context of large informality and poor productivity of the private sector. Arab women suffer from this context, which is compounded by social values and gender stereotypes that, despite undeniable advances in their education enrolment even at tertiary level, limit their economic participation and economic empowerment whether through employment or entrepreneurship.

The general policy recommendations raised in this document are aimed at improving this situation from the perspective of the specific issue addressed by this study. However, one might easily observe that, for many, they cannot materialize without a global reform agenda context that aims at changing the 'global economic business model' prevailing in most Arab countries. A reform agenda addressing this broader issue, even if it constitutes *an essential pre-requisite* for the effectiveness of recommendations suggested in this document, is beyond its scope.

Specific policies targeted towards youth and women without much surprise entail integrated and long-term approaches where issues of skills, financing, advisory services and, no less, access to market and new value chains are of prime importance. If one overarching recommendation can be raised with regard to such initiatives, short-term and restricted scope (focusing on one single issue) initiatives are not prone to provide tangible results and should be avoided. Governments should try to play the role of facilitators, contribute to the funding, and let the concerned actors with the support of their own representative organizations (NGOs, private sector, local authorities) define and manage programmes. It is only thus that their sustainability can be assured. Needless to say, this is quite incompatible with top-down authoritarian/paternalistic approaches primarily driven by the motivation to buy social peace.

Thirdly, we recall an observation raised in the introduction that addressing the challenge of empowering the tens of millions of disenfranchised Arab youth and women needs approaches prone to *enhance inclusiveness at scale*. The suggested value chain development (particularly in local contexts and in agriculture) and social entrepreneurship are interesting approaches towards this objective. Also leveraging Digital platforms and content with 'new eyes' that address first and foremost local concerns and don't seek to blindly follow global trends for the benefits of only the most affluent in the region is much needed. These methods do not claim to represent the only possible approaches, but they provide good examples where entrepreneurship can be appropriately leveraged to the benefit of the largest beneficiaries.

Finally, innovation and entrepreneurship could address the Arab region's SDG challenges. In turn, these could be transformed into opportunities, if associated with proper inclusive approaches and driven by motivated – and well educated – youth and empowered women. Beyond all 'technical' recommendations, this needs, first and foremost, a new social contract.

Annex I

ILO and OECD policy recommendations on women entrepreneurship development

The table below provides a summary of policy recommendations formulated in the work of ILO and OECD to develop women entrepreneurship.

Policy recommendations	Selected regional good practices
Entrepreneurship training	
• **Target vulnerable women:** Specifically, those severely impacted by educational and knowledge constraint and make knowledge about the existence of entrepreneurship programs accessible to them with training programs customized to suit their needs better; • **Consider socio-cultural constraints:** Entrepreneurship training should provide women with soft skills, self-esteem and access to peer networks. Safe transport, secure environment, family-friendly timing and childcare facilities should be a high priority in the design stage of programmes; • **Foster cooperation with the private sector:** Develop curricula relevant to entrepreneurs, offer internship opportunities for prospective female entrepreneurs, help them expand their networks and put them in touch with successful business persons and female role models.	• The **Neqdar Nesharek** programme[1] in rural Upper Egypt targeted 4,500 young women (between 2003-2014) aged 16-29 years old, by providing them with skills and supporting them in starting a business or seeking employment. This program is exemplary in the gender-sensitive approach it adopts, which includes gender-sensitive outreach, creating female-friendly spaces during training, minimizing the distance to training facilities, offering flexible timing of classes and close mentoring by local women serving as role models; • **INJAZ Al-Arab**[2] has been implementing entrepreneurship education training in the MENA region since 1999. Working with high school and university students, the organization's Company Program enables small teams to develop a business idea and a business plan and work through the experience of a full lifecycle of the business from the establishment to exit with the support of private sector companies, teachers and experts. Assessments of the Company Programs in Egypt, Jordan, Lebanon, Morocco, Saudi Arabia, and the United Arab Emirates found that participants (aged 16-17) do indeed gain substantially in terms of initiative, self-motivation and more critical mindsets, reflected in changing attitudes to both job search and entrepreneurship.

[1] https://www.popcouncil.org/research/neqdar-nesharek.

[2] http://www.injazalarab.org/.

