

Re-dynamizing the Job Machine



Technology-driven transformation of labor markets in MENA

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INTRODUCTION

In spite of widespread signs of economic recovery in different parts of the world, unemployment is expected to remain at high levels globally. The International Labor Organization (ILO) has warned about a “jobless’ worldwide economic recovery. Youth unemployment is particularly high in the Middle-East and North Africa (MENA) region, a serious problem considering that more than half of the 369 million inhabitants of this region are under the age of 25.

There is, however, a window of opportunity: the ‘Millennials’ (i.e. young people under 25) are digitally connected as never before, creating the so-called Arab Digital generation.¹ Over the past few years the levels of connectivity have been increasing drastically. Between 2007 and 2012, internet penetration jumped 294 percent in the MENA region, while mobile data traffic grew 107 percent in 2013.² Companies and policy makers increasingly foresee that in such context Information and Communication Technologies (ICTs) can be used as a “game changer” to assist job seekers in finding jobs, up-skilling and stimulate job creation. And the economic consequences are large: with a collective GDP of US\$2.85 trillion, the Arab world ranks among the top ten largest economies; larger than that of India, Russia or Brazil.

A promise of the digital economy is that it can deliver wider opportunities for innovation. ICTs make it easier for more people to become entrepreneurs. New businesses can have access to cheaper digital platforms via cloud-based services, access to wider markets via e-commerce, access to open innovation possibilities and even access to wider sources of finance via channels like crowdfunding. The created Small and Medium Enterprises (SMEs) could then generate more employment. A report by Strategy& recently stated that “if the pace of digitization in the MENA region were to accelerate, it could create over 4 million new jobs by 2020”.³

A critical issue is just how much of the available labor in the region will directly benefit from the digital economy. Not everyone will become e-entrepreneurs or be employed by high-tech start-ups: “making life easier for tech start-ups will not by itself be sufficient to get young people off the street. Most do not have the skills to work in such firms, nor will these create enough jobs”, suggested The Economist in a recent article.⁴ Furthermore, companies across many non-IT industries are also increasingly demanding a set of skills that few people have. Companies are

increasingly generating ‘IT-intensive’ jobs, whose main purpose is to produce information or knowledge for the functioning of different business processes, which are increasingly digitized. People increasingly need up-skilling to fill those jobs.

The good news is that ICTs can foster employment and labor markets in several other fronts via a transformational effect on the overall economy. **This report analyzes how technology is likely to shape labor markets in the short and medium-term and how it can make labor markets more efficient through ‘re-dynamizing’ the job machine.**

The impacts on labor markets are multiple. Jobs are indeed being created in the ICT sector itself in the form of digital jobs and digital entrepreneurship. Yet, the users and beneficiaries need not to be digital experts. ICTs enable employment in all other sectors of the economy by:

- (i) facilitating job search and a better matching of jobs across all sectors (e.g. via online market places and also via more flexible forms of work from online contracting);
- (ii) facilitating up-skilling in diverse sectors of the economy (e.g. via online learning);
- (iii) empowering entrepreneurs at large irrespective of the sector (particularly Small and Medium Enterprises, SMEs);
- (iv) providing decision makers at all levels (front line customer-facing employees, back office employees, operations, etc.) with actionable data.

In addition to these four benefits of ICTs, the report also analyzes the role of digital technologies in shaping the type of skills demanded by companies. Technologies such as mobile platforms, cloud-based services, analytics and citizen-centric applications require innovations in business models, organizational processes and skills. Jobs that demand IT skills, often refer to as ‘e-skills’, can emerge in all kinds of organizations, large or small, including startups.

New skills are often technical (e.g. using certain type of software) or functional (e.g. learning how to do HR support tasks). Moreover, behavioral skills are also crucial because they determine how willing people are to launch a startup, to engage in open innovation, or to transform the workplace (involving e-leadership skills).

Businesses and governments have expressed readiness to act, but often lack the institutional frameworks, assessment tools and points of reference to do so efficiently. This report is an action

tool to understand the link between ICTs and talent - defined as the sum of both employable and entrepreneurial skills. It also aims at stimulating dialogue between governments, business and academia. The report takes two main steps:

1. *Identify*: identify how ICTs can help the youth connect with opportunities, get the pertinent training and foster entrepreneurs (e.g. SMEs);
2. *Measure*: establish a benchmarking framework, called the Digital & Talent Model, which can be deployed over time for allowing policy makers to evaluate the evolution of domestic labor markets as determined by the intersection of: Talent; ICTs and Innovation & Entrepreneurship (Figure I).

Figure I: The Digital-Talent Approach to Competitiveness



If used and leveraged properly, ICTs can expand the work opportunities for younger generations. Yet, managers and high-skilled professionals must also adapt by becoming the “dual-thinkers” that digitization requires:⁵ people who have the skills to recognize and develop new business opportunities, and the technical skills to identify which technologies to use to do so, or even to spot new business opportunities directly in technologies and applications.

The report is organized as follows.

- The first chapter identifies key trends from the labor market in the MENA region with a particular focus on the dimensions and origins of youth unemployment.⁶
- The second chapter discusses the role of ICTs in transforming labor markets and the empowerment of talent, including sections on the demand for new skills, upskilling and learning, data-driven decision-making and e-entrepreneurship. The chapter is based on the state-of-the-art knowledge on these areas and the discussion is tailored to the specific case of MENA.
- The third chapter proposes a benchmarking framework for evaluating the evolution of talent across countries of the region, particularly in the context of new digital technologies.
- The last chapter concludes with some policy recommendations on the areas of digitization, labor markets, education and entrepreneurship (areas that often overlap).

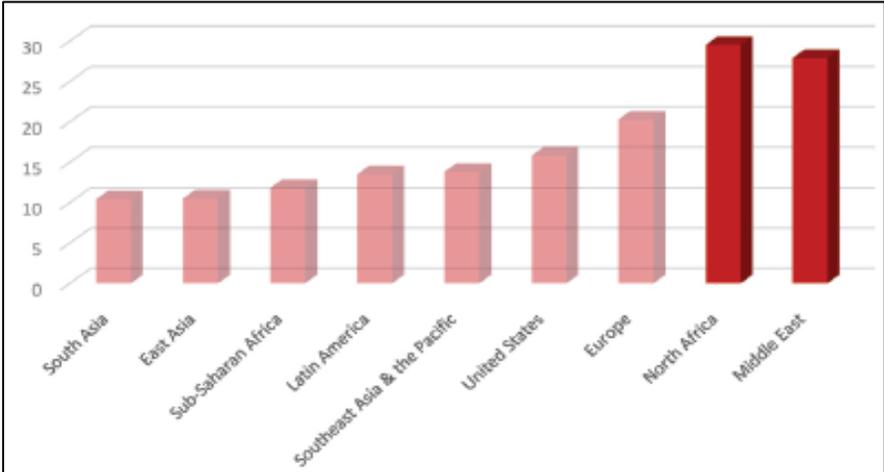
CHAPTER 1 - Labor Market in MENA and Trends of Adoption of ICTs

Technology can be leveraged to achieve better performance of labor markets. While the ICT landscape in the MENA region has improved considerably, labor markets continue facing challenges. Unemployment is high and there are shortages of many types of skills demanded by the economy. ICTs have not been fully leveraged to improve employment. In this chapter we present the trends of employment and ICTs adoption separately. In the next chapter we shall address how both phenomena are linked.

MENA Labor Markets and Youth Unemployment

Despite widespread signs of economic recovery in different parts of the world, unemployment remains high globally. Youth unemployment, in particular, is affecting both rich and emerging countries. Among the 34 members of the OECD, there are about 26 million youths not in education, employment or training.⁷ Approximately 262 million young people are in the same situation in emerging countries, estimates the World Bank. The most affected regions are South Asia, the Middle East and Africa, which concentrate almost half of the world’s young people.⁸

Figure 1.1: Youth Unemployment Rates (%) in 2014

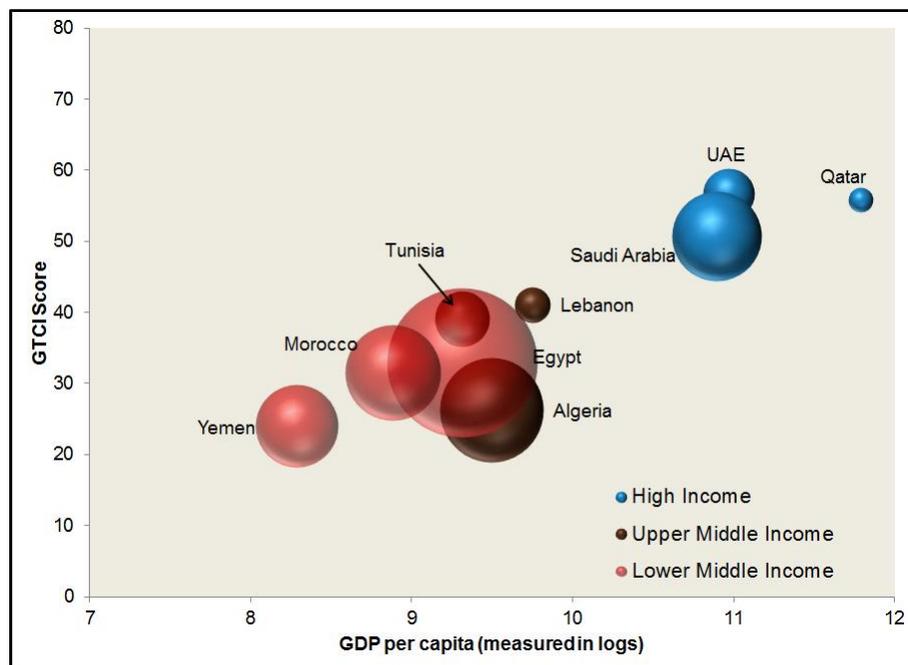


Source: Extracted from EFE (which uses data from ILO and the World Bank)

Although there are big disparities across countries of the region, there are common challenges...

Countries like Qatar, UAE and Saudi Arabia have a relatively good performance in the Global Talent Competitiveness Index (GTCI), INSEAD's flagship publication that benchmarks what countries do to attract, grow and retain talent (see Chapter 3 for more details). The ranking of Qatar, the regional leader, is the position 24 among the GTCI sample of 93 countries. After these three countries, there is a group of middle-income countries that do not have a talent performance as high as the top countries (Figure 1.2).

Figure 1.2: GTCI score in selected MENA countries

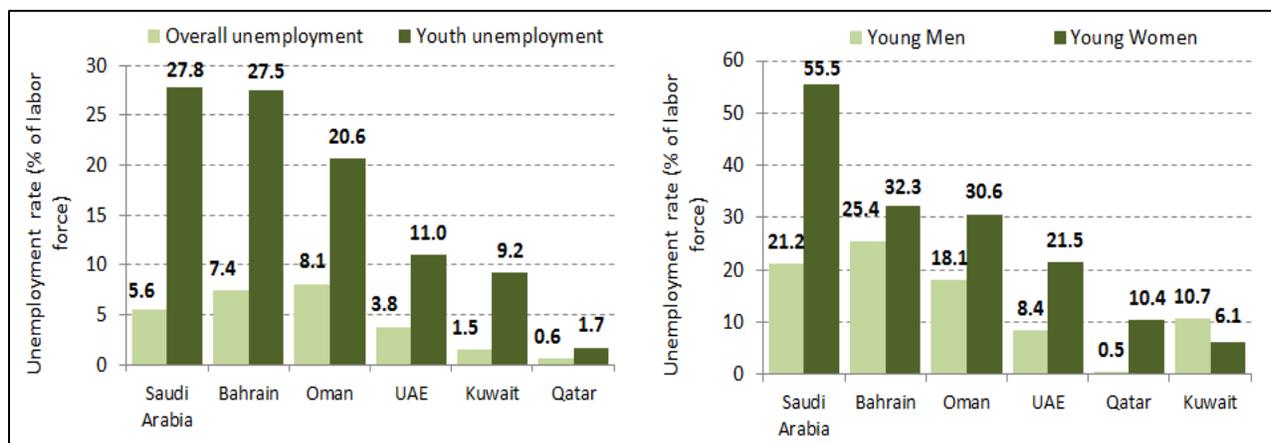


Note: the size of the bubble indicates the size of the country population

Based on the results of GTCI, Qatar is very good at attracting talent (so too is UAE). In terms of developing domestic talent, Qatar could still improve with respect to other high-income countries the performance of formal education (e.g. in terms of enrolment and quality). Life-long learning (i.e. firm training, management schools, etc.), by contrast, is among the best in world. People who are already in the labor market also benefit from access to growth opportunities (e.g. a good environment for networking and accessing decision-making positions).

Although countries of the Gulf Cooperation Council (GCC) are leading the way in terms of talent empowerment, they also present challenges. Youth unemployment rates are more than twice as large as overall unemployment rates (see Figure 1.3). In addition to this generational disparity, there are also marked gender disparities. With the exception of Kuwait, youth unemployment rates in GCC countries are much higher for women.

Figure 1.3: Youth Unemployment in GCC Countries, 2012



Source: World Economic Forum (2014)

The demographic “youth bulge” is both an opportunity and a challenge for MENA. With more than half of its population under 25 years old and the world’s highest regional youth unemployment rate, the Middle East and North Africa region stands at a critical juncture. As put by the World Economic Forum, “this youthful populace can turn into either a ‘youth dividend’ or a ‘youth liability’, contingent upon the region’s ability to create an enabling environment in which young people’s aspirations can be fulfilled”.⁹ Today, only 19 percent of the working age people in MENA have formal jobs.¹⁰ Informality is a barrier for boosting labor productivity.¹¹

Labor market segmentation does not encourage the emergence of the right skills....

Why is employment not being created? The consequences of the financial crisis are indeed a factor (although it affected particularly badly young people in the rich world). There are two additional structural factors (common in the developing world). First, the institutions that support

employment and business creation are often not as efficient as in other countries. Second, there is a growing mismatch between the skills that youngsters have and the vacancies that employers want to fill.

A recent report by the World Bank¹² suggests that this is due to a combination of forces. In economies where (1) the private sector has limited dynamism, (2) the public sector offers attractive employment conditions, and (3) relatively rigid labor regulations maintain labor market divides, the incentives to cultivate relevant skills can be distorted. In particular, in moving from school to work, young MENA citizens need to make a successful “double transition.” First, they need to obtain skills, competencies, and credentials of sufficient quality to become employable; second, they need to position themselves in a labor market characterized by segmentation.

Labor regulation in MENA is heterogeneous—more restrictive in North-African countries and more flexible in GCC countries— but all labor markets in the region contend with a relatively heavy public sector. The design of social insurance systems also influences the dynamics of labor markets: very generous, costly pension systems cover a small minority of workers, while the lack of well-functioning unemployment insurance and poverty-targeted social safety nets makes job losses extremely costly for people that do have access to formal employment.¹³

Privileges apply to both people and enterprises...

Some institutional obstacles to business creation are common in developing countries, including red tape, corruption and obstacles in the judicial system, and high cost of finance. They all limit the growth of SMEs and startups, which are the engine of job creation. Furthermore, in MENA there would also exist the problem of unequal treatment of different firms. The recent report “Jobs or Privileges” from the World Bank proposes that the slow creation of firms and employment in MENA is caused by policies that privilege a few dominant firms by insulating them from competition (although this problem varies across countries and cannot always be generalized to the whole region).¹⁴ For instance, treatment by tax administrations can be unequal and unpredictable depending on political connections.¹⁵

Also, restrictions on foreign firms to enter service sectors are among the highest in the world (some countries favor domestic firms by offering generous energy subsidies) and discretionary non-tariff technical barriers to trade are imposed in some countries. Firms in some industries receive more privileges than in other industries.¹⁶ Inequitable or protectionist policies in MENA have created an uneven playing field reducing competition among firms, which harms employment.¹⁷ For example, the World Bank argues that removing restrictions on foreign direct investment into the sector of services in Jordan would create more jobs even in domestic firms: a 1 percent increase in the share of employment in foreign firms would increase employment growth among domestic firms by 1 %-point over a five years period.

