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A Conceptual Model of National Skills Formation for Knowledge-based Economic Development in the Arab World

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Abstract

The movement of many Arab countries toward knowledge-based economic development requires the transition to more effective skills formation systems. This paper proposes an institutionalist approach to national skills development systems in the advancement toward knowledge-based economic development. There is currently no accepted general framework to analyze national skills development systems, and this has resulted in countries adopting reactive approaches to skills development problems. The conceptual framework advanced is an integrated, systemic view of national skills formation systems guided by government intervention in light of rampant failures of skills formation approaches that rely exclusively upon market mechanisms. The framework contributes to the skills formation literature by reviewing, synthesizing, and building on the literature from a multidisciplinary perspective. It considers the relevant institutions and interests of key stakeholders as highly interrelated in the context of knowledge-based economic development and achievement of accompanying economic, political, and social objectives in the Arab World.

Keywords: *skills formation, knowledge economy, skills development policy, economic development, lifelong learning, Arab World*

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Knowledge-based Economic Development and the Need for More Effective Skills Formation Systems

Schwalje (2013a) finds that 17 of the 22 countries in the Arab World have adopted development of a knowledge-based economy as a medium to long-term economic policy objective. Knowledge-based economic development is at the nexus of Arab governments' economic, political, and social objectives. It is also highly related to national competitiveness and economic policies that support innovation, technology development, entrepreneurship, workforce skills development, adoption of high performance organizational structures, and Information Communication Technology (ICT) infrastructure development (Kingdom of Saudi Arabia Ministry of Economy and Planning [KSAMOEP], 2010). Rischard (2009) observes several common development objectives - job creation, economic integration, economic diversification, environmental sustainability, and social development - which have underpinned successful transitions to knowledge-based economies. A vital precursor to knowledge-based development is human capital development that is conducive toward developing a society characterized by skilled, flexible, and innovative individuals nurtured through quality education, employment, and broadly accessible life-long learning opportunities (KSAMOEP, 2010).

In the 1960s, Becker (1994) underscored the critical link between human capital and economic growth when he observed, "Since human capital is embodied knowledge and skills, and economic development depends on advances in technological and scientific knowledge, development presumably depends on the accumulation of human capital" (p. 324). More recently, Kuruvilla and Ranganathan (2008) show that, given sufficient skills levels, a development strategy based on the export of low-cost and high-end knowledge-based industries¹ is a viable alternative to the more traditional low-cost export-oriented manufacturing strategies often pursued in developing countries. The movement of more developed countries toward knowledge economies and the skills formation challenges that such transitions present have also been well documented. The lack of effectiveness of skills formation systems to produce high-level skills serves as a constraint to knowledge-based economic development. Adaptability and congruence of skills formation systems and constituent actors in response to factors such as economic development, skill demands of employers, technological progress and industrial strengthening, and macroeconomic trends is critical to knowledge-based development in the Arab World (Schwalje, 2011, 2013a). Thus, the movement of many Arab countries towards knowledge-based economic development inevitably requires the transition to more effective skills formation systems.

This analysis advances an institutionalist approach to skills formation, which might serve as a conceptual model to inform national skills development systems that require flexibility and responsiveness to establish sophisticated, innovation-driven, knowledge-based industries. The literature on skills formation draws from several disciplines. Unfortunately, the literature currently exists in a fragmented and non-integrated form that fails to cut across disciplinary boundaries. There is currently no accepted general framework to analyze national skills development systems,

¹ Schwalje (2013a) finds that the term knowledge-based industries is subject to interpretation but often refers to industries which require high levels of technology and human capital.



which has resulted in countries adopting reactive approaches to skills development problems (Kuruville, Erickson, & Hwang, 2001). The conceptual framework advanced is an attempt to review and synthesize the literature on skills formation. This paper proposes an integrated, systemic view of national skills formation systems guided by government intervention in light of rampant failures of skills formation approaches that rely exclusively upon market mechanisms. Under such approaches to skills formation, formal education and training systems, industrial development policy, firm-level skills training and workforce development initiatives, and the incentives behind individual investment in skilling have lacked coordination and proceeded as distinct fields of inquiry (Kupfer, 2011). It is important to consider the relevant institutions and interests of key stakeholders as highly interrelated in the context of knowledge-based economic development and achievement of economic, political, and social objectives.

National Skills Formation for Knowledge-based Economic Development

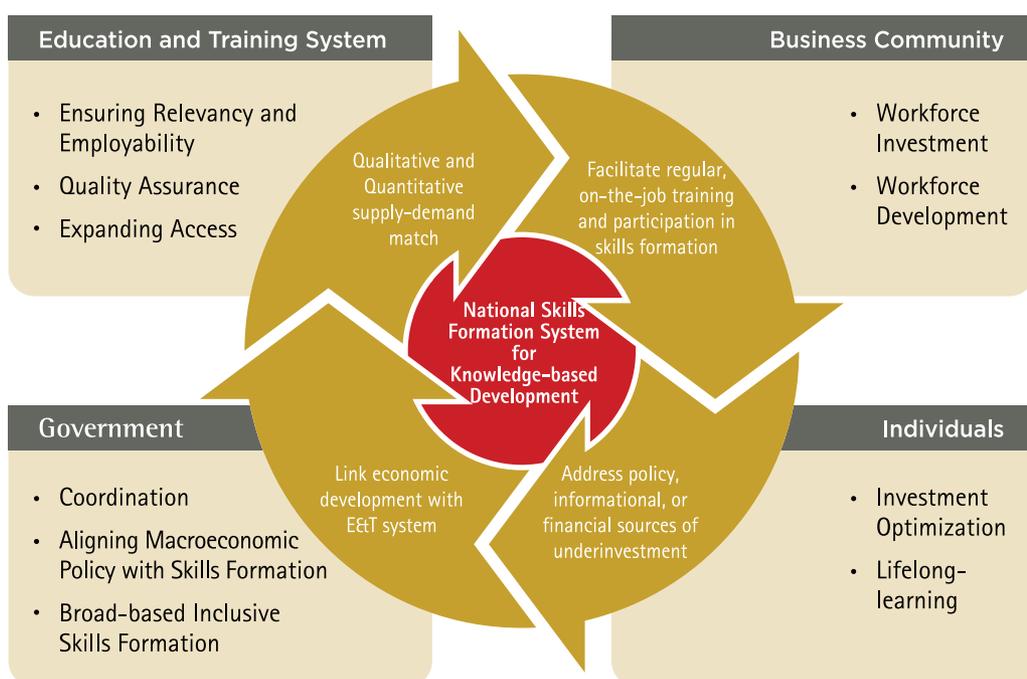
Beginning in the 1990s, there was a shift from viewing formal education and training systems as solely suppliers of skills toward an emphasis on the relationship between governments, educational systems, labor markets, and firms to generate demand for skills (Ashton, Sung, & Turbin, 2000). Such a demand-driven, integrated approach to skills development recognizes the point Foster (1964) made in "The Vocational School Fallacy in Development Planning." He stated that career "aspirations are determined largely by the individual's perception of opportunities within the exchange sector of the economy, destinations by the actual structure of opportunities in that sector" (p. 151). Individuals and firms do not invest in education and training unless they are sufficiently compensated. In such an environment, government supply side expansionary measures such as building more schools or training facilities may be economically suboptimal and ineffective due to low demand for skilled labor (Wood & Ridao-Cano, 1996). In the Arab World, development policy has been accompanied by increased emphasis on the welfare of individuals being tied directly to their success in gaining and maintaining higher qualifications and skills. The objective of such policies has been to increase individual investment in attaining qualifications and skills, which can be sold in the labor market to match high wage employment opportunities expected to be generated by emerging high skill, knowledge-based industries.