Policy recommendations	Selected regional good practices
Access to finance	
• **Account for women's needs:** Provide gender-sensitivity training to banks to provide loans to women-owned start-ups who lack access to long-term loans at reasonable interest rates and flexible repayment schemes; • **Finance innovative start-ups:** Introduce incentives to banks to pilot special loan programs and targeted credit for women with promising early-stage enterprises that have high growth potentials, who need access to larger loans and business grants that enable investments, even if they have little collateral; • **Improve access to information and complementary services:** Enhance awareness of young people and women without previous experience in formal banking about lending opportunities; • **Take rural realities into account:** Adjust credit conditions to the needs of rural households with various sources of income from a variety of farm and non-farm activities that can be quite volatile.	• In **Lebanon**, with the support of the IFC,[3] **BLC Bank** launched the Women's Empowerment Initiative (WEI), which offers services for women entrepreneurs, especially in terms of facilitating access to finance. Through this initiative, the number of loans to women grew by 55 per cent and the number of bank deposit accounts held by women by 17 per cent as of December 2012; • In **Jordan**, programs that lend primarily to women are: the Micro Fund for Women (96 per cent of borrowers are women), FINCA Jordan16 (98 per cent women, low income entrepreneurs), Tamweelcom (95 per cent women), Alwatani (85 per cent of borrowers are SMEs run by women), Ahli MicroFinancing Company (all sectors except agriculture), Development and Employment Fund (small projects and micro-activities), and Middle East Microcredit Company-MEMCC21 (for rural SMEs); • In **Saudi Arabia**, the Women's Higher Technical Institute, affiliated with the Technical and Vocational Training Corporation (TVTC), aims to grant loans of up to SAR 200,000 ($53,000) to its graduates to help them launch small businesses; • See box 19 on Berytech.
Advisory services	
• **Offer follow-up programs:** Entrepreneurship support should also be available at later stages of business development. Follow-up programmes for young people and women struggling to develop and grow their existing businesses should be expanded; • **Consider socio-cultural barriers and mobility constraints:** Provide, when needed, personal counselling to women by other women and ideally in the community context; • **Support promising start-ups:** Enhanced support to these start-ups plays an important role in creating a friendly business climate for them, provides young people with role models and examples and changes public perceptions about entrepreneurship.	• Successful interventions, such as the **Neqdar Nesharek** program in rural Upper Egypt (see above), provide young women with female mentors from their own community, which can be an important factor in ensuring mutual trust and acceptance; • Two incubators in Egypt (Hatshepsut Women Business Incubator) and Morocco (AFEM – see below) are identified as providing **follow-up support** to the enterprises once they graduate from the business incubator; • See box 19 on Berytech.

[3] World Bank International Finance Corporation.

Policy recommendations	Selected regional good practices
Access to networks, markets and value chains	
• **Stimulate business incubators for women:** Increase the number of incubators that actively seek project proposals from women entrepreneurs and provide conditions conducive to the integration of women-owned SMEs into value chains and clusters; • **Support cooperatives:** The establishment of women's cooperatives allows rural businesses and entrepreneurs to bolster their bargaining power and economies of scale through the cooperative approach; • **Foster access to ICT and technological knowledge:** ICT facilitates access to all kinds of information about markets, technologies and programs. Therefore, access to high-quality internet, particularly in remote rural areas, should be made available, and women, who are underrepresented in technology-intense jobs, need to be made aware of the benefits of technology and how to use the internet. Strengthen women's voices in business associations: Ensuring effective and balanced gender representation from the bottom to the top of such organizations does not only raise women's voices in policy, but also widens network building and sharing of good practices and strategies.	• **Women business incubators** are starting to develop in the Arab region. In 2014, the OECD study on Arab women entrepreneurship[4] identified structures in Bahrain, Egypt, Jordan, Oman, Morocco, Saudi Arabia and the United Arab Emirates. The incubators are open to women entrepreneurs across all sectors and have different targeting strategies as regards education attainment and income profile; • The 'Association des Femmes Chefs d'Entreprise (AFEM)'[5] is a major women entrepreneurs' association in **Morocco** with about 600 members (employing more than 50 000 workers) and eight branches. It offers mentoring, training and professional development to members, advocates for policies and programs in favour of women's entrepreneurship and operates many incubators; • The afore-mentioned OECD study surveyed types of business development support offered by supporting organizations for women and found that training on the use of **ICT for business development** is one of the services offered but only in seven BDS organizations among those who responded to the survey.

Source: Compiled by ESCWA based on ILO, 2018a, pp. 20-32 for Policy Recommendations; OECD, 2014, for some good regional practices.