Small companies are the engine of job creation; and they are not growing...

The private sector simply does not create enough jobs. Between 42 percent and 72 percent of all jobs in the region are found in SMEs, which are not growing.¹⁸ For every 10,000 working-age people, only six new limited liability firms are created annually in MENA countries compared to an average of 26 new firms among all developing countries worldwide.

Progress is being made in terms of employability, but remains slow....

Over the past decades, MENA countries have significantly expanded access to education, with substantial growth in enrollment in secondary and tertiary education.¹⁹ However, employability - defined as the capital of skills, competencies, academic certificates, and professional qualifications, as well as the capacity to function in a job - remains a challenge in the region.

The situation to date shows little progress in confronting the challenge of youth unemployment in a structural manner, in spite of existing financial means. Possible explanations of the limited progress involve a lack of common understanding of the problem and the perception that risks associated with comprehensive solutions are too high. Policies often tackle the issue in a selective manner, without fundamentally challenging the status quo.²⁰

Leveraging ICTs is the key to matching the right skills....

Initiatives and policy actions in different domains are relevant for employment. Education policies that improve the matching between supply and demand for skills are evidently important. So too are policies for facilitating business creation (i.e. improve the ease-of-doing-business environment). In addition, if business creation is fueled by innovative products and services facilitated by ICTs, then policies of digitization also matter. And in this domain the region is doing real progress. For instance, better broadband infrastructure and a rapid uptake in digital adoption have made the ICT industry one of the most promising fields for job creation in the near-term. In 2010, the ICT industry in the Middle East was valued at \$81 billion but is on track to reach \$173 billion now in 2015.²¹ If the current pace of industry growth continues, it could generate nearly 4.4 million jobs over the next five years.²²

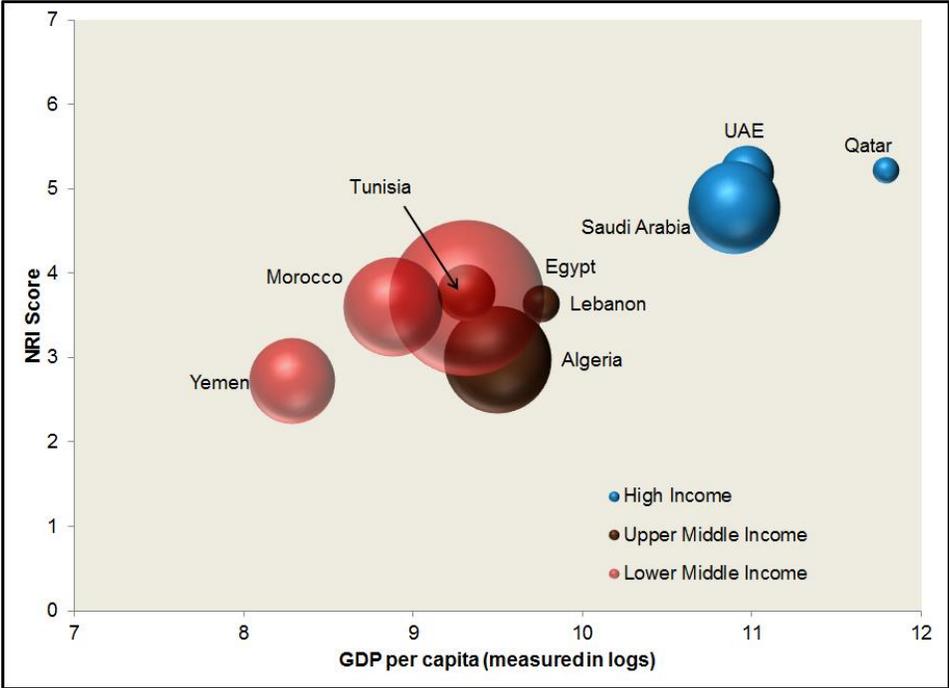
The expansion of ICTs can transform entire societies and how they leverage the talent they have. One example is the participation of women in the labor market, which is being enabled by the increasing adoption of digital technologies via two channels: by expanding the ICT industry, which is one of the top sectors employing women in MENA, and by making it easier for other industries to employ them. Online work platforms (see the case of Nabesh.com in Chapter 2) increasingly provide flexibility to workers with family commitments and enabling women to work from home where cultural sensitivities might otherwise prevent them from participating in the labor force.

ICT Readiness in MENA

The MENA region depicts a highly diverse outlook in terms of the capacity of countries to leverage ICTs to boost competitiveness and well-being. On the one hand, several Gulf Cooperation Council states have continued their efforts to improve ICT uptake and integrate ICTs better in more robust innovation ecosystems in order to obtain higher returns. On the other hand, many countries in North Africa continue to lag behind and suffer from important weaknesses in their framework conditions and overall innovation capacity that prevent them from fully leveraging ICTs and obtaining higher returns.

Qatar leads the Arab world and remains stable at 23rd place globally of the Networked Readiness Index, the ICT benchmarking tool from the Global Information Technology Report (GITR), published annually by INSEAD and the World Economic Forum (see Chapter 3 for more details).²³ In the past year, the country has continued to improve and upgrade its ICT infrastructure (31st) and uptake (18th), thanks to a decisive effort led by the government’s strong vision (3rd) that has identified ICTs as one of the key industries that will diversify the local economy and boost the productivity of all sectors. Qatar is among the top 10 in the world in terms of Internet users (9th) and households having access to a computer (8th) and Internet connection (10th), which has become almost universal.

Figure 1.4: Networked Readiness Index (NRI) score in selected MENA countries



Note: the size of the bubble indicates the size of the country population

The United Arab Emirates continues to move up in the rankings, this year by one position, to reach 24th place due to improvements in its ICT infrastructure (30th) and ICT uptake by individuals (29th). As in Qatar, the government has a strong vision (1st) to develop ICTs as one of the key industries to diversify the local economy; this is reflected in the already high and rapidly increasing levels of ICT uptake across all stakeholders. More precisely, 85 percent of its

population use the Internet (14th) and have access to a personal computer at home (18th); government services are largely available online (9th) and e-commerce is relatively well established (20th).

Despite some significant improvement in the uptake of ICTs by individuals and development in its infrastructure, Saudi Arabia falls one position to reach 32nd place. Overall the country depicts a very stable profile compared with that of previous editions. Similar to others in the region, the government (6th) is leading the effort to digitally connect and advance the country, while individual uptake (44th), despite recent improvements, and business uptake (34th), with a limited development of e-commerce (54th), lag a bit behind.

Jordan and Lebanon have improved their networked readiness and perform significantly better than countries in North Africa; yet, these countries are lagging behind the leaders in the Middle-East (i.e. GCC countries). In general, countries of the region are increasingly becoming ready for leveraging ICTs.

Next chapter establishes the link between information technologies and labor markets. It explores the three forces behind labor markets. It first explores the *demand side*, i.e. how ICTs shape the types of skills demanded by companies and the economy (including in the context of Big Data). It then explores the *supply side*, i.e. how ICTs facilitate upskilling and entrepreneurship, thus enlarging the talent pool. It finally explores the *match between supply and demand*, i.e. how ICTs facilitate job search and matching.

CHAPTER 2 - Information Technologies and Labor Markets

Information Technologies and the Corporate Demand for New Skills

New technologies allow creating new goods and services. At the same time, companies that produce them often demand new skills and also new ways of working. Given the digitization of business processes, IT professionals are in more demand but also decision makers that know how to use technologies (i.e. IT-savvy business professionals or ‘dual thinkers’) to make organizations more agile.²⁴

ICTs affect the demand for skills in two main ways that we discuss below. On the one hand, the evolution of information technologies sometimes makes some jobs redundant. Therefore, some people will have to acquire new skills for working on something else (either within the same company or in another industry). On the other hand, some workers will just have to upgrade their skills for performing their tasks. We put more emphasis on the second. Technological change seldom implies completely replacing workers from an entire industry with machines. Most of the time technology automates some elements of business functions and people must learn how to work with new digitized business processes.

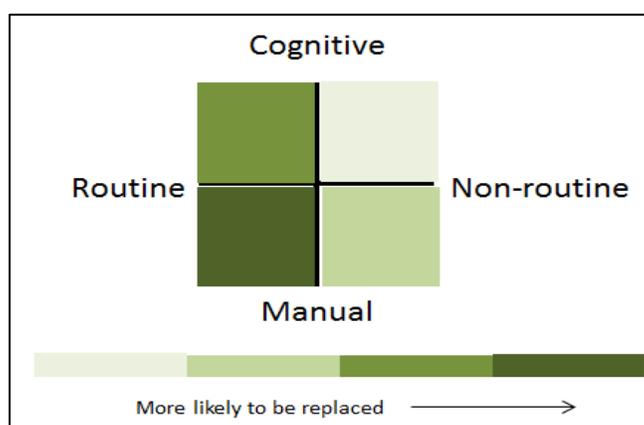
The IT sector in India is a good example. Some analysts argue that employment in the big IT companies will suffer a slowdown because there are many low-level engineers doing repetitive manual tasks and they will become redundant with the proliferation of automation and artificial intelligence. Yet, the evolution of technology does not necessarily mean losing jobs; it means that people must acquire new skills.²⁵ HCL Technologies (which employs over 95,000 engineers worldwide) recently announced that it expects a drastic change in its employee structure over the next couple of years. The expectation is to have an “hourglass structure” with more engineers with domain work experience (i.e. “niche” skills), replacing the current “pyramid structure” where a lot of employees do simple software testing and provide IT support. Even if some people do lose their job, new opportunities are also opening up in the form of jobs at startups.

Machines' abilities are increasing fast and some jobs will be replaced...

Work in almost every industry is being transformed due to technology and there are innumerable examples of it. IPsoft's Amelia, a virtual service desk employee, is being trialed by oil industry companies (e.g. Shell) to help with employee training and inquiries. Law firms are using software (e.g. Blackstone Discovery software) to automate the process of gathering evidence for a lawsuit, previously an important task of paralegals.²⁶ The US-based startup Work Fusion sells software to businesses to automate big projects that would previously have been done by office workers, such as updating company records or extracting information from internet websites.²⁷

Artificial intelligence and machine-learning technology that allow computers to make decisions, recognize speech and visualize in 3D are the main driver of the process. Until now the jobs most vulnerable to automation were those that involved routine, repetitive tasks. To analyze the skills most affected, jobs are usually categorized as routine or non-routine and then again by whether they are cognitive or manual (see Figure 2.1).²⁸ The routine jobs – both cognitive (say payroll clerk) and manual (say assembly line worker) – are falling away more dramatically than the non-routine – both cognitive (say financial analyst) and manual (chambermaid). But with the exponential rise in processing power and the ubiquity of digitized information (“big data”), computers are increasingly able to perform complicated tasks more cheaply and effectively than people. In general, jobs that involve originality, social intelligence and interacting with complex objects in unstructured environments are less likely to become automated.²⁹

Figure 2.1: Job Task Categorization



Yet, the main implication of technological change is that people need new skills....

In the face of growing automation, workers must acquire skills for critical thinking and problem solving and develop the creativity to generate ideas for new products, processes and ways of working. This is what will set people apart from computers. Yet, people and computers are not necessarily competing against each other; technology complements the work of people in pursuing higher productivity and people must learn how to exploit such technologies.

In particular, companies increasingly need to fill ‘ICT-intensive’ job functions, which are created through the application of ICTs to a new or existing activity or process. The core task of an ‘ICT-intensive’ function is to produce information or knowledge, particularly for specific business processes (Figure 2.2 shows some common examples of these jobs). These functions can be found in large organizations, small and medium enterprises (SMEs) and in governments.

Figure 2.2: ICT-intensive job functions

Business Processes: Customer-facing role <ul style="list-style-type: none">- Job functions: Marketing, sales and maintenance- Numeracy and problem solving skills: basic- Work readiness: basic- Inter-personal skills: strong- Device and Software use: some training	IT Support and Management <ul style="list-style-type: none">- Job functions: e.g. IT help desk, database management- Numeracy and problem solving skills: strong- Work readiness: strong- Inter-personal skills: basic- Device and Software Use: Proficiency
Business Processes: Operations role <ul style="list-style-type: none">- Job functions: e.g. Digitization, data entry and processing, transaction processing- Numeracy and problem solving skills: basic- Work readiness: medium- Inter-personal skills: basic- Device and Software use: some training	Content and Product Development <ul style="list-style-type: none">- Job functions: e.g. Webpage design, software development- Numeracy and problem solving skills: strong- Work readiness: strong- Inter-personal skills: basic- Device and Software Use: Proficiency

Source: Dalberg and Rockefeller Foundation (2014)

The skills that are required go far beyond the narrow confines of ICT practitioners (i.e. the professionals that design, develop and manage ICT systems). They also comprise ICT user skills and e-business skills.³⁰ The former encompasses the utilization of software tools for supporting

business functions within industries other than the ICT industry. Such skills are needed in almost every sector of the economy, including healthcare, agriculture, education, finance, media, manufacturing, retail, telecommunications, and public services.

E-Business skills (also called e-leadership skills) are the capabilities needed to exploit opportunities provided by ICT, notably the Internet, to ensure more efficient and effective performance of different types of organizations, to explore possibilities for new ways of conducting business and organizational processes, and to establish new businesses

The specific IT-intensive jobs needed by firms vary across industries. Research done in different emerging markets suggests that the jobs accessible to younger people will mostly be driven by the ICT sector, Business Process Outsourcing (BPO) and financial services industries, which are the sectors that have the highest demand for entry-level digital skills.³¹ Job functions in high demand include customer services, back office support, IT support and content development.

Digital network skills are becoming essential in the ICT industry and in other industries...

Enterprises are faced with the challenge of adding more intelligence to their networks to be able to handle increasing traffic flows, complex transactions, and increasingly demanding applications and to deliver quality of service in line with the demands of modern technology users. And in order to do this effectively, organizations need not only sufficient digital-network skills³² but also the skills to adapt to the ever-changing requirements of technology.

Next-generation technologies rely heavily on a robust, speedy, and pervasive foundational network.³³ As it stands today, technology trends such as video and voice-over-IP (VoIP), proliferation of mobile and other IP-devices, virtualization, and cloud computing all have a direct and very immediate impact on the network, leading to investment in upgrades to make network infrastructure more converged, more intelligent, more flexible, and more robust.

Organizational teams also need to understand business processes based on digitized platforms...

Companies increasingly accumulate technologies and data and many business processes now operate upon digitized platforms. An organization's digitized platform consists of the accumulation over time of the following three types of inter-related components:³⁴

1. *IT applications and infrastructure*: they refer to the composite hardware, software, network resources and services that constitute an enterprise IT environment; e.g. customer relationship management (CRM) systems help develop more relevant services for customers.
2. *Digitized business processes*: these are processes that depend on IT applications and infrastructure for execution; e.g. business unit using a CRM system to handle and track specific engagements with customers, such as subscriptions to new services, complaints, and termination of services;
3. *Data*: these are generated and used by applications during the execution of digitized business processes; e.g. customer data generated and used by a CRM system that a business unit invested in to improve the way it engages with customers.

Managers, in particular, must understand the interdependencies between IT systems, digitized processes, and data. Integrated systems have the ability to coordinate activities and facilitate information flows, overcoming the limitations of complex nests of disparate technology silos and thus empowering organizational agility.³⁵ Large complex information systems such as enterprise resource planning systems are increasingly serving as a platform to which other tools can be added in order to take advantage of shared data resources.³⁶ How workers and managers employ data defines whether companies establish a competitive advantage.

To make sense of information, data specialists will be in high demand....

Business value depends more and more critically on how people and firms exploit information.³⁷ Such capability requires both technical and business skills, ranging from design and data

visualization skills (e.g. use graphic or interactive web pieces) to being able to take complex information and make decisions.