Despite the need for countries to adopt demand-driven approaches to skills development, conceptual frameworks of skills formation seldom consider the role of the state and economy. This results in static accounts with no clear link between key stakeholders and specific economic outcomes (Ashton et al., 2000). Hoppers (2007) observes that an integrated conceptual model of skills formation must include "the totality of other structured arrangements that provide young people and adults with a learning experience that develops competencies for the world of work, whether as pre-employment or as further skills development while working, institution-based or work-based, off-the-job or on-the-job training" (p. 13). In this evolving perspective of skills formation systems, investment in human capital has become a political as well as economic goal in which government intervention is warranted (Brown, Green, & Lauder, 2003). This represents a departure from the view of the role of government in skills formation based on human capital theory in which human capital formation is pareto optimal without government intervention. Market approaches that underpinned skills formation policy



in the past have failed to address persistent skills development problems and do not present a comprehensive strategy to develop the skills of the workforce as a whole (Hall & Lansbury, 2006). With the objective of arriving at a conceptual model of a sustainable system of skills formation to facilitate knowledge-based economic development, this analysis proceeds by discussing the role of key stakeholders in a systemic approach to skills formation that aligns skills development within broader economic development, business, and social measures. A graphic depiction is shown in Figure 1.

Figure 1: Conceptual Framework of a National Skills Formation System for Knowledge-based Economic Development



This paper proceeds by discussing each of the major stakeholders involved in skills formation: The first section discusses the need for governments to coordinate key stakeholders in the skills formation system, align skills formation with macroeconomic policy, and pursue inclusive labor market policies. The next section highlights the responsibilities of the formal education training system in ensuring outgoing employability of graduates, adopting quality assurance practices to align education systems with employer needs, and increasing access to disadvantaged groups. The third section asserts the need for regional employers to provide firm-based training and share responsibility for national workforce development. The fourth section discusses the challenges individuals face in making education and training decisions and how government responses influence continuous skill upgrading. After addressing the various elements of the conceptual framework, the fifth section highlights several representative examples of good practice in national skills formation from the Gulf Arab countries. The paper concludes by underscoring the criticality of adopting ecosystem-based approaches to skills formation that enables knowledge-based development in the region and wards off competition from emerging high skilled, low wage knowledge-based workers globally.

The Role of Governments

The changing demands of knowledge-based economic development, global macroeconomic trends, and social development, create a need for interdependence and collaborative networks consisting of education and training providers, firms, government entities, and other key stakeholders for effective skills formation (Finegold, 1999; Powell & Snellman, 2004). The literature points to the following government roles in the skills formation system for knowledge-based development: coordination, aligning macroeconomic policies with skills formation, and ensuring skills formation is broadly based and inclusive.

Coordination

Finegold (1999) compared the interrelationship between the various actors involved in skills formation systems to a complex adaptive system. Since the constituent parts of complex adaptive systems are always changing, the aggregate behavior of the system can be suboptimal and may never arrive at a final optimal state (Holland, 1992). In the context of skills formation systems, suboptimal states are manifest in underinvestment in human capital and institutional and market failures occurring at all components of the skills formation system: education and training institutions, employers, institutions providing training, and individual investment in attaining higher level skills (Lall, 2000; Wade, 1992). The economic and political exigency of skills formations systems to constantly respond to evolving skills needs requires an institutional setting similar to a complex adaptive system. In light of this need for adaptability, feedback loops, responsive policymaking, and coordination of education and training actors, institutionalist approaches to national skills formations in which governments play a central role have emerged as a preferred approach to national skills formation (Campbell, 2012). The role of government in an integrated institutional approach to skills formation goes beyond supply side policies for schools, universities, and training organizations. It reflects an understanding that the relationship between skills formation and labor markets is more nuanced than applying simplified neoclassical assumptions that labor markets are homogenous and supply and demand will converge upon equilibrium (Brown et al., 2003; Kupfer, 2011).

Effective institutions that prevent market failure-related underinvestment in skills, provide adequate regulation, and coordinate stakeholders are key elements of effective skills formation systems. In many countries, such as Australia, Germany, and the United Kingdom, national skills development policies—underpinned by skill inventories, sectoral skill development plans, and competency standards and accreditation frameworks—serve as a governance mechanism for policy guidelines. They also play a role in monitoring the workforce supply and requirements, channeling funds, and ensuring coordination in skill building efforts (Schwalje, 2013a). Thus, there are four main overarching skills formation coordination objectives required by governments to advance knowledge-based development: (1) linking economic development with the evolution of education and training systems; (2) ensuring qualitative and quantitative supply-demand match between outgoing students and the needs of the labor market; (3) facilitating regular, on-the-job training provision and participation in skills formation by the business community; and (4) addressing policy, informational, or financial sources of individual underinvestment in skills development.



Aligning Macroeconomic Policy With Skills Formation

A completely market-based approach to skills formation is not effective during a period of significant industrial upgrading in which there is entry into technology-intensive, new industries requiring substantial and uncertain skills development costs with a long-term payback horizon. As countries develop economically and become more competitive with greater reliance on technology, the demand for higher levels of human capital, both in terms of basic skills developed through formal education and training and specific technical skills, becomes stronger. The skill supply influences the amount and degree of sophistication of technology which can be adopted and efficiently used, while in turn the amount and sophistication of newly introduced technology impacts the demand for skills. The high costs of skill upgrading can bias countries toward less skill intensive, low technology industries (Lall, 1999). In such instances, skill shortages might stall the development of strategic new industries. Kurvilla (2008), for example, finds that skills shortages and the inability of the skills formation system in India to produce higher level skills has stalled the growth of higher-value added, knowledge-based industries such as IT outsourcing. Wages offered for skills related to emergent industries may also not reflect the future social benefits that employment of skilled workers can have on economies (Ziderman, 2003). For example, in the Gulf Cooperation Council (GCC) countries that are pursuing nuclear energy programs, such as the United Arab Emirates (UAE), Saudi Arabia, and Qatar, there is a need to train and develop a skilled workforce across the nuclear value chain—including areas such as construction, maintenance, safety, decommissioning, and research and development. An inability to adequately train a sufficient number of citizens in this emerging industry could potentially mean that GCC countries have to delay investments in renewable energy technologies like nuclear power in favor of continued reliance on using fossil fuels to generate electricity².

