Tech entrepreneurship ecosystem in the Kingdom of Saudi Arabia

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wamda

OC&C Strategy consultants

Commissioned by Google

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Preface

The digital era represents a fundamental shift in the global economy, pushing the limits of innovation and redefining the boundaries of global trade. Innovations have never before been faster paced, more widespread, or scaled more quickly to become billion-dollar "unicorns". Over the last 15 years, the ICT sector as a backdrop to innovations and digital advancements has grown its share from just 1.3% of the global economy to 3%, and is set to grow even more.[1]

Nations which nurture a digital and innovation-based culture have pioneered the global shift toward knowledge-based industries and have enjoyed extraordinary wealth (and, job creation) while transforming the way people live and do business. This shift is made possible by substantial tech entrepreneurship activity within a supportive environment that features both government and private sector contributions. Initiatives of leading countries are now regarded as best practices for aspiring nations that want to create a similar impact, and the global conversation around regulation and innovation policies is framed around their practices.

Countries that are more reliant on manufacturing or natural resources are eager to capture a bigger share of the expanding digital economy. In order to deliver on these aspirations, they are exploring ways to transform the fundamentals of their economic structures and to deploy more resources to cultivate competitive tech entrepreneurship ecosystems. The establishment of high-impact tech entrepreneurship as a sustainable source of employment is especially critical for those nations with young populations and a need for new sources of job creation.

Given the importance of strong fundamentals in attracting both domestic and global interest in the tech entrepreneurship ecosystem, countries which fail to make broader reforms in education, good governance and an entrepreneurship supportive business environment risk falling behind.[2]

Google has commissioned this study to identify improvement areas in policies and regulations, which affect tech entrepreneurship in the Kingdom of Saudi Arabia (KSA), as part of a six country study that includes Turkey, the Russian Federation, South Africa, Nigeria, and the United Arab Emirates (UAE).

For the purposes of this study, entrepreneurs are those individuals focused on building a rapidly scalable business venture with the aim of innovating, improving or transforming the given way of doing things. The entrepreneurship domain in our definition includes the 'startup' and 'scale-up' phases of the business lifecycle where companies experience high growth in revenues and employees while validating their value proposition. Furthermore, our efforts specifically address technology-driven entrepreneurship – those endeavors with technology-enabled business models and a focus on hyperconnectivity between networks, people, businesses, things, and hardware.

Using these definitions, we began with a comprehensive research of existing literature to identify factors that indicate tech entrepreneurship success, grouping them into nine components. Some of these components explain the strength of the ecosystem that supports tech entrepreneurship, and others point to the results achieved.

In our view, the inputs that form the preconditions for success and the outputs that result feed each other in an iterative process to determine the health of a tech entrepreneurship ecosystem. The quality, connectedness and efficiency of the tech entrepreneurship ecosystem, which we refer to as the inputs, create the conditions for sustainable success. Meanwhile, effectiveness in generating tangible results such as growth, employment, creation of wealth along with innovation - the outputs - cultivate a stronger ecosystem by attracting more of the required inputs. This holistic perspective is reflected in the framework we shaped to assess tech entrepreneurship success.

[1] Selvam, M. and Kalyanasundaram, P. "Global IT/IT Enabled Services and ICT Industry: Growth & Determinants." http://globalbizresearch.org/Chennai_Symposium/conference/pdf/C549.pdf (accessed September 27, 2017)
[2] World Bank. "Digital Dividends." http://www.worldbank.org/en/publication/wdr2016 (accessed September 27, 2017)
[3] Schumpeter, J. 1942. Capitalism, Socialism, and Democracy. New York: Harper & Bros.
[4] Global Entrepreneurship Monitor (GEM) Global Report 2016/17, Global Entrepreneurship Research Association 2017

Based on our assessment, we identified leading and emergent countries in tech entrepreneurship, putting the USA, Singapore, Israel and United Kingdom at the top of the list. Identifying successful countries provided a filter to select best practices as well as set performance indicators that aspiring countries such as KSA can use to assess their status, identify improvement areas, and apply approaches that fit the nature of their own ecosystems.

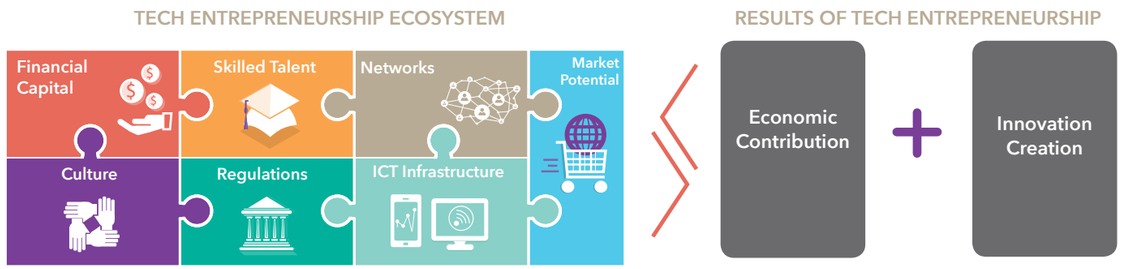
To put KSA's status in context, we have also compared input and output indicators for KSA against a peer set of countries with comparable development stages, similar characteristics, or geographic proximity.

In the final stage of the study, we conducted extensive primary research in Saudi Arabia to complement the desk research efforts. Where the desk research served to develop the structure of the tech entrepreneurship ecosystem and identify current initiatives that are in place to cultivate it, we gained insights and understood context and impact by conducting bespoke research with ecosystem participants, together with Wamda. The policy recommendations that are part of this report are the recommendations of the Saudi entrepreneurial community for further policy initiatives that will help strengthen the development of the tech entrepreneurship ecosystem in KSA.

In total, we interviewed 27 stakeholders representing different components of the ecosystem, spanning public and private as well as institutional and individual perspectives. The full list of participants is presented in the contributor acknowledgments section.

OC&C's framework for assessing tech entrepreneurship success

FIGURE I: TECH ENTREPRENEURSHIP ECOSYSTEM STRENGTH AND RESULTS ACHIEVED FEED EACH OTHER FOR GREATER SUCCESS



Source: Literature Research, OC&C analysis

Tech entrepreneurship ecosystem - Inputs

The tech entrepreneurship ecosystem and its components constitute the inputs in OC&C's tech entrepreneurship success assessment.

One definition of an entrepreneurial ecosystem is:

"a set of interconnected entrepreneurial actors, organizations (e.g. firms, venture capitalists, business angels, banks), institutions (universities, public sector agencies, financial bodies) and entrepreneurial processes (e.g. the business establishment, growth, levels of 'blockbuster entrepreneurship', number of serial entrepreneurs, degree of sell-out mentality within firms and levels of entrepreneurial ambition) which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment" [5]

OC&C's Tech Entrepreneurship Ecosystem Framework (Figure II) presents the attributes outlined above, and the way in which they interact and influence one another. Seven distinct components, working together, provide the environment necessary to generate successful tech entrepreneurships.

Best-in-class countries are able to offer **equity funding** sources in greater volume and variety (i.e. business angels, venture capital firms, and government investment funds). **Deep and efficient stock markets and the high frequency of deals** make the entrepreneurial challenge financially worthwhile and are instrumental in drawing in more resources – in terms of funding, skilled talent, and support – into the ecosystem.

These countries have a larger number of **highly skilled** employees and a labor force created by **education systems and talent attraction initiatives that support tech entrepreneurship.** These ecosystems are characterized by a **greater pool of scientists, engineers, and research universities** that foster a culture of innovation.

Benchmarks demonstrate a superior level of **network development** that is characterized by the availability of entrepreneurial networks, startup associations, accelerators, incubators, co-working spaces, technoparks, etc. There are **stronger innovation linkages between academia and the private sector** such as joint-venture/strategic alliance deals and industry-university collaborations.

In the best-practice countries, there is a higher **individual risk appetite**, coupled with **cultures that are more supportive of entrepreneurship. It is easier and less bureaucratic to start and run** companies as an entrepreneur, and the **risk of failure is better managed.**

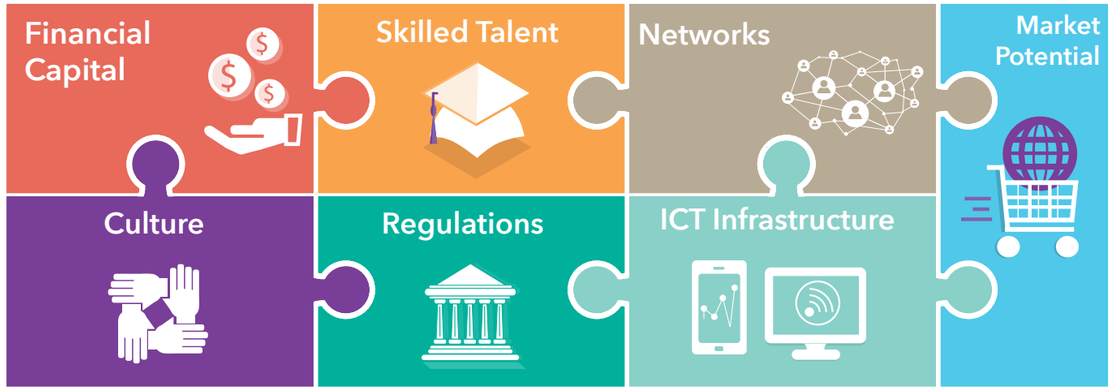
Supportive digital policies – laws related to data flow, cybersecurity, data privacy, IP protection, etc. – and **strong innovation capacity** steered by governments' R&D policies provide a sturdy backbone for the ecosystem. **Open foreign trade policies** enable these countries to globalize their businesses.

Another fundamental differentiator is **reliable fixed and mobile internet infrastructures at affordable prices.** Digital policies that support **cross-border data flows** lead to **higher utilization of efficient, cost-effective global cloud services.**

Lastly, leading countries possess **sizable market potential; those that don't have a market that is large enough are globally oriented** in their endeavors from the beginning. In the domestic market, **consumer digital literacy is of great importance** as **consumers are then more likely to try new digital products**, thus creating attractive market conditions for B2C companies. In addition, advanced markets are efficient and competitive, with minimum barriers of entry for businesses.

[5] Mason and Brown, Entrepreneurial Ecosystems and Growth Oriented Entrepreneurship, OECD LEEP Program and Dutch Ministry of Economic Affairs workshop paper, The Hague, Netherlands, Jan 2014
http://www.oecd.org/cfe/leed/entrepreneurial-ecosystems.pdf (accessed October 2, 2017)

FIGURE II: TECH ENTREPRENEURSHIP ECOSYSTEM FRAMEWORK



Source: OC&C analysis

Role of the government in strengthening the tech entrepreneurship ecosystem

While there are many actors involved in the ecosystem, the role of government warrants dedicated focus. Government policy is able to touch all entrepreneurial actors and components of the ecosystem: resource providers, entrepreneurial connectors within the ecosystem, and the entrepreneurial environment of the ecosystem. Government contribution is important for its direct impact on the ecosystem through the creation of favorable terms and the provision of incentives for high-growth startups. Moreover, governments exert their influence on all components to create a constructive environment and facilitate interconnectivity between components.

In benchmark countries, the shift to knowledge-based industries has happened via both favorable policies to support the development of each contributing component of the ecosystem and greater funding by governments committed to high-growth firms.[6] Governments have played a leading role in successfully facilitating the tech entrepreneurship ecosystems through their impact on all seven components of the ecosystem.

[6] Global Entrepreneurship Monitor, Global Report 2016/2017

Executive summary

The Kingdom of Saudi Arabia at a glance

Saudi Arabia is the **largest economy in the MENA region with a GDP of USD 646 billion and oil and gas are** indispensable sources of income – this sector **constitutes about 50% of GDP** and 80% of public revenues.[7-8] The **global decline in the price of oil** beginning in 2014 has adversely affected the country's fiscal surpluses and **challenged the sustainability of the welfare state, in which close to 70% of the country's workforce are employed in the public sector.**

SMEs make up a small proportion of the economic activity in KSA, contributing about 20% to GDP. **Unemployment among Saudi nationals is around 12.8%, but youth, who comprise about half of the population of 32 million, face a more difficult challenge**, as the public sector which has traditionally been the main employer of university graduates has become overcrowded. **Between the ages of 20 to 29, unemployment is 29% and that's for a relatively well educated, market-ready workforce.**[11] Looking into the future, redefining job market dynamics in KSA is a top priority considering that for every person due to exit the workforce (aged 55 to 59), there are 2.15 people (15 to 19 years old) due to enter it.

The Crown Prince Mohammed bin Salman presented **Vision 2030** in 2016, **a multifaceted grand scheme that provides the blueprint for reorienting the national economy to a more diversified, private-sector led structure.** These plans are reinforced by the creation of **the world's largest sovereign wealth fund, with an estimated asset size of USD 2 trillion**, which will be deployed to transform the economy and create employment.[10]

Entrepreneurship, especially involving technology, is a cornerstone of Vision 2030 and a critical lever for achieving goals such as finding new sources of economic growth and employment. Numerous public authorities and quasi-government entities have allocated considerable resources to help develop the entrepreneurship ecosystem in the country.

Results of Tech Entrepreneurship – Outputs

Saudi Arabia's tech entrepreneurship outputs suggest that the country's ecosystem is nascent and has significant scope for growth. The level of contribution from knowledge sectors to the economy is very low. The prevalence of tech startups is also low, and currently this sector is considered to be a consumer rather than a creator of digital technology and services. There have not been significant exits valued over USD 100 million and none of the existing tech scale-ups are valued in excess of USD 1 billion.

Innovative output generation in the country is a development area for both established sectors as well as tech entrepreneurs. Saudi entrepreneurs, nevertheless, have high-growth aspirations which is a big asset. As the ecosystem matures, tech entrepreneurship can be a remedy for oil sector dependency and overreliance on public employment.

The output performance comparison of KSA against the benchmark set can be found on page 22.

KSA tech entrepreneurship ecosystem overview – Inputs

The tech entrepreneurship ecosystem in the Kingdom is at its early stages, yet it is dynamic nevertheless. Tech entrepreneurship activity is spread among the cities of Riyadh, Jeddah, and Thuwal. Software-as-a-Service **(SaaS) and e-commerce are the main focus of tech startups.** These focus sectors are in line with the infancy of the ecosystem, since most of the startups adopt business models that have proven successful in other markets. Startups springing from King Abdullah University of Science and Technology **(KAUST) in the Thuwal region differ in profile, since this university is a prominent, advanced research institute, creating more deep-tech-driven business endeavors.**

There is a **very strong political commitment to developing a solid science, technology and innovation base in the Kingdom that will spur new entrants into the private sector** in the Saudi economy. Beginning with the 2002 **National Science, Technology, and Innovation Policy,** the country began to develop five- year plans that **ultimately aim to transform KSA into a knowledge-based economy. Vision 2030 elevates this goal on the country's agenda with its focus on startups, technology transfer, empowering women and building human capacity.** Accordingly, the National Transformation Plan has allocated SAR 4.4 billion (USD 1.2 billion) to be divided amongst nine ministries and quasi-government entities to establish the fundamentals that will lead to change.

Our review of the KSA tech entrepreneurship ecosystem, which involved the participation of key stakeholders, highlighted four areas of focus:

- **Recent regulatory reforms in the country have focused on relieving the roadblocks to developing tech entrepreneurship. Increasing the pace of enacting and enforcng rules would accelerate activity** and build momentum in the ecosystem.
- Burgeoning entrepreneurial activities are supported by a few, albeit well-structured, institutions and programs, considering the size of the market. **The incubators/ accelerators, co-working spaces and affiliated entrepreneurship programs need to increase in number** to create more knowledge-sharing and networking opportunities.
- The young ecosystem needs to emulate best practices on several fronts in order to cultivate a productive tech entrepreneurship culture. The **international linkages that would foster these exchanges and dissemination of knowhow, financial capital and skills have not yet been fully forged.**
- The Saudi business culture mainly revolves around public or large corporate employment. In addition, the technically skilled workforce is not large enough to meet the demands of knowledge-based sectors. **Excelling in tech entrepreneurship will require cultural adaptation at all levels of the ecosystem.**

The KSA government mobilized substantial financial resources to jump start the movement in tech entrepreneurship. The equity funding needs of the Saudi tech ecosystem are mainly served by **government-backed funds, either deployed as seed stage capital by accelerators and university programs or matching investments by venture capital firms. The Saudi authorities made available a USD 1 billion (SAR 4 billion) 'fund of funds',** along with a number of additional public funds and financing programs. The most prominent **corporations of the Saudi business world have taken an active role by initiating tailor-made funding programs and established corporate venture arms to provide the much needed early- stage funding investments.** The total funds available for SMEs – directly or indirectly to tech entrepreneurs – are valued at USD 3.3 billion, yet, actual investments going into Saudi tech startups, up to USD 5 million, are concentrated on the seed stage and deal flows are moderate.

The number of private VC firms is currently insufficient to meet the equity financing needs of the rising number of tech startups. **However, there is notably a great deal of activity underway to tackle the hurdles impeding VC establishment, aiming to expand coverage across a wider range of investment stages.**

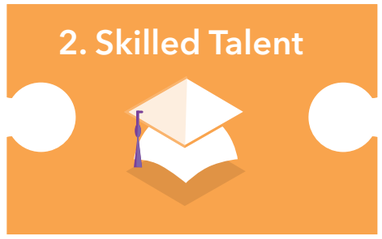
Angel investment is still nascent in Saudi, as high-net-worth individuals are not active investors in tech entrepreneurship**; their investment history is brief and limited to a small number of transactions.** However, aspiring angel investors are forming networks, developing a greater deal of interest, and enhancing their knowledge and understanding of tech entrepreneurship endeavors.

The larger players in the corporate realm, especially **family-owned conglomerates managing portfolios, are just beginning to get acquainted with tech-enabled entrepreneurship. Their engagement needs to expedite developments, as investors or**

strategic partners, in order to facilitate the integration of tech entrepreneurs in the private sector.

SMEs lending by banks is one of the lowest in the MENA region – c. 5%– and public officials are working to improve debt financing options for startups.

Parallel to its development stage, there has not been a strong emphasis on exit plans and routes in the Kingdom's tech entrepreneurship ecosystem. There is no track record of successful exits to be used as models and to signal wealth creation opportunities to all stakeholders**.**The primary stock exchange in KSA, *Tadawul,* which is mostly accessible to large corporations and sizable, established institutional investors was recently deregulated to grant access to foreign investors. In order to increase capital access for small cap SMEs, the Capital Market Authority (CMA) created a secondary market, *Nomu*, in 2017.



A healthy tech ecosystem depends on a large pool of qualified potential founders and employees with superior skills in technology development and entrepreneurial drive. Educational foundations are considered key to raising an analytically skilled generation that is adaptable to knowledge-based employment. **The standard KSA education system does not encourage critical and innovative thinking.** Elementary school education in the country, in terms of math skills, is relatively weak in comparison to some of the frontier countries in knowledge-based sectors. **The value of hard work and academic accomplishment, necessary for entrepreneurial success, are not yet emphasized** in schools and universities.

In tertiary education however, there have been notable schemes designed to grant access to world-class higher education for Saudi nationals. **KSA has offered one of the most generous national overseas scholarship schemes since 2005, the King Abdullah Scholarship Program**, equipping its future workforce with competitive skills and global exposure. **KSA has the fourth largest scholarship student body studying abroad following China, India, and South Korea.**

There have been sizeable investments in expanding research and innovation capacity at local universities. King Abdullah University of Science and Technology **(KAUST), founded in 2009,** is one the most advanced, state-of-the-art science and technology graduate schools in the world. **The school has the second highest endowment (USD 10 billion) after MIT and has a unique profile with its co-ed, international student body that is recruited by a scouting team.**

KSA's fundamental challenge, however, is to transfer talent to private-sector employment and to tech entrepreneurship. A recent survey among university and vocational school students revealed that **over half of the pool still preferred to work for the government, even after announcements were made about prospective cutbacks in civil service recruitment.** About 15% of those surveyed expressed an interest in entrepreneurship, while only one in one hundred considered private sector employment.[25] A number of **entrepreneurial training programs have been launched by leading universities and the SMEs Authority** (Monsha'at) to develop an appetite for tech entrepreneurship.