Few people possess the two types of skills: some people excel at, say, developing statistical algorithms while some others are better at making sense of information and taking decisions. Data scientists are highly-skilled professionals that simultaneously possess breadth and depth in data management, data analysis, and domain area expertise. Yet, the demand for data scientists, which continues to increase to take advantage of Big Data (this topic is discussed further later in this Chapter), grossly outstrips the supply. Such shortage of talent will continue, according to industry specialists.³⁸

The 'future of work' requires multiple skills...

It is increasingly the case that a combination of technical, business and soft skills is required in order to fully exploit the opportunities offered by different technologies. Surveys of hiring managers have shown that business and communication skills and/or customer service abilities can at times be considered more important than the technical skills required to keep pace with technologies (e.g. mobile, cloud computing, Web security, etc.).³⁹

People working in the IT function itself have had to adapt as well. A 2010 survey of IT managers showed that the vast majority of respondents (96 percent) acknowledged that IT's primary role has changed over the past five years, while they pay more attention to managing outsourced IT or cloud services providers.⁴⁰ Process standardization, increased automation and a rise in outsourcing engagements—including moving more services to the cloud—have all contributed to the transition. Managing service providers is just one skill that IT staff will need to develop to support this new business model. Strengthening business knowledge and communication capabilities (i.e. “softer” skills) represents a marked departure from the deep technical expertise on which IT has traditionally focused.

The mix of skills can become transferable, thus empowering employability...

IT-intensive jobs in certain industries may help individuals to build a transferable skill set that strengthens their future employment opportunities and enhances their adaptability to the changing nature of the workplace.⁴¹ For example, gaining and refining communication skills through an entry-level call center role can eventually allow a young person to progress and qualify for a mid-level customer service role in financial services.

The Arab World will face many of these patterns in the demand for skills...

IT-intensive job functions will continue increasing in the region and skill gaps will not diminish overnight. One example will suffice to illustrate this point: gaps in digital network skills (i.e. people involved in network design, operations and maintenance, and deployment and support) are expected to increase significantly. In 2012, the skills gap in Saudi Arabia was 17,736, which represents a gap of 73 percent when calculated as a proportion of total demand; the gap in UAE was 5,242 (i.e. a gap of 31.8 percent). By 2016, such numbers are expected to increase to 33,792 (79.4 percent) and 15,386 (47.8 percent), respectively.⁴²

Big Data, Decision Making and Skills

In today's fast-changing and hyper-connected world, 'big data' has emerged as the holy grail of business success. The demand for data scientists is increasing. Yet, the implications for decision-making and firm performance of the vast amounts of data proliferating are not well-understood.

A first step for understanding big data is to determine what it actually means. In a publication by the Massachusetts Institute of Technology when the concept was growing popular,⁴³ experts on the topic stated that:

"organizations are swimming in an expanding sea of data that is either too voluminous or too unstructured to be managed and analyzed through traditional means (e.g. social media content)....But big data also encompasses everything from call center voice data to genomic and proteomic data from biological research and medicine....Companies that learn to take advantage of big data will use real-time information from sensors, radio frequency identification and other identifying devices to understand their business environments at a more granular level, to create new products and services, and to respond to changes in usage patterns as they occur."

The Global Information Technology Report 2014 puts it in a more succinct way:

““This new asset class of big data is commonly described by what we call the “three Vs.” Big data is high volume, high velocity, and includes a high variety of sources of information. Next to those traditional three Vs we could add a fourth: value.””

This means that ‘big data’ refers not only to the amount of data but also to the combination of various sources and types of data. The value of big data comes from the way and velocity with which data are analyzed, which require cross-sectoral skills.

The analysis of data is not new in organizations; the variety of data is...

Many companies already try to achieve a strategic advantage by taking decisions based on insights from data mining and statistical analysis (what is called business intelligence). The key differentiating characteristic of the era of ‘big data’ has more to do with the *variety* of data than with the *amount* of data. Some types of data (e.g. sensor data, transaction data, etc.) allow analyzing business processes.⁴⁴ Furthermore, the generation and collection of data has increased dramatically beyond operational systems and companies are increasingly capable of understanding their external operating environment (i.e. consumers and markets).⁴⁵ The Internet and devices such as mobile phones now generate streams of data that allow analyzing what people think and how they behave (which has triggered the expansion of network and web analytics).⁴⁶ Some types of data are so granular (e.g. tracking people during the day via smartphone GPS signals) that some specialists have called for a new era of “reality mining”.

Competitive advantage is now based on discovery and agility, which requires adaptation....

Whereas the process of business intelligence has been primarily employed for structured decision making, analytical capabilities are increasingly used as a foundation to support less structured and more strategic decision making.⁴⁷ Since the business environment and the data that describe it are constantly changing, the types of IT capabilities⁴⁸ and decision-making structures that firms need also evolve. This, in turn, has implications on the types of skills that companies need.

Exploiting data requires resources, including skills to make decisions...

Improved access to relevant, accurate information allows decision makers to make better decisions.⁴⁹ Yet, for turning data into information and knowledge (via information processing) and then knowledge into actual decision making,⁵⁰ the right resources must be in place: integration and sharing of data across organizations, the right structure of decision making and the appropriate skills.

Businesses need knowledgeable people to make decisions using some form of heuristic processing. Even in business processes that increasingly have automated decision rules, human intervention is still relevant for their proper functioning (e.g. reviewing and confirming decisions, creating and maintaining rules in automatic systems and ensuring the optimization of decision rules by monitoring system results).

The digitization of companies has mitigated the relative scarcity of one resource - data- but has created scarcity of others. One of them is the ability of decision-makers to identify the most strategic business problems to focus on. With better analytics, managers can indeed have better knowledge and accurate answers about an increasing set of business questions; yet, processing a larger variety of data is costly in terms of human resources⁵¹ and managers must thus prioritize. Identifying the most relevant business questions to tackle becomes more challenging with varied data. Business units must know what they would like to learn from new data being generated.

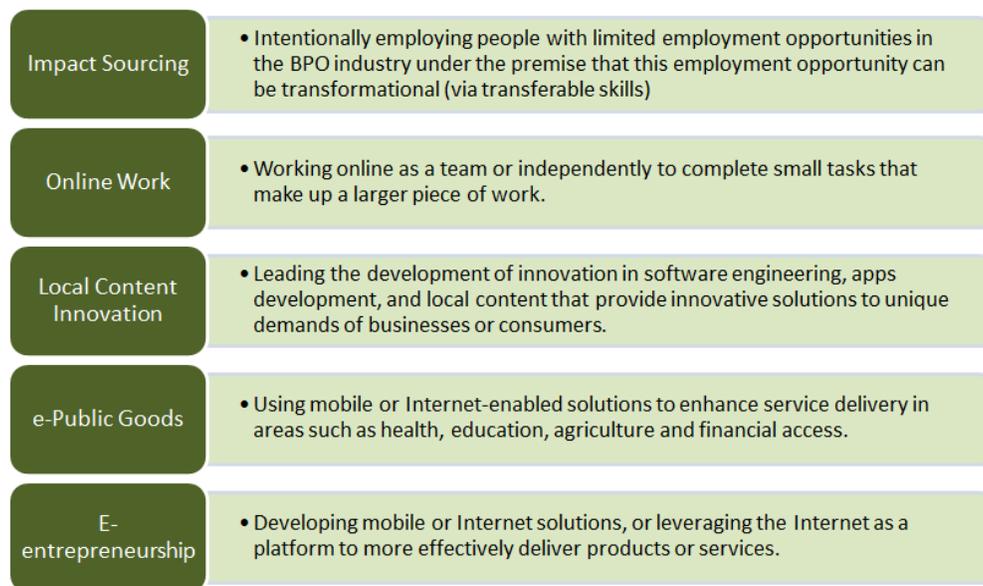
In addition to skills, the corporate culture of decision making is also important...

The corporate culture complements skills, because it affects how employees see and use information for supporting decisions.⁵² “What matters is to reshape internal decision-making culture so that executives base their judgments on data rather than hunches”, concludes Chapter 1.3 of GITR (2014). The decision-making culture is linked to the decision-making style adopted by employees. People with analytical decision styles will adopt and use organizational data and information to a greater extent than people with conceptual decision styles.

Digital Entrepreneurship

The digital economy holds significant potential for creating jobs, including for people that have been historically marginalized.⁵³ Companies increasingly demand ‘ICT-intensive’ job functions. ICTs also empower ‘digital jobs’ – i.e. activities that use IT to deliver a product or service. Digital opportunities can range from online work for completing small tasks to launching a new startup via e-Entrepreneurship (see Figure 2.3). There is the possibility of a virtuous cycle here: digital technologies foster entrepreneurship, which may then lead to new digital services.

Figure 2.3: The Digital Opportunities



Note: the figure uses information from Dalberg and Rockefeller Foundation (2014)

The entrepreneurial opportunities facilitated by the digital economy not only allow the entrepreneurs to find employment; the SMEs they create also give employment to other people. Job opportunities can be found in areas such as customer-facing work, operations, IT support and management, and content and product development.⁵⁴ SMEs are the biggest contributors to employment around the world.⁵⁵

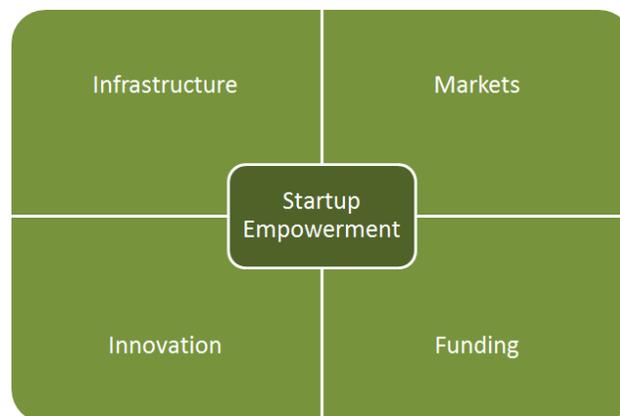
The logistical hurdles for entrepreneurship are quickly shrinking with the expansion of digital technologies. However, some other obstacles remain high, e.g. in terms of regulations, skills and markets:

- Are the right regulatory conditions in place for letting entrepreneurship flourish?
- Do people have the functional and behavioral skills for entrepreneurship?
- Are markets ready to follow-up ideas with financing opportunities?

Digital technologies empower...

Digital technologies are paving the way for more people to become entrepreneurs around the world. The prospects for entrepreneurship, particularly startups, look brighter in four dimensions: infrastructure, markets, innovation and finance (i.e. access to funding).

Figure 2.4: Digital Empowerment of Startups



Access to markets, i.e. selling goods and services online, is increasingly within the reach of more people (and they do not have to be necessarily iPhone apps). The business models created around network-based information flows (social networks, freemium, viral marketing) are creating new business opportunities for those who have or can acquire the right e-skills. Then social media could be used as promotional tools, for marketing, PR or advertising (or sometimes social media are the very foundation for a tech start-up). Some businesses are local while others increasingly involve global trade.⁵⁶ Also, ICTs enable SMEs to become part of global value chains, reach new markets, and purchase goods and services they may otherwise not have been able to afford.⁵⁷

Box 1: Cloud-computing and SMEs

Cloud computing enables on-demand ubiquitous network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned (usually via pay-per-use either in a public cloud or deployed privately within a firm) and released with minimal management effort or service provider interaction. Therefore, such services are often flexible and with rapid scalability.

Ubiquitous access (for working “anywhere”) and outsourcing of IT responsibility are two benefits of the cloud often identified by SMEs (particularly smaller firms that have less IT “training”). Another benefit is the flexibility to scale up to meet customer demands. This leads to business agility and cost savings (via optimization of IT capacity and lower infrastructure costs).

Both infrastructure and platforms can be offered “as a service”. Access to business critical information can become much simpler with one cloud-based software service managing all key processes of a small company, including customer-relation management (CRM), finance, demand planning, stock control, webstore & dispatch, etc.⁵⁸ Business information can also become more secure.⁵⁹ More than 60 percent of SMEs in developed Western economies would be using cloud-based solutions today.⁶⁰

The Middle East is considered by many as the next major market to adopt cloud computing. One example of the initiatives being taken in the region is the partnership between Virtustream and Etihad Etisalat (Mobily), the largest telecom operator in MENA, to provide cloud services. The joint partnership will provide enterprise cloud services to SMEs in Saudi Arabia as well as other parts of the region.⁶¹ Easier IT operations may generate more SMEs, which, in turn, generate more jobs.⁶²

Nevertheless, using cloud-based services require different skills and capabilities:

1. *Business and financial skills*: to make the business case for a cloud deployment
2. *Negotiation skills*: to work with cloud providers (e.g. establish contacts, service-level agreements, etc.)
3. *Technical skills*: to build applications that can run quickly on the Internet and across several devices (e.g. mobile); to design an enterprise architecture that satisfies business needs; also to understand security and compliance issues.
4. *Data integration and analysis skills*: to ensure data generated through cloud-based systems mesh seamlessly with on-premises systems.

Access to resources (e.g. infrastructure and finance) is also facilitated by ICTs. For example, new firms can rent computing power from Amazon through the cloud rather than having to buy expensive servers (see Box 1 for an analysis of how cloud-based services affect SMEs). Finance is becoming ever easier to find thanks to peer-to-peer lenders and crowdfunding platforms like Kickstarter. Easy and cheap access to all the off-the-shelf components needed for a startup is fuelling the rise of “weightless companies”: entrepreneurs can turn their ideas into firms with huge valuations using minimal capital and hardly any staff.

Not only in Silicon Valley...

The proliferation of startups and clusters of Internet firms is no longer something that only happens in Silicon Valley. Although not at the same scale yet, this is already occurring in emerging markets. Countries in the MENA region are growing aware of the importance of e-entrepreneurship and people increasingly find business opportunities online. The Economist recently praised Amman as a hub of online firms and, certainly, one of the Middle East’s leading start-up hubs.⁶³ The country is also home to some of the region’s leading media and gaming companies.⁶⁴ But Jordan is not alone in this trend. Also cities such as Beirut and Dubai were mentioned as part of this “start-up spring”, in which small technology firms are multiplying. Countries like Qatar and Saudi Arabia have also great potential.

The types of services that can be offered in the digital economy cover a large array. For instance, i360 Accelerator, whose mission is to help potential entrepreneurs from the MENA region turn ideas into viable business ventures, lists some of its most common business ventures: B2C and B2B e-commerce sites; Web and mobile applications for customer experience (e.g. interactive shopping experiences, social networking experiences); e-learning apps; commercial games; security services (for mobile solutions and cloud-based services).

Arabic content apps and portals represent an increasingly important area of opportunity. Saudi Arabia and UAE are among the largest consumers of digital content (e.g. YouTube visits).⁶⁵ Content is dominating daily lives, yet the production of Arabic content is still small.⁶⁶ Few have taken the initiative to produce or aggregate content and disseminate it to an audience that is

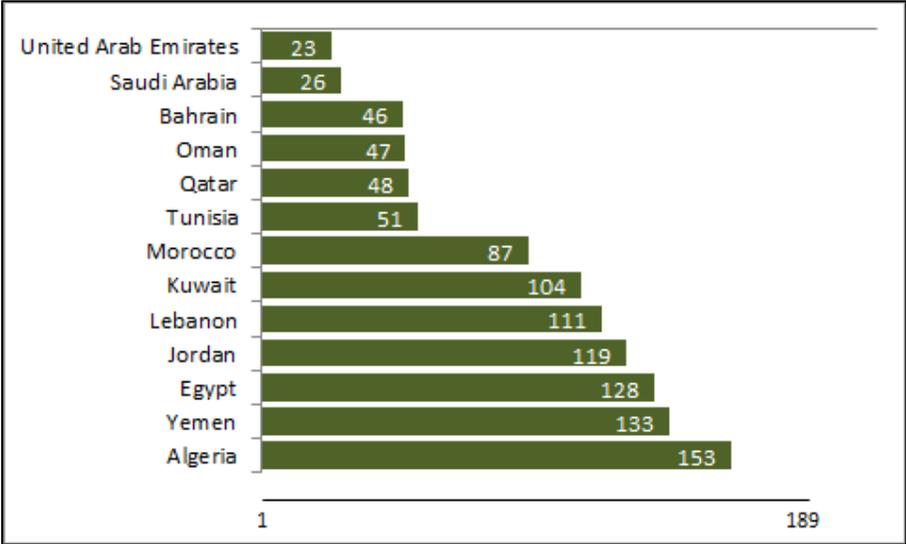
quickly embracing internet and mobile as a major source of ‘infotainment’. Promising steps are being taken, nonetheless. Taghreedat (“tweets” in Arabic) is a regional Arabic e-content community building initiative whose objective is to build an active Arabic e-content creation community that contributes directly to increasing the quality and quantity of Arabic e-content.