As governments engage in proactively shaping the technological and industry structure of their countries, they create a need for skills development that cannot be predicted by free market mechanisms. Thus, educational and industrial policy interventions must be set in place so that education and training systems co-evolve with industry development. Returning to the example of nuclear energy in the GCC, the Emirates Nuclear Energy Corporation's scholarship program, which provides full tuition, stipends, and performance bonuses as a means of attracting Emiratis to the nuclear sector, is an example of direct government intervention in the skills formation system to ensure the UAE education and training system co-evolves with the growth of the nuclear industry. A partnership between Emirates Nuclear Energy Corporation, the Federal Authority for Nuclear Regulation, Khalifa University of Science, Technology and Research, and Abu Dhabi Polytechnic has led to a number of specialist higher education degrees and diplomas to meet the workforce development needs of the UAE's emerging nuclear energy industry. In this case, the UAE government has directly intervened in the education and training system to ensure the viability of the nuclear industry by providing both financial incentives for graduates to enter the industry and by funding higher education programs at public universities.

² Schwalje (2013b) also suggests that the UAE's ambition to become an Islamic finance hub similarly faces threats due to skills shortages and gaps which may impact the growth of the industry.



National Foreign Direct Investment (FDI)-based strategies of technology acquisition and skills development are frequently met with policy responses to develop local capabilities of suppliers and domestic firms due to increased demand for high skill workers associated with FDI inflows (Davies & Desbordes, 2012). Through FDI, multinationals import technologies calibrated to host country skills. Porter (2000) finds that firms do not generally invest in more advanced technological capabilities, further expansion, and higher-level skills development without government upgrades to the skills formation system and upskilling of domestic firms across the value chain. Domestic firms face more market failures and higher training costs particularly in technology-intensive industries. Effective skills formation policies can also improve the efficacy of FDI promotion efforts by attracting more sophisticated FDI. Attracting higher levels of FDI is premised upon a sufficient level of education and skills. Without policies and systems in place to ensure increasing levels of skills formation, investors choose other destinations or bring low level technologies, which are not upgraded over time and fail to increase demand for higher skilled labor (Lall, 2000). For example, the UAE's solar innovation system now primarily consists of companies focused on downstream activities such as design, installation, maintenance, and system integration with a lack of specialization and very few upstream innovation-driven companies that manufacture solar photovoltaic technologies (Vidican, McElvaney, Samulewicz, & Al-Saleh, 2012).

A historical example from the Arab World of the perils of inadequate skills development paralleling foreign and domestic investment is Muhammad Ali's attempt to industrialize Egypt through the establishment of a textile industry in the 1800s (Schwalje, 2012a). In 1819, Muhammad Ali began an industrialization drive using imported foreign technicians and investment, which led to the establishment of 30 modern factories for textile manufacturing. By 1830, these factories employed 30,000 workers, but within a decade all the factories had failed due to lack of technical skills, European competition, and increased production quality in Europe (Beinin, 1981). At the time, French and English technical superiority and lower labor and raw material costs allowed the Europeans to displace Egyptian imports to Europe. Egypt also faced skills shortages related to engineers and mechanics who could operate, repair, or make innovative improvements to imported technologies, which led to obsolescence of Egyptian textile equipment (Butterworth & Zartman, 2001). English free trade concessions further led to industry decline, and by the 1840s Egypt was relegated to a supplier of raw materials to the European textile industry and a net importer of finished textile products from Europe (Marsot, 1984). Despite significant investment in the sector, 87% of cotton in Egypt continued to be processed with manual, time consuming, inefficient methods until 1860 when state of the art steam technologies were introduced. This was due to favorable competitive opportunities for Egyptian cotton resulting from decreased global supply from the United States during the American Civil War (Abdelsalam & Negm, 2009).

Alignment of macroeconomic policy with skills development may involve training subsidies under the rationale that societal benefits will be derived from the emergence of new industries which might fail to take off if sufficient workforce skills do not exist. The cost of such subsidies could be funded through taxation due to the societal benefits generated. While general education subsidies are justified in light of societal externalities, the case for subsidizing more tailored training and skills formation for particular occupations is less justified as societal benefits decline over time for such investments (Ziderman, 2003).



Broad-based, Inclusive Skills Formation

The workforce of a country must have sufficiently high levels of general education to ensure knowledge-based economic development. From this perspective, national skills formation systems must support the workforce presently employed in or entering the formal sector as well as individuals who are self-employed, working in informal sectors, or unemployed. Viewing entrepreneurship as a mechanism for job creation, several GCC governments have engaged in efforts to improve the environment for entrepreneurship by providing funding and training, reducing bureaucracy, and establishing business incubators (Al-Mubarak & Busler, 2012). Examples of such initiatives include:

- Mohammed Bin Rashid Establishment for SME Development (UAE)
- Khalifa Fund for Enterprise Development (UAE)
- SME Development Fund (Oman)
- Enterprise Qatar Initiative (Qatar)
- Saudi Industrial Development Fund (Saudi Arabia)
- Small Projects Development Company (Kuwait)
- SME Development and Support Center (Bahrain)

Government economic policies that stimulate the creation and growth of enterprises are both a mechanism for creating jobs as well as increasing demand for employable skills. Demand-driven, active labor market policies targeted at unemployed youth and adults or other disadvantaged groups who have left the education system—including employer involvement and various mixes of job-search assistance, work experience, job training, remedial education, and direct job creation—have been shown to be effective at increasing employability skills and reducing unemployment (Quintini, Martin, & Martin, 2007). Examples include the UAE's National Human Resource Development and Employment Authority and Abu Dhabi Tawteen Council; Bahrain's Labor Fund; and Saudi Arabia's Human Resources Development Fund. However, evidence from industrial and developing countries shows that the use of active labor market programs are more effective as short-term measures than as remedies for market failures in the skills formation system or structural problems in labor markets (Angel-Urdinola, Semlali, & Brodmann, 2010).

Particularly in North Africa, high unemployment, underemployment, and poverty where opportunities in the formal economy are scarce have increased the role of the informal economy as a source of employment (International Labor Organization, 2003). Low education levels complicate skills development of individuals employed in the informal economy (Adams, 2008). The diversity of activities comprised by the informal sector makes skills formation priorities for the informal sector difficult (Liimatainen, 2002). Skills formation to overcome economic vulnerability embraces a much wider set of skills than just conventional technical and managerial competencies including basic literacy and numeracy, social and political awareness, and life skills (Bennell, 1999). However, skills development in the informal sector cannot be separated from other inputs necessary to the informal sector, such as access to credit, infrastructure, and legislative or policy support, which are required for the successful utilization of the acquired skills (Liimatainen, 2002).

The Role of Formal Education and Training Systems

While there is no ideal education and training system architecture due to social, historical, cultural, organizational factors, and varying levels of economic development, the literature suggests three objectives for education and training systems to complement knowledge-based economic development: relevancy and employability, quality assurance, and expanding access.

Ensuring Relevancy and Employability

The effectiveness of formal education and training systems is increasingly measured by production of human capital in the quantity and quality required by the labor market and whether outgoing students meet the expectations of employers (Organization for Economic Cooperation and Development, 2010). Large macroeconomic trends such as expanding international trade ties, skill-biased technological change, globalization, changing forms of work organization, and knowledge-based economic development necessitate opportunistic as well as responsive education and training systems. These economic trends have led to an increased demand for skilled labor. However, education and training systems are struggling in their response to global macroeconomic forces by not creating the skills needed for development and increasing industrial sophistication (Brown, Lauder, & Ashton, 2011). Particularly in developing countries, population growth and demographic trends have stressed education and training systems and created a need for job creation (Cincotta & Engelman, 1997). Youth bulges in the Arab World and elsewhere have led to high unemployment, underemployment, and low wages as well as urban informal sectors becoming a larger source of employment (Gatti, Angel-Urdinola, Silva, & Bodor, 2011).