[4] OECD, 2014, p. 95.

[5] http://www.afem.ma/.

Annex II

Indicators to measure effectiveness of entrepreneurship policies

Policy area	Possible indicators	What they monitor
Formulating national entrepreneurship strategy	• Number of formal business start-ups created annually; • Survival rates; • Share of total start-ups in target areas such as high-tech enterprises, green enterprises, social enterprises or enterprises in key export sectors; • Share of total start-ups in target groups such as women, youth, minorities and rural populations; • Job growth due to start-ups; • Revenue generated and taxes paid by start-ups (values and growth rates).	• Success of entrepreneurs in starting and sustaining businesses; • Success in reaching specific targets for different sectors; • Improved economic opportunities for target groups of the population; • Economic impact of entrepreneurship.
Optimizing the regulatory environment	• Number of procedures to open a business, number of agencies involved; • Number of days, cost to start or close a business; • Number of days, cost to register a title to a property; • Timeliness of dispute resolution mechanism: number of days from filing to judicial decision.	• Ease of starting/closing a business; • Effectiveness of the judicial system.
Enhancing entrepreneurship education and skills development	• Share of secondary schools offering entrepreneurship programs/extra-curricular activities; • Share of technical/vocational schools offering entrepreneurship programs/ extra-curricular activities; • Number of annual spin-offs from universities/ research programs.	• Availability of entrepreneurship education; • Success of higher education institutions in enterprise-relevant research and in commercializing results of research.

Policy area	Possible indicators	What they monitor
Facilitating technology exchange and innovation	• Share of graduates with science/ engineering degrees; • Number (and occupancy rates) of science parks, technology hubs and incubators; • Share of technology-intensive start-ups in total start-ups; • Share of technology-intensive start-ups with venture capital funding.	• Success in promoting science/ engineering careers; • Availability and success of facilities for the promotion of technology-intensive start-ups; • Success in promoting technology-intensive start-ups.
Improving access to finance	• Share of microfinance/SME loans in total business loans; • Average value of collateral required for SME loans (per cent of the loan); • Total VC invested in SMEs; • Credit bureau coverage (per cent of adult population).	• Performance of banking sector in facilitating loans to entrepreneurs; • Support by private investors for start-ups; • Adequacy of financial infrastructure for entrepreneurship lending.
Promoting awareness and networking	• Results of opinion/attitudinal surveys and evaluations following awareness campaigns; • Number of business associations devoted to women, youth, rural entrepreneurs, SMEs, …	• Success in fostering a positive societal attitude toward entrepreneurs; • Networking Opportunities networking for specific target groups.

Bibliography

Acemoglu, Daron and Robinson, James A. (2012). *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. Crown Publishers, New York.

Acs, Z.J. and others (2016). *Global Entrepreneurship Index 2016*. Washington, D.C.: Global Entrepreneurship and Development Institute. Available at https://thegedi.org/global-entrepreneurship-and-development-index/.

Department of Economic and Social Affairs (DESA) (2018), *World Economic and Social Survey 2018: Frontier technologies for sustainable development* Available at https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/WESS2018_full_web.pdf.

Economist Intelligence Unit (EIU), (2018), *Adding it up: The economic impact of Additive Manufacturing*. Available at https://eiuperspectives.economist.com/sites/default/files/Addingitup_WebVersion.pdf.

Economic and Social Commission for Western Asia (ESCWA) (2005), *Information and Communication Technologies and Women: Draft Issues and Viewpoints*.

ESCWA (2012), *Addressing Barriers to Women's Economic Participation in the Arab Region.* Available at https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/e_escwa_ecw_12_1_e.pdf.

ESCWA (2015). *Arab Sustainable Development Report*: *First Edition, 2015*. Available at https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/arab-sustainable-development-report-1st.pdf.

ESCWA (2017a), *Innovation Policy for inclusive sustainable development in the Arab region.* Available at https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/innovation-policy-inclusive-sustainable-development-arab-region-english_0.pdf.

ESCWA (2017b), *The Innovation Landscape in Arab Countries: A Critical Analysis.* Available at https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/innovation-landscape-arab-countries-critical-analysis-english.pdf.

ESCWA (2017c), *Perspectives on Digital Economy in the Arab Region.* Available at https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/perspectives-digital-economy-arab-region-english_0.pdf.