There are multiple enablers already in place in the Arab world...

The infrastructure for the wide use of ICTs is already in place. Although the Arab world is lagging behind other regions in internet use, it is catching up fast in the development of e-commerce. Smartphone penetration is among the highest in the world (UAE and Saudi Arabia are part of the top three countries with highest penetration globally).⁶⁷ This presents opportunities for content creation startups and also for citizen media.⁶⁸

What has further helped the “startup spring” is a mix of regulations that are friendlier for business. Starting a new for-profit company in the United Arab Emirates, for instance, became dramatically simpler and quicker from 2000 to 2010.⁶⁹ Saudi Arabia also ranks highly in the World Bank’s Doing Business indicator (see Figure 2.5). What is more, cultural and linguistic barriers provide some protection against foreign competition (including internet giants).

Figure 2.5: Ease of Doing Business in selected countries in MENA (ranking position within the sample of 189 countries worldwide)



Source: World Bank (2014b)

Furthermore, the region has witnessed a dramatic increase in the number of resources available for entrepreneurs: incubators, accelerators, co-work spaces, boot camps, and venture capital entities.⁷⁰ There are also information networks and trade fairs. There are multiple examples (Table 2.1).

Table 2.1: Selected Examples of Resources for Entrepreneurs (not an exhaustive list)

Initiative(s)	Home Location	Objective
1st Abu Dhabi Global Summit for Young Entrepreneurs	Abu Dhabi	Spreading awareness on the importance of enhancing the culture of innovation and entrepreneurship.
Enterprise Qatar; Qatar Business Incubation Center; Digital Incubation Center.	Qatar	These entities aim at helping young people turn initial ideas into fruitful projects. In addition, efforts are being made to support Angel Investors: e.g. Silatech launched SILA Angel Investment Network in 2012.
Dubai-based i360 Accelerator	Dubai	It teaches the fundamentals of creating an innovative start-up business (from polishing the idea and validate it via market research to testing a prototype, designing go-to-market plans and delivering a pitch). Funding is also provided.
Impact Hub	Dubai	A gathering space for entrepreneurs (now with locations in over 40 cities)
Wamda	Lebanon / Dubai / Jordan	It is a platform designed to empower entrepreneurs in the MENA region via 3 channels: 1) The Media Site: Wamda.com offers articles and reports to showcase success stories of SMEs and inspire and educate entrepreneurs; 2) Wamda Capital Fund: it invests in early stage startups (industry-agnostic, investing in both tech and non-tech-focused startups); 3) Programs and Products: to help startups set up, run, and grow a company.
OASIS 500	Jordan ⁷¹	It is an “accelerator” program where small teams of founders develop products, find customers and learn the basics of business, mentored by experienced entrepreneurs. Start-ups picked for the program, receive an investment in cash and services such as workspace and legal advice. Some startups have follow-on financing.
Arab Business Angels Network (ABAN)	UAE	It targets startups and early stage ventures in the MENA region that are looking to raise \$100k to \$500k in seed capital to fund their business. It targets particularly businesses in the areas of ICT, Media, Retail and Services.

Given the potential of Arabic content, some entities support particularly the development of digital content products and services.⁷² For instance, MENA apps (founded in 2011 by leaders from the Telecom, Applications, Media and Banking Industry), bridges the talent and potential of the MENA region’s youth with all the resources, administrative and logistical support, and the funding needed to become successful e-entrepreneurs. In particular, it focuses on entrepreneurs who have viable ideas in the areas of content, cloud computing and new media.

Industry leaders are increasingly optimistic about the prospect of the digital economy: “startup investments have actually tripled between 2009 and 2012. In co-working spaces, accelerators and university halls, there is a new breed of tech-savvy entrepreneurs who are building products and technologies that are catching up with global trends (digital content and e-commerce) or solving big problems (e-payments, education, health and green energy)”, recently said Fadi Ghandour, Executive Chairman of Wamda Ventures, a new Venture Capital fund focusing on technology investments in the Arab World.⁷³

Yet, the MENA region still faces some challenges to develop their own Silicon Valleys...

There are technological, regulatory, market and human capital challenges that need to be addressed. The power of online capabilities implies that people have access to the right infrastructure (e.g. high-quality broadband access). Also, the expansion of e-commerce requires that societies change certain habitudes and how they use technology. Payments systems, for instance, are essential for a burgeoning e-commerce landscape (Box 2).

Box 2: e-commerce and Payment Systems in MENA

E-commerce is expanding fast in the region. According to PayPal,⁷⁴ this market is expected to double in four years in the Middle East: from \$7 billion USD in 2011 to 15 billion in 2015. M-commerce represents an increasing share of those transactions: 36 percent of online purchases are done via mobile.⁷⁵ Yet, the market is still small by global standards.

According to PayFort's State of Payments Report 2014, e-commerce payments in the Arab world are indeed growing faster than anywhere else on Earth, at an annual growth rate of 45. Yet, a remarkable 85 percent of online transactions are paid by cash on delivery (COD), in part because MENA countries often lack proper regulations (e.g. Jordan has no e-commerce law to protect consumers) and people do not trust the Internet (there is a fear that websites may not be secure, or that payment authentication is insufficient.)

There are some companies offering innovative solutions. Hyper (with offices in Dubai and Jordan) offers a service that picks up the cash before an online order is delivered. Also in Jordan, MarkaVip (a shopping website) offers payment on delivery and it even has a refund policy. PayFort offers different payment options for merchants that mirror the online shoppers behavior for both credit card and non-credit cardholders (in order to maximize online payment acceptance).

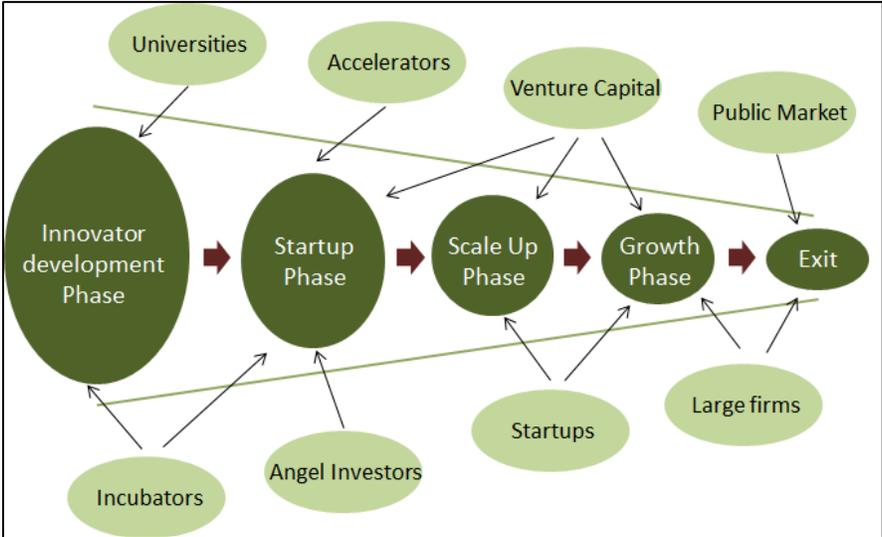
Although these models represent clear progress, private-sector operators in the region can benefit in more substantive ways by evolving past COD operating models. While it has helped to accelerate e-commerce in some regional markets and address payment-security concerns for some customers, COD carries real costs for companies, such as significantly longer payment cycles and higher return rates.⁷⁶

Regulations are still a hurdle for businesses, particularly in a region that is still regarded as favoring privileges.⁷⁷ In addition, the lack of economic integration in the MENA region also deters online shopping. A pan-regional payments system does not exist. Also, the considerable regulation of cross-border trade means that tariffs and duties tend to be relatively steep. It can be cheaper to buy an item from the U.S. and ship it to Dubai, for example, than buying from Dubai and shipping to Riyadh. Such regulations often complicate the task of smaller enterprises trying to expand through other markets in the region.

The Startup Cycle needs follow-up support to keep moving ...

Despite the potential access more and more people can have to finance via innovative channels (e.g. via crowd-funding), follow-up finance is still a challenge. As ideas move from the early-stage startup phase into the scale-up phase (see the startup cycle in Figure 2.6), significant follow-up funding is required. Given the risky nature of the innovation process, traditional loan-based vehicles of financing (e.g. banks) are not usually available.⁷⁸ Therefore, a mature venture capital is essential.

Figure 2.6: Digital Empowerment of the Startup Cycle



The Arab World needs to develop its homegrown venture capitalists. These institutions are slowly starting to emerge in places such as Jordan and UAE. Wamda Capital, for instance, is investing millions in start-ups that mainly focus on e-commerce.⁷⁹ The i360 accelerator in Dubai has become the regional partner of San Jose-based Fenox Venture Capital, which invests largely in the areas of e-commerce, mobile, social and cloud technologies besides those working on business-to-business software and hardware and advertising technology.

Venture capitalists in the region are, however, much more risk-averse than their American counterparts,⁸⁰ and they tend to deal only with companies in the “growth” phase. Attracting Angel Investors, who have both capital and professional experience they can leverage to add value to startups, has also been challenging (e.g. ABAN initially did not attract enough angel investors to make it sustainable).⁸¹ Entrepreneurs need early-stage investors who are willing to open up their networks, help with business strategy and provide support in case of failure.

The biggest factor is the availability of human capital...

Some factors are crucial in certain stages of the creation of a startup. Going to the scale-up phase, for instance, needs access to follow-up finance. Nevertheless, along the whole process, from the first glimpse of ideas to the growth phase of the company, the availability of different types of skills is required. These include both technical (i.e. including functional skills relevant for the operations of business functions) and behavioral skills.

The availability of a strong pool of people with technical and functional skills is important so that the new companies being created can operate. As the nascent companies enter the scale-up and growth phases, it needs to acquire the talent necessary to move forward: skilled professionals who have years of expertise working in functions such as product development in organizations and also experience in various roles: from administration and sales to marketing and engineering.

Supporting the development of employable skills is important for the sustainability of SMEs, but so too is encouraging the skills that allow the emergence of the entrepreneurs in the first place. New research in innovation suggests that innovators need “behavioral” skills.⁸² Factors that often drive people around the world into creating their own enterprises include ‘fear of failure’,

‘entrepreneurial intentions’ and the perception of entrepreneurship as a good career choice (this factors are also relevant for countries of the MENA region, according to the Global Entrepreneurship Report). Interestingly, the UAE exhibits one of the highest rates of fear of failure, among these economies, and one of the lowest rates of entrepreneurial intention.⁸³

Innovators are typically driven by a desire to change the status quo and a healthy appetite for taking calculated risks. An environment where these desires are encouraged and developed will produce more would-be innovators than an environment where they are suppressed. The Arab World should influence existing cultural habits that oppose change and hinder risk-taking.

A whole innovation ecosystem must be put in place...

People and companies must learn to both produce and consume innovations: “successful innovations rely also on the various actors in society—for example, consumers, the government, and others—that will ultimately be the recipients and users of these innovations. Thus the human factor in innovation does not stop at the supply side but reaches far into how innovations are received, accepted, and diffused”; concludes the Global Innovation Index Report 2014, an annual publication co-published by Cornell University, INSEAD, and the World Intellectual Property Organization that benchmarks countries’ innovation capabilities and results (see Chapter 3 for more details).⁸⁴

Training and Up-skilling

Digital technologies increasingly demand new skills. The types of skills currently in demand look different than in the past. New technologies demand abilities that people have to increasingly learn, from developing design and data visualization skills (e.g. use graphic or interactive web pieces) to being able to take complex information and make decisions. Soft skills continue to be relevant, if not more important than in the past. This has implications on how formal educational institutions design their curricula, how firms train their employees and how people keep pace with the evolution of the digital economy.

Formal education institutions (including universities) must adapt their curricula...

Universities must adapt to foster ‘e-competences’, which result from combining e-skills and inter-personal and business skills. Curricula must be relevant for shaping IT-user skills, IT practitioner skills and e-business skills (as defined in previous sections).⁸⁵

Global Knowledge (GK) talent, which is the talent relevant for innovation and high-value industries, requires a wide set of skills beyond the technical ones. Formal education system must then adapt; “education systems that narrowly focus on test-based academic performance and numbers of students enrolled in science and technology subjects are not necessarily those that will produce young people with the creativity, critical thinking, and communication skills that innovative societies require”, was one of the conclusions from the latest editions of both the Global Innovation Index and Global Talent Competitiveness Index Reports.⁸⁶

Higher education institutions must be more “open-minded”, so to speak. The knowledge and digital economies require creative people but also people that engage in entrepreneurship. And many times educational institutions are not well prepared to properly train those skills; “universities are too focused on training for ‘big company’ employment and they are only starting to understand the value of engineering and other disciplines as a means for entrepreneurship”, said Christopher Schroeder, author of the book “Startup Rising: The Entrepreneurial Revolution Remaking the Middle East”.

Companies (i.e. the employers) can resort themselves to different strategies to fill skills needs...

Companies need to constantly re-skill and up-skill the talent that they already have in-house. If they do not have all the needed skills available, they can train existing staff or source talent through outsourcing and new recruits. To retain and train talent already in-house, organizations are increasingly encouraging a combination of technological expertise and operational and project competencies, and, for example, actively rotate high-performers across technology domains and into business and operational functions, provide training that helps technical staff

understand the business better, and allow high-performing staff to engage with external communities.⁸⁷

A general movement of “Education for Employment” has been agreed as crucial...

Companies cannot always find appropriate people in-house and train them, so they must search for employable skills in the labor market. There are a series of successful examples of institutions committed to producing employable skills in the region. One successful entity actually has adopted Education for Employment (EFE) as its name and it has trained and placed in jobs over 7,200 youth with limited opportunity from across the MENA region (see Box 3).

Box 3. The Experience of EFE in the Middle-East & North Africa (MENA)

The organization Education For Employment (EFE) has provided job placement, employability and entrepreneurship training to more than 27,300 young women and men across many countries in MENA: Egypt, Jordan, Morocco, Palestine, Tunisia and Yemen.

Wide-ranging local employer networks, targeted research, and boards of directors in each country that include influential business leaders enable EFE affiliates to develop an accurate understanding of the local labor needs. Through partnerships with world-class universities and education experts, EFE develops training programs that cater to the needs of employers and the demands of the labor market.

EFE establishes relationships with businesses ranging from SME’s to multinational corporations in order to identify the skills important to employers and secure job commitments prior to training, when possible (many times companies help design relevant curricula).

The Job Placement Training Program is the core training offering, targeted toward unemployed youth ranging from secondary school drop-outs to university degree holders, depending on the sector and location. The program provides students with the professional and vocational skills that are in demand by employers in the region. The crucial success factor is EFE’s commitment to link Job Placement Training Program graduates to employment upon their program graduation: “the differentiating factor of EFE is that it not only focuses on training; it also seeks to close the loop by paying attention to job placement; our target is for more than 85 percent of our graduates to be linked to a job”, said Mariel Davis, EFE Communications & Partnerships Manager.

EFE executives recognize the relevance of IT skills: “the region’s growing SMEs require IT talent, and entry-level employees often have the task of getting local businesses online; skills such as basic website development and social media management are in demand”, said Davis. Yet, it was emphasized that soft skills are many times most relevant for companies from the region and people that have them are in short supply: “when a company approaches EFE, we perform an assessment of skill, to detect those that are in greatest demand; soft skills (teamwork, communication skills, work ethic, etc.) are typically more valued by enterprises; for this reason the standard training of EFE is based on soft skills; technical skills such as programming represent then a plus”, explained Pia Saunders, EFE Director of Measuring, Evaluation and Learning.