While there is general agreement that education plays an important role in economic growth, the exact role it plays is unresolved (Islam, 1995). Microeconomic findings provide a strong rationale for government and private investment in education with the expectation of benefits from educational investments that enable individuals to be equipped with knowledge and skills that improve their employability and productive capacities that would lead to higher earnings (Pritchett, 2001). However, the inconclusiveness of macroeconomic growth studies suggest a nuanced conclusion (Son, 2010). Some studies suggest a mediated impact of education on economic growth based on the level of economic development. Otani and Villanueva (1990), for example, provide evidence that higher levels of government expenditures on education as a percentage of gross national product have a small but positive impact on economic growth, which is found to be stronger particularly in low and middle-income countries. Lygoun and Owen (1996) find evidence that national education and training system needs progressively increase as economies develop and human capital intensive industries emerge. This means countries must ensure alignment between the education and training system and industry needs to enable economic development. Gemmill (1996) finds that primary level education is more conducive to growth in the least developed countries; secondary educational levels impact growth more in middle income countries; and tertiary educational levels have a strong impact on growth in developed countries. Endogenous growth theories have also found that education affects growth and competitiveness by establishing comparative advantage, increasing productivity, influencing the rate of domestic innovation, and speeding the adoption of technology from



abroad amongst other things (Benhabib & Spiegel, 1994; Lucas, 1988; Mankiw, Romer, & Weil, 1992; Nelson & Phelps, 1966). The complementary role of education and training systems to economic development suggests a critical role for differentiation and alignment of educational programs and institutions with specific science and technology needs required by knowledge-based economic development and industrial development policies. The success of universal primary education in developing countries has also necessitated increased capacity to train semi-skilled workers in two-year or shorter vocational programs with skills that match immediate market needs (United Nations Educational Scientific and Cultural Organization, 2010a).

Development economics models of stages of development are an attempt to integrate empirical macro growth findings to specify national education and training priorities at various stages of development (See, for example, Schwab & Sala-i-Martin, 2012). These models assume that as countries move from resource-based to more competitive, knowledge-based economies they face similar challenges and priorities. In such models, countries start as low income, primarily agrarian based economies in which the primary sources of competitive advantage are cheap labor and natural resources. Economic development is a process of “successive upgrading, in which businesses and their supporting environments co-evolve, to foster increasingly sophisticated ways of producing and competing” (Michael Porter, Sachs, & McArthur, 2002, p.17). Development economics models of skills formation underscore the conception that human capital requirements increase as countries become more developed, as industry structures become more competitive and knowledge-oriented, and as firms move from smaller patriarchal family structures to larger size firms.

The once predominant liberal view of education for personal enrichment has lost ground to new vocationalism which views occupational preparation as a primary goal of education and articulates the relationship between education and employment outcomes with competency-based thresholds. For example, Schwalje (2012a) finds that the Arabization of the concept of knowledge-based economy has infused the development of education and training systems with several regional economic and social development issues such as economic integration and diversification, innovation, entrepreneurship, education and training system reform, environmental sustainability, identity, language, gender equality, and political participation and democratic reform.

Competency frameworks formalize the link between educational systems and specific labor market outcomes suggested by macro growth theory and development economics. Economic benefits have become a key driver behind education policy decisions and measuring success (Harris, Hobart, & Lundberg, 1995). An important outcome of the new vocationalism movement is that “Traditional models and methods of expressing qualifications structures are giving way to systems based on explicit reference points using learning outcomes and competencies, levels and level indicators, subject benchmarks, and qualification descriptors” (Adam, 2003, p.3). Competency-based education and training standards are employer-led and prescribe the qualifications needed for performance in the workplace. Adopted by countries such as the United States, England, New Zealand, Australia, Mexico, Costa Rica, France, and South Africa, competency based educational approaches were exported farther afield via international organizations despite differences in social context and varying institutional environments (Asian Development Bank, 2009; Caillods, 1994; Power & Cohen, 2005; World Bank, 2003). In the Arab World, there are several examples



of the increased use of competency frameworks such as UAE's Federal Government Behavioral Competency Framework and the ongoing efforts to develop national qualification frameworks in a number of Arab countries. To ensure skill alignment with the needs of employers, public-private partnerships are increasingly being leveraged to avoid supply-demand informational gaps (e.g. internship programs, joint advisory boards composed of education institutions and industry leaders, project-based research sponsored by companies, and R&D centers built with active involvement from the business community). Notable initiatives in the region include the Qatar Science and Technology Park and several of the initiatives pursued by Mubadala to form industry partnerships that prepare citizens for work in knowledge-based industries.

Quality Assurance

The institutional environment and governance structures, which control the provision of public and private education and training in many countries, are increasingly becoming disconnected from market forces (Brown et al., 2011). Education and training systems are slow to adapt to changing needs suffering from centralized curriculum design and limited institutional autonomy. Such systems, referred to as supply-driven, find it difficult to respond to changing skills demand required by rapidly developing, competitive economies (Ziderman, 2003). In many cases in the Arab World, federal ministries are both providers and regulators of education and training systems. This creates a situation where a lack of independent regulatory bodies can lead to misalignment between the education and training system and industry needs to enable economic development. Since the cost of providing education and training represents a significant share of public expenditure, shrinking or insufficient public budgets for education and training can lead to access issues in countries with demographic youth bulges, insufficient institutional capital spending, and a focus on system expansion rather than performance. Poor institutional governance and funding challenges in the Arab World often result in outdated instructional methods and curricula, low quality standards, and market lagging public policies to regulate private education and training providers (Schwalje, 2008).

Hanushek and Kimko (2000) find that labor force quality, as proxied by performance on international standardized tests, is positively related to school quality. From this perspective, poor quality schools can have an impact on economic development as well as social development since studies show little or no wage premia from additional schooling in poor quality institutions (Pritchett, 2001). In addition to industrial development in the Arab World, skills formation systems are linked with outcomes such as religious, moral, and ethical values; national identity; preservation of traditions and cultural heritage; a well-rounded and engaged citizenry; a cohesive, participatory society; improved decisions about health, marriage, and parenting; and social responsibility (Qatar General Secretariat for Development Planning, 2011a). The negative impacts of school quality have influenced some Arab education and training systems to adopt more performance-oriented (rather than expansion-focused) approaches to improving quality, increasing performance, and assuring the marketability of outgoing students (Schwalje, 2008). Such initiatives are often achieved through adoption of accreditation systems, performance standards to assess system performance, and the capacity for data collection that facilitates system monitoring and evaluation, and policy analysis. In many education and training systems, renewed emphasis on quality has also necessitated a move from lecture-based methods of



instruction to interactive and experiential instructional methods accomplished by training teachers in more engaging teaching methods and use of technology in the classroom (Carlson & Gadio, 2002; Darling-Hammond, 2000). Licensing, professional development, and qualification standards for teachers have also accompanied quality assurance efforts (Brule, 2008). In the Arab World, there are several efforts to both strengthen university teacher preparation and training institutions affiliated with ministries of education tasked with ongoing professional development for teachers (United Nations Educational Scientific and Cultural Organization, 2010b).