Ecosystem participants believe that **the quality of the technical workforce is comparable to international standards, but their numbers are not adequate to meet growing demand. Only 0.9% of total FTEs in Saudi Arabia are considered digital talent** which is below the 1.7% average for the Middle East region.[17] It is considered **very difficult to entice well-educated, experienced talent without making them partners in the company's future but stock options are not available in KSA.** In terms of accessing global talent, **the introduction of the highly anticipated entrepreneurship visa** in December 2017, which **is believed to be the key to resolving the current talent bottleneck, will enrich the ecosystem.**

Tech entrepreneurship is also considered to be a potential avenue to increase women's participation in the labor force from its current standing of 8%. Saudi women tend to be academically qualified and many have completed post-graduate level education. **At the moment, only 5% of tech startups were founded by women in KSA** compared to 25% in the Levant.

Engaging in private endeavors and tech entrepreneurship are new concepts in the country and there is a growing need to easily access network facilities, training programs, coaching and mentorship. According to a survey conducted by Arabnet, **entrepreneurs perceive a lack of mentorship support as posing the biggest obstacle after financing.**

Aspiring tech entrepreneurs are, in general, less ready for idea conceptualization than their international counterparts and accelerators/ incubators are educating and filtering hundreds that apply through boot camps prior to official programs. **The sheer number of applicants to accelerator/incubator programs indicates an overwhelming demand to learn and get involved in entrepreneurship that cannot be met with the existing supply.**

Leading corporations are active in setting up training and support programs to build the infrastructure needed for the transition to entrepreneurship. **These programs** are important but **are not designed to bring together the business world –** public and private **– to engage in joint solution development as collaborators with tech startups.**

Connections with the international entrepreneurship community beyond the GCC do not exist. **Establishing a stronger international support network will offer the next stage of training programs that are not yet widely available locally for burgeoning tech entrepreneurship.** Industry and university collaborations have been formed and Tech Transfer Offices are being established at select universities.

Ongoing **government plans and programs that aim to bring technology companies to Saudi Arabia are expected to eventually create the network effect needed for tech entrepreneurship clusters to flourish.**

For generations, talent has been concentrated **in public roles in KSA, working at a slower pace while receiving generous compensation.** This work culture has been passed down and, as a result, Saudi youth today have high expectations and search for employment in high-paying jobs.

A study by Riyadh's King Saud University found that **80% of Saudis polled in the capital stated they would rather wait for a government job than work in the private sector**. The drive to **promote private-sector employment, especially entrepreneurship, demands a radical shift in the mindset of the young as well as that of their communities.** It is worth noting that an entrepreneurship appetite is growing, especially among those who have had international exposure during their studies or careers.

Systematically addressing cultural elements around loyalty compared to merit and performance, becoming comfortable with failure, long-term orientation, and collaboration, such as forming partnerships at schools and extracurricular training programs, will contribute to the creation of a flourishing entrepreneurship culture.

The presence and celebration of successful national tech entrepreneurs will serve as role models in the ecosystem while re-shaping general cultural beliefs. **Increased publicity and promotion of entrepreneurship is already paying off, as is evident from the growing number of applicants to accelerator programs.**

In order to shape the latter stages of **building credibility and trust between the tech entrepreneurs and the business community it is crucial to create partnerships and relationships with investors.**

The legal system in KSA is based on Shari'a law and its interpretation by clerical judges. The scope and content is not standardized and there is low reliance on judicial precedents. In matters related to labor, commercial and corporate law, royal decrees (Nizam) supplement the Shari'a but, they are subordinate: regulations rather than laws.

In light of the increased importance of rejuvenating the private sector, these regulations are being revisited by the relevant authorities. There have been numerous interventions and amendments to accommodate the needs of entrepreneurs. While enactment has been swift, especially in the last two years, they take effect slowly at the execution level. **Nevertheless, in order to reach global standards in regulatory frameworks that will support tech entrepreneurship, more changes are necessary.** These changes need to be integrated and holistic in design to deliver the highest impact.

BUSINESS PROCEDURES

Shareholder nationality impacts the capital requirements and licensing procedures, significantly increasing the time employed and capital necessary to start a business in KSA. Company incorporation procedures involve multiple steps spanning different federal and local public agencies that are handled separately. Currently, **it takes about 17 days to establish a company in the Kingdom.** In 2017, the Ministry of Commerce and Investment **(MOCI) introduced a one-stop shop, Miras, which physically and digitally brought all related public offices together** to provide easy access and to simplify the process. Continuous improvements will streamline procedures and speed up the process. Renting an office space is a prerequisite for establishing a company, which puts cash constraints on tech ventures in the early stages.

Entity structures accommodating foreign investment and shareholding are LLCs, which fall short in a number of features that equity investors demand in deal making. Specialty courts that can handle the specifics of new deal structures have not been introduced to the system. Winding down failed operations is a lengthy process, and regulations related to bankruptcy and protection of minority rights in insolvency have not been addressed.

DIGITAL POLICIES

Digital businesses are a new area for Saudi and the regulations in place to govern different aspects of the sector are not up to international standards. A number of regulations enacted in the 2000s broadly set the boundaries of technology and internet-related businesses such as the Competition Law (2004), the Trademark Law (2002), the Copyright Law (2003), the Patent Law (2004), the Electronic Transaction Regulation (2007), the Telecommunication Act, and the Anti-Cybercrime Law (2007).

Saudi Arabia's Communications and Information Technology Commission (CITC) maintains control of content on the Internet and conducts filtering. CITC **lifted the ban on Skype, WhatsApp, and other messaging applications in September 2017.**

CITC advocates developing a strong cloud services industry in Saudi Arabia as a key part of creating a developed digital infrastructure to support Vision 2030. **Cloud service providers need to obtain one of the available licenses in order to operate in the country and government entities only work with providers that possess local hosting infrastructure.**

GOVERNMENT R&D POLICIES

Domestic resources allocated to **R&D were 0.80% of Saudi's GDP in 2015**. This is a **huge improvement compared to ten years ago** when expenditure on R&D was merely 0.1% of GDP. Looking forward, the **Public Investment Fund announced plans to spend SAR 210 billion (USD 56 billion) over the next three years** to contribute to the localization of cutting-edge technology and knowledge in KSA

KSA's plans to increase purchases of locally produced **military equipment to at least 50% of total spend have positively affected R&D projects in the defense sector.** The ecosystem participants believe that this policy will encourage civilian tech entrepreneurship in the country. The government is also **collaborating to increase the level of ICT and heath sector R&D in the country.**

TRADING ACROSS BORDERS

KSA is part of the GCC Customs Union established in 2003. However, the union does not operate as a single market like the European Union. **Member states apply a Common Customs Law (2015) and a Unified Customs Tariff with a standard customs duty rate of 5%.** Application of the GCC Customs Law, however, reportedly varies in each member state.

Beginning in the early 2000s, the Saudi government took significant steps to improve ICT infrastructure. The country has become the largest and fastest growing ICT market in the region as a result of these efforts. Today, **KSA's population is highly connected, 91% use the internet, and 73% have smartphones.**[41] It ranks 7th in the world on households with internet access. **Mobile broadband is the main means of internet access in KSA and the infrastructure and costs** – though more expensive in comparison to a number of benchmark countries - **are considered acceptable** by users. Saudis spend 4.1 hours per day on the internet on average, using their PCs, and Saudi Arabia is the third highest ranking nation when it comes to spending time on the internet using a mobile device (3.8 hours) after Brazil and Thailand.[53]

Tech entrepreneurs do not voice particular concerns about accessing global cloud services. The established business sector in the Kingdom, on the other hand, has been notably reluctant to adopt cloud. The reasons cited are lack of clarity as to the benefits, concerns over data sovereignty, the lack of cloud-related regulations, the absence of national cloud strategies, and limited visibility of the long-term cost impact.

In principle, KSA is interested in managing public cloud in the country rather than overseas and shows a willingness to invest in building the necessary infrastructure for it.

The Saudi market is the **largest in the GCC in terms of population and consumer spend. Saudi tech entrepreneurs are mainly focused on capitalizing on the local market potential.** Plans for expansion beyond boarders are scarce and tend to be focused on the region.

Saudis are avid social media users. They are regarded as the key target market for digital content providers and online advertisers in the region. An overwhelming 95% of Saudis consume entertainment from neighboring Arab states while 40% of the content is generated in KSA. YouTube consumption is the highest per capita in the world.

Online sales to Saudi Arabia were estimated at USD 8.7 billion in 2017, projected to grow to USD13.9 billion by 2020. [56] **B2C e-commerce across all product categories was valued at USD 6.1 billion, but domestic e-commerce is still nascent, at SAR 5.2 billion (USD 1.4 billion), amounting to only 0.8% of total retail sales in the country.** [57] The Public Investment Fund forecasts the ratio will increase to 2.4% by 2020.[12]

A large share of cash on delivery (48%) is perceived as the major barrier to domestic e-commerce adoption due to the operational challenges it poses.

Building trust in cashless payments systems and establishing a clear set of rules on consumer rights protection would serve to increase e-commerce adoption in the Kingdom. **Availability of transparent, periodically published market data and an improved logistics infrastructure will contribute to the growth** of tech-enabled consumer businesses.

Besides B2C opportunities, **sources indicate health, education, clean energy, and municipality services as top fields that can provide B2B opportunities for startups. However, eligibility criteria for public and corporate procurement programs are not considered SMEs – i.e. tech entrepreneurship – friendly.** Many interviewees believe that inclusion in public procurement programs would be an effective way for government to support entrepreneurs and strengthen their ability to do business with the private sector.

Policy playbook designed to strengthen the tech entrepreneurship ecosystem

Insights into the KSA tech entrepreneurship ecosystem and suggestions by ecosystem participants led to the articulation of a series of policy recommendations that can be considered to foster a strong ecosystem.

These recommendations are grouped under four main headings:

POLICY RECOMMENDATIONS DESIGNED TO STRENGTHEN THE KSA TECH ENTREPRENEURSHIP ECOSYSTEM

Details of the recommendations can be found on page 67.

Conclusion

The Kingdom of Saudi Arabia has embarked on a bold national change management program with the announcement of Vision 2030 by the Crown Prince Mohammed bin Salman. The aim is to calibrate the country's economic model to carry its growing young population into the future. Championing tech entrepreneurship in the country is an ideal way to meet these change ambitions.

Saudi public authorities have dedicated significant financial resources to meeting the vision's targets. The government's ongoing task right now is to modify the established structures and mode of operation on multiple fronts in order to maximize the effects of committed resources and deliver the expected results. In order to cultivate a prosperous tech entrepreneurship ecosystem, the regulatory framework needs to be aligned with the requirements of the sector and with global best practice. It is necessary to put increased emphasis on meticulous and timely execution with continuous monitoring and updates. Creating formal and informal linkages with best-practice ecosystems and experienced, international talent will expedite the learning process for Saudi ecosystem participants. There is a need to populate a variety of support networks to draw in more aspiring tech entrepreneurs to private ventures. Most important of all, the government and its officers should continue spearheading the cultural mindset shift necessary to create more scope and acceptance for tech entrepreneurship in the Saudi community.

With these efforts, the Kingdom's ample resources and inherent market dynamics, the burgeoning tech entrepreneurship ecosystem is poised to become a regional powerhouse.

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The Kingdom of Saudi Arabia at a glance

Founded in 1932, Saudi Arabia is the largest economy in the MENA region with a GDP valued at USD 646 billion. The Kingdom is home to two significant cities in Islam, Makkah and Madinah. Saudi Arabia is an absolute monarchy and the Holy Qur'an and Sunnah (the traditions of Prophet Muhammad) comprise the country's constitution.[7]

Saudi Arabia plays an active role in the Organization of Petroleum Exporting Countries (OPEC) and is a major producer of oil and natural gas. The country is also home to an estimated 22% of the world's proven oil reserves.[7,8] Oil and gas are indispensable sources of income – they constitute c. 80% of budget revenues, 50% of gross domestic product (GDP) and 85% of earnings generated by exports.[8-9]

FIGURE 1. MACROECONOMIC INDICATORS FOR KSA, 2016

	Value	Rank (192)
GDP (USD)	646 B	20
GDP per capita (PPP adj. USD)	55 K	12
Population (millions), 2016	32	41
Rate of population aged 15-19 over those aged 55-59	2.15	
SME contribution to GDP, 2016	20%	
Consumer expenditure as a % of GDP	43%	
Stock market cap as a % of GDP	69%	
Stock market traded as a % of GDP	47%	

Source: IMF, World Bank, Global Entrepreneurship Monitor, Euromonitor, AT Kearney, Economist, World Economic Forum, Kingdom of Saudi Arabia

The global decline in the price of oil in 2014 has adversely affected the country's revenues and fiscal surpluses. This deterioration put a constraint on public finances, with the government's budget balance yielding a deficit as opposed to the surplus that the country has grown accustomed to.[10] The economy grew moderately in 2016 and contracted somewhat in 2017. These circumstances challenged the sustainability of the welfare state (close to 70% of the country's workforce is employed in the public sector).

FIGURE 2. GLOBAL COMPETITIVENESS INDEX SCORES FOR KSA, 2016

	Score (1-7)	Rank (138)
Global Competitiveness Index	4.8	29
Institutions *The quality of legal and administrative framework that regulates interactions between government, firms and people*	5.1	24
Infrastructure *Existence of extensive and efficient infrastructure to supply required services*	5.1	31
Market Size *Size of the economy*	5.4	14
Macroeconomic environment *Stability of the economy*	4.7	68
Goods market efficiency *Intensity of local competition, ease of doing business, tax rates, imports ratio and buyer sophistication in a country*	4.6	41

Source: World Economic Forum

Due to the structure of the economy, SMEs account for a small proportion of economic activity in KSA, contributing about 20% to GDP. The slow growth of SMEs in the Saudi business environment has been attributed to several challenges, most notably limited access to financing.

The unemployment rate among Saudi nationals stands at around 12.8%.[11] Unemployment among the young is a more pressing issue; of Saudis aged between 20 and 29 that are in the workforce, 29% are unemployed.[11] The traditional employer of university graduates in the country has been the public sector, which is now considered to be overcrowded. About half of the population of 32 million in the country are below 30 years old and this demographic structure is a concern for the future job market. In Saudi Arabia, for every person aged 55 to 59, those due to exit the workforce, there are 2.15 15 to 19 years olds due to enter it.

Against this backdrop, 2016 witnessed the unveiling of Vision 2030, engineered by the Crown Prince Mohammed bin Salman. This multifaceted plan calls for a major economic overhaul, paving the way for the reorientation of the Kingdom's economy away from fossil-fuel-powered, state- driven growth, to a more diversified, private-sector led economic model.

Vision 2030 promotes entrepreneurship, especially involving technology, as a critical lever for achieving goals in finding new sources of economic growth and employment. Saudi authorities recognize the importance of SMEs for diversifying the economy and want to leverage their higher job creation potential and have, therefore, initiated a number of initiatives to support their growth.[12] The target is to raise the contribution of SMEs to the economy to 30% by the year 2030.

These plans are reinforced by the creation of the world's largest sovereign wealth fund, with an estimated asset size of USD 2 trillion that will be deployed to transform the economy and create employment.[10] In 2017, through its main sovereign wealth fund PIF, Saudi Arabia committed USD 45 billion over a five-year period to Japan's Softbank Vision Fund. Softbank's USD 93 billion Vision Fund plans to invest in a number of technology sectors with varying degrees of equity stake, considering companies at different development stages[13-14] These investments are envisioned to serve the Kingdom's interest in obtaining access to foreign technology and diversifying into new industries.

Softbank, in return, will be investing up to USD 15 billion in KSA's new city Neom on the Red Sea coast.[14] Neom is planned to be built from scratch, as a state-of-the-art smart city, larger than Dubai in size that will be totally based on technology. The initial ground breaking is planned for 2019 and the first phase is to be completed by 2025. The geographic location of the city is a short drive away from Jordan's resort town of Aqaba and will be linked by a bridge to Egypt and Sharm el-Sheikh. It is also envisioned to serve a more efficient, globally connected economic zone isolated from the ongoing market inefficiencies in the country. Some of Softbank's Vision Fund's portfolio companies will also be physically represented in the city.[10]

The government is estimating that GDP growth will rebound to 2.7% in 2018. The authorities are optimistic and they are pushing forward the country's transformation plans and increasing government spending to record highs of SAR 978 billion (USD 261 billion) in 2018.[15]

[7] GASME. "Brief Introduction of Saudi Arabia". http://www.globalsmes.org/news/index.php?func=detail&detailid=1061&catalog=20&lan=en&search_keywords

[8] Saudi Arabia Facts and Figures, OPEC (http://www.opec.org/opec_web/en/about_us/169.htm)

[9] "Doing Business in KSA- A tax and legal guide" September 2015, PwC (http://taxsummaries.pwc.com/ID/Saudi-Arabia-Overview

[10] "Sun, Sea and Robots: Saudi Arabia's Sci-Fi City in the Desert", Glen Carey et al, October 26,2017, Bloomberg

[11] Labor Market Statistics, 2017 Q2, General Authority for Statistics (https://www.stats.gov.sa/sites/default/files/labour_market_2017_q2_2.pdf)

[12] The Public Investment Fund Program (2018-2020)[14] Gulf News. "Dh300b projects in UAE to spur knowledge economy". http://gulfnews.com/news/uae/government/dh300b-projects-in-uae-to-spur-knowledge-economy-1.1623814 (accessed December 15, 2017)

[13] "Softbank-Saudi tech fund becomes world's biggest with $93 billion of capital", Andrew Torchia, Reuters, May 20,2017 (www.reuters.com/article/us-softbank-visionfund-launch/softbank-saudi-tech-fund-becomes-worlds-biggest-with-93-billion-of-capital-idUSKCN18G0NP

[14] "SoftBank Plans Up to $25 Billion in Saudi Investments ", Dinesh Nair et al, Bloomberg, November 15,2017, www.bloomberg.com/news/articles/2017-11-15/softbank-is-said-to-plan-up-to-25-billion-in-saudi-investments-ja146fd5

[15] "Saudi Arabia's announced its largest budget ever in a major effort to reshape its economy", 20 Dec 2017, CNBC (https://www.cnbc.com/2017/12/20/saudi-arabia-2018-budget-mohammed-bin-salman-announces-big-spending.html)

The results of tech entrepreneurship – Outputs

Saudi Arabia's tech entrepreneurship outputs suggest that the country's ecosystem is nascent and has significant scope for growth.

Among its global and regional peers, Saudi Arabia's output performance indicators reveal that tech entrepreneurship in the country is at its infancy, exhibited by the very low tech startup prevalence in the country coupled with the non-existence of significant exits valued over USD100million. The country is largely a consumer rather than a creator of digital technology and services. Evidence of this is the low uptake of domain names reserved for the country (ccTLDs). In Saudi Arabia, this is below two per 1,000 people whereas it reaches 330 ccTLDs per 1,000 people in the Netherlands and around 165 in the UK. This is in contrast to the country's high social media penetration.[16] In parallel, the levels of contribution from knowledge sectors to the economy are low.

As has been highlighted in Vision 2030, innovative output generation in the country is a development area for established sectors as well as for tech entrepreneurs. All in all, Saudi entrepreneurs have high-growth aspirations which is a major asset. As the ecosystem matures, tech entrepreneurship can be a remedy for single-sector dependency and over- reliance on public employment.