Graduates have been placed in a wide range of professions, including construction management, HVAC installation and repair, ICT, teaching, banking, and e-commerce.

People need to understand business processes based on digital platforms...

ICT companies are also actively supporting the 'Education for Employment' movement, and their participation is crucial for teaching people how to work with digital business processes.

SAP Training and Development Institute (TDI), for instance, is trying to bring best practices to the MENA region by enhancing ICT capacities that improve labor market outcomes. The institute delivers "double-blended training": i.e. hard and soft skills, taking place via eLearning, instructor-led training and on-the-job training.

What makes TDI offerings unique is a focus on (digital) business processes: because of the very particular nature of the training of an ERP user and/or consultant, the trainee gets equipped with expertise on "business processes", a skill that applies to most businesses - not only ICT. TDI has introduced a series of Innovation Concepts and Training Programs (see Box 4). The objective is to create Private-Public-People partnerships applied to the ICT sector to deliver on the promise of "up-skilling for employment".

People must also be trained to understand data...

Academic institutions worldwide are designing new educational programs focused on data science (which includes learning big data analytics technologies). The skills required reach beyond a strong grounding in mathematics, a familiarity with programming languages, a working knowledge of analytical modelling. Demanded skills increasingly include a wide set of skills from design and data visualization skills to knowledge of specific business contexts.

Box 4. Best practices from the SAP Training and Development Institute

The SAP Training and Development Institute (TDI) shapes the next-generation knowledge workforce in the MENA region. Focused programs boost the ‘business system’ knowledge of students, young graduates, local talent and the experienced workforces. A series of specific training programs are implemented:

SAP University Alliances: this program provides participating universities’ graduates and students the opportunity to connect to the SAP Ecosystem and engage in capacity-building activities in the region.

Young Professionals Program: it is a 3-month intensive program focused on up-skilling unemployed graduates across the MENA region. The Mawared program contains components in order to up-skill graduates with SAP certifications and functional tracks. This program supports graduates to become certified consultants who can be quickly absorbed into SAP’s customer & partner organizations.

Second Chance Education: This programs targets unemployed graduates and jobseekers and provides the opportunity to qualify as SAP certified consultants and SAP certified users in collaboration with selected government and public or private partners. SAP appoints training partners based on high quality standards and standardized processes with the objective of a long term enablement of resources.

Dual Study Education: this program focuses on combining and alternating Practice (SAP Specific Skills) and Theory (Learning Techniques) into two to four year programs run by universities in cooperation with SAP. By providing universities with SAP specific applied technology focused curriculums students can participate in innovation and application of the latest technology trends and find mentored internships.

TDI has also designed a series of Innovative Concepts:

SAP CodeJam: it consist of a 5 to 6 hour hands-on coding and networking event whereby attendees share their knowledge and collaboratively develop with SAP technologies, platforms and tools in a fun and casual environment. The events are developer community focused and SAP supported exploring technologies available through the Developer Center: SAP HANA, Mobile and Cloud.

Design Thinking: facilitate discussions to explore new angles to problems to unearth underlying needs. The objective is to explore emerging behaviors and new business models, and make value creating connections to disruptive technology.

Co-Innovation Lab: the Lab unites region specific knowledge of SAP customers, partners and academic institutions with the latest SAP technologies in order to develop innovative business solutions.

Training for entrepreneurship is embraced by the whole business ecosystem...

Policies and programs are increasingly targeting both technical and entrepreneurship (behavioral) skills, in some cases from an early age of students. In Saudi Arabia, Injaz’s programme "my Way to the Job Market" aimed to reach over 11,400 high school students across the Kingdom with each group of students to receive 12 workshops in business and workplace skills. On completion of the program, the students received a certificate that highlights their career readiness.

Inspiring people for entrepreneurship is a shared effort of collaboration. Such multi-stakeholder approach is essential because the Middle-East does not have a culture for entrepreneurship. Failure is still seen as a shame.⁸⁸ Countries in the region are taking this seriously. For instance, Tejar Dubai, an initiative by Dubai Chamber of Commerce and Industry, has signed a Memorandum of Understanding with Injaz UAE, a member of Junior Achievement Worldwide (JAW) to inspire and prepare students in Dubai for acquiring entrepreneurial skills.⁸⁹

Many initiatives come from the private sector. The comprehensive training boot camp offered by Oasis500 (the Jordan-based Accelerator) is regarded by many as the leading entrepreneurship and business training for ICT startups in the MENA region (Figure 2.7 shows some aspects of the startup cycle that they train). Also in Jordan, every first Tuesday of the month, an event called TechTuesdays attracts hundreds to discuss both technology and business issues such as how to bounce back from failure.

Figure 2.7. Training Entrepreneurs in the ICT sector

Finance	<ul style="list-style-type: none"> • Investment and business terms • Revenues and cost forecast • Income statement workshop
Technology	<ul style="list-style-type: none"> • Creating a growth IT business. crossing the chasm. • Technology start-up marketing
Branding & Marketing	<ul style="list-style-type: none"> • Investment-focused company profiles • Persona, customer segmentation and branding
Pitching	<ul style="list-style-type: none"> • How to pitch to investors • Live pitches and pitch assessments
Operations	<ul style="list-style-type: none"> • Sales life-cycle • Why companies fail, what to avoid • Teamwork and time management
Business Model	<ul style="list-style-type: none"> • Creating a business model canvas • Customer profiling/segmentation • Value proposition

Note: These training modules were identified by looking at the training programs of initiatives such as OASIS 500

Initiatives also involve collaboration across borders. For instance, Cisco joined forces with America-Mideast Education and Training Services (AMIDEAST) in Morocco to launch its Cisco

Entrepreneur Institute Training Center. This center delivers business training and technology tools for businesses throughout North Africa and the Middle East.⁹⁰ The center has core courses, some focused on the practicalities of starting a business (e.g. "Starting a Business", "Growing a Business", and "iExec Enterprise Essentials"), some others focused on technology (e.g. "Web 2.0") and some other focused on the mindset and culture (e.g. "The Entrepreneurial Mindset").

Despite challenges, online technologies can reach more segments of society...

People that previously did not have access to formal education can now acquire employable skills online. Moreover, when educational institutions do not keep pace with the new economic and technological realities, the Internet allows people to self-educate: “People increasingly engage in a process of ‘self-education’ given the constraints shown by the formal education sector in some countries of the Arab world, which have not adapted to the new economic reality”, said Christopher Schroeder; “rote memorization of concepts is not the way to develop talent for knowledge industries and entrepreneurship”.

Self-directed education is empowered by digital technologies and e-learning. While English-language Massive Open Online Course (MOOC) platforms such as edX, Coursera, and Udacity have gained traction across the globe, Arabic MOOCs have started to emerge. Edraak, launched in Amman in 2014 as a social entrepreneurship startup,⁹¹ was the first pan-Arab initiative of its kind and seeks to make quality education more accessible for the entire population. Other Arabic language MOOCs include Rwaq in Saudi Arabia, SkillAcademy in Egypt or MenaVersity in Lebanon. Courses are diverse but people increasingly show interest in improving digital skills (e.g. the course ‘Introduction to Computer Science’ had near 30,000 registered students in 2014).

Online training is reaching more people but it needs support for achieving the goal of educating for employment; “MOOCs are very beneficial if integrated in a comprehensive upskilling and education program. A comprehensive training program should include a blend of online training, instructor-led training and on-the-job learning”, said Marita Mitschein, Managing Director of SAP Training & Development Institute; “a combination of these three elements is essential to deliver quality education”.

The development of MOOCs faces additional challenges. In some countries, not everyone has access to internet connection with enough bandwidth to download and stream lectures. Edraak is responding to this challenge by tapping into community-based tech centers where participants might access internet with the required bandwidth for free. It is also trying to establish partnerships with internet (telecom) providers that would allow users to access and use Edraak content for free.⁹²

The emerging ‘Arabic’ MOOCs in the region are making their way without the support of governments, which show skepticism at best; “entrepreneurs have launched these initiative through ‘learning-by-doing’ since there is no direct support from governments”, said Fouad Alfarhan founder of Rwaq in Saudi Arabia; “moreover, it is difficult to operate in the education sector without the permission of the government, which controls almost the entirety of this sector.” The entrepreneur emphasized the need for the government ‘to believe in startups’, instead of regarding them as ‘intruders’. Government support is essential in order to make sure that certificates are harmonized and recognized across different countries.

Training is also increasingly benefiting women...

Governments and private companies, often in collaboration, are increasingly targeting women for their training programs. One example is the Women in Technology Program (WIT) for the Middle East and North African region, which since its inception in 2005 has trained over 11,000 women and strengthened the capacity of over 60 local women’s organizations in the region.⁹³ Nevertheless, online training can reach more women, which represent an important source of entrepreneurship in the region. In 2013 The Economist released an article that read “The Middle East beats the West in female tech founders”, which states that the share of entrepreneurs that are women is above 35 percent in many cities of the region. There are many reasons for this, including the proliferation of professional social networks (as discussed below); but access to education is a crucial element.

People need skills that are tailored to the region's needs....

E-learning help larger segments of population acquire technical skills that are in demand. Nonetheless, the major gap that the emergent “Arab” MOOCs hope to fill is one for local expertise; “skills necessary for entrepreneurship, like digital marketing, for example, are completely different here; from the legality, to trademarks, and the success factors. We need content that relates to this market”, said Fouad Al-Farhan in another interview.⁹⁴

Job Search and Matching

In order to boost employment it is important to count with three integral parts: initiatives that improve the supply of talent, initiatives that increase the demand for such talent, and initiatives that create the right enabling environment to effectively match supply and demand.

ICTs enable businesses to engage in a cost-effective manner with people looking for a job. Businesses can use ICT to recruit, train, and hire people with different skill levels; meanwhile, ICT gives such work-seekers much greater job market information, and new levels of access to formal, wage-earning employment.

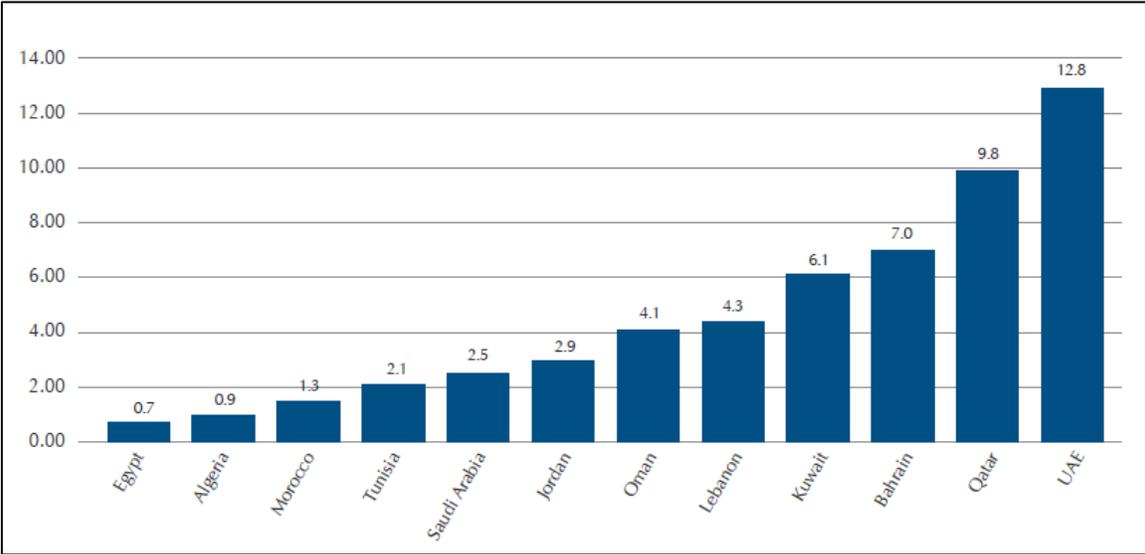
Online employment marketplaces are helping an estimated 12 million people worldwide find work by connecting them with employers globally.⁹⁵ Moreover, more flexible forms of work are also created: online contracting and microwork platforms allow breaking down large business processes into smaller discrete tasks – such as data entry and verification, copy-writing, or graphic design – and distribute them to workers across geographic boundaries.

Social Media can help with Virtual Job Markets...

Social media is facilitating access to customized information about jobs and employment opportunities. A survey carried out by the Dubai School of Government shows that 71 percent of respondents in the region state that they would rely on social media to find their next job.⁹⁶

Social networks allow workers to connect with businesses and enterprises looking for talent or specific services. The power of social networks expands as the pool of users increase across the MENA region (Figure 2.8). One notable example is Nabbesh.com, founded in 2012 in Dubai, which connects businesses with freelance talent online. The network virtually connects expert regional talent with flexible work, online jobs and opportunities to work from home. The marketplace of Nabbesh extends beyond Dubai to Middle East and North Africa, and people can market their skills (e.g., translation, development, graphic design), showcase their work and get hired. In the year it was launched, the site had close to 1000 users, 65 percent of which were women (the site seems ideal for women looking to start a family), and 60 percent of which were located in Lebanon and the UAE. Two years later, the community counted already with 40,000 people across 130 countries.⁹⁷

Figure 2.8: The Use of Social Networks (LinkedIn penetration, %)

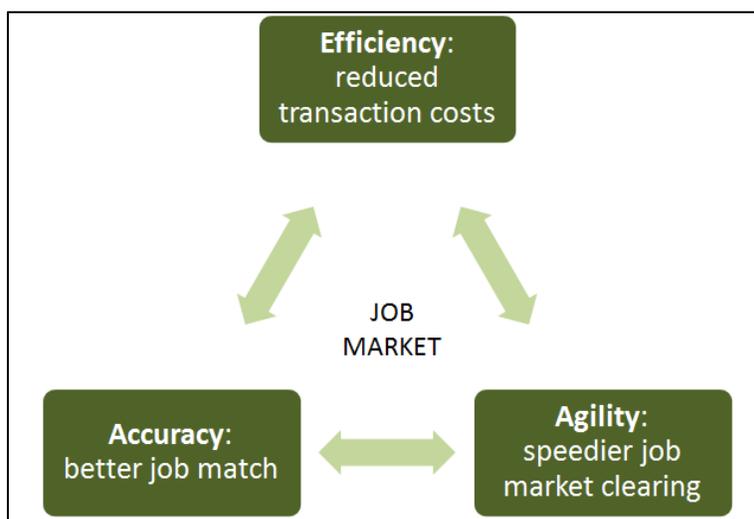


Source: Dubai School of Government (2012)

Nabbesh’s founder, Loulou Khazen, a young Lebanese female entrepreneur (now mainly based in the Gulf) whose vision of this project is simple: “build a giant meritocracy, a marketplace where the 140 million Arabs who are online today could use their skills to find online project work and are able to transact in a transparent and safe environment, and get paid for on time,

securely and via a method of their own choosing. This is especially important for unleashing the power of women who may choose to enter the workforce if they can work from home”.⁹⁸

Figure 2.9: ICTs and the Affordances in Labor Markets



One interesting aspect of this example is that it shows how the digital technologies allow people to engage in productive activities by creating new businesses and services (in this case an online market place), which at the same time allow other people to find employment.

Women, in particular, benefit from online work platforms such as Nabbesh.com because they provide flexibility to workers with family commitments and enabling women to work from home where cultural sensitivities might otherwise prevent them from participating in the labor force.