Expanding Access

The ongoing global financial crisis has imposed severe fiscal restraint on governments through declining tax bases and enormous public deficits that have reduced public education budgets (Barakat, Holler, Prettnner, & Schuster, 2010). A recent report suggests that less wealthy countries could be hit harder by the financial crisis and begin limiting universal education expansion (Abuel-Ealeh et al., 2010). Led by the initiatives of international organizations and donors, there is an increasing emphasis on the need to develop skills among individuals who are disadvantaged by inadequate skills investment. Failure to develop these skills can lead to long-term, negative externalities on health, earnings, and education that impose large costs on individuals and societies (Banerji et al., 2010). These long-term repercussions have highlighted the need for national programs which specifically target the poor, ethnic minorities, and women to facilitate job matching and skilling. However, the expansion of education and training systems to accommodate these groups will further stress already limited public education and training budgets and may require intervention in capital markets to increase the affordability of education for individuals from disadvantaged groups (Ziderman, 2003).

The Role of the Business Community

Internal organizational pressures catalyzed by global macroeconomic trends have increased the importance of firms taking a long-term approach to workforce skills formation. Expanding trade, technological diffusion and adoption, and changing forms of work organization have increased the relative demand for skilled workers globally. Globalization increases the importance of skills, rather than resources, as a source of competitiveness (Shankar & Shah, 2003). Workers employed in exporting industries tend to be well educated and highly skilled (Autor, Katz, & Krueger, 1998). As countries increasingly shift their development policies from import-substitution to export-led growth models, trade-induced flows of workers from importing, traditionally lower skilled, labor-intensive industries, to higher skilled, export and knowledge-driven industries increases the overall demand for high skilled workers. Trade in high skill, knowledge-based services has become a significant contributor to gross domestic product and a large source of employment in many countries (World Bank, 2010).

Globalization increases technology imports leading to productivity growth from higher capital intensity and resulting in an increase in the demand for skilled labor (Mayer, 2000). A higher level of human capital enables capital investment to be more productive while increasing return on

investment (Ashton, Green, James, & Sung, 1999). Slaughter (2002) provides evidence that Foreign Direct Investment (FDI) stimulates skill upgrading in developing countries. If capital accumulation favors highly skilled workers and technology is substitutable for lesser skilled workers, an outward shift in the relative labor demand curve for skilled labor can lower demand for unskilled labor and increase demand for skilled labor.

Globalization, trade openness, and technology-driven development have led to new patterns of work organization. Firms are moving toward more flexible and innovative forms of organization and production to increase efficiency, accommodate technological change, respond to evolving consumer behavior, as well as adapt to broad macroeconomic forces (International Labor Organization, 1998a). The tendency of firms to adopt what has been labeled as “high performance enterprise” forms of flexible work organization and practices has a significant impact on the skills required by employees (Schwalje, 2012b). For employees, this means more involvement in continuous improvement and production, which requires social and problem solving skills in addition to technical skills. The evolving skills demanded by high performance enterprises require continuous firm-based training. New forms of work organization have been adopted in many industries and services, particularly manufacturing and tradable business services, by a large number of firms in OECD and developing countries (International Labor Organization, 1998a, 1998b). However, adopting new forms of work organization, which require greater skills levels and responsibility, are prohibitive to countries with low skills levels.

The trends identified above have led employers to demand both higher numbers of skilled workers as well as greater levels of skills from their existing workforce. In many countries, evidence points to an unmet demand for highly skilled workers, known as a ‘skills shortage,’ as well as firms expressing concern that they face internal employee skills deficiencies that limit performance, a phenomenon that has been labeled as a ‘skills gap’ (Campbell et al., 2001; Economist Intelligence Unit, 2009; Education Analytical Services, 2010; Higher Education Forum, 2010; National Association of Manufacturers, 2005). The few skills studies available in the Arab World suggest a deficiency in general skills such as critical thinking, problem solving, listening, communication, teamwork, and collaboration as well as more technical skills such as languages, technological proficiency, science, engineering, and mathematics (Economist Intelligence Unit, 2009; Higher Education Forum, 2010; Mohammed bin Rashid Al Maktoum Foundation, 2008). Skills deficiencies affect both developing and developed countries serving as a significant constraint to economic growth, firm-level competitiveness, and firm entry into highly skilled, knowledge-based industries (Campbell et al., 2001; Education Analytical Services, 2010; National Association of Manufacturers, 2005). Schwalje (2013a) argues that the large disconnect between the skills required for the growth of knowledge-based industries in many Arab countries and the current level of skills available in national labor markets deters the development of high skills, knowledge-intensive industries in the region.

Workforce Investment

While firms tend to focus on paying higher wages for highly demanded skills, macroeconomic trends and rampant market failures of education and training systems suggest that longer term approaches to skills formation through continuous, regular on-the-job training and knowledge transfer are needed (Hall & Lansbury, 2006). Market failures in human capital formation are rampant



as education and training institutions struggle to keep pace with economic growth (Lall, 1999). The workforce investment mandate of employers in the 21st century has expanded to include not only training in response to high-performance workplace organization and maintaining skills relevancy in light of competitiveness, but also the burden of remediating inadequate pre-employment general skills formation due to formal education and training system market and institutional failures. Despite widespread skills shortages and gaps observed in the Arab World, training rates are generally lower as compared to developed knowledge economies with more effective skills formation systems as well as other developing economies such as Brazil, China, and Russia (World Bank, 2010).

Lall (1999) suggests that basic skills, personal attitudes, and competencies developed through formal education and training must be complemented with specific technology-based experience to develop technical skills. Industrial sophistication and competitiveness are derived not from formal education and training but the “practical experience of mastering, adapting, and improving specific technologies” (Lall, 2000, p. 22). Industrialization and skill accumulation are achieved by expansion of the education system alongside the upgrading of the skill intensity of economic activities. For developing countries, this approach reduces the technology gap with advanced countries while raising the demand for higher levels of human capital and concurrently providing the education and training required for economic development (Mayer, 2000). To avoid insufficient individual incentives to engage in skill upgrading, improved performance and productivity gains from skills acquisition are linked with pay when firms exercise wage flexibility (Ashton & Sung, 2002).

The willingness and ability of firms to provide enterprise-based training is rooted in a number of factors. The educational attainment of the workforce and firm managers can serve to reduce investments in firm-level training. Low levels of education among a firm’s workforce can raise doubts surrounding the absorption capacity of training, while managers with lower levels of education may not perceive a value in providing training. Managerial calculations of the returns to training may be further complicated by informational gaps surrounding technology, future skill requirements, and benefits of training (Lall, 1999). Firms which operate in less competitive, low skill production economies in which short-term strategic planning, little technological upgrading, low rates of capital spending, and an unfavorable economic policy environment for growth are rampant may prevent structured firm-based training.