[16] Cybercrime and the Digital Economy in the GCC Countries" , Chatham House, June 30 2017 (https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2017-06-30-cybercrime-digital-economy-gcc-hakmeh.pdf)

The Kingdom of Saudi Arabia vs. benchmark countries

ECONOMIC CONTRIBUTION

TECH STARTUP PREVALENCE IN A COUNTRY[a] PER MILLION URBAN POPULATION

		Tech startup longevity (1=highest, 0= lowest)
IRELAND (IE)	337	0.30
ISRAEL (IL)	214	0.49
SINGAPORE (SG)	176	0.68
UNITED STATES (US)	160	0.48
UNITED KINGDOM (UK)	122	0.53
LUXEMBOURG (LU)	101	0.62
INDIA(IN)	92	0.59
NETHERLANDS (NL)	76	0.67
UNITED ARAB EMIRATES (AE)	40	0.68
GERMANY (DE)	34	0.68
KOREA (KR)	20	0.32
CHILE	20	0.41
TURKEY (TR)	16	0.16
CHINA (CN)	12	0.57
MALAYSIA (MY)	11	0.77
SOUTH AFRICA (ZA)	10	0.36
RUSSIA (RU)	6	0.42
JAPAN (JP)	4	0.61
EGYPT (EG)	4	0.48
NIGERIA (NG)	3	0.60
SAUDI ARABIA (SA)	2	0.76

NUMBER OF EXITS OVER USD 100M 2012-16

UNITED STATES (US)	1,946
UNITED KINGDOM (UK)	215
GERMANY (DE)	65
CHINA (CN)	49
INDIA (IN)	40
ISRAEL (IL)	37
NETHERLANDS (NL)	33
IRELAND (IE)	20
JAPAN (JP)	16
SINGAPORE (SG)	15
RUSSIA (RU)	7
KOREA (KR)	6
TURKEY (TR)	6
SOUTH AFRICA (ZA)	6
CHILE (CL)	4
EGYPT (EG)	4
LUXEMBOURG (LU)	4
NIGERIA (NG)	3
UNITED ARAB EMIRATES (AE)	2
MALAYSIA (MY)	1
SAUDI ARABIA (SA)	1

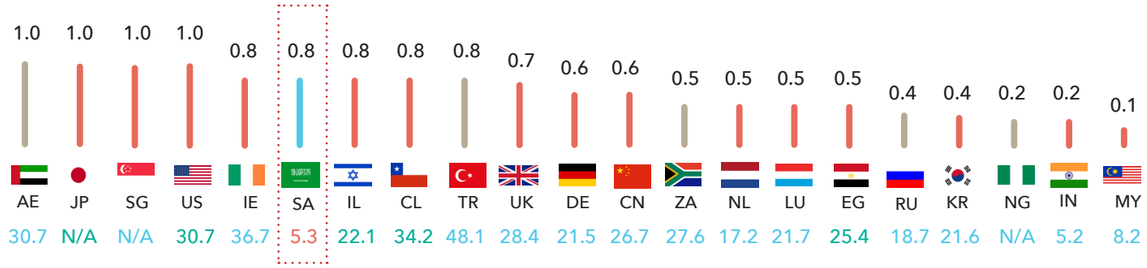
Other countries in scope of tech entrepreneurship study

Note: The definitions of the output indicators can be found in the appendix a. Density shows proportional values among ecosystems. Scales are only comparable within each indicator

ECONOMIC CONTRIBUTION

ENTREPRENEUR'S GROWTH ASPIRATION SCORE[b]

A scoring based on percentage of entrepreneurs with a sophisticated growth strategy aspiring to grow at least 50% in the next 5 years and attract VC funding (1=highest, 0=lowest)



HIGH JOB CREATION EXPECTATION (% OF ENTREPRENEURS)

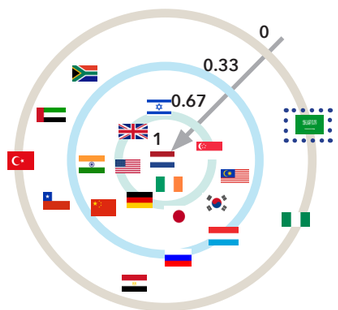
Other countries in scope of tech entrepreneurship study

ABILITY TO CREATE GLOBALLY RECOGNIZED "UNICORNS"[c]

Technology start-ups with over USD 1 billion valuation in benchmark countries

CONTRIBUTION OF KNOWLEDGE SECTORS TO THE ECONOMY

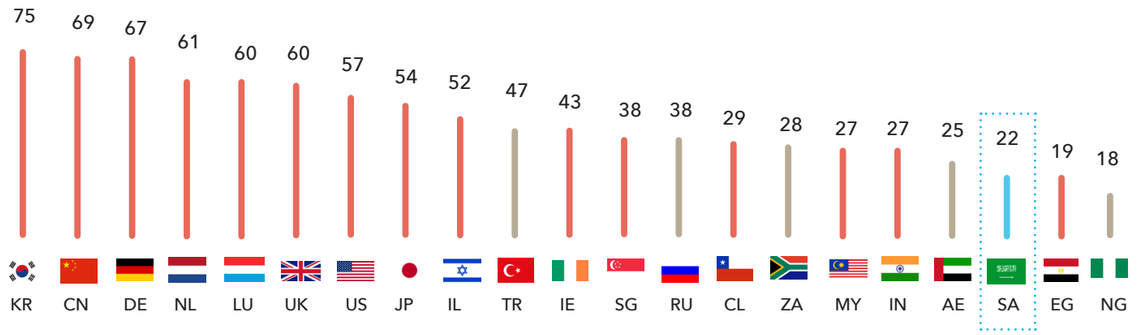
ICT & High-tech exports, international data flows and IP receipts (1=highest, 0=lowest)



INNOVATION CREATION

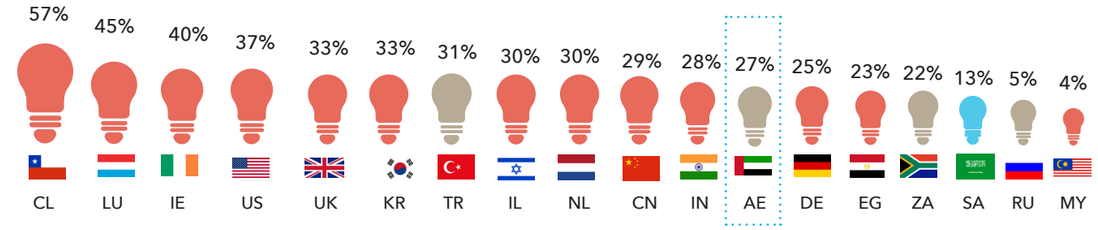
INNOVATIVE OUTPUT DENSITY

The abundance of knowledge creation and intangible assets in a country (out of 100)



ENTREPRENEURIAL INNOVATION CREATION[d]

Rate of entrepreneurs involved in new product or service creation



Other countries in scope of tech entrepreneurship study

Note: The definitions of the output indicators can be found in the appendix
b. A scoring based on percentage of entrepreneurs with a sophisticated growth strategy aspiring to grow at least 50% in the next 5 years and attract VC funding
c. Unicorns in tech-related categories are taken into consideration

d. Some benchmark set countries are not shown due to data availability

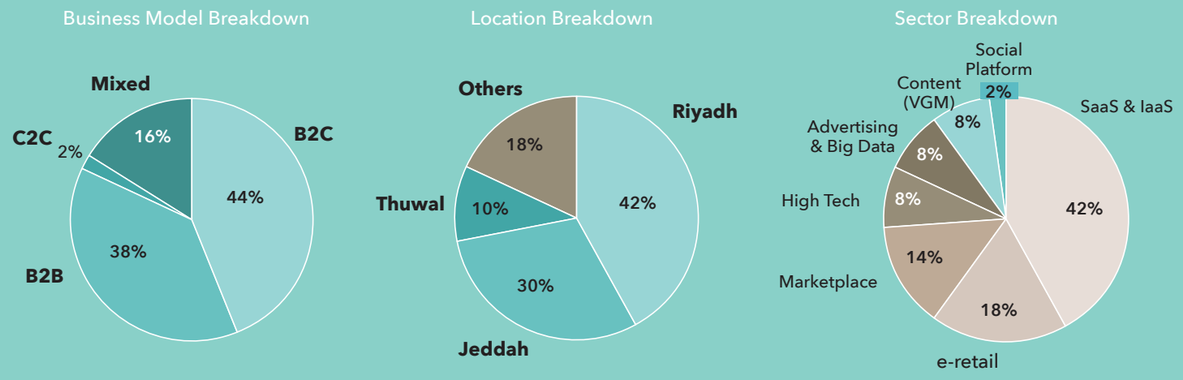
Source: OC&C analysis based on World Bank, GEM, GEDI, Crunchbase, INSEAD, McKinsey, CB Insights

KSA tech entrepreneurship ecosystem overview

The digital economy, constituting the digital share in private consumption, private investment, government expenditure, and imports and exports is estimated to account for 3.8% of GDP in Saudi Arabia. The share of the digital economy in the USA and the EU's GDPs is estimated to be 8 and 6.2%, respectively, indicating substantial scope for growth for tech entrepreneurship in KSA.[17]

Though the tech entrepreneurship ecosystem in the Kingdom is at its early stages, it is highly dynamic. Software-as-a-Service (SaaS) and e-commerce startups are the main focus of tech startups. These sectors are in line with the infancy of the ecosystem, since most of the startups adopt business models that are proven to be successful in other markets. As the ecosystem gears up, there will be a shift toward high-tech and big-data domains. A similar reasoning can also explain the dominance of B2C startups, which mostly offer online retailing platforms or marketplaces to consumers. It should be noted that tech startups spun off from King Abdullah University of Science and Technology (KAUST), which are located in King Abdullah City of Science and Technology (KACST), engage in commercialization of advanced research, hence they are more sophisticated than other ecosystem players and mostly offer B2B solutions.

FIGURE 3. PROFILE OF TOP 50 TECH STARTUPS IN THE KSA ECOSYSTEM



[17] Digital Middle East: Transforming the region into a leading digital economy" Digital McKinsey, October 2016
[18] www.kacst.edu.sa/eng/stip/Pages/Science-Technology-Innovation-Policy

FIGURE 4. MAJOR ACTORS WITHIN THE KSA TECH ENTREPRENEURSHIP ECOSYSTEM

a. Startups that are founded after 2010 and have technology-related businesses
Source: Startups Watch, Crunchbase, Teknosektor, Ministry of Science, Industry and Tech., Idema, Doğru Tercihler, Banks Association of Turkey, Council of Higher Education, ICTA

The Kingdom's first move towards developing a base for science, technology, and innovation was the Royal Decree of 1985, directing KACST to propose a national policy. KACST thus began developing the National Policy for Science and Technology in collaboration with the Ministry of Economy and Planning. The policy was approved by the Council of Ministers in 2002, embodying the Kingdom's vision and its fundamental strategic plans, building the Saudi knowledge society and knowledge-based economy.[18]

The National Science, Technology, and Innovation Plan consists of four five-year plans designed to realize certain strategic objectives:

- First national plan (ended in 2014): To establish infrastructure for science, technology and innovation in the Kingdom.
- Second national plan, (2018): The Kingdom to become a pioneer in the field of science, technology and innovation in the region.
- Third national plan (2023): To become a leading country in science technology and innovation in Asia.
- Fourth national plan (2028): To join developed science, technology, and innovation countries and transform into a knowledge-based economy.

The outlined national science and technology policy goes hand in hand with Vision 2030 (see Figure 5) which focuses on startups, technology transfer, empowering women and building human capacity. The vision encourages developing a strong foundation. As a subcomponent of Vision 2030, the National Transformation Program (see Figure 6) allocates budgets to different entities to enable the transformation throughout the Kingdom set out in the Vision.

FIGURE 5. VISION 2030 - A PLAN TO SHAPE KINGDOM'S FUTURE

رؤيـــة VISION 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

Targets

Ambitious Nation

- To increase **non-oil government revenue** from **SAR 163 billion (USD 43.5 billion)** to **SAR 1 trillion (USD 267 billion)**
- To increase **household savings** from **6 percent** to **10 percent** of total household income

Thriving Economy

- **Lower the unemployment** rate from **11.6 percent** to **7 percent**
- **Increase the PIF's asset** to over **SAR 7 trillion (USD 1.87 trillion)**
- **Increase the private sectors' contribution to 65 percent of GDP**
- **To raise** the share **of non-oil exports in non-oil GDP from 16 percent to 50 percent**

Vibrant Society

- Serve **30 million Umrah visitors**
- Increase **household spending** on **culture/ entertainment by 6 percent**
- **Increase life expectancy** from **74 to 80**

Programs

National Transformation Program 2020

- **Develop effectiveness within the government** and **build relevant infrastructure** to achieve **Vision 2030 targets**
- **Track shared objectives** for public entities based on national priorities
- **Facilitate collaboration** between **private and public sector** to come up with **innovative solutions** to **identified problems**

Fiscal Balance Program — Balanced Budget

- **Construct a medium-term fiscal planning mechanism** to sustain the status of **public finances** and **achieve a balanced budget**
- **Establish a system** to **promote accountability** and **full ownership** of financial targets **across all entities**

Public Investment Fund Program

- **Strengthen the Public Investment Fund (PIF),** which is **the engine of economic diversity in the KSA by:**
  - **Growing the assets of PIF**
  - **Unlock new sectors** through the PIF
  - **Localize most advanced technology and knowledge**
  - **Build strategic and economic partnerships** through PIF

Source: Vision 2030, Public Investment Fund Program

FIGURE 6. BUDGETS ALLOCATED TO DIFFERENT ENTITIES FOR NATIONAL TRANSFORMATION PLAN

وزارة التجارة والصناعة — Ministry of Commerce and Industry

- Launch of essential and value added applications, and electronic services to support SMEs — **SAR 45M** (USD 12M)
- Create forums, awareness and marketing campaigns for SMEs — **SAR 35M** (USD 9M)
- Establish and support business incubators and business entrepreneurship centers — **SAR 48M** (USD 13M)
- Develop and promote programs for freelance and business entrepreneurship culture — **SAR 29M** (USD 8M)
- Deploy initiatives led by government to support the development of SMEs — **SAR 250M** (USD 67M)

الشباب — الرئاسة العامة لرعاية الشباب — GP OF YOUTH WELFARE

- Leverage on digital tools, technology, and apps — **SAR 6M** (USD 2M)
- Design and deliver a system for the programs, events, and competitions — **SAR 450M** (USD 120M)
- Establish the physical and digital Saudi Youth Council — **SAR 313M** (USD 83M)

مدينة الملك عبدالعزيز للعلوم والتقنية — KACST

- Business incubators and accelerators program — **SAR 494M** (USD 132M)

وزارة التعليم — Ministry of Education

- Develop an awareness program on investment and entrepreneurship for students — **SAR 49M** (USD 13M)

Ministry of Labor — Kingdom of Saudi Arabia

- Create ILAB centers for innovation

وزارة المالية — Ministry of Finance

- Build a national financial electronic system — **SAR 1BN** (USD 267M)

وزارة الاقتصاد والتخطيط — MINISTRY OF ECONOMY & PLANNING

- Establish Saudi Media City — **SAR 624M** (USD 166M)

Ministry of Culture and Information

- Coordinate the efforts to develop the national framework for local content — **SAR 40M** (USD 11M)
- Create a program to accelerate digitalization — **SAR 160M** (USD 43M)

وزارة الاتصالات وتقنية المعلومات — Ministry of Communications and Information Technology

- Establish a governance model to lead and guide IT business incubators — **SAR 54M** (USD 14M)
- Launch a comprehensive digital literacy program — **SAR 47M** (USD 13M)
- Launch & activate ICT training centers — **SAR 33M** (USD 9M)
- Organize digital innovation contests for Saudi high school students — **SAR 47M** (USD 13M)
- Design a program to stimulate e-commerce — **SAR 44M** (USD 12M)
- Establish the e-commerce council to eliminate obstacles — **SAR 40M** (USD 11M)
- Implement a program to provide vocational guidance and awareness campaigns for ICT jobs — **SAR 10M** (USD 3M)
- Make "Yasser" e-government program an independent entity with increased resources — **SAR 470M** (USD 125M)
- Facilitate lending terms for banks to Small and Medium IT enterprises — **SAR 13M** (USD 3M)
- Organize exhibitions and workshops to introduce IT services/products to SMEs and corporates — **SAR 39M** (USD 10M)
- Implement a program to assess and support SMEs based on their maturity level — **SAR 23M** (USD 6M)

Source: Arabnet The Quarterly Issue 11 | Winter 2016

In our review of the Saudi tech entrepreneurship ecosystem, carried out with stakeholder participation in the form of roundtable discussions and interviews, four major areas for improvement were frequently highlighted:

Roadblocks to developing the tech entrepreneurship ecosystem have been the focus of recent regulatory reforms in the country. The increased pace of enactment and enforcement would accelerate activity and build momentum.

Tech entrepreneurship in Saudi Arabia benefits from being at the center of the Kingdom's strategic economic plans for a sustainable future. The ingredients needed to create a tech entrepreneurship hub are mostly present, such as being the biggest market in the region, the availability of financial capital, a young and educated talent pool, and robust infrastructure.

But championing entrepreneurship to drive economic growth is a new endeavor for KSA. Therefore, the existing rule of law that governs commercial life is not totally aligned to cater to the needs of high-impact, technology-led entrepreneurship. There have been a number of Royal Decrees and policy changes designed to move toward an open market structure where private initiatives can thrive. Ecosystem participants feel that policy advancements need to move forward in a steady and systematic way, with special attention being given to their materialization in a faster and more concrete manner.

In addition to enacting new laws and regulations, the alignment of different ministries and authorities is also considered necessary to smooth out procedures in practice. The application of the new rules relies on clear guidance, knowledgeable executives, and trained civil servants. At this point, the interviewees perceive a bottleneck where clear guidelines may be missing and officials may show reluctance to be the ones to first implement rules without precedent.

The incubators/accelerators, co-working spaces, and affiliated entrepreneurship programs need to increase in number to create more knowledge-sharing and networking opportunities.

Formal accelerator/incubator programs provide business premises, advice, networking opportunities and initial equity finance. Informal clusters provide physical proximity that facilitates collaboration and access to resources and knowledge. Clustering speeds up the ability of startups to discover market opportunities, launch new ventures, achieve market validation, and tap into the labor market.

For KSA's market size and the density of network, institutions are low compared to more evolved ecosystems. Burgeoning entrepreneurial activities are supported by a few, albeit well-structured, institutions and programs that have been initiated by public entities and established state-owned enterprises.

Ecosystem participants indicate that the number of such programs and physical clusters need to be populated in the country, in line with its growth aspirations. These will be instrumental in dissemination of a new perspective, business culture, and mentorship for aspiring young entrepreneurs. The programs will provide more publicity for tech entrepreneurship and create awareness and pull. In order to import expertise into the market, collaborations and affiliations with cutting-edge international programs are also highlighted.

International linkages for exchanges and dissemination of knowhow, financial capital, and skills have not yet been fully forged.

The young ecosystem needs to emulate best practices on several fronts in order to create the conditions that would best serve the cultivation of a productive tech entrepreneurship ecosystem. Because the country has only taken up tech entrepreneurship seriously in recent years, the interlinkages are just being made.

Best-practice sharing can take place in multiple settings made possible by a series of interventions. The missing linkages with other international ecosystems are one improvement point that can facilitate information exchange between authorities, agencies, and entrepreneurs. Secondly, granting freer mobility for foreign tech entrepreneurs and related talent would upskill the domestic market by bringing in best practices. Accordingly, being able to access international VCs, funds, and accelerator programs at home would jumpstart the whole ecosystem and elevate standards. In addition, the private sector – especially the multinationals that engage in university partnerships and open innovation practices in other markets – would be another important contributor to developing the KSA tech entrepreneurship ecosystem by bringing some of those practices to the Saudi market. Lastly, harboring large technology corporations and innovative companies in the country would serve the community in multiple ways.

Excelling in tech entrepreneurship will require culture adaptation at all levels of the ecosystem.

Saudi business culture mainly revolves around public or large corporate employment. Although trade is embedded in Saudi culture, pursuit of private initiatives is not a proven career path for the well-educated workforce.

Developments following the announcement of *Vision 2030* created a strong movement amongst regulatory bodies, the private sector, and aspiring entrepreneurs. However, wider penetration into society and public offices will take continuous reinforcement of messages, success stories, and publicizing efforts.

Cultural norms about the perception of failure, collaboration, and sharing of ideas and wealth in order to grow a venture to its full potential need to be tackled in entrepreneurship programs, events, forums, and in schools.

The lack of an adequate, high-quality Saudi technical workforce does not support a fast growing tech entrepreneurship ecosystem as the most readily available skill sets in KSA are related to conventional business skills. The more technical, knowledge-based skills are not prevalent and the education system needs to adjust accordingly to fill this gap.

Increasing participation of women in the tech entrepreneurship domain will also bring a transformation to the business culture in the country.

Insights into ecosystem components

Successful tech startups require adequate and timely funding. Different sources of capital tailored to the needs of startups accompanied by guidance and support is required for healthy growth.

There are five main sources of equity finance available for entrepreneurs:

- **Individual investors** (personal networks, angel investors, crowdfunding) – at the seed stage.
- **Venture capital** – (institutional investment), from seed to later stages with high return expectations.
- **Public funding** (grants, sovereign investment funds, 'fund of funds') – to fill funding gaps at various stages and stimulate priority sectors.
- **Corporate investment** (strategic acquisitions, direct investment and via corporate venture funds [CVCs]) – to acquire industry-specific solutions, or for corporate innovation exposure.
- **Initial Public Offerings** (IPOs) – in the local and foreign stock exchanges that also signal success to a wider audience.