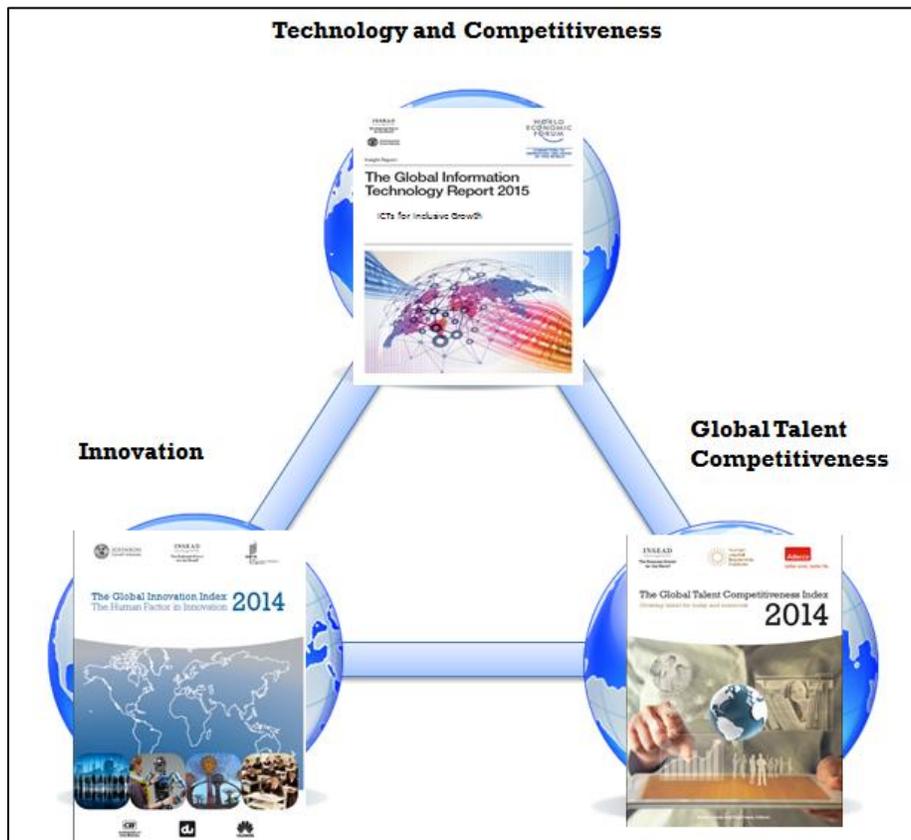
In summary, job search via digital technologies offers three potential efficiency gains to the economy: reduced transactions costs; speedier clearing of the job market; and better matching between workers and vacancies (Figure 2.9).⁹⁹ Furthermore, social media can also help with career guidance for the young,¹⁰⁰ an essential step acquiring the right skills: “young people need to discover what they want in life in order to get in the right field (and get the right vocational orientation)”, emphasized Fouad Alfarhan founder of Rwaq in Saudi Arabia.

CHAPTER 3 - INSEAD Digital & Talent Model

With a view to provide businesses and governments in the MENA region with a regular assessment tool, we propose a benchmarking model that allows monitoring the development of talent over time. Such a tool can also constitute an instrument to stimulate dialogue between governments, business and academia.

For over a decade, INSEAD has been playing a leading role in designing, publishing and disseminating global indices. Increasingly, such indices proved to be efficient tools to stimulate strategic thinking about critical issues, and to generate joint actions by governments and businesses. Such indices, the most relevant to this proposal, have covered Information Technology (GITR report), Innovation (GII report) and Talent Competitiveness (GTCI report)

Figure 3.1: INSEAD Global Indices



The Global Information Technology Report (GITR), jointly published since 2001 with the World Economic Forum, provides a comprehensive assessment of networked readiness, or how prepared an economy is to apply the benefits of information and communications technologies (ICTs) to promote economic growth and well-being. The report ranks the performance of 148 economies in leveraging ICTs to increase productivity, economic growth and the number of quality jobs. The rankings also show how far some countries have gone in bridging the digital divide – not only in terms of developing ICT infrastructure, but also in terms of economic and social impact – and highlight the main strengths and weaknesses countries are facing.

The Global Innovation Index (GII), in its 8th edition this year, is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO, the intellectual property agency of the United Nations). The core of the GII Report consists of a ranking of world economies' innovation capabilities and results. Over the last eight years, the GII has established itself as a leading reference on innovation. Understanding in more detail the human aspects behind innovation is essential for the design of policies that help promote economic development and richer innovation-prone environments locally. Recognizing the key role of innovation as a driver of economic growth and prosperity, and the need for a broad horizontal vision of innovation applicable to developed and emerging economies, the GII includes indicators that go beyond the traditional measures of innovation such as the level of research and development.

The Global Talent Competitiveness Index (GTCI), published since 2013 with HCLI and Adecco, is an innovative, annual benchmarking study that introduces the dimension of talent/human capital and its connection to competitiveness. The study collects a series of indicators that measure talent attraction, growth, retention at the level of national economies as well as the market conditions that act as facilitators (i.e. enablers). Such measurements are linked to output in terms of vocational and global knowledge skills. GTCI offers an academically rigorous, yet practically relevant policy tool to business and government.

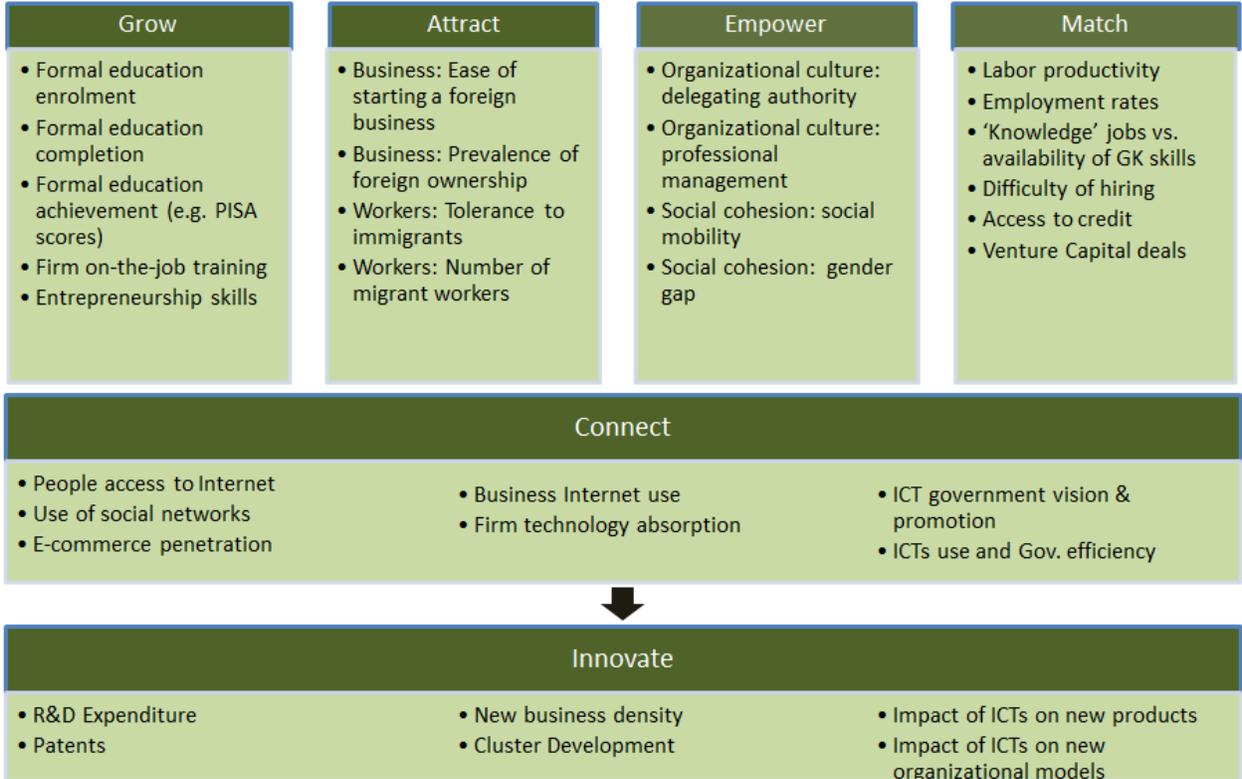
Benchmarking models represent a powerful tool for informing and giving actionable recommendations to industry leaders and to policy makers. Beyond national economies, nonetheless, cities and regions are playing an increasingly important role as talent providers and

talent magnets, and in the global competition for foreign investment. Those countries that adapt more quickly to this new environment will gain a competitive advantage. An area of future work that requires immediate attention is the definition of a benchmarking model that is more granular and capable to give more targeted recommendations for very specific local markets. Cities are becoming the future (think about Dubai or Singapore) and they should be able to compare themselves against other top business hubs.

The Digital & Talent Model

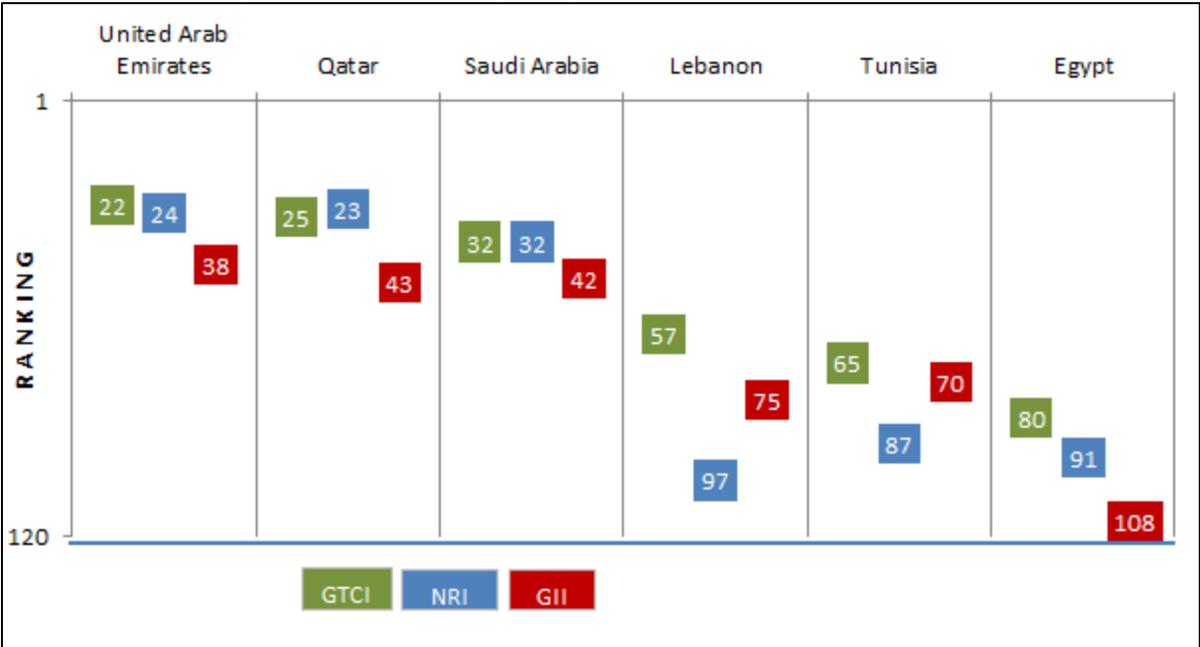
In order to assess how ICTs (i.e. the digitization of the economy) are transforming employment and labor markets, industries, cities and nations must be able to measure three things: (i) how they develop (grow, attract and empower) and match talent; (ii) the extent to which they are digitally-connected; (iii) the extent to which they are innovating.

Figure 3.2: INSEAD Digital & Talent Model



INSEAD indices allow benchmarking countries of the region across the three dimensions: Talent, ICT readiness and Innovation (Figure 3.3). UAE is the regional leader followed closely by Qatar and then by Saudi Arabia. These three countries show a consistent good performance in terms of ICT readiness (NRI) and access to talent (GTCI). Yet, innovation performance (GII) is not living to its potential. Outside GCC, countries have not completely closed the gaps with developed countries in terms of ICT readiness.

Figure 3.3: Global Ranking of key MENA countries in the three Indices



Note: GTCI measures talent competitiveness; NRI measures ICT readiness; GII measures innovation performance

INSEAD Global Indices have measured such dimensions separately and at the country level. A more granular analysis requires two things: (1) looking at how such three dimensions interact (e.g. cities or nations that are more digitally-connected make it easier to match talent); (2) measuring relevant indicators via a survey of companies. These potential further steps would allow measuring trends in the three relevant dimensions across regions, sectors and industries. This way, policy recommendations could become more specific and tailored to certain needs.

The benchmarking model will aim at monitoring talent development over time by providing relevant measurements for the different channels of “ICT empowerment” of talent and labor markets:

- Demand side: measure the demand for e-skills and the access to actionable data for decision makers.
- Supply side: monitor upskilling and the empowerment of entrepreneurship.
- Match efficiency: measure how efficiently the demand for skills is met by the supply of skills.

The ICT-related elements contained in each of the three labor market forces above determine the state and maturity of ‘Digital & Talent’ in each country and can be related to macroeconomic impacts (e.g. job creation) via INSEAD global indices of Talent, ICT and Innovation.

CHAPTER 4 - Economic Implications and Policy Options

Economic consequences

Digitization, which refers to the mass adoption of connected digital technologies and applications by consumers, enterprises, and governments, will create new firms and jobs and make existing companies more efficient. Yet, digitization will affect a large array of segments in the labor market, implying changes in the required profile of employable skills.¹⁰¹

From the macroeconomic perspective policy makers must thus be aware that the face of the economy will change and some people will gain and others will lose. Even if new jobs and products emerge, in the short term some people will lose their employment either because their work becomes redundant with the expansion of automation or because they no longer have the proper skills. With this, income gaps will widen, causing a social dislocation and perhaps even changing politics. The reason is that new technologies usually displace jobs from unskilled (poorer) people.

In developed nations this economic inequality can be appreciated in the fact that macroeconomic productivity (the amount of economic value created by an hour of labor) has been increasing while employment has stagnated for several years. Until the end of the last century, productivity and employment closely tracked each other meaning that as businesses generated more value from their workers, the country as a whole became richer, which fueled more economic activity and created even more jobs. Then, beginning in 2000, the trends diverge; productivity continues to rise robustly, but employment suddenly wilts. There is, therefore, a trade-off between higher productivity and job creation linked to digitization and automation.¹⁰²

People will stop doing some things and start doing new things.....

At the same time, nonetheless, the digital revolution is transforming the process of innovation itself. The main economic argument in favor of technological innovation is that by raising productivity, any automation which economizes on the use of labor will increase incomes. That

will generate demand for new products and services (and the number of digital startups could thus explode), which will in turn create new jobs for displaced workers.¹⁰³

The right policy approaches and programs should be in place...

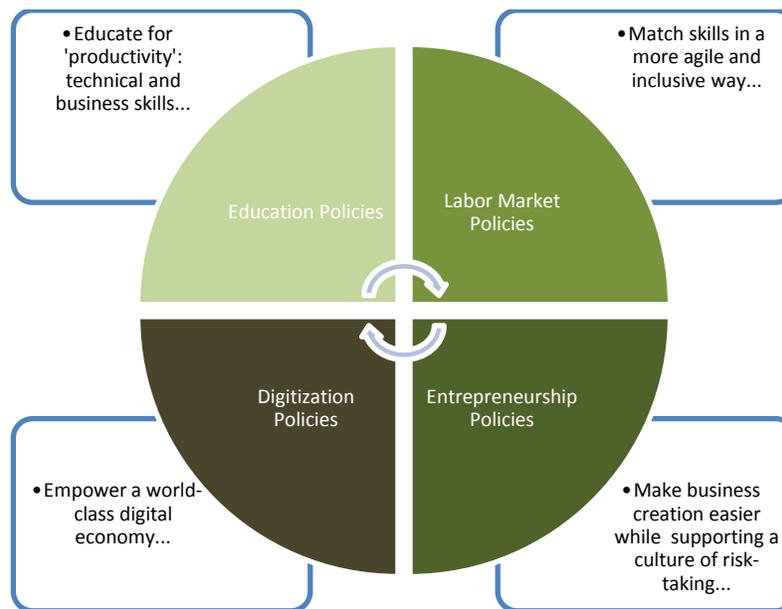
Technologies have undoubtedly taken over some human jobs; yet, automation is often used to make human workers more efficient, not necessarily to replace them. Rising productivity means businesses can do the same work with fewer employees, but it can also enable the businesses to expand production with their existing workers, and even to enter new markets. In order to keep productivity increasing while avoiding unemployment (particularly of poorer people) and economic inequalities, the right policy approaches and programs should be in place.