Lack of internal capacity to provide training can obligate firms to rely upon external private training provision. In cases where the external training sector is underdeveloped and firm sizes are generally small, the inability to achieve scale to minimize training costs and budgetary constraints can serve to reduce the prevalence of firm-based training (Lall, 2000; Ziderman, 2003). This situation is particularly applicable in the Arab World where firm sizes are comparatively small relative to other regions (Schwalje, 2013c). Employee poaching, the tendency of firms to recruit employees with transferrable skills from other firms, may serve to limit firm-based training since training firms incur the cost of employee training only to lose the employee and resulting benefits of the training to another firm. In an environment with high levels of poaching, training firms will reduce training or only offer highly specific training that is not transferrable to other firms (Acemoglu & Pischke, 1998).



Due to the variety of causes of inadequate enterprise training, policy solutions must be tailored to the root cause. In cases of market failure, which deter workforce investment, joint approaches that share the responsibility of skills development between government and business have been effective. Training subsidies allow companies to develop training capacity, but more sustainable, longer-term approaches such as government provided training advisory and technical assistance funded through national training funds and levy-grant schemes are preferred. A notable initiative of this type is the Waqf Fund in Bahrain, which trains employees for the Islamic banking sector based on contributions from private financial institutions that are invested in money market instruments and the returns invested in training initiatives. The Human Resources Development Fund in Saudi Arabia also works in a similar way. Where the private training sector is weak, the government may fulfill a transitional role to build the capacity of private training providers complemented with public sector provided training. Payroll levy-grant schemes, which do not require government financing, are effective in limiting poaching. Under such schemes, firms that provide training receive subsidies to fund such initiatives while firms that do not train do not have access to funds since they are more likely to poach employees (Ziderman, 2003).

Workforce Development

Jacobs (2002) identifies workforce development as the cooperation of education and training institutions, the business community, and governments to provide individuals with rewarding employment as well as firms obtaining skills in the quantity and quality they require. High youth unemployment rates and market failures of education and training systems to create general skills suggest an expanded role for the Arab business community towards ensuring alignment between the skills imparted in formal education and training systems and those demanded in the workplace. Apprenticeships or work experience, often compensated at below the market wage rate, in which work experience is integrated into the formal educational structure and classroom learning can ease the school-to-work transition and ensure employability of young graduates (Quintini et al., 2007).

Including employers in curricula design, identifying the skill sets needed by graduates, standards setting, and accreditation can ensure education and training systems evolve alongside changing labor market needs. Through membership in industrial trade associations, businesses can also serve a governance role in the skills formation system (Ackroyd, Batt, Thompson, & Tolbert, 2005). However, in developing countries the oversight role typically played by scholarly, scientific, and professional organizations may be limited due to lack of capacity. Workforce development ensures that the relevance and employability mandate of education and training systems is fulfilled by minimizing informational asymmetries which reduce individual investment in skills acquisition. Early employer involvement in articulating future skills needs also serves to reduce the need for workforce training investment to backfill general skill deficiencies resulting from poor quality education and training systems.



The Role of Individuals

Much of the literature on individual human capital decisions focuses on the economics of education as a major field of empirical inquiry. Education augments natural abilities with skills that are subsequently sold in the labor market. It is also a proxy for the willingness of individuals to invest in their own human capital (Bedard, 2001; Sweetland, 1996; Wolfe & Haveman, 2002). Private rates of return are used to explain the motivation of individuals to pursue different levels and types of education. Typical findings on the private rate of return to education from studies in several countries summarized by Psacharopoulos and Patrinos (2004) reveal the following trends: (1) declining returns to education with economic development; (2) decreasing returns with increases in supply of education; (3) higher returns for primary and secondary schooling; and (4) returns which are generally higher than those on physical capital. Such analyses assume that individuals pursue general skilling as long as the value stream of future earnings is more than foregone earnings, training, and equipment expenses. Because the property rights to general training rest with individuals who derive higher wages from higher levels of training, individuals are willing and incentivized to pay the costs of general skilling (Becker, 1994).

In addition to higher expected wage differentials relative to less educated workers, there is evidence that individual investment in higher levels of skills is influenced by the probability of finding employment that adequately rewards the skills achieved (Mayer, 2000). Such findings underscore the importance of alignment between the education and training system and industry needs to enable economic development. Neglecting the delicate balance between skills demand and supply can lead to systemic failures such as low skill equilibria or overskilling. In a low skill equilibrium, employers face few skill shortages in a predominantly low skilled workforce, where there is little incentive to participate in education and training and raise qualification levels and aspirations (Finegold, 1999). Countries in low skill equilibria suffer from a lack of institutional alignment resulting in low productivity, low wages, and a low value added production orientation. Over investment in skills can lead to an oversupply of skilled workers that deflates wages or causes brain drain by those who cannot find local employment to match their skills and aspirations (Mavromaras, McGuinness, & Fok, 2007).

Investment Optimization

The assumption that individuals can make rational choices to optimize their education and training decisions has been criticized widely (Ashton & Green, 1996). Empirical studies have found that a number of factors drive the evolution of wage differentials. Returns to education are higher when demand for education rises due to a disequilibrium created by sectorial shifts requiring higher skill intensity (Schultz, 1975). In environments where the expansion of educated labor outpaces expansion in employment, returns to education can decrease (Pritchett, 2001). Returns to education are higher where technological progress is rapid and by implication in countries where government policy is more conducive to technological progress and skill intensive development (Rosenzweig, 2010).

However, the complexity of making education and training decisions in the Arab World can be shown by the example of Qatar. Empirical studies on private rates of return to education in Qatar show strong positive returns of 11 to 14 percent for each additional year of university education



for men and 8 to 11 percent for women. However, these studies also show strong returns for shorter diploma studies in the range of 8 to 24 percent for each additional year of diploma studies for men and 8 to 20 percent for women. The relatively high return to shorter diploma studies, if generalizable to other Arab countries, may influence nationals to pursue diploma studies as opposed to longer higher education courses (Qatar General Secretariat for Development Planning, 2011b). Since post-secondary school is free or heavily subsidized in many Arab countries, the private cost of post-secondary schooling is currently the income foregone during the period of schooling. However, requiring more private contributions to fund individual education and wage compression, which may result from higher concentrations of university-educated workers, may negatively affect private returns. In this respect, policy decisions have the potential to significantly impact the education choices of Arab citizens by altering private returns to education.

Information gaps about the future trajectory of industries and emergent skills needs, the returns to investing in particular skills sets, and projecting the future returns of education and training investments is a main source of market failure (European Commission, 2010). Skilling investments may also be subject to short-termism in which individuals are unwilling to invest in skills with uncertain and longer-term return horizons (Keep, 2006). Capital market weaknesses in terms of a lack of funding to finance education and training investments can lead to underinvestment. These sources of market failure are particularly applicable to Arab countries, which are entering knowledge-intensive industries that require substantial long-term investment and industry development. Externalities and labor market rigidities may also alter the incentives and return to skilling resulting in sub optimal investment in skills formation. Such market failures are mainly unintended outcomes of economic and social policies that serve to alter the returns to training such as artificially compressed wage scales and unions or minimum wage legislations that raise wages above the market level when pay and status are not linked to the attainment of qualifications (Centre for Economic Policy Research, 1996; Ziderman, 2003). An example in the Arab World is employment policies that offer more favorable terms for working in the public sector (Assaad, 1997). The appropriate government response to such market imperfections is to address the policy, informational, or financial source of the failure. However, such market failures may be immensely difficult to solve politically. In such cases, subsidies typically take the form of training grants to individuals or organizations offering firm-based training. The focus of the subsidy would be to raise the private benefits of education and training relative to their cost so the incentives for engaging in increased levels of education and training are sufficiently high (Ziderman, 2003). As in the example of Qatar earlier, scholarships or subsidized tuition often plays this role in the Arab World.