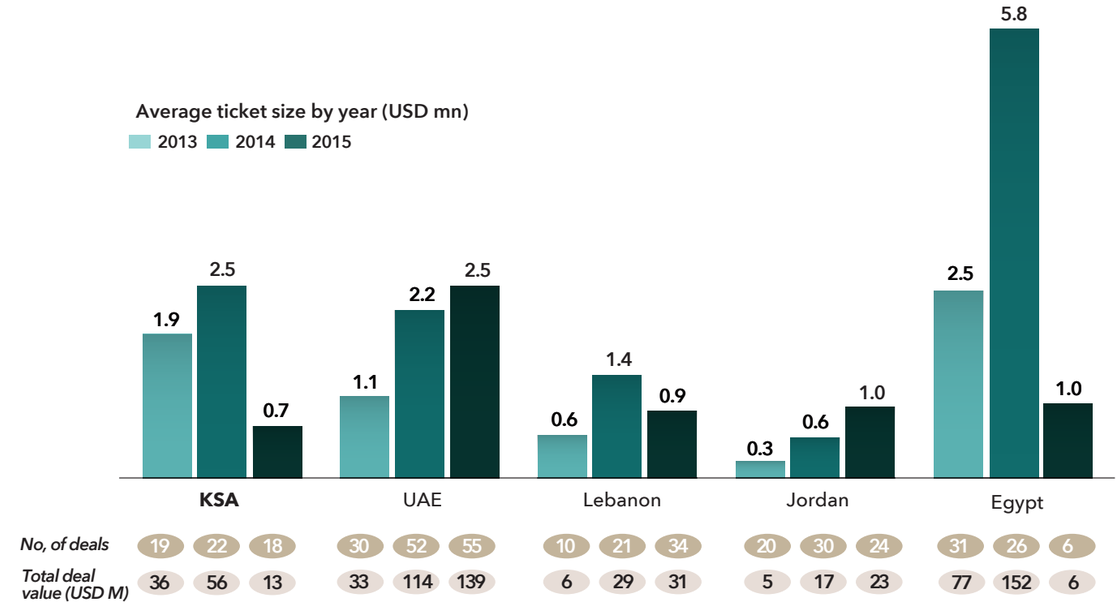
Currently, the equity funding needs of the Saudi tech ecosystem are mainly served by government-backed funds leveraging one of two main delivery mechanisms. The first is providing grants or seed stage capital deployed by accelerators and university programs. The second, through matching funds of investment arms of country's leading state or quasi-state corporations.

The number of private VC firms is currently limited but, there is a lot of activity to establish the right conditions to multiply their numbers and expand their activity and coverage over a wider range of investment stages. Business angel investors are forming clusters and building interest and their understanding of tech entrepreneurship endeavors. However, their investment history is short and limited to a small number of transactions. The larger extent of the corporate realm, especially family-owned conglomerates managing portfolios, is just beginning to get acquainted with tech-enabled entrepreneurship. SMEs lending by banks is at low levels – c.5%– which is one of the improvement areas public officials are working on.

Parallel to its development stage, there has not been a strong emphasis on exit plans and routes in the Kingdom's tech entrepreneurship ecosystem. There is no track record of successful exits to create models to be emulated and signal wealth creation opportunities to all stakeholders.

> *"When we started in 2012, Saudi ecommerce startups were comparable in size to Souq.com. But, Souq was able to raise so much more as a company based outside Saudi, their last round before Amazon acquired them was about USD 250 million. Since 2014 we received only USD 650 thousand, that was it and it is not just us." –* ***Muhammad Arrabi - CEO, Ecommerce Sea***

FIGURE 7: AVERAGE EQUITY INVESTMENT TICKET SIZE IN THE REGION (2013-2015)



Source: Arabnet – The State of Digital Investments in MENA

The government has put in place a number of programs and initiatives to funnel funding into the tech entrepreneurship ecosystem.

- The Saudi government has demonstrated its clear intention to vitalize tech entrepreneurship in the Kingdom by mobilizing sizable financial resources to jump start the movement.

- The Council of Ministers issued a decision in 2016 to establish a "fund of funds" to invest in private equity, venture capital, and seed capital funds on a commercial basis, with the aim of supporting and incentivizing SMEs investments. The fund is about USD 1 billion (SAR 4 billion), and aims to support those funds that will invest in SMEs in Saudi Arabia for a period of 15 to 20 years.[12]

- Several other public funds have been established in the country by different authorities. These resources are entrusted and managed by professional organizations.

  - Takamol Holding[19,] as a part of their mission to support employment creation and transformation, match funds through becoming a guarantor between the VCs and the banks, Musharakah program.[20]

  - The Saudi Public Investment Fund (PIF) established and funded a technology investment arm: TAQNIA.[21] The company established *Riyad TAQNIA Fund (RTF)* worth USD 133 million, in partnership with Riyad Bank's Riyad Capital. RTF invests in growth and early-stage local and international technology startups. VC's investment committee are experts from around the world and they review the opportunity pipeline.

  - The Small and Medium Enterprises Authority (SMEA, Monsha'at) has initiated Centennial Fund to offer profit free finance up to SAR 5 million to support youth starting their small and medium-sized projects. The authority also announced the establishment of a VC fund targeting startups valued at USD 750 (SAR 2.8 billion) in addition to an indirect funding source valued at USD 426 million (SAR 1.6 billion).[22]

"Government sovereign capital being used to create fund-of-funds then recruiting experienced VC teams both locally and internationally who have experience working in the region in order to deploy that capital in a smart way. That is a great way to drive economic diversification, create high-paying jobs and build a generation of entrepreneurs who will create a future wave of innovative start-ups." – ***Kemal Farid - Managing Director, Bluevine Ventures***

[19] Takamol Holding is a newly established semi-government holding company operating under the umbrella of the Ministry of Labor. The company's mission is to transform the Saudi labor market by launching sustainable projects and activating partnerships between the public and private sector.

[20] "Musharakah" is a joint enterprise or partnership structure with profit/loss sharing implications that is used in Islamic finance instead of interest-bearing loans. Musharakah allows each party involved in a business to share in the profits and risks.

[21] TAQNIA: (The Saudi Technology Development and Investment Company) was established in June 2011 by Royal Decree to localize technology in Saudi Arabia and commercialize outputs of R&D centers. TAQNIA invests in technology – local and international - that contributes towards Saudi Arabia's economic diversification. TAQNIA tries to target projects with characteristics of technology transferability, strategic relevance, profitability, and alignment with local R&D efforts, value chain, synergy creation, and economic impact.

Leading corporations of the KSA are engaged in corporate venturing with various mandates.

- The most prominent, locomotive corporations of the Saudi business world have taken an active role in developing tech entrepreneurship in the country. Saudi Aramco, STC, Mobily and MBC Group have all initiated tailor-made funding programs and established corporate venture arms to provide much needed early-stage funding investments.[23]

  - Saudi Aramco's entrepreneurship center *Wa'ed* provides grants of around USD 27,000 (SAR 75,000) and loans of up to USD 1.3 million (SAR 5 million).

  - *Wa'ed Ventures,* established in 2011, is a USD 200 million VC fund that has a mandate to make seed to growth stage investments to create jobs in Saudi Arabia and support economic development. The VC has invested in 22 startups since its establishment offering up to USD 5 million per transaction.

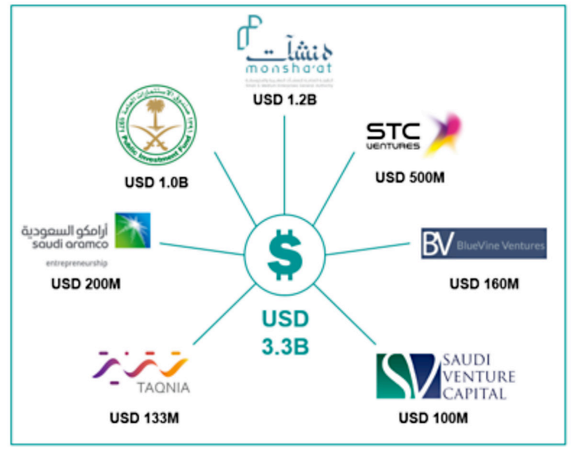
  - STC has two venture capital funds: STC Ventures, established in 2012, focuses on the GCC, MENA, and Turkey. STV is a technology VC fund, valued to USD 500 million, investing exclusively in the digital sector.

  - Mobily Ventures focuses on ICT, media, and entertainment covering the MENA region as well.

  - MBC ventures invests in ICT and media startups in the MENA region offering USD 500,000 for 10% to 20% equity.

- The investments of these VCs in tech entrepreneurship are mostly in early-stage reaching USD 5 million in equity contribution for around 20% stake in the business.

FIGURE 8. TOTAL FUNDS AVAILABLE FOR SME AND TECH ENTREPRENEURSHIP FUNDING (NON- EXHAUSTIVE)



Source: Wamda Research "The KSA: Status of the entrepreneurship ecosystem", Wamda, Bloomberg, Deal Street Asia, Arabian Business, PRLOG, Palico

Seed and early-stage fund needs are mainly deployed through accelerators or public university run programs that are either backed by public institutions or large corporates.

- All leading universities in KSA have established entrepreneurship centers that include investment funds as well as accelerator programs. Universities are leveraging these two vehicles to promote entrepreneurship, provide guidance, as well as early equity investment to tech startups.

  - The private research university KAUST established funds for early-stage investments in high-tech startups with values ranging from USD 200 thousand to USD 2 million. The university is supported by government grants.

  - Umm Al Qura University's Wadi Makkah has a venture capital fund which specifically targets startup companies springing from the University.

[22] "The launch of four initiatives supporting the Saudi SME sector", December 14, 2017, Wamda (www.wamda.com/2017/12/launch-initiatives-supporting-saudi-sme-sector)

[23] The KSA: The status of the entrepreneurship ecosystem, June 2017, Wamda Research

- Public entities and large corporations also back universities in these initiatives while running their own funding activities though venture firms and their own accelerators.
- Ecosystem participants stress that while these funds are taking shape their deployment pace is not a match to the surge in the number aspiring entrepreneurs. Therefore, accessing early-stage equity investment in the ecosystem is currently at a bottleneck.

FIGURE 9. SEED ROUND VELOCITY

Other countries in scope of tech entrepreneurship study

Note: Figure shows number of seed rounds per million urban population in each country
Source: Startup Bootcamp, Crunchbase, OC&C analysis

FIGURE 10. NUMBER OF INVESTORS PER MILLION URBAN POPULATION

Other countries in scope of tech entrepreneurship study

Note: Figure shows number of investors per million urban population in each country
Source: Startup Bootcamp, Crunchbase, OC&C analysis

Angel investment is still nascent in Saudi; high-net-worth individuals are not active investors in tech entrepreneurship.

- Private investors in Saudi are considered quite traditional by entrepreneurs. Most investments by high-net-worth individuals are in the stock market and real estate. Entrepreneurs observe that aspiring angel investors are challenged to accept that a company will become profitable in 10 years' time. They seek quick returns and quick capital gain in very short period of time.
- Two business angel networks exist in the country. OQal is the largest one with 340 members. Membership is by referral and subject to an annual membership fee of SAR 25,000. However, the fee is reduced if a member is active, invests, and identifies entrepreneurs to be considered by the network.
- There is no formal registry of membership or certification of angel investors in the country. Accordingly, there are also no incentives to motivate angel investment in tech entrepreneurship. Membership in the networks is also not tied to an investment obligation; therefore, the actual investment track record of the networks is insubstantial.

The hurdles impeding VC establishment have been addressed to a certain degree but, there remain additional issues to settle for full-fledged VC activity at all entrepreneurial stages.

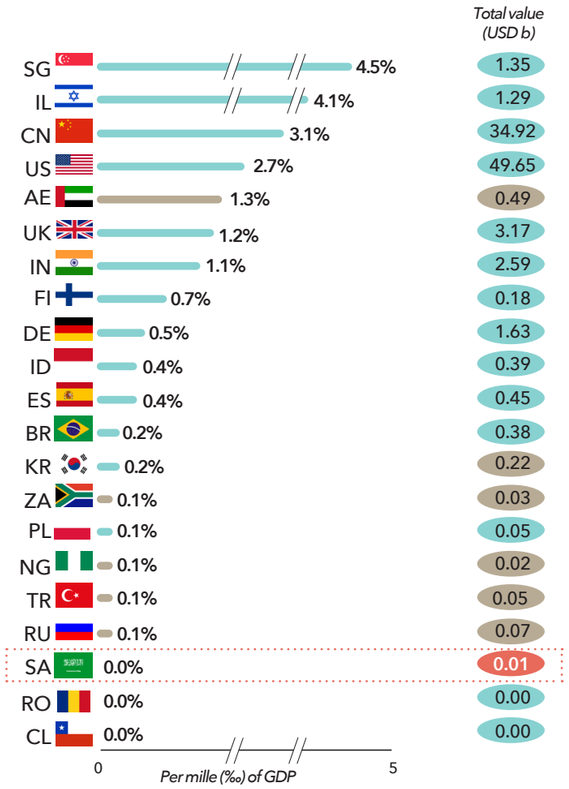
- The number of VCs in the market is not adequate to meet the equity financing needs of the rising number of tech startups. It is reported that there are about forty PEs operating in the country while there are only around 20 VCs.
- The existing VCs engage in early-stage funding only; there is no growth stage investment in the market. Ecosystem participants think that the number of VCs should increase by engaging with more domestic and international parties.
- The requirements of starting a VC are considered to be complex and costly which has recently been eased by Capital Market Authority (CMA) interventions. The capital requirement for an asset management company was lowered from USD 13 million to USD 5 million (SAR 50 million to SAR 20 million).
- The definition of a "sophisticated investor" was also broadened to increase the number of eligible LPs to participate in the VC fund.
  - Previously, a "sophisticated investor" was someone or some entity that satisfied two out of three requirements: an asset size of SAR 10 million, SAR 40 million yearly turnover, and 2 years' experience in the field.
  - After the revisions, if the subject satisfies one of the six requirements, they are granted a certificate: SAR 5 million asset, SAR 40 million turnover, having a CPA certificate or a masters in finance or passing CMA1 exam, at least 2 years' experience in the field or maintaining an annual income of SAR 600,000 for two consecutive years.
- In the Kingdom, the Ministry of Commerce and Investment (MCI) and CMA rules do not allow for several generally accepted GP/LP structures in running a venture fund:
  - different share classes allowing for differentiated governance, commercial and downside protection rights for minority investors such as VCs,
  - flexible capital call structures and remedies to compensate the fund and its investors in case of a defaulting LP,
  - cumbersome procedures to set up a SPV for acquisition of portfolio companies.
- As a result, VC funds that prefer to maintain such structures are set up in other jurisdictions but considered foreign investors in KSA, thus facing substantial obstacles when registering or investing in the Kingdom.
- Capital gains realized by a non-resident investor from the sale of shares in a KSA registered company are subject to 20% capital gains tax.
- Ecosystem participants highlight that the deal closing process for USD 5-6 million levels of investments - considered series A/B stages - takes longer than in other markets. It is partly an indirect result of the previously mentioned regulatory constraints as foreign investors seek to invest in Saudi tech companies established in a jurisdiction with which they are familiar (i.e. BVI, DIFC or ADGM Company in UAE).

Having a higher concentration of regional and global funds in the ecosystem will serve tech startups to scale up to become globally competitive.

- Entrepreneurs and investors interviewed indicate that making international

smart money available in the ecosystem would provide the opportunity for Saudi entrepreneurs to gain exposure to different players in other markets and provide the guidance to grow beyond a narrow business definition.

FIGURE 11. VC INVESTMENT MAGNITUDE (2016)



Other countries in scope of tech entrepreneurship study

Source: Crunchbase, OC&C analysis

Family-owned conglomerates are starting to engage in the innovation economy as investors. Examples need to increase in order to facilitate the integration of tech entrepreneurs into the private sector.

- Family-owned holding companies are involved in mainstream sectors. Involvement in technology-enabled businesses as a differentiator of existing businesses or a diversification of portfolio companies is not a generally observed trend.
- Beside the holding portfolio most family offices are also looking for more conservative asset classes within KSA, mainly in real estate as investment opportunities.
- Against this backdrop, few early adopters are becoming involved in tech entrepreneurship investment by establishing private VCs separate from their holding structure such as Raed Ventures. This fund invests in tech-enabled businesses at seed and early stage that may – although not a mandate – support their portfolio in traditional sectors.
- The movement has to spread to the wider business community to unlock not only investment capital for startups but also business linkages and potential acquisition transactions.

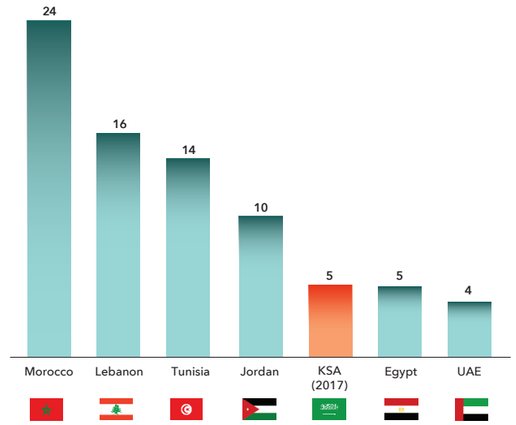
"In the logistics area for instance, technology is advancing really fast. There is a convergence in the market. Big companies are struggling to adopt new technologies. New guys may start killing the old easily in a few years. Big companies cannot survive without acquiring smaller, tech-enabled companies" – ***Omar A. Almajdouie - Founding Partner, Raed Ventures***

SMEs lending in the Kingdom is at very low rates. The government has launched a program to promote debt financing to SMEs.

- Financial institutions have not considered developing their SMEs lending arms prior to *Vision 2030*. Companies with a USD 5 million asset base are considered small enterprises, companies below this threshold are overlooked.
- The transformation plan is encouraging financial institutions to increase the share of loans to SMEs from around 5% to 20% of their total portfolios by the year 2030.[24]
- The SMEA, together with the Saudi Industrial Development Fund, has initiated a loan guarantee program – Kafalah – de-risking small scale businesses for banks by guaranteeing a percentage of the funding.

[24] "KSA Innovation Economy: Tech Startups 2017", Arabnet The Quarterly, Issue No15, Winter 2017

FIGURE 12: SMEs LOANS' SHARE IN TOTAL BANK LOANS (2011, EXCEPT FOR KSA)



Source: The World Bank, SMEA

Exit routes are not yet obvious in the market. There is a limited number of M&A deals, mostly among larger firms, and the primary capital market is also accessible to institutional investors interested in established businesses.

- Exits are crucial for the completion of the startup lifecycle and the sustainability of the ecosystem. Efficient markets for public offering, M&A, secondary sales, and alternative markets are important pathways to return capital to investors and provide liquidity to entrepreneurs.
- Tech entrepreneurship activity is in its early stages and not many endeavors have reached the maturity to contemplate an exit strategy. Most investors forecast that they will be able to exit in 7 to 10 years, in the form of a PE or strategic buyout. Nevertheless, the path and options are not visible in the ecosystem which would be an underlying concern for venture investors.

A secondary market was established to provide a suitable public offering venue for tech entrepreneurship.

- The primary stock exchange in KSA, *Tadawul,* is accessible to large corporations and sizable, established institutional investors. In 2015, the market was opened to foreign investors. In 2017, the Capital Market Authority (CMA) announced more initiatives to further deregulate access by foreign investors.
- In order to increase capital access for small cap SMEs, CMA created a secondary market, *Nomu*, in 2017. The minimum capital requirement in the secondary market is SAR 10 million as opposed to the SAR 100 million requirement of the Saudi Stock Exchange. The listing requirements are also kept less stringent. The new market also allows listed companies to move up to *Tadawul* after trading for at least two years on *Nomu*.

  - There are only nine companies currently registered in the market and the trade volume is at low levels - around SAR 300 million.

  - As of 2018, The CMA announced plans to open the secondary market to foreign investors.
- Interviewees suggest collaborations with international stock exchanges, such as NASDAQ, will also create a clearer path and generate appropriate support systems for Saudi tech entrepreneurs.

"Money is there, but how you structure it and how you offer it is a problem. If you solve that problem, more entrepreneurs will have access to funds."