ESCWA (2017d), *Social Development Report 2: Inequality, Autonomy and Change in the Arab Region.* Available at https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/social-development-report-2-english_1.pdf.

ESCWA (2017e), *Technology and Innovation with a focus on the 2030 Development Agenda: Community-based Innovation for Improved Social Wellbeing*. Available at https://www.unescwa.org/sites/www.unescwa.org/files/page_attachments/community-based-innovation-agenda-2030-en.pdf.

ESCWA (2017f). *Community-based innovation and technology for improved social well-being*. November. Available at https://www.unescwa.org/sites/www.unescwa.org/files/page_attachments/community-based-innovation-agenda-2030-en.pdf.

ESCWA (2018a), *Report of the 2018 Arab Forum for Sustainable Development "Natural resources, future generations and the common good"*. United Nations House, Beirut, 24-26 April 2018. Available at https://www.unescwa.org/sites/www.unescwa.org/files/events/files/arab-forum-sustainable-development-2018-final-report-en.pdf.

ESCWA (2018b). *Arab Horizon 2030: Digital Technologies for Development. Provisional Version*. Available at https://www.unescwa.org/sites/www.unescwa.org/files/page_attachments/arab-horizon-2030-digital-technologies-development-en.pdf.

ESCWA (2018c), *Fostering Innovation in Small and Medium Enterprises in the Arab Region*. Available at https://www.unescwa.org/publications/study-innovation-small-business-arab-region.

Global Entrepreneurship and Development Institute (2017). *Global Entrepreneurship Index Data 2018*. Washington. Available at https://thegedi.org/global-entrepreneurship-and-development-index/.

Global Entrepreneurship and Development Institute (2016). *Global Entrepreneurship Index Data 2017*. Washington. Available at https://thegedi.org/global-entrepreneurship-and-development-index/.

Global Entrepreneurship Monitor (GEM) (2017a), *Global Report 2017/18*. Available at https://www.gemconsortium.org/report/50012.

GEM (2017b), *Middle East and North Africa Report 2017*. Available at http://gemorg.bg/wp-content/uploads/2018/02/gem-2017-mena-report-1511260863.pdf.

Halabi, S., Kheir, S., Cochrane, P. (Halabi and others) (2017). *Social Enterprise Development in the Middle East and North Africa: A Qualitative Analysis of Lebanon, Jordan, Egypt and Occupied Palestine*. Cairo, Egypt and Beirut, Lebanon. Wamda. Available at https://wamda-prod.s3.amazonaws.com/resource-url/e2981f10ea87448.pdf.

International Labour Organization (ILO) (2016a), *National Women's Entrepreneurship Assessment*. Available at https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_504169.pdf.

ILO (2016b), *Value Chain Development for Decent Work: How to create employment and improve working conditions in targeted sectors, Second edition*. Available at https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_seed/documents/instructionalmaterial/wcms_434363.pdf.

ILO (2017a), *Women's Entrepreneurship Development Assessment: Egypt*. Available at http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_seed/documents/publication/wcms_551168.pdf.

ILO (2017b), *Évaluation nationale du développement de l'entreprenariat féminin en Algérie : Situation et Recommandations* Available at http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_seed/documents/instructionalmaterial/wcms_568885.pdf.

ILO (2017c), *Évaluation nationale du développement de l'entreprenariat féminin en Tunisie : Situation et Recommandations* Available at http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_seed/documents/publication/wcms_551170.pdf.

ILO (2017d), *Global Employment Trends for Youth 2017: Paths to a Better Working Future*. Available at http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_598669.pdf.

ILO (2018a), *Évaluation du développement de l'entreprenariat féminin au Maroc: Situation et Recommandations* Available at http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_seed/documents/publication/wcms_541962.pdf.

ILO (2018b), *Constraints and Good Practices in Women's Entrepreneurship in MENA. Case study: New evidence on gender attitudes towards women in business. Taqueem Initiative: Impact Reports Series, Issue 10*. Available at http://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_622769.pdf.

ILO (2018c), *Fostering Employment through Business Support to Young Entrepreneurs in Lebanon: Berytech Taqueem Initiative: Impact Brief Series, Issue 13*. Available at https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_619773.pdf.

INSEAD. 2011. *The Global Innovation Index 2011: Accelerating Growth and Development*. Available at https://www.globalinnovationindex.org/userfiles/file/GII-2011_Report.pdf.