Lifelong-Learning

Though several definitions exist, lifelong learning emphasizes the continuous learning of knowledge, skills, and values throughout all stages of a person's life for the purposes of community engagement, performance in the workplace, personal development, and physical well-being (See, for example, European Commission, 2011; Medel-Añonuevo, Ohsako, & Mauch, 2001; World Bank, 2003). However, evidence from a variety of regions such as the Arab World, Africa, and Latin America suggest that lack of a lifelong learning culture and operationalization of its concepts has failed to motivate individuals to engage in continuous learning to ensure continued relevance of skills (Maruatona, 2006; World Bank, 2005; Yousif, 2009).



Lifelong learning requires public spending on education for which social returns exceed private returns (such as basic and secondary education) and increased private spending on investments that yield higher private returns (such as most higher and continuing education) (World Bank, 2003). Since lifelong learning implies increased private spending on educational investments after formal education, participation would be subject to the individual investment optimization process described above. It would also suffer from the same return uncertainties. Palacios (2003) observes, “Because lifelong learning encompasses such a wide variety of areas, including learning outside formal education settings, and because of the different circumstances each individual faces in life, it is very difficult for government to try to administer the provision of lifelong training” (p. 14).

Representative Examples of Good Practice From the Gulf Cooperation Countries

There are many practical examples of how elements put forth in the conceptual framework of national skills formation systems appear in the Arab world today. This section highlights examples of skills formation reform initiatives in GCC countries that aim to advance knowledge-based economic development. An example of good practice from a GCC country is provided for each stakeholder objective followed by an explanation of how the example supports the national skills formation system. Examples have been chosen to reflect the diversity of approaches across the GCC.

Fulfilling the skills formation role of governments in knowledge-based economic development

Coordination: Several countries in the GCC have embarked upon skills formation system reform without accounting for the need for systemic coordination and concurrent reform of relevant institutions. For example, in 2000 Saudi Arabia established its Human Resources Development Fund and began establishing technical institutions to prepare Saudis for technical roles in the private sector. However, there has been little evidence of the effectiveness of these institutions on Saudization efforts and reducing youth unemployment (Achoui, 2007). Beginning in 2012, Saudi Arabia began another wave of education and labor market reforms which included much more widespread reforms. One such reform was the Nitaqat Program, established by the Ministry of Labor to increase Saudi private sector employment by imposing restrictions on foreign employee sponsorship of companies who do not meet threshold hiring requirements for Saudi employees. In November 2012, the Ministry of Labor also began charging private sector companies that employ more foreigners than Saudis a levy of \$640 (SR: 2,400) per foreign worker. These active labor market policies aimed at increasing demand for Saudi labor have been accompanied by supply side policies to expand schools, universities, and training organizations in particular fields. The Human Resources Development Fund will also be restructured to promote pre-employment and on-the-job training through grants and wage subsidies to companies hiring Saudi nationals.



This example from Saudi Arabia, though still in progress, reflects the coordination of institutions and education and labor market policies to link economic development with the skills formation system. It also ensures quantitative and qualitative supply of sufficiently skilled Saudi workers, counteracts underinvestment in firm-level training, and provides individual incentives for engaging in employability training. Saudi Arabia is following a coordinated, systemic policy approach to address skills formation and realize its economic development aspirations.

Aligning Macroeconomic Policy with Skills Formation: Many of the GCC countries have made large investments in high skill, knowledge-based industries to promote high wage employment opportunities for their citizens. Strategies for contesting such industries are often established in economic development visions and national development strategies with little consideration for the availability of sufficient levels of workforce skills to compete effectively in such industries. In many cases, line ministries are not consulted in the development of macroeconomic policy and are asked only to implement national level strategic plans (Schwalje, 2012). In such cases, GCC governments must proactively intervene in education and training systems to ensure that adequate quantitative and qualitative supply of skilled workers are available in emergent industries. The emergence of the nuclear energy industry in the UAE is an example of an effective approach. The Emirates Nuclear Energy Corporation's scholarship program provides individual incentives to ensure students are attracted to the industry. Partnerships between the Emirates Nuclear Energy Corporation, the Federal Authority for Nuclear Regulation, Khalifa University of Science, Technology and Research, and Abu Dhabi Polytechnic have established academic and technical courses in the sector to upskill the UAE workforce to the needs of this emergent industry.

In this case, the UAE government is providing individual incentives to attract students to an emerging industry with unclear long-term job prospects. At the same time, academic partnerships support the emergence of the nuclear industry by strengthening higher education and technical training programs at public universities. In this way, the UAE has aligned its macroeconomic policy with specific programs to ensure the necessary human capital required by the nuclear industry.

Broad-based, Inclusive Skills Formation: In many GCC countries, women are heavily concentrated in public sector roles in select occupations. For example, 80% of the Qatari female labor force is employed in less technical sectors such as public administration and defense, education, human health, and social work (Qatar Statistics Authority, 2012). The clustering of women in these occupations is primarily due to socio-cultural factors and relatively favorable wages and conditions of employment offered in the public sector (Aradi, Buckner, & Schwalje, forthcoming). In order to promote female owned businesses that might attract women away from public sector employment, the Qatari government established the Roudha Center in 2010 to serve as a dedicated business incubator for potential women entrepreneurs.

The Roudha Center is an example of a highly targeted economic policy to stimulate the creation and growth of enterprises as a mechanism for employment. Responding to the concentration of females in Qatar in limited sectors with low growth potential to create additional jobs, the Qatari government adopted an inclusive policy to foster a heightened entrepreneurial culture amongst the nation's women.



Fulfilling the skills formation role of education and training systems in knowledge-based economic development

Ensuring Relevancy and Employability: Several skills studies have shown a mismatch between those skills required by employers and the skills of graduates and existing employees (See, for example, Schwalje, 2013). One common international approach to close this gap is through a national skills survey that probes which skills business establishments require and how well new entrants to the labor force and existing employees meet skills needs. National skills surveys can improve firm and economic performance by providing data to guide public policy interventions that remediate skills deficiencies through expanded training. In 2009, Bahrain's Labor Fund completed the region's first survey of employee skills sufficiency in priority areas for economic growth. The survey assessed unmet quantitative supply of workers with particular skills as well as qualitative skills deficiencies amongst existing employees. With the data from the skills survey, Bahrain's Labor Fund introduced a number of targeted certification training programs for individuals as well as support programs for firms to upskill staff.