– ***Amal Dokhan - Director, Babson Global Center for Entrepreneurial Leadership, MBSC***

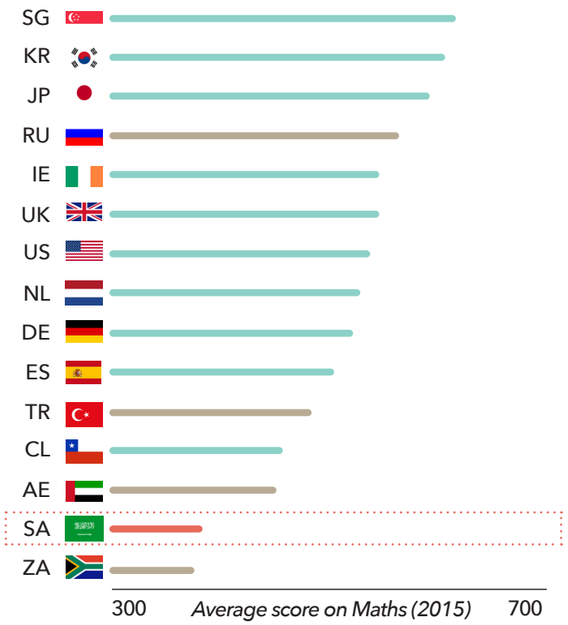
2. Skilled Talent

A healthy tech ecosystem relies on a large pool of qualified potential founders and employees with superior skills in technology development and entrepreneurial drive. This, in turn, relies on a strong educational foundation in STEM as well as business knowledge. Besides the skills taught in formal education, others must be learned via employment or experience, requiring the private sector's participation to provide training.

Educational foundations are considered key to raising an analytically-skilled generation adaptable to knowledge-based employment. Elementary school education, in terms of math skills, is relatively weak in comparison to some of the frontier countries in knowledge-based sectors.

The standard KSA education system does not ecourage critical and innovative thinking. The value of hard work and academic accomplishment, necessary for entrepreneurial success, are not yet emphasized in schools and universities.[25]

FIGURE 13: TIMSS MATH SCORES FOR 10-YEAR-OLDS, 2015



Other countries in scope of tech entrepreneurship study

Source: TIMSS, OC&C analysis

However, intellectually gifted students are identified through a national exam conducted by the Giftedness Agency. These students demonstrate greater STEM skills and receive special education where their expenses are covered by the state. The SMEA has recently launched a summer camp program for 100 male and 100 female gifted students to expose them to entrepreneurial and technological skills.

For the past decade, the Saudi government has been paying special attention to increasing the reach and penetration of higher education. Today, there are 36 universities in KSA, ten of which are private. There are also 41 private colleges offering degree programs. There have been notable schemes to grant access to world-class higher education for Saudi nationals. The gross tertiary enrollment ratio in the country has risen from a mere 30% to 55% between 2005 and 2014 for both sexes.[23] However, continued efforts to increase the employment of Saudi nationals in the country and recent tightening of the education budget by around 12% have resulted in implications for some of the outstanding programs.[26]

In tertiary education, KSA offers one of the most generous national overseas scholarship schemes, rendering its forthcoming workforce equipped with competitive skills and global exposure.

- In 2005, The Custodian of The Two Holy Mosques' Overseas Scholarship Program, also known as the King Abdullah Scholarship Program, was launched. The program covers full tuition, medical insurance, a monthly stipend for living expenses, and annual round-trip airfare for undergraduate, graduate, and doctoral candidates studying abroad.

  - KSA was ranked fourth largest in terms of students enrolled in a scholarship program studying abroad following China, India, and South Korea. Saudi Arabia also had the highest rate of students studying abroad relative to its population [26,27]

  - In 2015, a total of 200,000 students were supported by the program, estimated to be 90% of all the Saudi students enrolled in tertiary education abroad.[26]

  - The third and final five-year plan of the program, which kicked off in 2015, tightens the rules of eligibility for the scholarship including a stipulation that the institution enrolled in must be in one of the world's top 50 academic programs in their field or top 100 universities. The recipient must also maintain a minimum GPA.

- Renamed as the "Your Job First, and Then Your Scholarship" stage, this new five-year plan ties scholarships to predetermined jobs aiming to resolve the employment challenges of earlier recipients. Beneficiaries of the scholarships will become public companies who, in return, will guarantee public jobs for the recipients of the scholarships.

There has been vast investment to expand research and innovation capacity and there is also a focused effort to increase the commercial applicability of the IPs.

- King Abdullah University of Science and Technology (KAUST), is a state-of-the-art, model graduate school founded in 2009 that is working toward advancing scientific research, innovation and technology. The highly competitive institution has a co-ed, international student body that is recruited by a team of scouts. The school has the second highest second highest endowment in the world (USD 10 billion) after MIT.

  - KAUST is recognized by the global community for having the fastest growing research and citation records in the world. It is also renowned for the quality of its research output.

  - The research university has a diverse international research partnership network with other institutions around the world. They also have several programs to collaborate with industry partners in open innovation.

- The school is working on projects to increase the entrepreneurial aptitude of its researchers while they innovate. The KAUST entrepreneurship center offer an elective course on entrepreneurship and innovation where students are challenged with coming up with a commercial solution to an idle IP that is then presented to companies for evaluation.

- Unlike advance ecosystems in tech entrepreneurship, academics are not allowed to engage in private endeavors while in service. Releasing these conditions could also contribute to commercialization efforts of research and innovation.

KSA's fundamental challenge is to transfer its existing talent to private-sector employment and to tech entrepreneurship.

- The private sector accounts for about 40% of the economy, however, most of the workforce – c. 70%– have been employed by the state in well-paid jobs that do not fully capitalize on their potential. Public sector jobs account for 45% of total government spending and the aim is to reduce it to 40% by 2020 by reducing the size of civil service by 20%. [28]

  - To counterbalance the effects of the policy change *Vision 2030* calls for creation of 450,000 new private sector jobs [25]

- The business culture, particularly in public sector, is predominantly based on longevity of service which is associated with years spent in office rather than output, merit, qualifications or leadership skills. This is in stark contrast to what is sought for and appraised by the private sector and hence constitutes the biggest obstacle to the transformation plan.

[25] "Laura El-Katiri,"Saudi Arabia's Labour Market Challenge", 06 July,2016, HBR (https://hbr.org/2016/07/saudi-arabias-labor-market-challenge)
[26] "Saudi Arabia cuts funding for students abroad", 26 Feb,2016, CNN (http://money.cnn.com/2016/02/09/news/saudi-arabia-students-overseas/index.html)
[27] The Ministry of Education (https://www.moe.gov.sa/en/news/Pages/an74.aspx)
[28] "Saudi Arabia Faces Challenge in Enlarging Private Sector", 7 June 2016, Wall Street Journal

- Even though existing ways of doing business cause uneasiness among the young who possess current skill sets and greater exposure to the global business realm, taking a leap of faith in the private sector does not come naturally. A recent survey conducted by Erahad among 3,000 university and vocational school students revealed that over half of the pool still sought government employment even after announcements were made about prospective cutbacks in civil service . About 15% expressed an interest in entrepreneurship while only 1% considered private sector employment.[25]

- Scholars argue that in order to bring about change, the public sector also needs to systematically enforce meritocratic structures and performance based management in order to signal change and level the playing field between public and private-sector employment for the younger generation.[25] Constructive steps have been taken along these lines with the establishment of quasi-government institutions tasked with detailing and execution of numerous transformation initiatives and programs. These institutions have been attracting experienced, skilled, young talent available in the public and private sector and provides a new, transitory reference point.[29]

A number of entrepreneurial training programs have been launched in the Kingdom to build an appetite for tech entrepreneurship.

- Leading educational institutions in the Kingdom have created bespoke entrepreneurial training programs to increase the skills of their student body and build an appetite for tech entrepreneurship

  - KAUST, is working on cultivating an entrepreneurial culture and it has also been a key player in enabling technology transfer and providing R&D facilities to entrepreneurs.

  - The Wadi Makkah innovation center of Umm Al- Qura University is partnering with blue-chip companies such as Saudi Aramco, STC, Google and IBM.

  - MBSC has launched an MBA program in partnership with Babson College who are responsible for recruitment. The university is also running a "Signature Learning Experience" class where each student needs to start a business project from day one and apply all the academic subjects covered to this venture. The school also provides funding of up to USD 15,000.

  - In general the universities in KSA are encouraged and supported to collaborate with reputable international universities of their choosing to improve the academic rigour of their programs.[29]

- SMEA (Monsha'at) is spearheading establishment of extracurricular training programs to increase the entrepreneurial capabilities in the country

  - The Authority has designed "capacity building" training programs on technology and design thinking which is delivered at some universities as workshops and also in 26 of the Ministry of Commerce's locations.

  - They also have a customized upskilling program that takes 50 to 100 "gazelle companies" and works with them to find tailored solutions for their obstacles including regulations and financing for a period of 9-12 months. Participating companies are usually 3-5 years old, operate in selected sectors, and demonstrate high growth rates.

The Saudi nationalization scheme is a concrete tool to increase Saudi private-sector employment rates however, greater benefits could be realized by relaxing its terms for tech businesses

- In order to improve the employment participation of Saudi nationals in the private sector and overcome the unemployment challenge, the Ministry of Labor introduced the Saudi Nationalization Scheme in 2011, "Saudization" (Nitaqat system), which

[29] "Foreign scholarship program in for restructuring" http://saudigazette.com.sa/article/517111/SAUDI-ARABIA/Foreign-scholarship-program

was redesigned in September 2017. According to the updated scheme, Saudi private companies that employ more than six people are required to hire a specific number of Saudi nationals. The ministry also raised the requirement for an employer to be rated a higher tier ("high green" or "platinum") to qualify for Block Visa approval.

- Employers in Saudi Arabia must hire more Saudis in order to remain eligible to employ foreign workers and to avoid restrictions on other services, including obtaining and renewing work permits.

- The policy, as it currently stands, inhibits attraction of the right talent to grow tech entrepreneurship endeavors and become competitive. The ecosystem participants view that adapting a more open market HR policy for tech entrepreneurship companies would create more winners and ultimately contribute more to domestic employment.

The size of the available, high-quality technical workforce is not adequate to meet the growing demand in the country.

- Ecosystem participants believe that the quality of the technical workforce is comparable to international standards. However, the size of this workforce in the Saudi market is believed to be too small.

  - 0.9% of total FTEs in Saudi Arabia are considered digital talent which is below the average for Middle East region (1.7%), USA and EU 3.7%[17]

  - A recent survey of tech entrepreneurs published in Arabnet Quarterly, indicated that while most readily available skill sets in KSA are related to conventional business skills, more technical knowledge-based skills are not as prevalent. (i.e. development and coding 11%, product design 7% and data analytics 2%) [24]

  - The results are in agreement with information obtained during interviews where authorities point out that by 2020 there will be a need for 200,000 data scientist in the country but current numbers are estimated to be around 2,000.

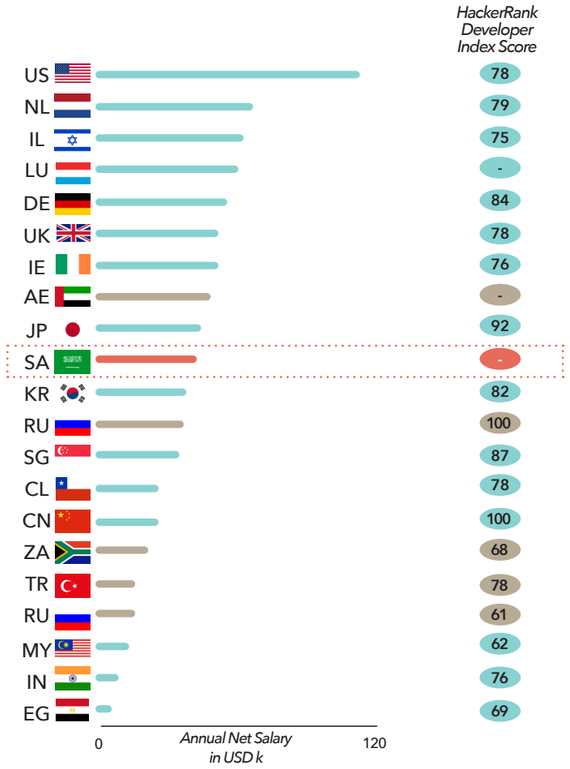
- The well- educated and experienced talent pool prefer employment in secure and well- paying public and corporate jobs. They refrain from taking up entrepreneurship or joining startups as compensation schemes are not competitive, especially since stock options, ownership of a stake in the entrepreneurial ventures, are not possible in KSA. These are common vehicles used in other ecosystems to lure highly sought-after talent around the world.

- Currently, entrepreneurs indicate that they are tackling the skilled tech-talent gap by in-house training of local staff and outsourcing more technical aspects of the business to overseas resources mostly in Egypt or Jordan. The latter alternative is said to be much more cost-effective, an important benefit for cash poor tech startups.

- In the meantime, concentrating on building skills in a faster manner by promoting open online courses that usually take six months to complete as opposed to full degree programs is also cited as a plausible interim solution in the interviews, until the educational infrastructure aligns with market needs

"The education is changing around the world, and has to change in the country but, changing the entire curriculum takes time. Instead, new paradigms such as open education and new degrees such as nanodegrees that takes six months have emerged and widely adopted. Four year degrees to raise data scientists is not suitable for market and competitiveness demand, we have to upskill existing talent to fill the immediate gap by such paradigms and degrees" ***- Sami Al Hussayen, - Vice Governor, SMEA***

FIGURE 14 SOFTWARE ENGINEER SALARIES (USD):



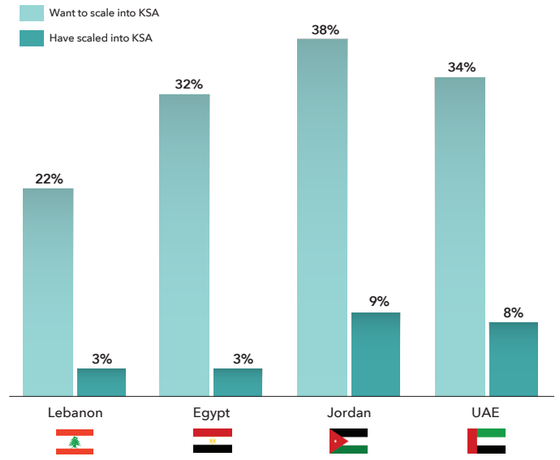
Other countries in scope of tech entrepreneurship study

Note: HackerRank Developer Index score is used as a proxy to indicate coder skills
Source: Startup Genome, Glassdoor, Hacker Rank, OC&C analysis

The eagerly anticipated entrepreneurship visa was recently approved. It is believed to be the key to resolve the talent bottleneck and enrich the ecosystem in multiple ways.

- Ecosystem participants welcomed the news in December 2017 of the introduction of an entrepreneurship visa. The early information provided tied the visas to invitation letters from universities or incubator/accelerators. While overall procedures were not yet clear at the time of this study, there was a shared belief that importing entrepreneurs and skilled talent from abroad would benefit the ecosystem in terms of generating new ideas, creating on the job training opportunities for the local talent, and forming a greater pool of mentors to aspiring entrepreneurs and early-stage startups. The competitive environment is thought to better local players' standards and fulfill some untapped areas in the market.

FIGURE 15. ENTREPRENEURS FROM THE REGION WHO WANTED TO SCALE INTO KSA VS. ENTREPRENEURS THAT HAVE ALREADY SCALED



Source: The KSA: The status of the entrepreneurship ecosystem, June 2017, Wamda Research

Employee retention is a common pain point among tech ventures

- Business founders find it challenging to retain employees and generally complain that their turnover rates are too high. The promising talent usually opt for better paying and less challenging roles in public or larger private companies as soon as the opportunity presents itself.

- Some indicate they have come up with non- monetary benefits to hook their employees. However, the ability to offer stock options and subsidized services are the most sought after improvements in the rules to support tech entrepreneurs. In addition, potential courses on developing enticing HR policies would also benefit tech entrepreneurs.

"You won't find many people who are going to leave a well-paying job with benefits at a large company to go and join a startup with an unknown future that cannot pay as much if they don't have an incentive by way of stock options or owning a stake in those startups. If we can solve this, we will see a huge talent migration to Saudi startups." ***- Mazin Alshanbari - Director, TakaMol Holding***

Tech entrepreneurship could become a celebrated venue to increase female participation in the economy.

- One of the main objectives of the *Vision 2030*, is to increase the participation of women in the labor force from its current standing of 8% to 30%.
- Statistically, there are as many Saudi female university students as there are male. There are also about 25,000 Saudi graduate students.[23] About one-quarter of overseas education scholarship recipients have been women in the past 10 years.[30] It has also been indicated that Saudi women are higher academic achievers.
- There is an increasing number of well-educated Saudi women occupying senior roles in public offices. However, the trend has not fully picked up in the private sector or tech entrepreneurship. The proportion of female founders in KSA is reported to be about 5%, which is the lowest in the MENA region. In the Levant, female ownership of tech startups has reached up to 25%.[31]
- The ongoing transition to expand women's involvement in social and economic life in the Kingdom could entice highly skilled, ambitious, and entrepreneurial Saudi women who had opted to stay abroad to launch their careers and businesses to return home. Hence, progressively addressing barriers restricting women could create the opportunity to fully reap the benefits of decade long investments in building the Kingdom's female human capital.

Healthy tech entrepreneurship ecosystems feature a dense array of players and structures, with strong relationships between them. This helps entrepreneurs exchange ideas, build teams, and get the resources they need to grow.

The introduction of *Vision 2030* spurred the development of incubators and accelerators within the Kingdom. Notable government-backed and/or university affiliated incubators and accelerators include KAUST's Hikma, Taqadam, Badir, 9/10ths, Wadi Makkah and Flat6Labs.[23,32] These programs reward their participants with grants and seed stage funding.

Engaging in private endeavors and tech entrepreneurship is a new concept in the country and there is a growing need to easily access network facilities, training programs, coaching, and mentorship. According to a survey conducted by Arabnet, entrepreneurs perceive mentorship support as the biggest gap after financing.[24] Endeavor's study of the New York ecosystem found that 33% of top performing startups were three times as likely to have a high-quality mentor compared to startups that experienced regular growth.[33] The early stage of development of the KSA ecosystem means it is not possible to have an adequate number of experienced entrepreneurs to give back to the ecosystem. In an effort to expand the mentorship pool available to the entrepreneurs, *Monsha'at* (SMEA) launched *Fnar* – an online mentorship and advisory platform. However, attaining the right kind of mentors, experienced entrepreneurs that have launched, scaled, and exited a startup, will require time to accumulate or a cross-border influx.

[30] "Why has Saudi Arabia lost the war for talent to Dubai", 19 September 2016, Al-Arabiya English (https://english.alarabiya.net/en/views/news/middle-east/2016/09/19/Why-has-Saudi-Arabia-lost-the-war-for-talent-to-Dubai-.html)
[31] "The state of Digital Investments in MENA, 2013-2015, Arabnet Business Intelligence
[32] Nawito, Mohamed. "Promising Incubators & Accelerators in Saudi Arabia". https://www.linkedin.com/pulse/promising-incubators-accelerators-saudi-arabia-mohamed-nawito
[33] Thaker, Anand. "Get a mentor or go home." Atlanta Tech Village. http://atlantatechvillage.com/buzz/2017/02/08/get-mentor-go-home/ (accessed September 21, 2017)

Leading corporations are active in the inauguration of training and support programs to build the infrastructure needed for entrepreneurial development of aspiring youth. Corporate-led initiatives provide monetary and non-monetary benefits.

FIGURE 16. NOTABLE SUPPORT SERVICES PROVIDED BY ESTABLISHED COMPANIES

Source: Wamda Research, MITEF, Fablab

The highly anticipated entrepreneurship visa was recently approved. It is believed to be the key to resolve talent bottleneck and enrich the ecosystem in multiple ways.

These programs serve an important purpose but they are not designed to bring together the business world – public and private – to engage in joint solution development as collaborators with tech startups. Industry–tech startup partnerships provide opportunities for youth to work on real case problems, using actual data and modifying concepts and products to best serve market needs. The incumbent, on the other hand, allows access to innovation that will upgrade its services and products, thus creating a point of competitive advantage in the market. In order to ignite such cooperation in the ecosystem, *Monsha'at* launched a portal for open innovation – *Fikra* (idea) - three months ago. The portal allows for government bodies and large corporations to post their challenges and the entrepreneurs to offer solutions. The winners will then be awarded with a reward or contract to complete the work.