INSEAD, WIPO, Cornell University (INSEAD) (2018a), *The Global Innovation Index 2018: Energizing the World with Innovation*. Available at http://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2018.pdf.

INSEAD, Adecco, Tata Communications (INSEAD) (2018b), *The Global Talent Competitiveness Index: Diversity for Competitiveness*. Available at https://www.insead.edu/sites/default/files/assets/dept/globalindices/docs/GTCI-2018-report.pdf.

Kondo, N. (2016). Old problems, new solutions: measuring the capacity for social innovation across the world. *The Economist Intelligence Unit*, 26 September. Available at https://eiuperspectives.economist.com/technology-innovation/old-problems-new-solutions-measuring-capacity-social-innovation-across-world-0.

McKinsey Global Institute (McKinsey) (2017). *Jobs lost, Jobs Gained: Workforce Transitions in a Time of Automation*. Available at https://www.mckinsey.com/~/media/McKinsey/Global per cent20Themes/Future per cent20of per cent20Organizations/What per cent20the per cent20future per cent20of per cent20work per cent20will per cent20mean per cent20for per cent20jobs per cent20skills per cent20and per cent20wages/MGI-Jobs-Lost-Jobs-Gained-Report-December-4-2017.ashx.

McKinsey (2018a), *The Future of Jobs in the Middle East*. January 2018. Available at http://www.lsce-mena.org/uploads/resources/mckinsey-Full_Report.pdf.

McKinsey (2018b), *The Power of Parity: Advancing Women's Equality in Asia Pacific*. April 2018. Available at https://www.mckinsey.com/featured-insights/gender-equality/the-power-of-parity-advancing-womens-equality-in-asia-pacific.

Malouche, Mariem Mezghenni; Plaza, Sonia; Salsac, Fanny (Malouche and others) (2016), *Mobilizing the Middle East and North Africa Diaspora for Economic Integration and Entrepreneurship***.** World Bank Group**.** Available at http://documents.worldbank.org/curated/en/251661484064811210.

Momani, Besma (Momani) (2016), *Equality in the Economy: Why the Arab World Should Employ More Women*, Brookings Doha Center Policy Briefing, December 2016. Available at https://www.brookings.edu/wp-content/uploads/2016/12/bdc_20161207_equality_in_me_en.pdf.

Momani, Besma (Momani) (2017), *Entrepreneurship: An Engine for Job Creation and Inclusive Growth in the Arab World*, Brookings Doha Center Policy Briefing, March 2017. Available at https://www.brookings.edu/wp-content/uploads/2017/03/entrepreneurship_in_the_arab_world.pdf.

Moussa, Roula (Moussa) (2017), *The Role of Technology in Sparking Diaspora Engagement in Lebanon*. Expert Group Meeting on Innovation and Technology for Achieving the 2030 Development Agenda. ESCWA, Beirut, 5-7 December, 2017. Available at https://www.unescwa.org/sites/www.unescwa.org/files/events/files/roula-moussa-case-study-technology-diaspora-engagement-lebanon-en.pdf.

Organization for Economic Co-operation and Development (OECD) (2014), *Women in Business 2014: Accelerating Entrepreneurship in the Middle East and North Africa Region*, OECD Publishing. Available at http://dx.doi.org/10.1787/9789264213944-en.

OECD (2017a), *Unlocking the Potential of Youth Entrepreneurship in Developing Countries: From Subsistence to Performance*, Development Centre Studies, OECD Publishing, Paris. Available at http://dx.doi.org/10.1787/9789264277830-en.

OECD (2017b), *Women's Economic Empowerment in Selected MENA Countries: The Impact of Legal Frameworks in Algeria, Egypt, Jordan, Libya, Morocco and Tunisia*, Competitiveness and Private Sector Development, OECD Publishing, Paris. Available at http://dx.doi.org/10.1787/9789264279322-en.

OECD (2017c), *Entrepreneurship at a Glance 2017*, OECD Publishing, Paris. Available at http://dx.doi.org/10.1787/entrepreneur_aag-2017-en.

OECD (2018), *The Future of Rural Youth in Developing Countries: Tapping the Potential of Local Value Chains*, Development Centre Studies, OECD Publishing, Paris. Available at http://dx.doi.org/10.1787/9789264298521-en.

Ramalingan, Ben; Hernandez, Kevin; Prieto, Pedro Martin, and Faith Becky (Ramalingan and others) (2016), *Ten Frontier Technologies for International Development*. Institute of Development Studies, November 2016. Available at https://www.gla.ac.uk/media/media_524607_en.pdf.