This example from Bahrain reflects an effort to precisely identify skills shortages and gaps faced by Bahrain's business community in emerging sectors. The purpose of such studies is to fulfill the relevancy and employability mandate of education and training systems to ensure that economic development is not stalled by lack of workforce skills. Targeted policy interventions in the education and training system in Bahrain seek to close the gaps identified by the skills survey to ensure employers have access to adequate quantities and types of skills in the local labor force.

Quality Assurance: Poor quality schools can have negative social and economic impacts on countries. For this reason, many of the GCC countries have established institutions to ensure the quality of institutions at all levels of education. For example, in the UAE the Commission for Academic Accreditation (CAA) is a federal institution that licenses post-secondary educational institutions and programs. Through its licensure and accreditation procedures, the CAA ensures compliance with international academic, administrative, managerial, and operational standards. All institutions in the UAE outside of Free Zones must be licensed and accredited by the CAA.

This example from the UAE is indicative of quality initiatives throughout the GCC, which are focused on the adoption of accreditation systems, performance standards to assess system performance, and creating licensure standards for educators.

Expanding Access: Many of the GCC countries have made substantial progress in providing educational access. However, there still remain small populations which are excluded from education. Oman's Learning Village Program is an example of a national strategy, which seeks to eradicate illiteracy amongst the village populations in remote areas. The program, implemented in eight villages, uses local community volunteers and has a special curriculum for empowering women (The Sultanate of Oman Ministry of Education, 2009).

This example from Oman is notable in its effort to bring education to rural communities in remote villages. While the majority of initiatives in the GCC have focused on increasing access to formal education, this example reflects an innovative approach to providing informal learning opportunities to citizens not served by the formal education system.

Fulfilling the skills formation role of the business community in knowledge-based economic development

Workforce Investment: Inadequate enterprise training is widespread in the Arab World due to the concentration of small and medium sized entities in the region and immature human resource functions (Schwalje, 2013). The Waqf Fund established by the Central Bank of Bahrain in 2006 in partnership with leading Islamic Finance institutions is an example of a public sector intervention in an economic sector of critical importance to national economic development. The Fund receives financial contributions from affiliated financial institutions, which it uses to fund training and research initiatives to strengthen the sector.

This is an example of public intervention in the training market to build the capacity of private Islamic Finance training providers. In this way, training expenses to ensure the competitiveness of the sector are shared with private businesses. Developing a strong workforce in this sector is critical to securing Bahrain's regional role as an Islamic finance leader and pioneer in industry standards and regulation.

Workforce Development: Cooperation between education and training institutions, the business community, and governments ensures that outgoing students have sufficient employability skills and employers attain the skills they need. Career advisory boards, which consist of independent experts from the business community who provide advice on university curricula, are a widely adopted approach in the GCC. Advisory boards provide an independent opinion of the sufficiency of academic programming in meeting international standards and the needs of local employers. They also help resolve curricula weaknesses, and provide an objective assessment of the preparedness of outgoing students. Many examples exist in the GCC, such as the Mechanical and Industrial Engineering Advisory Board at Sultan Qaboos University in Oman.

This example from Oman, demonstrates how employers can be involved in curricula design and identifying skills needed by graduates. The involvement of industry in curricula design is a check on the education and training system to ensure employers have access to employable graduates and also to define emerging skills needs that require curricula expansion.

Fulfilling the skills formation role of individuals in knowledge-based economic development

Investment Optimization: Making informed education and training decisions in the GCC is complicated by lack of economic diversification and information gaps about the future trajectory of emergent industries. However, psychometric assessments are increasingly being used in the region to help individuals make informed career decisions based on their skills and interests. Qatar's Silatech established an online platform called Tamheed to help individuals appraise their skills relative to particular occupations and explore potential career fields that coincide with their interests.

Examples such as Tamheed represent an attempt to resolve informational gaps about opportunities in particular employment fields. Psychometric testing allows individuals to make more informed decisions about employment choices. However, an important limitation of such



tools is the inability to predict the ongoing viability of certain industries and potential for long-term employment opportunities. Without detailed projections of industry development, such systems remain a tool for more efficient matching of individual interests to appropriate career choices rather than an informational resource upon which to base private training investment decisions.

Lifelong Learning: In the Arab World, lifelong learning is often equated with adult literacy education and low-level skill training. Yet there is a need for comprehensive lifelong learning systems across the region that can accommodate unemployed graduates of post-compulsory education, secondary school leavers, and university graduates who must maintain the relevancy of their skills (Yousif, 2009). One example of an institution responding to this need is the Center for Continuing Education at the American University of Kuwait. The Center provides professional education for individuals who need to learn new skills for their jobs as well as retraining workers for new fields.

While this example from Kuwait is indicative of similar university level initiatives across the GCC, it is clear the concept of lifelong learning is still evolving in the region. There is a critical need for GCC countries to see “... lifelong learning as a broad governing concept that encompasses all levels of education which can provide multiple opportunities for individuals to review continually their knowledge, skills, and competencies in a rapidly-changing labor market in a rapidly-changing world” (Yousif, 2009, p. 16).

Implications for Skills Formation Policy in the Arab World

The changing demands of knowledge-based economic development create a need for interdependence and collaborative networks for effective skills formation. Although specific institutions designed to achieve skills formation objectives may vary by country, a systemic approach reflects the adaptability and congruence required by knowledge economies and concurrent achievement of development objectives—including job creation, economic integration, economic diversification, environmental sustainability, and social development. The conceptual framework advanced is an attempt to update and advance current skills formation thinking from a multidisciplinary perspective to guide collective action and inform both policy and practice as Arab countries pursue knowledge-based development. The approach advanced views skills formation as a political and economic goal in which government intervention is warranted to align skills development with broader economic development, business, and social measures.

The widespread regional pursuit of knowledge-based economic development is driven by policies that envision the emergence of high skill, high wage economies that will create jobs. However, the global availability and growth of low cost, high skill workers potentially threatens the viability and economic fundamentals of sophisticated, innovation-driven knowledge-based industries taking root in the region and can potentially devalue the credentials of skilled workers. If knowledge-

based industries fail to take root and lead to employment, many of reforms and money spent on higher education expansion, education quality, R&D ecosystems, and entrepreneurial growth could be deemed inappropriately spent.

While some Arab countries are more suited to competing in a high-skill, low-wage global economy, other Arab countries which are unable to compete in high-skill, high-wage knowledge-based industries will need to adequately calibrate the expectations of their citizens regarding the types of jobs that will be available in the future. They will also have to account for the likely instability of salaries due to wage compression from competing low-wage, high-skill workers. Efforts to privatize education attainment so that labor market success or failure passes the burden on to individuals are prone to market failure without sufficient demand for skills from the labor market.

Arab governments will have to take a hard look at the economic counsel they have received over the last two decades to judge its worth in securing the economic interests of the region. Skills formation system reforms must challenge the assumption that more education is always the answer, reconsider the full employment promise which hampers global competitiveness, reduce wage inequality to ensure equal distribution of wealth, and determine the Arab world's position in an global economy with emerging low cost, high-skill competitors that challenge knowledge-based economic development both in the developed and developing world.



⁶ This variable is also based on a four-level Likert Scale

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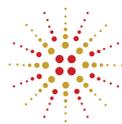
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