There are also reputable network events and meetings that bring the ecosystem together where challenges are shared and learning is exchanged. The turnout at these events is growing stronger, drawing in participants from the region and beyond. The composition of attendees is promising, as was the case during Arabnet 2017, which was held in Riyadh in December 2017. Many young Saudi women participated, signaling that the business community is growing accustomed to the increasing involvement of women in tech entrepreneurship and the development of the economy.

Accelerators and incubators are taking on the crucial task of educating aspiring tech entrepreneurs who, in general, are less prepared when it comes to the conceptualization of their ideas than their international counterparts.

- Tech entrepreneurs usually approach accelerator programs with raw ideas and are subjected to a boot camp to distill viable initiatives to be accepted to accelerator programs.

  - For instance out of 500-800 applicants to the *Badir* accelerator programs, 80 ideas are filtered and tested in a one week boot camp. Out of this process about 10 startups qualify for the accelerator program.

  - *Taqadam* startup accelerator runs a competitive initiation process among teams from different universities across the country. A cohort of 600 applications are brought down to less than one-third in the initial screening followed by a pre-accelerator program that further reduces the accelerator participants to 30 startup teams.

"In Shark Tank, as one of the sharks, the only participants that really caught my attention were apparently ones that graduated from local incubators."

– Maha Taibeh- Consultant, Eradah

- Such an approach builds commitment to the programs according to the interviewees. Entrepreneurs face an intense schedule with many milestones which gets them accustomed to what to expect as an entrepreneur and builds momentum in their endeavor.

The sheer number of applicants to accelerator/ incubator programs indicates an overwhelming demand to learn and get involved in entrepreneurship that cannot be met with existing supply.

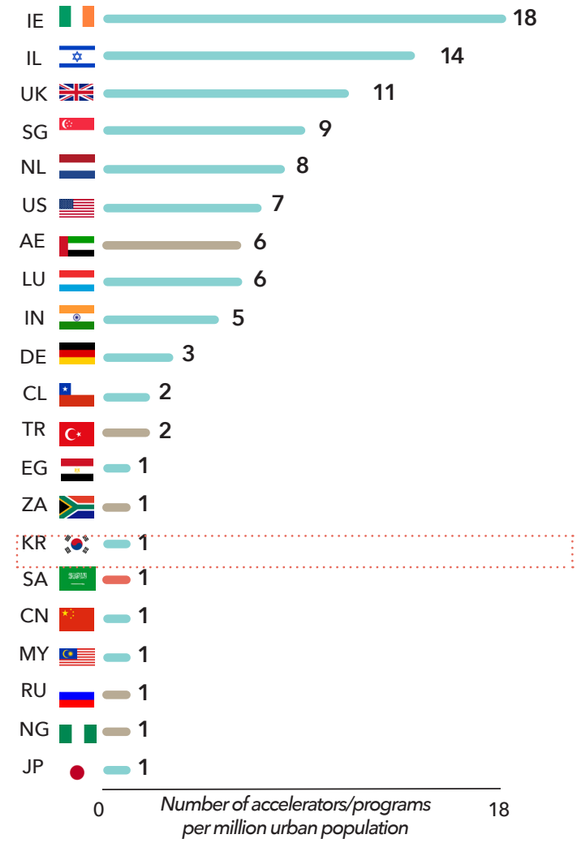
- The number of Saudis developing an interest in tech entrepreneurship is on the rise. However, the existing number of accelerators and entrepreneurship centers are not sufficient to cater to this demand.

- In addition to the establishment of structured programs, ecosystem participants believe that there is an emerging need to create co-working spaces and clusters such as technoparks where entrepreneurs, companies, and supporting service providers can informally get together, work side by side, and reach out to each other easily to access knowhow and to collaborate. Physical clustering creates the best environment to develop ideas and partnerships to materialize business concepts. The country currently only had a few such facilities.

- SMEA's new initiative HUB1006 in King Abdullah Economic City will provide access to professional and legal services, workspaces, venture capitals, and government services thus decreasing bureaucratic challenges impeding business scale up. GCAM is also working on an incubator that will offer co-working space, studios and editing labs, education, mentoring, and government services.

- Interviewees highlighted the fact the license impediments around opening accelerators/ incubators and co-working spaces have been resolved and thus an increase in the number of private hubs is expected.

FIGURE 17. ACCELERATOR DENSITY



Other countries in scope of tech entrepreneurship study

Source: F6S, OC&C analysis

"In addition to traditional incubators and accelerators, many of which are making a strong showing and offering a valuable contribution to the startup ecosystem in Saudi Arabia, I believe it is valuable to have working spaces specialized in helping technology startups start up. An example is Astrolabs, based in Dubai. They are selective in who they invite to join and offer startups and entrepreneurs a co-working space and community in which to work efficiently, network and cooperate with other co-located businesses while receiving mentorship, training and help from industry experts in technology as well as issues that face small businesses in management, legal, and finance" ***- Hashim Alawadi - General Manager, Technology Investments Company***

The accelerator programs will need to upgrade in content and become versatile as tech entrepreneurship evolves in the country. Earlier interaction with VC funds in the programs will also expedite later stages of networking for tech entrepreneurs.

- The current programs serve the needs of the existing market well. However, as the next stage of improvement, advanced programs should include guidance on how to scale up, manage growth, and establish governance according to the interviewees.

- Currently, VCs are not necessarily integrated into accelerator networks. Closer working relations could serve to build up the pipeline of companies to watch for on the part of the investors and provide earlier access to valuable smart money mentorship for entrepreneurs.

Initiatives have started to promote IP commercialization in the country. Universities are creating accelerators and TTOs to commercialize their technology via entrepreneurship or in partnership with corporations.

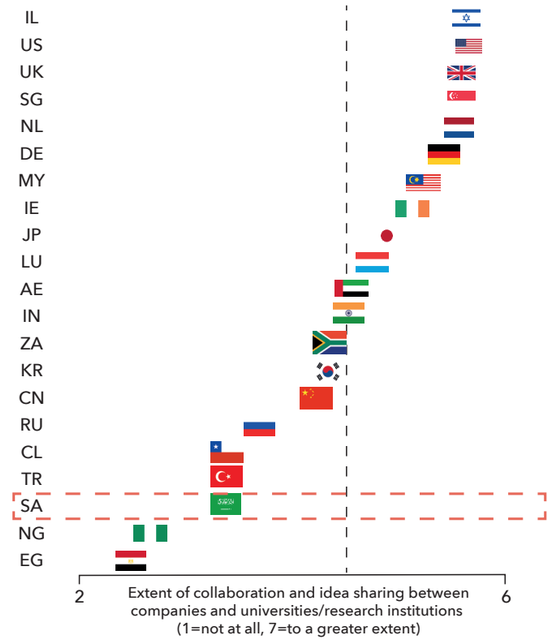
- Much of the focus of research institutes has been on producing publications and delivering research and patents without linking these to commercial applications. Today, there is a movement to increase the commercialization of innovation with a view to creating companies and jobs.

  - KAUST is launching *Hikma*, a new accelerator program designed for students, postdocs, and academics who wish to pursue the startup potential of their technology. The program is run by the university's entrepreneurship center with assistance from the KAUST Technology Transfer Office (TTO).

- Aramco is known to commission research at universities where the IP is co-owned by the university and the company. Multiplication of such collaborations will strengthen the working relationship between universities and industry and provide best-practice examples for smaller firms. Partnerships also lead to the emergence of tech entrepreneurs who bridge the gap between commercialization and adaptation of research fit for market.

- When populating the number of TTOs in the country, better results could be achieved if university TTOs could be distinguished as centers of excellence in specific fields that match the institution's knowledge and academic strength and also the business community and economic activities in their catchment areas. (i.e. the cluster forming around Dhahran on advancements in petrochemicals and energy). Such a structure also provides clear addresses to the tech entrepreneur community leading to the reduction of inefficiencies in the system.

FIGURE 18. UNIVERSITY/INDUSTRY RESEARCH COLLABORATION



Other countries in scope of tech entrepreneurship study

Source: World Economic Forum Executive Opinion Survey 2016-2017, OC&C analysis

There are no established linkages with the wider international tech entrepreneurship community.

- Developing connections with the wider international tech entrepreneurship community facilitates the establishment of a stronger support network for burgeoning tech entrepreneurship. It will offer the next stage of training programs not yet widely available in the local network.

Also, multinational cohorts participating in international accelerator programs will widen the perspectives of Saudi entrepreneurs and encourage them to look beyond solutions available to them at home.

- Becoming more aligned with international tech entrepreneurship practices in regulatory and investment areas could increase the benefits of these interactions with maximum applicability of lessons at home.

Ongoing government plans and programs that aim to bring technology companies to Saudi Arabia will, in time, create the network effect to complementing tech entrepreneurship clusters and allowing them to thrive.

- Interview participants believe that the Saudi government's mega projects and international investment initiatives that aim to draw global technology and innovation companies to the Kingdom will create the context that spring boarded many of the leading tech entrepreneurs around the world.

  - The PIF program identified sectors that will contribute to the Kingdom's economic development and diversification: defense, industrial transformation, entertainment, e-commerce, recycling, energy efficiency, and travel and tourism. The fund's investment in large technology-enabled companies in these fields will have a direct impact on populating tech entrepreneurship in respective areas.

  - The Kingdom is also running Giga-projects that will transform the economy and act as a catalyst for many private businesses to thrive (i.e. Neom Project, Red Sea Project and Qiddiya Project).

  - Saudi Arabia is collaborating with Japan's Softbank Vision Fund to tap into technological advancements and businesses around the world. The partnership entails drawing in some of the portfolio companies to the Kingdom to build a strong technology base that will nurture the domestic ecosystem.

Entrepreneurial aspirations range from creating a better life for oneself, financial gain, the glamor of launching a market-leading enterprise to building an alternative to regular employment. Traits such as energy, self-confidence, perception of failure as a learning process, ambition, and independence are key for tech entrepreneurship.

Cultural expectations and perceptions of entrepreneurship guide behavior and how entrepreneurs receive support from the community. They affect when and whether citizens choose to use their skills in entrepreneurial endeavors. Generally, in cultures that support entrepreneurial behavior[34]:

- People strive to equalize the distribution of power and wealth in society by taking personal initiative, indicated by low power distance scores.
- There is scope for individualism and less of a preference for communal identification and adherence.
- Society at large is more competitive. Achievement, spearheading, assertiveness are celebrated traits and people expect to be rewarded materially for success.
- Lastly, people in entrepreneurial cultures feel less uncomfortable with uncertainty and ambiguity. There is more acceptance of nonconformist behavior and ideas to overcome challenges than to maintain the status quo.

Saudi Arabia is an absolute monarchy and the population is heavily reliant on social welfare, benefiting from being a natural resource-rich nation. For generations, the talent pool has been employed in the public sector, working at a more relaxed pace and receiving generous compensation. This work culture is well established and Saudi youth – those that are under 25 who make up more than half of the population- have the same expectations as a result.

[34] Geert Hofstede - Cultural Dimensions (www.hofstede-insights.com/models/national-culture/)

This generation has grown up in an era in which high oil prices sustained the status quo in the job market. The country's youth have high expectations and seek high-paying jobs to attain them. However, in a market economy, wages will be determined by the perceived value of an individual's contribution.

A recent study published by Riyadh's King Saud University found that 80% of Saudis polled in the capital stated they would rather wait for a government job than work in the private sector.[28] The call for going into private-sector employment, especially entrepreneurship, demands a radical shift in the mindset of the young as well as their communities. As such, this must be a gradual transformation.

Systematically addressing some elements of the Saudi culture will contribute to creating a flourishing entrepreneurship culture: [25,35]

- Saudi culture respects authority and demonstrates a high tolerance for power distance and social hierarchy. In business settings, this attribute manifests as acceptance of leadership in organizational structures that is typically a function of seniority as a result of years spent in service or based on other sources of influence.
- At work, those in leadership positions cannot be questioned and subordinates expect to be told what to do. Known paths and methods of getting things done are prized while the pursuit of nonconformist alternatives is discouraged.
- Saudi Arabia is a collectivist society. Loyalty and long-term commitment to a group supersedes individual aspirations and the need for personal achievement. Hence, in business, value to an organization is often measured in terms of loyalty and presence rather than merit and performance.
- Particularly in institutions where young employees are increasingly becoming more qualified and skilled than their managers, adherence to the above mentioned societal rules result in disengagement and loss of drive to perform.
- Causing shame and loss of face is dreaded in collectivist societies. In addition, Saudi culture scores high in preference to avoid uncertainty, thus, job security is an important individual motivation. These attributes play a part in resisting failure and trying new things.
- Long-term orientation is also described as low, mostly attributed to the normative nature of the society which favors achieving quick results
- All of the above needs to be included in training at schools to mold a new set of behaviors that support entrepreneurship among future generations. In order to help the current young labor force to transition more easily, those traits that will help them achieve personal success in the private sector should be encouraged in both formal and informal settings. In addition, widespread availability of extracurricular personal development courses and trainings at universities or entrepreneurship centers would be further support their transition

The appetite for entrepreneurship is growing, especially among those that have had international exposure during their studies or careers.

- Amidst the aforementioned norms, interview participants underline that there is a visible change taking shape in the tech entrepreneur community.

  - Aspiring entrepreneurs are more knowledgeable about the journey and the expectations of the investor community today than they were two years ago. Entrepreneurs are becoming less risk averse and more skilled.

  - There is a higher proportion of people who have had international experience and who have observed global trends to be emulated in order to achiever similar successes at home.

- Ecosystem participants also indicate that increased publicity and the promotion of entrepreneurship is paying off in generating interest evidenced by the rising number of applicants to accelerator programs.

The presence and celebration of successful national tech entrepreneurs will serve as models in the ecosystem re-shaping general cultural norms.

- Role models fill a critical role in driving society's appreciation for entrepreneurship and inspire highly skilled individuals to become entrepreneurs.

[35] www.hofstede-insights.com/country-comparison/saudi-arabia (accessed January 04, 2018)

"In Raed Ventures, 50% of the deal evaluation is on entrepreneurs. Entrepreneurs have to demonstrate that they believe in their companies. We look at the dedication of entrepreneurs when investing, they need to dedicate themselves and work full-time in most of the cases. We love a team of cofounders, supporting and complementing each other."

– Omar A. Almajdouie - Founding Partner, Raed Ventures

- Wider coverage of successful tech entrepreneurs in public campaigns and mass media builds a positive perception of tech entrepreneurship in the national consciousness

Getting comfortable with failure is going to be the main game changer and drive more people to try entrepreneurship rather than attempting to fit into traditional roles.

- Aspiring entrepreneurs are held back by fear of failure because, culturally, failing is considered shameful. This is contradictory to the behavior of tech entrepreneurs in more mature markets where failure is regarded a part of the learning process. Abroad, investors are more inclined to bet on entrepreneurs who have had failed businesses before because they were able to develop an understanding of what it takes create a winning model.
- In trusted communities and informal settings, entrepreneurs are becoming more comfortable talking about their business struggles and sharing their stories of "failure". Sharing creates opportunities to learn from others and opportunities to devise new solutions from exposure to the experiences of others.

Learning to collaborate and form partnerships is a common development point for young Saudis that want to build winning businesses.

- Those who are working with Saudi entrepreneurs at different levels observe that startup founders are hesitant to take on partners and form winning teams which has the potential to increase their chances of survival and success. This is usually attributed to being unwilling to share potential upsides. Interviewees see the need to educate entrepreneurs on the benefits of owning a part of something big as opposed to total ownership of a small business.
- Another reason for this behavior has to do with lack of trust and the fear of theft of intellectual property. However, experienced ecosystem players highlight that a strong team with a solid plan will always make the difference in a market with similar ideas.
- Female entrepreneurs are perceived to be more collaborative, open to partnering with those with complementary skills, and more willing to explore options by asking more questions.

Building credibility and trust between tech entrepreneurs and the business community that partners or invests with them is crucial to building momentum in the ecosystem.

- The older generation, which is making the business and investment decisions in the domestic businesses or family offices, has not yet established an understanding of tech entrepreneurship. Some entrepreneurs comment that they refrain from taking a meeting with conventional business owners or investors because they do not feel they will be taken seriously.
- By interacting with entrepreneurs in more informal and social settings, executives and high-net-worth individuals can observe how entrepreneurs operate and what they can bring to the table.
- This could help to align investor and entrepreneur expectations, increase investor tolerance for failure, and expose the more conventional business community to entrepreneurial trends.

"We need to educate our society to accept failure. That is a major mind shift for Saudis. The minute we see a guy who failed in one of the startups a lot of people don't want to associate with him. Although this guy could potentially be the CEO of the next big startup. This is one of the main issues to build the ecosystem." ***– Mansour Al-Misfer - Managing Director, Bluevine Ventures***

5. Regulations

Tech entrepreneurship is directly and indirectly affected by a broad range of regulations that effect its business construct (Business Procedures), operational domain and boundaries (Digital Policies), sources of innovation (R&D), and international trade opportunities (Trading across Borders).

The legal system of KSA is based on Shari'a law and its interpretation by the clerical judges. The scope and content is not standardized and there is low reliance on judicial precedents. An intention to codify the Shari'a was announced in 2010 but this has not yet materialized. In matters of labor, commercial, and corporate law, royal decrees *(Nizam)* supplement the Shari'a but, they are subordinate in rank - regulations rather than laws.[9]

The regulations governing the establishment of businesses and commercial obligations are being revisited by the relevant authorities in light of the increased importance of rejuvenating the private sector and entrepreneurship brought about by *Vision 2030* and the *National Transformation Plan*.

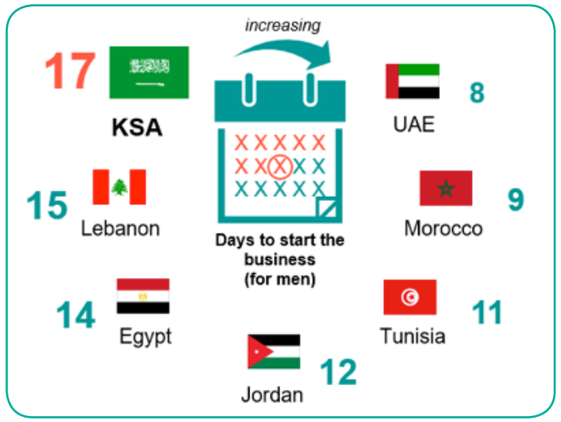
In this context, the introduction of tech entrepreneurship necessitates adoption of many new policies and regulations to allow the ventures to take root in the country. To this end, there have been numerous interventions and amendments to accommodate the needs of entrepreneurs. While their enactment has been swift, especially in the last two years, execution is markedly slower. Nevertheless, in order to reach global standards in regulatory frameworks that will support tech entrepreneurship, more changes are necessary. These changes need to be integrated and holistic in design to deliver the highest impact.

A. BUSINESS PROCEDURES

The ease of executing business functions drives, in part, how many startups can be launched and survive. Straightforward business procedures help drive interest to take up entrepreneurship. Streamlined, relaxed, and digitized procedures minimize administrative efforts and allow entrepreneurs to accomplish more with limited resources. Tax obligations, in terms of both time and cost, can affect a startup's growth, especially in the early years when cash flow is uneven.

Regulatory and legislative practices around business, particularly dispute resolution, serve to reassure both startups and their investors of the protection of their rights and its costs. Bankruptcy legislation is also important as it can be a significant motivator or deterrent to starting a business.

FIGURE 19: DAYS REQUIRED TO START UP A COMPANY IN THE MENA REGION



Source: World Bank

Shareholder nationality impacts capital requirements and licensing procedures, which can significantly increase the time and capital employed to start a business in KSA.

- Fully Saudi owned and partially or wholly foreign invested companies are subject to different procedures and requirements in the Kingdom.

  - For Saudi shareholders, the minimum capital requirement for company incorporation is SAR 500,000 (c. USD135,000)

  - The regulations permit 100% foreign-owned services or manufacturing businesses as long as are physically present in KSA. However, companies involved in any type of trading – applicable to most tech endeavors- have to have at least 25% Saudi shareholding and a minimum contribution of SAR 20 million (USD c.5 million) from foreign shareholder(s). Therefore, tech startups involved in several different functions opt to set up separate entities to benefit from the varying requirements.

- Irrespective of the shareholder profile, obtaining a commercial license for the tech and innovation sectors has been a costly and bureaucratic process for many entrepreneurs.

  - Much of the challenge is associated with defining the activities of tech startups to match existing codes as many value propositions cut across different functions.