The World Bank recommends that in order to maximize the positive impact of ICTs on employment, policymakers must pay attention to five enabling systems:¹⁰⁴

- *Human capital systems*: this refers to a pool of workers with appropriate ICT skills, and the awareness and soft skills that give competitive advantage in the labor market.
- *Infrastructure systems*: this refers to ubiquitous connectivity to ICT; access to electricity and transport; infrastructure to support innovation and adoption of technology by SMEs.
- *Social systems*: this refers to networks of trust and recognition for workers and employers and measures to minimize possible negative outcomes of ICT-enabled employment.
- *Financial systems*: this refers to efficient and accountable systems to ensure timely payments; and access to finance to support innovation and entrepreneurship.
- *Regulatory systems*: this refers to an enabling environment that creates employment opportunities and increases labor market flexibility while protecting the rights of workers.

The intersection of Talent-Digital-Innovation, as visualized by INSEAD Global Indices, involves policy actions in at least four interconnected areas: education, labor markets, entrepreneurship (including business creation regulations) and digitization, as depicted in Figure 4.1.

Figure 4.1. The relevant Policy Areas



What countries need is a national strategy of digitization and to implement the corresponding policies. Such strategy will then have implication on education systems, labor markets and business creation and policies must adapt accordingly.

Policy Options for Digitization

By and large, policymakers have focused until now on improving the reach and affordability of ICT services — most recently facilitating, and even investing in, large-scale broadband deployment.¹⁰⁵ Though important, this is just one part of the story. Policymakers in the future need to become digital market makers — creators of a digital economy, via digitization policies and adequate governance, that provides its citizens, enterprises, and economic sectors with the competitive advantage essential to thrive in an increasingly global market.

For achieving broader digitization in MENA, foundational platform is required to accelerate the adoption of broader digitization policies and enact governance reforms. This platform includes pan-regional online payment systems, regional cross-border trade facilitation and normalization,

legal protection for digital entrepreneurs, public–private partnership frameworks, cybersecurity standards and regulation, and stakeholder collaboration forums.

Figure 4.2. Policy areas for Digitization



The slow pace of regional economic and trade cooperation is a long-running issue for the MENA region. The uptake of digital technologies and the region’s long-term economic policy needs are therefore intimately linked. E-commerce and other online services, which can benefit from a large Arabic market, will not reach full potential if countries in the region do not harmonize trade policies, customs regulations and payment systems.

Becoming a digital market maker requires policymakers to undertake three activities:¹⁰⁶

- *Designing sector digitization plans*: develop competitive advantage and generate jobs in sectors that are already critical to the national economy, taking into account the trade-off between higher productivity and job creation that digitization generates.
- *Building capabilities*: foster enablers necessary to achieve these digitization plans. Governments can develop digital infrastructure in cases where the private sector does not have the right incentives (or at least provide financing in cases where the investments are

too risky for the private sector); or they can facilitate private investments in cases where they emerge.

- *Jump-starting and monitoring the wider digitization ecosystem:* collaborate closely with industry, consumers, and government agencies to encourage the uptake of digital applications by creating clear objectives and accountability for their digitization targets.

The Digitization of cities and nations has then implications on the other policy areas: Education, Labor Markets and Entrepreneurship.

Policy Options for Education

Adapt Curricula.....

Curricula in universities must thus be adapted. For instance, since education for data scientists is a new field that is still evolving, policy makers will need to ensure homogeneity in curricula across different regions and assure that data science educational programs address the current needs (and anticipate the future needs) of global industries.

Enhancing curricula is not only important in higher education. Encouraging interest in ICT at an early age also requires some curricular changes in primary and secondary schools.

Adopt a tech-friendly educational environment....

Student engagement at a personal level is very important since early stages. Such engagement can start being developed in the classroom. Adapting and integrating new technologies into the classroom bring benefits in two ways: (i) by creating interest of students in technology and; (ii) by enhancing students' learning via new teaching practices.¹⁰⁷ One example of actions being taken in the Middle East is the forum *21st Century Education Solutions*, which brought experts and professionals from the public and private education sectors together (hosted by Qatar's Darwish Technology), highlighted technological solutions to boost the education sector as

envisioned by Qatar's growth plans. New devices in classrooms and offices (e.g. tablets or certain apps) allow for a more interactive and efficient environment. A tech-friendly educational environment should propagate across the whole region.¹⁰⁸

Educate for employment....

Too many countries in the MENA region still see a growth in the number of 'unemployed graduates'. Countries can adopt wide measures of 'education for employment', and foster the acquisition of 'employable skills' beyond formal technical or tertiary education. Partnerships with non-governmental initiatives are crucial as well as with private companies; "some companies have well-developed social responsibility drivers that are compatible with their human resources needs, so they want to invest in training", said Salvatore Nigro from Education For Employment in Europe (EuropEFE). EuropEFE creates partnerships with diverse types of private companies in order to achieve a "consortium" approach to training in the MENA region. The objective is that different firms have access to the skills they need.

Policies and programs must target both technical and soft skills. Technical skills increasingly involve the use of ICTs and people must learn how to work with digital business processes. For this reason, collaboration with private companies (e.g. via internships) is crucial.

But also educate for leadership and entrepreneurship...

Countries of the region must not only educate for employment; they also must educate for 'leadership'. This means that people not only need to acquire the skills to fill the vacancies demanded by corporations; they also need the behavioral skills to become 'dual thinkers' and entrepreneurs.

Dual thinkers are the people who have both IT and business skills within the company. They also have the skills to identify and develop new business opportunities, and the technical skills that allow them to identify which technologies to use to do so, and how, or even to spot new business opportunities directly in technologies and applications.

Initiatives by the education sector but also by the private sector should devise programs and events to teach students the value of failure, and what can be gained from unsuccessful experimentation. So much of computing is tied up with a trial and error process, being able to deal with failure is a crucial skill for success in technology.¹⁰⁹

Support grassroots initiatives ...

Improving education and skills is not only about big government solutions; grassroots initiatives also matter. It is usual to wonder what governments should be doing, how laws might be changed or department budgets might be spent. Government support is indeed important for education. Nonetheless, a big educational disruption may not come from the government or big corporates. Al-Farhan, co-founder of MOOC startup Rwaq, emphasized that creativity and new ideas come from startups and entrepreneurs: “it is almost impossible for governments alone to overcome their bureaucracy to timely implement new educational approaches; private initiatives work because they can mix business objectives with social objectives (i.e. social entrepreneurship).”¹¹⁰

The role of private initiatives is crucial for entrepreneurship: “culture in countries of the region does not tolerate failure and thus governments have little patience to sponsor initiatives with no immediate pay-offs as those involved in entrepreneurial endeavors”, said Salvatore Nigro from EuropEFE. He added that “private companies based in Europe or in other developed countries are willing to sponsor entrepreneurship programs in the region because a good economic environment for the proliferation of SMEs means that access to value chains and procurement becomes easier.”

Close stakeholders’ information and knowledge gaps to know which skills are required...

This effort entails monitoring and evaluating the quality of education and, at the same time, reforming assessment and certification systems. Addressing knowledge and information failures, including through counseling throughout secondary school, will allow employers to better communicate what they require from the educational system, schools, and educators to improve

quality and to better assess and certify learning, and families and students to make better decisions and form realistic expectations about the transition from education to work. Labor Market Information Systems (LMIS) can provide key labor market information used for making informed, data-driven decisions regarding career choices for the job seeker and training program development for training institutes.

Policy Options for Labor Markets

Solve the 'old' problems in labor markets....

Countries in the region must create awareness. Countries must first understand their labor markets, particularly the types of skills that are needed and the potential barriers for obtaining those skills. Countries must put the right institutions and policies in place and for that they must identify the problems and learn from best practices. The World Economic Forum's New Vision for Arab Employment initiative, for instance, engages leaders from business, government, civil society and academia to develop a holistic analysis of the employment system in Arab resource-endowed economies, with specific emphasis on GCC countries. This approach sought to create a shared understanding of the structural reasons for youth unemployment, while raising awareness of future pressures to the current system were it to be continued, as well as the potential consequences of interventions.

The set of 'old' problems that need to be tackled also include the following:

- *Make labor market more flexible:* in some countries, important wage rigidities contribute to unemployment, queuing, and informality (e.g. collective wage agreements that work by levels).¹¹¹ In addition to wages, contract duration (temporary, fixed term, or open ended), working hours, and dismissal procedures (including severance pay) define the employment relationship.
- *Promote meritocracy:* many experts in the region agree that people and companies with good connections are more likely to receive "privileges" in terms of access to jobs and in terms of growth opportunities. Educational credentials are widely perceived to play a minor role in employers' hiring decisions.¹¹² When formal degrees have limited signaling

value, other factors (such as trust and personal connections) can dominate job search and hiring decisions.

- *Empower Women:* meritocracy also implies recognizing the value brought by women into the economy. Female entrepreneurship has been quite successful in the Middle-East. The internet is a new space that is more meritocratic and not as heavily male.
- *Public Sector Employment:* formal employment in the MENA region is strongly associated with public sector employment.¹¹³ Opportunities for formal employment in the private sector in the region remain very limited.

The World Bank proposes strategic directions to promote long-term inclusive growth and formality,¹¹⁴ namely: (i) fostering competition; (ii) realigning incentives in the public sector; (iii) moving towards labor regulations that promote labor mobility and provide support to workers in periods of transition; (iv) enhancing the productivity of informal workers through training and skills upgrading

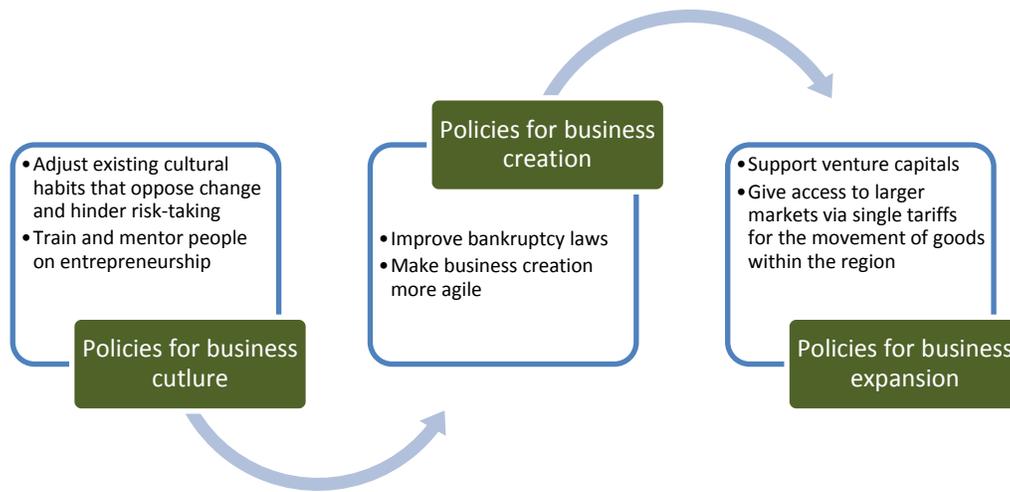
Adapt labor market policies to the Digital Era....

In addition to solving the old problems of labor markets, new challenges emerge with the digitization of the economy. For instance, social systems must be created: networks of trust and recognition for workers and employers, social safety nets, and measures to minimize possible negative outcomes of ICT-enabled employment.

Policy Options for Entrepreneurship

Policymakers, regulators, industry players, investors, and educational institutions can encourage and support digital entrepreneurs by removing the obstacles facing them, including restrictive legal frameworks (see Figure 4.3). Bankruptcy laws remain almost absent in the region and the cost of legally establishing a startup is still expensive; this hampers the development of e-commerce and other markets and potential entrepreneurs become demotivated. For established enterprises, it is difficult to expand to other markets because of the absence of single tariffs and harmonized payment systems.

Figure 4.3. Policies for Supporting SMEs



In the context of ICT-enabled entrepreneurship, initiatives for fostering (digital) entrepreneurship involve well-established steps that are already taking place in the region (Table 4.1). Governments across the region should continue to support incubation centers to educate entrepreneurs and innovators, and provide them with the needed skills and support to help them succeed. These centers provide needed training, support and funding for innovation experiments in the startup phase.

Table 4.1. Steps for supporting the Startup Cycle

Step	Objective	Example
<i>Ease of Doing Business</i>	To simplify setting up a new company; today it should take days rather than months to register a new firm.	Countries in the region from Jordan to UAE have been able to make business creation more agile.
<i>Trade fairs</i>	to discuss technology trends and business opportunities	In Jordan every first Tuesday of the month, an event called TechTuesdays attracts hundreds to discuss both technology and business issues such as how to bounce back from failure.
<i>Accelerator programs</i>	to mentor new entrepreneurs by teaching the fundamentals of creating an innovative start-up business	Oasis500 is an “accelerator” program created in 2011 in Jordan; i365 Accelerator is based in Dubai.
<i>Ventura capital development and Angel Investors</i>	to strengthen access to finance and networks and to bring experience into startups	Wamda; Arab Business Angel Network (ABAN)
<i>Information Support</i>	to showcase success stories of SMEs and to inspire and educate entrepreneurs	Wamda provides a steady flow of information online for entrepreneurs, organizes events for them in the real world and invests in some.

Governments must help build and partially fund capital venture partnerships, staffed with experienced innovation entrepreneurs and investment professionals, who collectively possess the needed expertise and the ability to make investment decisions based on the value-creation viability of a startup and its founders. With the right incentives, these funds will be able to invest in the scale-up phase of the right startup venture, and will be able to attract and recruit the experience required to staff the company's management throughout the scale-up and growth phases of the company.

Skills, labor markets and entrepreneurship are highly linked and Marita Mitschein, Managing Director of SAP Training & Development Institute, highlights in a succinct way the importance of having the right environment for people to thrive: “in addition to upskilling, which is the way of aligning job seekers with opportunities, the challenge of youth employment can be tackled by supporting the development of entrepreneurs. This requires putting in place good regulations and bankruptcy laws, provide entrepreneurs with coaching and facilitate access to markets, capital and skilled labor. But it requires, above all, an environment where entrepreneurial spirit can flourish, which means an environment where entrepreneurs are allowed to fail without a stigma”.

In Summary

Enabling youth employment requires the participation and collaboration of several stakeholders (governments, private sector, academia, etc.) and the design of policies across diverse domains (digitization, education, labor markets and entrepreneurship) that often overlap. Stakeholders and policies must interact in the context of a well-coordinated and comprehensive strategy. The conclusion is that government policies should be set up to help on all fronts: financially, emotionally and through relevant upskilling programs.

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Endnotes

¹ See Strategy& (2012b)

² As comparison, mobile traffic grew 86% in Asia Pacific, 77% in North America and 57% in Western Europe; source: “Innovation, Disruption And Growth: Now Is The Right Time To Invest In MENA’s Tech Scene”, Entrepreneur Middle East, Wednesday October 22, 2014, accessed February 23, 2015: <http://www.entrepreneurmiddleeast.com/innovation-disruption-and-growth-now-is-the-right-time-to-invest-in-menas-tech-scene/>

³ MENA’s e-commerce volume currently accounts for only 0.7 percent of its total purchases, compared with nearly 5 percent in developed markets. So, the potential for growth is large (see Strategy& 2012a).

⁴ Source: “Start-up Spring”, The Economist (Jul 11 2013), accessed February 24 2015: <http://www.economist.com/news/business/21581737-clusters-internet-firms-are-popping-up-all-over-region-start-up-spring>

⁵ Lanvin and van Welsum (2012) discuss the distinction between e-skills and e-leadership.

⁶ We acknowledge that, despite the many similarities that countries in the MENA region have (e.g. including a common language), countries may be quite different in some dimensions of the economy, politics and society at large. We use different names to group countries of the region: MENA countries, the Middle-East, the Arab World, etc., but we are fully aware that we cannot always generalize in some issues.