Terjesen, S. and Lloyed, A. (2014). *The 2015 Female Entrepreneurship Index: Analyzing the conditions that foster high-potential female entrepreneurship in 77 countries*. Washington, D.C.: Global Entrepreneurship and Development Institute. Available at https://thegedi.org/global-entrepreneurship-and-development-index/.

Unceta, A. and others (2016). Social innovation indicators. *Innovation: The European Journal of Social Science Research*, vol. 29, Iss. 2, pp. 192-204. Available at https://doi.org/10.1080/13511610.2015.1127137.

United Nations (UN) (2015), *Transforming our World: The 2030 Agenda for Sustainable Development.* Available at http://undocs.org/A/RES/70/1.

United Nations (2016), *Entrepreneurship for Development: Report of the Secretary-General*. Available at http://undocs.org/A//71/210.

United Nations (2017), *Entrepreneurship for Sustainable Development.* Available at http://undocs.org/A/RES/71/221.

United Nations Conference on Trade and Development (UNCTAD) (2012), *Entrepreneurship Policy Framework and Implementation Guidance.* Available at http://unctad.org/en/PublicationsLibrary/diaeed2012d1_en.pdf.

UNCTAD (2014), *Empowering Women Entrepreneurs through Information and Communications Technologies: A practical guide*. Available at http://unctad.org/en/PublicationsLibrary/dtlstict2013d2_en.pdf.

UNCTAD (2018), *Technology and Innovation Report 2018: Harnessing Frontier Technologies for Sustainable Development*. Available at http://unctad.org/en/PublicationsLibrary/tir2018_en.pdf.

World Bank (2012), *SMEs for Job Creation in the Arab World*: *SME Access to Financial Service*s. Available at http://documents.worldbank.org/curated/en/687631468110059492/pdf/715510WP0Box370r0Job0Creation0Final.pdf.

World Bank (2017), *Doing Business 2018: Reforming to Create Jobs*. Available at http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB2018-Full-Report.pdf.

World Bank (2018a), *Private Sector Solutions to Helping Smallholders Succeed: Social Enterprise Business Models in the Agricultural Sector*. Available at http://documents.worldbank.org/curated/en/370641521094121368/pdf/124302-WP-14-3-2018-16-1-20-bmibookMar.pdf.

World Bank, 2018b), *Reaching the Last Mile: Innovative Business Models for Inclusive Development*. Available at https://openknowledge.worldbank.org/bitstream/handle/10986/29544/124302-WP-14-3-2018-16-1-20-bmibookMar.pdf?sequence=1&isAllowed=y.

World Economic Forum (WEF) (2016), *The Global Information Technology Report 2016: Innovating in the Digital Economy*. Available at http://www3.weforum.org/docs/GITR2016/WEF_GITR_Full_Report.pdf.

WEF (2017a), *Realizing Human Potential in the Fourth Industrial Revolution: An Agenda for Leaders to Shape the Future of Education, Gender and Work*. White Paper, January 2017. Available at http://www3.weforum.org/docs/WEF_EGW_Whitepaper.pdf.

WEF (2017b), *The Future of Jobs and Skills in the Middle East and North Africa: Preparing the Region for the Fourth Industrial Revolution*. Executive Briefing, May 2017. Available at http://www3.weforum.org/docs/WEF_EGW_FOJ_MENA.pdf.

WEF (2017c), *The Global Competitiveness Report 2017-2018*. Available at http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017per centE2 per cent80 per cent932018.pdf.

WEF (2017d), *The Global Human Capital Report 2017: Preparing People for the Future of Work*. Available at http://www3.weforum.org/docs/WEF_Global_Human_Capital_Report_2017.pdf.

WEF (2018), *The Arab World Competitiveness Report 2018.* Available at http://www3.weforum.org/docs/Arab-World-Competitiveness-Report-2018/AWCR per cent202018.0724_1342.pdf.

Zein, Asmahan (Zein) (2017), *Lebanese League for Women in Business: Overview on Objectives and Activities*. Expert Group Meeting on Innovation and Technology for Achieving the 2030 Development Agenda. ESCWA, Beirut, 5-7 December, 2017. Available at https://www.unescwa.org/sites/www.unescwa.org/files/events/files/asmahan-zein-case-studies-lebanon-en.pdf.