  - Also, the existing definitions do not offer flexibility to account for business model evolution as the company grows and validates its value proposal.

- Any foreign-owned entity must first receive a license from the Saudi Arabian General Investment Authority (SAGIA). The authority's licensing definitions are considered very restrictive and too inflexible to accommodate the evolutionary nature of the tech startup business model.

  - SAGIA, in partnership with KAUST, introduced a new license class for innovators applicable to both local and international students in the Kingdom.

  - The country's maturity level in tech entrepreneurship means that most of the ventures will be local adaptations of international tech business models. Hence, using international examples as guidelines could expedite the process of updating license categories.

- In an effort to increase the impact of foreign investment on KSA's economy, SAGIA has introduced a program that grants special incentives and privileges to companies that fall into one of six predefined categories. Technology companies are considered strategic and included in the list. "Innovative firms" which have registered patents also qualify for these privileges[36]

- In 2016, SAGIA announced a number of amendments to ease investment procedures in the Kingdom.[36]

  - Documentation requirements were reduced.

  - A fast track service granting investment licenses within a maximum of 5 days was introduced and includes SMEs, which are classified as innovative enterprises

  - An option to extend the licenses for 15 years

- Since many of the tech endeavors in the Saudi market today are outside the definition of innovative firms that have registered patents, interview participants indicate SAGIA's licensing procedures are cumbersome and take between three to four months to conclude

Company structures in KSA are not a match for venture investor preferences.

- The Ministry of Commerce and Investment (MOCI) and the Capital Market Authority do not allow for GP/LP structures leading most venture funds to set up shop in other jurisdictions thereby putting them in the foreign entity category

- "Shelf companies" are not allowed in KSA, specifically for foreign investors. Those entities that consider foreign investment – either tech startups or VCs – and want to incorporate in Saudi, customarily register as Limited Liability Companies (LLCs). Nonetheless, this entity type falls short in attaining a number of features that equity investors look for in deal making:

  - There are no share class provisions

  - Share dilutions are not recognized by the courts

  - They cannot issue stock options

  - They have a flow-through-tax status which creates tax obligations for shareholders from operational results, even if they have not received a payout

  - Double taxation for investors in the funds. They are liable to pay taxes on the proportion of their shares in the company the fund has invested in even though the company already paid its taxes

[36] "SAGIA eases license procedures for foreign investors", 30 March 2016, Arabnews (http://www.arabnews.com/economy/news/902711)

Company incorporation procedures involve multiple steps spanning different federal and local public agencies.

- Tech entrepreneurs highlight that the procedures necessary for company establishment involve securing the approval of multiple public authorities. (MOCI, Chamber of Commerce, the labor office, the General Organization for Social Insurance (GOSI), The Department of Zakat and Income Tax (DZIT), and the Municipality).
- The procedures and requirements of these different bodies are considered to sometimes be at odds with each other and there is no clear superseding construct. Entrepreneurs must deal with each authority's procedures individually. The general inexperience of entrepreneurs in private endeavors is also a contributing factor in the challenges cited.
- Federal institutions have been more progressive in aligning their practices with market needs but municipality procedures are described as the major bottleneck that prolong the processes.
- The SMEA has undertaken ad hoc initiatives such as bulk registration of companies where they organized an event that brought all relevant parties involved in business registration together in Riyadh and registered 300 companies on the spot.
- The Ministry of Commerce and Investment (MOCI) introduced a one-stop shop in 2017, *Miras*, which physically and digitally brought all related public offices together to provide easy access and a smoother registration processes. The initiative has one office in Riyadh where representatives of different authorities share the same space. The website provides a gateway to each authority's own procedures online. The new concept has not yet integrated the procedures in a single process that fulfills requirements for all and can be seamlessly completed online.

Starting up a business requires the founder to rent an office space to complete procedures.

- The need to have a designated office to fulfill registration requirements is a cash out for many new startups that have not yet started to generate an income.
- MOCI has set up an SMEs support package which includes an exemption from paying for an office space for five years in King Abdullah Economic City. (KAEC) [23].
- In the case exemptions, authorities provide the best benefits if the designated common office areas are in proximity or within naturally-forming tech entrepreneur clusters.
- Some interviewees also highlighted that the regulations were changed to allow multiple entities to operate under the same address. This should ease the establishment of co-working spaces in the country that provide both a cost-effective solution as well as networking opportunities for early tech startups.

Visa and registration requirements for foreign-backed startups suggest a preference to draw in later stage tech companies.

- It is regarded as cumbersome for international companies, even from within the region, to expand into KSA if they are not 100% owned by shareholders who are GCC nationals. In any case, the companies that want to expand into KSA must present three-year financials demonstrating positive results to qualify for a SAGIA license.
- Foreign-backed tech companies in Saudi Arabia can apply for a foreign "investor" or "general manager" visa with a support letter from SAGIA. To apply for an "investor" visa, a company must meet one of the following conditions:[36]

  - The company should be engaged in "innovative activities" with a valid patent used as part of the business.

  - The company should be an exporter with the condition that the technical specifications and the method of production must conform to the approved Saudi, GCC, or international specifications

  - The entity must have a minimum of 50 workers and employ a maximum of 25% foreign labor

  - The entity's paid-in capital must not be less than SAR 37.5 million (USD 10 million)

FIGURE 20. EASE OF DOING BUSINESS AND GOVERNMENT POLICY: TAXES AND BUREAUCRACY

Other countries in scope of tech entrepreneurship study

Countries are listed in order of their score in respective category
Source: World Bank Doing Business, Global Entrepreneurship Monitor, OC&C analysis

Venture investors are drawn to jurisdictions where the rules and their enforcement can be anticipated to mitigate risk.

- Companies that are no longer profitable or functional cannot be wound down without incurring additional liabilities and fees. It takes up to 4 months for locals and 9-10 months for foreigners to wind down a failed operation. The absence of clear regulations related to bankruptcy and protection of minority rights in insolvency is deterring potential local and international investors from investing in Saudi registered startups.
- Specialty courts have that can handle the specifics of new deal structures have not yet been introduced to the system. Minority rights protection is not enforceable; many deal terms in shareholders agreements remain unrecognized by the courts. Moreover, the tendency of Saudi favoritism in the application of rules in case of a dispute between local and foreigner partners becomes a deterrent.

> *"We have to take actions, we have to move. Sometimes legacy can be an impediment, some government agencies would say 'no, we don't need to change anything'. That has to be changed with the Vision."* – ***Eamomn Mahdi Almutawa - Head of Foreign Investments Unit, Capital Market Authority***

B. DIGITAL POLICIES

The benefits of the internet economy are enormous but also give rise to growing concerns around privacy, security, crime, and anticompetitive practices. Striking the right balance between capturing the benefits of the internet while mitigating its potential risks has become a challenge for policy makers around the world.

> *"I think the whole world is going through a transformation on so many levels. Introducing the concept of sandbox regulation is going to be a very interesting experiment and I think it is needed. We have to take risks anyway so if we are going to take a risk let's at least take a more calculated one."* – ***Eamomn Mahdi Almutaw - Head of Foreign Investments Unit, Capital Market Authority***

Digital businesses are a new area for Saudi and the regulations to govern different aspects of the sector have not yet progressed to international standards.

- A number of regulations enacted in the 2000s broadly set the boundaries of technology and internet-related businesses:

  - Competition is regulated by the 2004 Competition Law issued by the Royal Decree. The Competition Law aims to protect and encourage fair competition in the KSA markets. It also prevents monopolies and merger and acquisition transactions that affect the markets. Violating the competition law can lead to payment of a fine of a maximum of SAR 5 million (USD1.35 million)[9]

  - The Trademark Law (2002), the Copyright Law (2003), and the Patent Law (2004) were updated to be compatible with the WTO agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) and the World Intellectual Property Organization (WIPO). It has been noted that Saudi Arabia has one of the best trademark laws in the region, and the Saudi Customs Authority has significantly stepped up its enforcement efforts. However, Saudi Arabia is not a party to WIPO internet treaties.[37]

  - Saudi Arabia does not have a specific data protection legislation but, Basic Law of Governance (1992) protects the privacy of individuals. In addition, the Electronic Transaction Regulation, Telecommunication Act, and Anti-Cybercrime Law provide provisions for data security in their respective fields. The Sharia law also warrants that an individual shall be compensated if he suffers loss as a result of the disclosure of his personal information by another party.[38]

  - The Electronic Transactions Regulation and its implementation rules were enacted in 2007, based on the principles of UN's International Trade Law. The legislation establishes a frame of reference to equate the electronic documents, including electronic signatures to paper-based versions [39]

  - Saudi Arabia is not a party to global anti-cybercrime agreements such as the Budapest Convention.[17]

  - Saudi Anti-Cybercrimes Law was issued by a Royal Decree in 2007 as well. The legislation defines cybercrimes and lays out the penalties in order to protect the information, rights of the user, secure the safe exchange of data, and safeguard public interest and morals. Cybercrimes are monitored by the Saudi Communications and Information Technology Commission (CITC). In 2012, the Arab Cybercrime Agreement also came into force to strengthen cooperation between Arab nations in combating cybercrimes and enforcing copyright laws.[40]

- There are no clear regulations governing e-commerce in the country. Interviewees point out that a draft law was prepared but has not yet been issued by the Council of Ministers.
- The legal community comments that regulatory reforms are slow and that there can be inconsistencies in implementation and variation in the degree of enforcement. In a GCC cybercrime review report by the Chatham House in 2017, regional cooperation is considered to be in its infancy.[17]

Saudi Arabia's Communications and Information Technology Commission (CITC) maintains control over the content on the Internet and conducts filtering.

- According to a public survey conducted by the authority, close to half of the population found the implementation of internet content filtering by the authorities fairly satisfactory.[41]
- Ecosystem participants believe that the environment could flourish more easily with more relaxed rules on freedom of expression. On a similar note, a 2016 Fifth Era survey found that in less developed internet economies, 79% of 475 international VC investors would feel more comfortable investing in countries where freedom of expression was not highly regulated. [42]
- CITC lifted the ban on Skype, WhatsApp, and other messaging applications in September 2017.[43]

The Communications and Information Technology Commission (CITC) proposed a regulatory approach for cloud computing in the Kingdom in 2016 and solicited input from related parties.

- CITC advocates developing a strong cloud services industry in Saudi Arabia as a key part of creating a developed digital infrastructure to support Vision 2030.
- The Council of Ministers decision No. 81 of 2009, sets out the framework for the public sector's use of cloud-based services, which requires government entities to host their websites on government networks or through providers with local hosting infrastructure and who are licensed by CITC. [44]

  - Cloud services are mostly used by government institutions (private cloud) and SAP announced its plans to set up a public cloud hub worth USD 76 million. The National Digitization Office aims to integrate the Cloud Hub into the planned government cloud, in order to further enhance government efficiency, employee productivity, and citizen services.[45]

  - In 2015, The Saudi Telecom Company (STC) and Cisco announced that they have agreed to build three new data centers to streamline cloud adoption in KSA.

- Finance institutions and healthcare providers are required to store data in the country.
- Cloud service providers must obtain one of the available licenses in order to operate in the country and government entities only work with providers that possess local hosting infrastructure.[46]

C. GOVERNMENT'S R&D POLICIES

Entrepreneurs are at the forefront of commercialization of innovation. Hence, countries with high public and private R&D activity create more opportunities for entrepreneurship.

Domestic resources allocated to R&D were 0.80% of the Saudi GDP in 2015. While this ratio is lower than in more mature ecosystems, where figures typically range from 2% to 4%, it demonstrates a huge improvement compared to ten years ago when the expenditure on R&D was merely 0.1% of GDP.[47] The country continues to be dependent on foreign R&D services provided for Saudi clients but there is a political commitment to establish local expertise. The Public Investment Fund announced plans to spend SAR 210 billion (USD 56 billion) in the next three years to contribute to the localization of cutting-edge technology and knowledge in KSA.[12]

Contracting oil revenues dampened public and private spending on R&D by 2016. Going forward, Euromonitor estimates Saudi Arabia's R&D industry will grow by 6% CAGR between 2016 and 2021, fueled by continuing implementation of governmental incentives under the National Science, Technology, and Innovation Plan (NSTIP), and growing activity in health, ICT, and defense R&D.[48]

- King Abdulaziz City for Science and Technology (KACST) is monitoring the implementation of the NSTIP. In 2016, they allocated SAR 263.2 million (USD70 million) to c.150 science and research projects in health, oil and gas, water, nanotechnology, and aeronautics in Saudi Arabia.
- Investments in health R&D are also expected to be boosted by the government's plans to privatize over 2,000 health centers and c. 300 hospitals.

[37] Saudi Arabia - 5-Protection of Property Rights", export.gov, July 19 2017 (https://www.export.gov/article?id=Saudi-Arabia-protection-of-property-rights)
[38] "Data protection in Saudi Arabia: overview", Practical Law, Thomson Reuters (https://uk.practicallaw.thomsonreuters.com/4-520-9455?__lrTS=20170927144527817&transitionType=-Default&contextData=sc.Default)&firstPage=true&bhcp=1)
[39] "Saudi Arabia Law Overview: Electronic transactions",Saudilegal (http://www.saudilegal.com/saudilaw/09_law.html)
[40] Saudi Arabia Cyber Crimes Law, STA Law Blog, August 2017 (https://www.stalawfirm.com/en/blogs/view/atthack-anti-cyber-crime-law-in-saudi-arabia.html)
[41] "Individuals Report ICT Survey Results,2015" CICT (http://www.citc.gov.sa/en/reportsandstudies/studies/Documents/PublicIndividualReport2015V5_En.pdf)
[42] Matthew C. Le Merle, Alison Davis and Felix O. Le Merle The impact of regulation on Investment, Fifth Era, January 2016
[43] The Verge. "Saudi Arabia lifts ban on Skype, WhatsApp, and other messaging apps". https://www.theverge.com/2017/9/20/16340342/saudi-arabia-skype-whatsapp-snapchat-censorship-ban-lift
[44] "Regulation of Cloud Computing in Saudi Arabia", Lexology., 30 September 2016 https://www.lexology.com/library/detail.aspx?g=554d0e15-5dcd-4c23-a630-a600820b5c3b
[45] ITP. "SAP to set up $76m public cloud hub in Saudi Arabia". http://www.itp.net/612623-sap-to-set-up-$76m-public-cloud-hub-in-saudi-arabia
[46] Regulation of Cloud Computing in Saudi Arabia", Lexology., 30 September 2016 https://www.lexology.com/library/detail.aspx?g=554d0e15-5dcd-4c23-a630-a600820b5c3b
[47] United Nations
[48] Research and Development in Saudi Arabia", July 2017, Euromonitor International

- R&D in the field of ICT will be both supported by the government's digital transformation initiatives and also local companies' investments.
- Prince Sultan Center for Defense Studies and Research focuses on applied research in the defense and security sectors.

KSA's plans to increase purchases of locally produced military equipment to at least 50% of total spend have positively affected R&D projects in the defense sector.

- The defense sector has historically been the springboard for tech entrepreneurship development in the mature ecosystems. Hence ecosystem interviewees believe that the government's defense R&D policy will have spillover effect on the overall tech entrepreneurship ecosystem in the Kingdom.

The Saudi authorities' main push in developing the R&D backbone of the country had focused on generating IP, but transformation to a knowledge economy requires attention to commercialization of the IP produced.

- The initial mission of the research universities and institutions established in the Kingdom was to increase the level of quality research developed in the country. The main indicators of this were the number of research papers published and patents registered.
- In light of the clear intention to promote knowledge-based sectors in the economy, most of these institutions are creating programs and incentives to increase the entrepreneurial motivations of the researchers as well as industry-academia collaborations.

D. TRADING ACROSS BORDERS

KSA is part of the GCC Customs Union, which was established in 2003 to remove customs and trade barriers between the GCC member states. Nevertheless, the GCC does not function as a single market like the European Union.

The GCC member states apply a Common Customs Law (2015) and a Unified Customs Tariff with a standard customs duty rate of 5% over CIF value. The customs duties are paid only once within the GCC at the original port of entry. KSA allows duty-free imports for most goods originating from other GCC member states, and member countries of the Greater Arab Free Trade Agreement ("GAFTA"). KSA does not charge export customs duties.[9]

In 2016, the GCC countries arrived at a unified agreement on introducing VAT in the GCC. Saudi Arabia and UAE are the only two nations that have implemented the 5% VAT as of 1 January 2018. Under current legislation, services and products purchased from and to Bahrain, Kuwait, Oman or Qatar will be considered as exports.[49]

Application of the GCC Customs Law reportedly varies in each GCC country, leading to discrepancies and contradictory practices that may affect businesses.

- Saudi tech entrepreneurs engaged in e-commerce of imported goods indicate that importation regulations, customs practices and FDA approvals in Saudi cost the business more time and money than in other GCC countries if you want to run bulk merchandise importation.

"Commerce is very fluid in this age, just like capital is fluid. KSA has to rethink all their customs and importation laws knowing that this will have an impact on the competitiveness of local players versus international ones. Laws have to change where there must exist a clear economic advantage for companies to move into Saudi. If this happens we will see big international companies opening offices in Saudi and big development of resources and talents in Saudi." ***– Muhammad Arrabi - CEO, Ecommerce Sea***

Wide penetration of high-speed internet at affordable prices promotes the ability of the ecosystem to support rapid knowledge-sharing and dissemination of new technologies to the wider population. It also indicates the ability of the wider market to consume tech-enabled products and services.

Cloud services allow businesses, especially tech startups, to reduce their capital expenditure and IT cost structure by providing hardware, infrastructure, software, and application requirements as a service instead of capital investments, thus increasing their business agility and operational resilience.[50] Moreover, studies indicate that increased access and use of cloud computing services positively correlates with the level of innovation in a country.

Until the late 1990s, Saudi Arabia had one of the slowest internet connections among the Gulf States. The internet only became accessible to people living in larger cities in 1999. Starting from the early 2000s the government took significant steps towards fostering the ICT infrastructure. The country has become the largest and fastest growing ICT market as a result of these efforts.[51] Today, KSA is the major IT investor in the MENA region, with estimated IT spending of USD 7.5 billion in 2017.[52]

KSA's population is highly connected, 91% use the internet and 73% have smartphones.[41] It ranks 7th in the world when it comes to households with internet access and Saudis spend 4.1 hours per day on the internet on average, using their PCs, and Saudi Arabia is the third highest ranking nation when it comes to spending time on the internet using a mobile device (3.8 hours) after Brazil and Thailand.[53]

[49] "VAT in the UAE and Saudi Arabia", Lexology, December 21 2017 (https://www.lexology.com/library/detail.aspx?g=20637ded-e084-4a68-89d2-a72b39fde499)

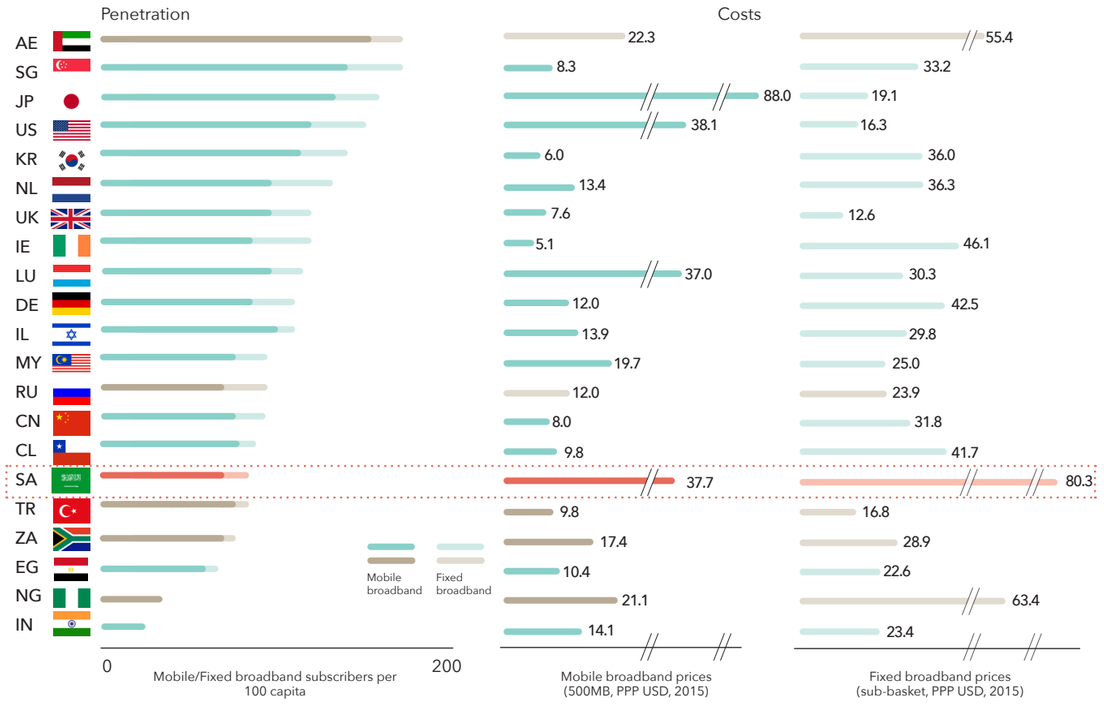
[50] Pepper, Robert; Garrity, John; LaSalle, Connie. "WEF The Global Information Technology Report 2016 – Cross-Border Data Flows, Digital Innovation, and Economic Growth." https://www.weforum.org/reports/the-global-information-technology-report-2016 (accessed September 4, 2017)

[51] Alturise, Fahad Mohammed. "Developing and Testing Policy for Effective Use of ICT in Saudi Arabian Universities". https://flex.flinders.edu.au/file/e5ea5f75-51aa-4219-bdfc-d19f5694efc0/1/Developing-and-Testing-Policy-for-Effective-Use-of-ICT-in-Saudi-Arabian-Universities.pdf

[52] Alturise, Fahad Mohammed. "Developing and Testing Policy for Effective Use of ICT in Saudi Arabian Universities". https://flex.flinders.edu.au/file/e5ea5f75-51aa-4219-bdfc-d19f5694efc0/1/Developing-and-Testing-Policy-for-Effective-Use-of-ICT-in-Saudi-Arabian-Universities.pdf

[53] "Media (R)evolutions: Time spent online continues to rise", March 01 2017, The World Bank, (https://blogs.worldbank.org/publicsphere/6-2016-media-revolutions-time-spent-online-continues-rise)

FIGURE 21. MOBILE/FIXED BROADBAND PENETRATION AND COSTS



Note: Countries are listed in order of mobile and fixed broadband penetration
Source: International Telecommunications Union, OC&C analysis

Mobile broadband is the main means of internet access in KSA and the infrastructure and costs are considered acceptable by users.