⁷ These are the so-called NEETs. Youth unemployment has increased by 30% across the OECD after the crisis.

⁸ Source: <http://www.economist.com/blogs/economist-explains/2013/05/economist-explains-why-youth-unemployment-so-high> (accessed March 20 2015)

⁹ See World Economic Forum (2014).

¹⁰ Source: World Bank (2015)

¹¹ See, for instance, World Bank (2014a)

¹² Source: World Bank (2013b)

¹³ idem

¹⁴ The World Bank (2015) argues that the problem is regional but the report presents more examples of specific countries such as Egypt and Tunisia (GCC countries are not well covered by the report).

¹⁵ Information obtained from: <http://blogs.worldbank.org/futuredevelopment/jobs-or-privileges>

¹⁶ For instance, the report by the World Bank estimates that 45% of ‘politically-connected’ firms in Egypt operate in high-energy-intensive industries compared to only 8% of all manufacturing firms.

¹⁷ The link between product market competition and employment is addressed extensively in economic literature (e.g. Amable and Gatti, 2004)

¹⁸ In Tunisia, for instance, micro businesses accounted for 92% of total net job creation between 1996 and 2010 and 177% of total net job creation in Lebanon between 2005 and 2010 (World Bank 2015).

¹⁹ See World Bank (2013b)

²⁰ See World Economic Forum (2014)

²¹ Source: Booz & Company (2012)

²² The digital market in the whole MENA region is expanding at a compound annual growth rate of 12 percent and is expected to be worth \$35 billion by 2015 (Strategy& 2012a). For instance, business process outsourcing (BPO), the most profitable and cost effective subset of offshoring, combined with IT and software development is expected to generate 59,000 digital jobs in Morocco by 2020 (EFE, 2014).

²³ This specific ranking comes from the 2014 Edition of the Global Information Technology Report (2014)

²⁴ See the academic literature on IT and business agility (e.g. Lu and Ramamurthy 2011) and also policy literature on e-skills and e-leadership (e.g. Lanvin and van Welsum, 2012)

²⁵ The top two, TCS and Infosys, which together employs more than 460,000 people, have maintained that they don't expect automation and AI to replace any jobs. Information retrieved from (accessed 20 Feb 2015): http://articles.economicstimes.indiatimes.com/2015-01-23/news/58382554_1_hcl-technologies-software-exporter-automation

²⁶ These examples are discussed in an article published by The Guardian (9 Feb 2015):

<http://www.theguardian.com/technology/2015/feb/09/robots-manual-jobs-now-people-skills-take-over-your-job>

²⁷ The software divides the job into micro-tasks, automates the repetitive bit then recruits freelance workers through crowdfunding platforms for tasks that require thinking.

²⁸ Similar categorizations are often used in the literature (e.g. Autor et al. 2003; Brynjolfsson and McAfee 2014; Frey and Osborne 2013).

²⁹ According to Frey and Osborne (2013), job categories most at risk tended to be low-skilled and were in office and administrative support; sales and services; transport; construction and extraction; and manufacturing. Among the highest risk jobs were telemarketers, payroll managers and wages clerks, bank and post office clerks, local government administrative occupations, assembly line workers, taxation experts, accountants, retail assistants, etc.

³⁰ See Lanvin and van Welsum (2012)

³¹ Research by Dalberg and Rockefeller Foundation (2014) shows that this is the case at least in a sample of African countries (including North Africa).

³² IDC call these ‘networking’ skills. Essential networking skills include: wireless, VoIP, network security, and general networking skills (routing and switching). Emerging networking skills include skills for: unified communications, video, cloud computing, mobility, datacenter, and virtualization.

³³ See IDC (2013).

³⁴ See, for instance, Ross and Beath (2011).

³⁵ See, for instance, Goodhue et al. (2009).

³⁶ Data sharing across business functions is crucial for business process integration: i.e. the extent by which business processes that rely on IT are integrated across business units. The concept of organizational integration found in academic literature usually involves the interconnectedness of an organization’s information technologies (i.e. the extent to which different systems can talk to one another).

³⁷ Tambe et al. (2012) show that IT and data allow companies to understand their operating environment. This is good for agility, which is a dynamic capability that enables firms to detect opportunities for innovation and seize those opportunities by assembling requisite assets, knowledge, and relationships with speed and surprise. (Sambamurthy et al., 2003; Tallon and Pinsonneault 2011). Entire industries and governments can also become more efficient by understanding trends in data (see, for instance, GTR 2014 on the benefits of big data).

³⁸ By 2018, the United States alone could face a shortage of 190,000 people with deep analytical skills as well as 1.5 million managers with the know-how to use the analysis of big data to make effective decisions (McKinsey, 2011).

³⁹ See the 2012 survey described in Pratt (2012).

⁴⁰ Information based on IDG Research Services - Global Market Pulse Survey (see CA Technologies 2010): http://www.ca.com/us/lpg/forms/na/cld/10521_12702.aspx

⁴¹ Transferable skills refer to cognitive, non-cognitive and specific and technical skills which enable an employee to perform the tasks required for their role. Examples include basic computer skills, database knowledge, graphic design, and programming knowledge.

⁴² These numbers were predicted by a report by IDC (2013).

⁴³ See Davenport et al. (2012)

⁴⁴ Process mining focuses on the analysis of processes using event data (e.g. event logs in supply chains).

⁴⁵ See Tambe et al. (2012) for a discussion on ‘extrovert’ firms.

⁴⁶ These include: text mining (e.g., information extraction, topic identification, opinion mining, question-answering), web mining, social network analysis, and spatial-temporal analysis with existing business intelligence systems.

⁴⁷ See Isik et al. (2013)

⁴⁸ Businesses and IT capabilities used to favor stability and scale and thus the traditional role of IT involved automating business processes. As big data evolves, organizations and the architecture of their information systems will develop into an information ecosystem: a network of internal and external services continuously sharing information, optimizing decisions, communicating results and generating new insights (Davenport et al. 2012).

⁴⁹ See Seddon et al. (2010).

⁵⁰ Decision environments are determined by the combination of decision types and information needs. Decision types range from unstructured to structured; a decision is structured if it is repetitive and routine; it is unstructured if there is no fixed method of handling it and it is made on a non-repetitive basis. Information is needed for strategic planning, management control, and operational control (Isik et al. 2013)

⁵¹ For instance, Lerch and Harter (2001) emphasize limitations in human cognition to process vast amounts of information.

⁵² The corporate decision-making culture involves governance-related issues such as shared risks and responsibilities, etc. (see Popovic et al. 2012).

⁵³ This is called ‘Impact Sourcing’ in the business literature.

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- ⁵⁴ A recent study by Dalberg (2014), in collaboration with the Rockefeller Foundation, shows that these four areas provided employment to more than 40,000 people in a sample of six countries in Africa.
- ⁵⁵ This is shown by a World Bank paper that summarizes the findings of a survey of over 47,000 firms conducted in 99 countries between 2006 and 2010 (see Ayyagari et al. 2011).
- ⁵⁶ See Lanvin (2015).
- ⁵⁷ See Lanvin and van Welsum (2012)
- ⁵⁸ Some examples are discussed in an article by The Guardian, “Cloud tech offers small and medium businesses opportunity for growth” (12 February 2014).
- ⁵⁹ In a cloud data center the same administrator can service thousands of servers, which allows companies to achieve lower infrastructure costs and higher security (large cloud providers are in better position to deal with security).
- ⁶⁰ Results of surveys of SMEs are presented in an article by Forbes, “Roundup of Small & Medium Business Cloud Computing Forecasts and Market Estimates, 2013” (30 July 2013). Academic work has also discussed the affordances of cloud computing: controlled interface, location independence, sourcing independence, ubiquitous access, virtual business environments, addressability and traceability (Iyer and Henderson 2010).
- ⁶¹ Source: Forbes, “Is the Middle East The Next Big Market For Cloud Computing?” (12 March 2013)
- ⁶² Etro (2009) discussed the economic consequences of this process.
- ⁶³ Today firms range from the likes of Palma Consulting, which helps companies implement software, to Aspire, which maintains computer systems. Source: The Economist, “Start-up Spring”, July 13 2013: <http://www.economist.com/news/business/21581737-clusters-internet-firms-are-popping-up-all-over-region-start-up-spring> (accessed February 27 2015)
- ⁶⁴ Rubicon, for instance, produces a wide range of content, from films to online training courses. Maysalward develops popular mobile games.
- ⁶⁵ With 167 million playbacks per day and 100 percent year-over-year playback growth, MENA countries - and Saudi Arabia in particular - stand as the highest users of YouTube (Strategy& 2012b).
- ⁶⁶ See the report by the Dubai School of Government (2012).
- ⁶⁷ These data were compiled by Statista, from the results of Google’s Our Mobile Planet survey; source: <http://www.statista.com/chart/1405/the-united-states-ranks-13th-in-smartphone-penetration/> (accessed 8 April 2015)
- ⁶⁸ The relevance of smartphone penetration in the region is further discussed in a BBC article “Why smartphone saturation in the Middle East matters”, 27 November 2013
- ⁶⁹ According to the 2010 Doing Business Report, the UAE’s rank propelled from 118 to 44 as a result of numerous policies taken on in the last couple of years.
- ⁷⁰ These help overcome the usual problem of lack of a “one-shop facility” to get advice on their ICT needs and access to reliable experts, which often hampers the ICT adoption by SMEs.
- ⁷¹ It emerged after Maktoob, a Jordanian internet portal, was sold to Yahoo in 2009 (The Economist, July 13 2013)
- ⁷² New Generic Top Level Domains (GTLDs) allow domain names in Arabic alphabet.
- ⁷³ Source: Entrepreneur Middle East, "Innovation, Disruption And Growth: Now Is The Right Time To Invest In MENA’s Tech Scene", (October 22, 2014): <http://www.entrepreneurmiddleeast.com/innovation-disruption-and-growth-now-is-the-right-time-to-invest-in-menas-tech-scene/>
- ⁷⁴ See the report by PayPal (2012)
- ⁷⁵ Source: <http://www.wamda.com/2014/05/the-future-of-e-commerce-in-the-region> (accessed 2 March 2012).
- ⁷⁶ See Strategy& (2012b).
- ⁷⁷ See the discussion in World Bank (2014a)
- ⁷⁸ In the joint survey of Union of Arab Banks and the World Bank on ‘The status of bank lending to SMEs in the MENA region,’ the average share of bank lending to small and medium enterprises (SMEs) was low- only 8% of their total lending in the MENA region. The average share of SME lending is only 2% in the GCC in 14% in the non-GCC region.
- ⁷⁹ Wamda also provides a steady flow of information online for entrepreneurs and organizes events for them in the real world.
- ⁸⁰ See Andersson and Djeflat (2012).
- ⁸¹ Source: <http://thesolutionsjournal.com/node/237248> (accessed on March 02 2015).
- ⁸² Both behavioral and cognitive factors are important for entrepreneurship (Baron 2007). The importance of behavioral skills for entrepreneurship in the Middle-East has been emphasized by experts and the media, including the article “Three Necessary Factors To Establish a Qatari Silicon Valley” by Prof. Maher Hakim (Carnegie Mellon)
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in the Magazine Entrepreneur Middle-East: <http://www.entrepreneur.com/article/242237> (accessed 26 February 2015). The willingness to accept failure is more important than optimism (see the discussion by Hmieleski and Baron, 2009).

⁸³ For further details see Kelley et al. (2011).

⁸⁴ See Global Innovation Index (2014), Chapter 1.

⁸⁵ A report by INSEAD (2010) analyzes curricula design for fostering e-competences in Europe.

⁸⁶ See Global Innovation Index (2014) and Global Talent Competitiveness Index (2014).

⁸⁷ See Kaplan et al. (2012).

⁸⁸ See, for instance, the article in Entrepreneur Middle-East, ‘An Opportunity for Growth: Defining Failure in the Context of Entrepreneurship’: <http://www.entrepreneur.com/article/242275> (accessed March 26 2015). As theory develops and increases our understanding of the role of emotion in learning from failure, entrepreneurship educators have the opportunity to reflect these advancements in their pedagogies. This requires a focus on how students “feel” rather than on how, or what, they “think.” (Shepherd 2004)

⁸⁹ Source: <http://gulfnews.com/business/economy/tejar-dubai-signs-mou-with-injaz-uae-1.1414296> (retrieved 19/02/2015)

⁹⁰ Cisco Entrepreneur Institutes are already established in Egypt, Lebanon, Morocco, Oman, Tunisia, UAE, & West Bank/Gaza.

⁹¹ This is an initiative of the Queen Rania Foundation for Education and Development (QRF). Edraak has signed a multi-year contract with edX, the MOOC platform founded by Harvard and MIT.

⁹² Source: <http://www.wamda.com/2014/06/first-arabic-mooc-platform-launches-quality-education> (accessed March 10 2015).

⁹³ It was founded by the Middle East Partnership Initiative of the U.S. Department of State, and is managed by the Institute of International Education, with strong support and collaboration from Microsoft.

⁹⁴ Source: <http://www.wamda.com/2013/12/saudi-arabia-rwaq-online-courseware-mooc-middle-east> (accessed March 10 2015).

⁹⁵ Source: World Bank (2013a).

⁹⁶ The results of this survey are presented in a report entitled: “Social Media, Employment and Entrepreneurship”, which was done in collaboration with SAP. October 2012.

⁹⁷ Source: <http://www.arabianbusiness.com/making-connections-lou-lou-khazen-baz-563237.html> (accessed 26 February 2015)

⁹⁸ This quote comes from an article published in The Huffington Post, “Rolling Up Their Sleeves: Online, Arab Women Master Their Own Fate” (29 October 2014): http://www.huffingtonpost.com/loulou-khazen-baz/rolling-up-their-sleeves- b_6069494.html (accessed 26 February 2015)

⁹⁹ Additional information can be obtained from: <http://www.nber.org/papers/w9254>

¹⁰⁰ This is discussed by the report by the Dubai School of Government (2012) and also by the UN World Youth Report from 2011.

¹⁰¹ Automation used to be seen as a way to substitute fixed capital for the physical labor of human capital. The advent of low-cost interconnected IT services (mobile broadband Internet) and new ways of analyzing and leveraging information (e.g., big data, business analytics) has now started to impact the 250 million ‘knowledge workers’ of this world (see the Global Talent Competitiveness Index 2014, Chapter 1).

¹⁰² Over the past 30 years the digital revolution has displaced many of the mid-skill jobs that underpinned 20th-century middle-class life. Typists, ticket agents, bank tellers and many production-line jobs have been dispensed with, just as the weavers were (see Brynjolfsson and McAfee 2014).

¹⁰³ See, for example, the article “Technology and Jobs” in The Economist (Jan 18th 2014).

¹⁰⁴ Source: World Bank (2013a).

¹⁰⁵ One essential ingredient, indeed, is the competition in Telecoms in order to facilitate access to Internet and mobile (see, for instance, World Bank 2010b).

¹⁰⁶ See Strategy& (2013).

¹⁰⁷ See, for instance, Blake (2009)

¹⁰⁸ Source: <http://www.entrepreneurmiddleeast.com/darwish-technology-hosts-forum-on-tech-solutions-in-education/>

¹⁰⁹ One global example is the “Failure Week” program pioneered by St Saviour’s and St Olave’s school in Southwark, South London.

¹¹⁰ He also made similar comments in an article in the Wall Street Journal: ‘Saudi MOOC Startup Wants to “Disrupt” Arab Education’ (December 17 2013).

¹¹¹ These agreements assume that a university education is needed for the highest levels. Wage floors are then set accordingly, often above what workers with less than a university degree, who would still be qualified for those jobs, are paid on the market. As a result, the salary differences are quite remarkable in most sectors, and unemployment is likely at each of these levels whenever the mandated wage exceeds the actual productivity of the workers that are available to fill the position.

¹¹² See World Bank (2013b).

¹¹³ See World Economic Forum (2014)

¹¹⁴ See World Bank (2014a)