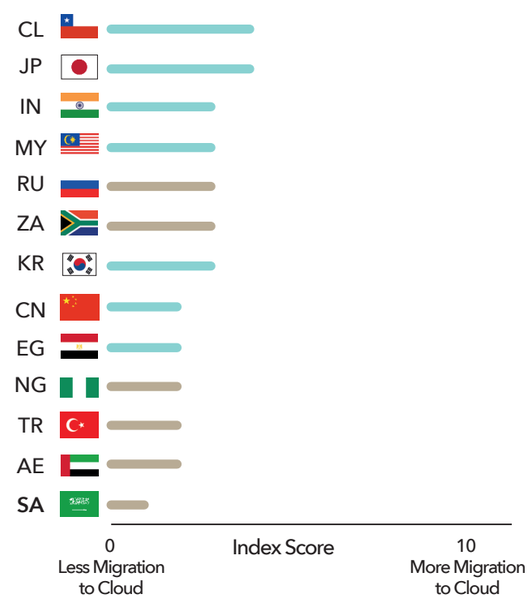
- Saudi internet users rely on the mobile internet infrastructure, both on their mobile devices and at home with routers. The existing infrastructure and the pricing – albeit more expensive in comparison to a number of benchmark countries - do not cause concern for innovation, startups, and their growth prospects.
- A fiber broadband network is not widely available in KSA. Only 5% of residences use fiber at home as a means of accessing the internet. Of those who use fiber networks, 80% subscribe to 20-25 Mbps connection bandwidth.[41]

While Saudi tech entrepreneurs are comfortable using international cloud services, established businesses are reluctant to transition to cloud computing solutions.[54]

- Existing rules and regulations are not restrictive of the use of international cloud services by private consumers. Tech entrepreneurs do not voice particular inhibitions in accessing global cloud services.
- The established business sector in the Kingdom, on the other hand, has been notably reluctant to adopt cloud. The reasons behind this are a lack of clarity as to the benefits, concerns over data sovereignty, the lack of cloud-related regulations, the absence of national cloud strategies, and limited visibility of the long-term cost impact. Also, a general shortage of qualified staff able to handle the transition to cloud computing transition is a major reason behind organizations' reluctance. [54,55]
- Among local enterprises that have adopted cloud in the Kingdom, there is a preference for private over public clouds. Sector experts foresee that as Saudi organizations are pushed to become more efficient and agile in their systems, the cumulative benefits of the public cloud will eventually win over current concerns.
- In principle, KSA opts for managing the public cloud in country rather than overseas and shows a willingness to invest in building the necessary infrastructure for it. Last year, the Saudi Ministry of Communication & Information Technology together with SAP announced plans to set up a public cloud hub with USD 76 million investment over four years.[45]

"For tech companies ICT infrastructure might be the strongest point." –
Hanouf Al-Ajmi - Entrepreneur Select and Growth Manager, Endeavor

FIGURE 22. CLOUD MIGRATION OF COMPANIES



Other countries in scope of tech entrepreneurship study

Note: Cloud migration represents the tendency of migrating traditional IT budgets to cloud platforms, thus measuring demand for public cloud services
Source: Huawei Global Connectivity Index, OC&C analysis

The addressable market size for tech startups in a country is a function of the national economy, digital literacy, and readiness of customer groups and consumer habits affected by internet/mobile coverage as well as the propensity to try new products and services. Other factors such as access to corporate customers and internationalization opportunities define a startup's growth opportunities.

The government can impact the size of the market with increased fast-speed access, consumer protection and competition rules by building public confidence in online services, and especially directly via procurement programs and policies.

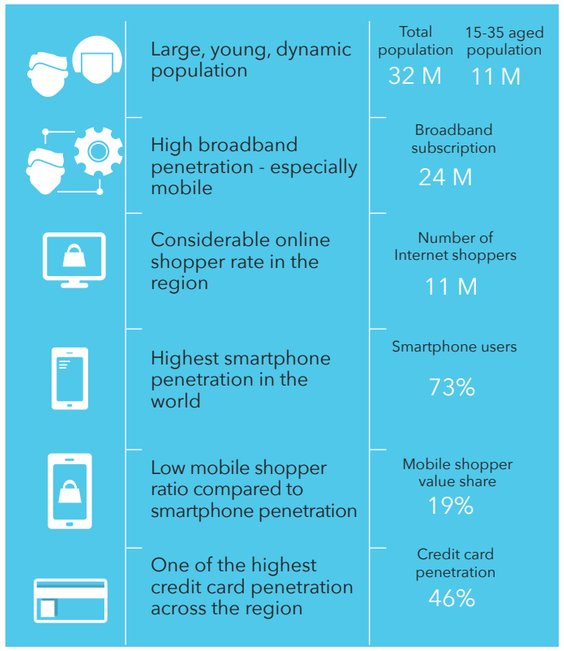
Saudis are avid social media users. They are regarded as the key target market for digital content providers and online advertisers in the region. An overwhelming 95% of Saudis consume entertainment from neighboring Arab states while 40% of the content is generated in KSA. YouTube consumption is the highest per capita in the world. The average Saudi internet user watches three times more videos on YouTube compared to an average UAE or USA user.[23]

Online sales to Saudi are estimated to be USD 8.7 billion in 2017, growing to USD13.9 billion in 2020.[56] The market is expected to outgrow UAE in line with its demographics. B2C e-commerce across all product categories was USD 6.1 billion and it is expected to grow to USD 9.4 billion by 2020[57] Domestic e-commerce on the other hand is still nascent, with SAR 5.2 billion (USD 1.4 billion)

[54] Alsanea, Majed "Factors Affecting the Adoption of Cloud Computing in Saudi Arabia's Government", 2015, (https://pdfs.semanticscholar.org/f59c/3fece4a4ca22fad12d12c066e-b41afcb8950.pdf)
[55] Buller, Alicia, "Saudi Arabia could warm to cloud computing, so long as regulation and connectivity keep pace ", Computerweekly.com, 29 April 2016, (http://www.computerweekly.com/news/450294175/Saudi-Arabia-could-warm-to-cloud-computing-so-long-as-regulation-and-connectivity-keep-pace)

amounting only to 0.8% of total retail sales in the country. The Public Investment Fund forecasts this percentage will go up to 2.4% by 2020.[12]

FIGURE 23. DIGITAL ECONOMY DRIVERS, 2016



Source: IMF, CITC, Euromonitor, MCIT, Statista, Payfort, Eshopworld

Smartphone penetration is very high and two-thirds of online shoppers use a smartphone for their purchases.

- Mobile commerce is thought to have great potential in KSA, as well as in the GCC as a whole.
  - While travel services and mobile applications account for the highest share on mobile spending, widespread electronics purchasing indicates higher penetration opportunities for other physical commerce categories as the solutions mature in the market.[58]

A preference for cash on delivery for the purchase of physical goods online is considered to be a significant operational challenge and a barrier to higher e-commerce adoption.

- A higher proportion of Saudi Arabia's adult population remains unbanked, compared to high-income nations around the world, at 69.4% and 94%, respectively.[59]
- Cash on delivery (48%) is the main method of payment for online purchases in the Kingdom. Credit card payment is about 34% and other e-payment methods are used for 1% of all e-commerce transactions.[57] Trust is the most cited factor for this behavior among the consumer community which also explains the higher use of credit and debit cards at collection rather than paying with them online.[41]
- Building trust in cashless payments systems and establishing a clear set of rules on consumer rights protection would serve to increase e-commerce adoption in the Kingdom.

Availability of transparent, periodically published market data and improved logistics infrastructure will contribute to the growth of tech-enabled consumer businesses.

- Public access to reliable, accurate, and systematically collected data is said to be limited in Saudi Arabia. This is perceived as a constraint on identifying business opportunities based on advancing into data analytics-driven business propositions. In order to be able to use such technologies, entrepreneurs need to partner with large corporations that may be collecting data for their own operations. However, these partnerships are not easily established in the market.
- The logistics of third parties are considered less established than international counterparts. The rise of e-commerce demands a stronger backbone that can supply warehousing, transport, and handling services. In order to meet demand from tech companies, incumbent logistics operators need to expand and modernize their distribution network. They should adopt modern technologies which will increase the cargo handling capacity of warehouses.

[56] Paul, Katie "High Noon.com: Battle for Saudi e-commerce market begins", October 15,2017, Reuters (https://www.reuters.com/article/uk-saudi-retail-ecommerce/high-noon-com-battle-for-saudi-e-commerce-market-begins-idUKKBN1CK0DN

[57] Saudi Arabia eCommerce Insights, eshopworld https://www.eshopworld.com/blog-articles/saudi-arabia-ecommerce-insights-2018/

FIGURE 24. SAUDI TECH STARTUP ADDRESSING TRANSITION TO CASHLESS PAYMENT FOR ONLINE COMMERCE IN KSA - PAYTABS

PayTabs
Simple and Trusted Payments

- **PayTabs** bis a company co-owned by **Saudi Aramco Entrepreneurship Ventures (Wa'ed)**, and the startup plans to contribute to the e-commerce potential of MENA region by offerin **payment-processing solutions** that can be integrated easily

168 currencies accepted

20 countries

20 M funding

- The company aims to **stimulate the market demand** by **addressing** the one of the **major problems** of **entrepreneurs**, which is **collecting payment online**
- PayTabs offer a **broad range of services** that a business needs, including **online payment, e-invoicing**, and **online payment security and fraud protection**

Source: PayTabs, Crunchbase, About Payments, PR Newswire, Al Arabiya

The Saudi market offers many B2B opportunities in fields where the government is seeking more private-sector involvement.

- There are a number of strategic fields where the Saudi government is cutting down public spending in favor of private-sector involvement to introduce new technologies, increase the quality of services, and foster efficiency. Health, education, clean energy, and municipality services are among the key fields that can provide opportunities for startups.
- Ecosystem participants foresee that tech entrepreneurs working on big-data analytics, gamification, optimization technologies, clean-tech, and water desalination technologies will be sought after in the Saudi market.

FIGURE 25: POTENTIAL INDUSTRIES AND AREAS WHERE SAUDI TECH ENTREPRENEURSHIP MIGHT MAKE A DIFFERENCE

Source: PayTabs, Crunchbase, About Payments, PR Newswire, Al Arabiya

Eligibility criteria for public and corporate procurement programs are not considered friendly to SMEs including tech entrepreneurship.

- Many interviewees believe that public procurement programs are one of the most effective ways for governments to support entrepreneurs, providing them with sizable business contracts that strengthen their ability to do business with the private sector.
- Established companies – either state-owned or private – have not revised their procedures to accommodate the entrepreneurial solutions that have been

[58] Paul,"Payfort Releases Comprehensive Online Payment Report for the Arab World, 03 June 2014, Arabnet (http://news.arabnet.me/payfort-releases-comprehensive-on-line-payment-report-arab-world/)

[59] The Little Data Book on Financial Inclusion 2015, Worldbank

startups the preconditions to apply for procurement programs or tenders are too high, such as having a bank warranty as collateral in tender procedures.

- The SMEA is working with large established corporations to develop B2B market opportunities for tech startup and scale-ups.

  - The authority has signed an agreement with the country's leading telecom operator STC to allocate 15% of their procurement to SMEs.[23]

  - Saudi Aramco is currently working on "The in-Kingdom Total Value Add" program which plans to enhance procurement from Saudis.

Saudi tech entrepreneurs are mainly focused on capitalizing on local market potential. Plans to expand beyond boarders are scarce and the focus is mostly regional.

- Having the largest, low penetrated market within the GCC, Saudi entrepreneurs are inward focused and trying to localize globally successful businesses at home.
- Once proven successful in Saudi, Egypt is considered the most natural destination to extend businesses. But, experts warn about the fundamental demographic differences of the two countries and caution that the business model might require significant alterations.
- The inward focus is sometimes criticized because it is seen as an indication that local tech entrepreneurs are not ready to compete in global markets.

Policy playbook designed to strengthen the tech entrepreneurship ecosystem

Insights into the KSA tech entrepreneurship ecosystem and suggestions by ecosystem participants led to the articulation of a series of policy recommendations that can be considered to address gaps and foster a strong ecosystem. These recommendations can be grouped under four main headings:

FIGURE 26. POLICY RECOMMENDATIONS DESIGNED TO STRENGTHEN THE KSA TECH ENTREPRENEURSHIP ECOSYSTEM

Increase sector attractiveness for skilled talent, investors and companies both domestic and foreign

Transform available financial power to professional "smart money" by adapting best venture capital practices

In order to create an ecosystem that can generate competitive tech entrepreneurship **in Saudi Arabia there is a need to form structures that can productively funnel available capital resources to startups.** The existing tech entrepreneurship system is currently supported by a number of mainly local VCs that focus on seed and early-stage investments. The small numbers of LPs that are investing in these VCs are often the venture arm of a large corporation or a state-owned enterprise managing an allocated fund for their general partner. **Internationally accepted VC operating and investor rights protection practices are mostly not applicable in KSA.** For instance, Saudi entities that consider foreign investment – tech startups or VCs – mainly incorporate as Limited Liability Companies (LLCs). LLCs are not widely preferred entity structures by international VCs due to their flow-through-tax status that might affect the tax exemption status of their LPs and the inability to issue certain types of stock options.

Another example is that call capital structures are not allowed, so VCs have to commit their funds. There are no share class provisions. Shareholders' agreements are permitted and enforceable only if the terms follow Shari'a and Companies Law. This creates uncertainties for dispute resolution and the protection of investors' rights in case of bankruptcy or dissolution

Receiving a license from the Saudi Arabian General Investment Authority (SAGIA) for a foreign jurisdiction registered Saudi company or a company with foreign investors is also a long, cumbersome process that deters international investors.

An inability to conduct modus operandi is a roadblock for international VCs that could collaborate with the Saudi national funds to bring knowhow, international linkages and versatility to the Saudi tech entrepreneurship ecosystem.

Incentivize high-net-worth individuals and local sizable businesses to take part in developing tech entrepreneurship

The Kingdom has a large number of high-net-worth individuals and families who look into alternative investment vehicles. However, these prospective investors are accustomed to quick investment returns at a foreseeable, steady rate such as real estate, which they can rely on as an income stream. **The nature of tech entrepreneurship investment is foreign to most of this community and different to other alternatives. They need to be educated on becoming angel investors to tech startups and to align their wealth creation expectations.** Angel networks are the best venue for this training and also for deal flow generation and assessment. **The novelty of the investment field will necessitate guidance and also de-risking measures for motivation. Public authorities could allocate a proportion of the "fund-of-funds" dedicated to tech entrepreneurship and match committed funds of angel networks to a certain extent.** It will be important not to overburden the matching procedure to avoid discouragement. The continuity of the matching support could be determined by the investment performance of the networks.

Sizable domestic businesses can also be incentivized to partner with tech entrepreneurs to provide tech-enabled solutions to their business challenges. This approach would initially help to expand the market demand for tech businesses but **as traditional business become acquainted with tech entrepreneurs their investment appetite could also grow leading to increased corporate investment activity** to support tech entrepreneurship in the ecosystem.

Establish clear paths to wealth creation for entrepreneurs and investors

Interest in tech entrepreneurship is spurred by the **availability of later stage investors and the availability of successful exit options, be it strategic acquisitions by established businesses or other sizable technology companies either domestic or foreign. Also successful public offerings generate wealth for the founder and investors and signal opportunities to the wider community.**

The creation of a secondary market in KSA suitable for smaller scale companies is a very positive development in this area. **Increasing the number of VCs that are serving the latter stages of growth for tech startups is an important bridge to build** in order to bring tech business to growth that will render them suitable for this capital market. Moreover, **Saudi authorities could form linkages with international capital markets to provide access for their promising tech scale-ups to tap into more mature capital markets** that are accustomed to investing in tech businesses. **Provision of legal and procedural support services** for those companies that would like to expand beyond borders would also indicate clearer paths to create wealth in the ecosystem.

Cultivate a diverse skill talent pool to boost tech entrepreneurship activity and bring new solutions to the market

One of the most crucial challenges in the Saudi market is to entice talented people to consider employment in newly establishing tech endeavors. **In mature markets the immediate salary gap, especially at early stages of development is compensated by making key officers in the company equity holders. Therefore, enabling employment stock options would serve as an important tool to motivate talent to move to startups** from well-paid corporate and public jobs.

Reconfiguring the application of 'Saudization' requirements to sponsor employee compensations in tech startups and scale-ups rather than in one's own firm would allow corporates to support private employment in the country while maintaining employee efficiency.

Allowing academia to participate in entrepreneurship would increase the number of deep science-based endeavors in the country. This will provide an opportunity to create a more sophisticated, high-growth-potential tech entrepreneurship profile in the country.

Tech entrepreneurship feeds on diversity, as is demonstrated by the success of more cosmopolitan hubs around the world. Diverse cities offering desirable lifestyles draw in skilled talent, different uses of technology and approaches used in other places around the world. **The recently enacted entrepreneurship visa has been very well received by ecosystem participants.** While the details of the visa program were not clear during the preparation of this report, **easing work and residential permits for high value skilled foreign labor** will help growing local tech companies, allowing them to attain global experience and knowhow.

The Saudi authorities might refer to programs initiated by other governments to boost their local tech entrepreneurship ecosystems such as "Start-up Chile", "French Tech Ticket" and Singapore's "EntrePass" in their efforts to further develop Saudi visa policies.

Provide investment incentives in strategic, technology-driven industries to entice global blue-chip companies

Success in **cultivating a productive tech entrepreneurship ecosystem relies heavily on harboring large technology corporations and innovative companies** that serve the community in multiple ways.[5] Technology corporations' initial role as employers provides training opportunities for the nation's workforce. Employees gain exposure and experience in using and commercializing technology as well as developing management skills. Secondly, these companies serve as a source of new tech entrepreneurs, as some of the experienced employees identifying market opportunities leave to set up their own ventures. Third, they become customers of tech entrepreneurs' goods and services. Finally, large technology companies often engage in outreach activities to promote the use of tech in their communities. They offer training programs to promising new startup candidates, collaborate with universities to promote technology and sponsor joint

programs. International corporations also run structured training programs for entrepreneurs which they launch in the countries that they operate in.

The Saudi rulers' vision for the future entails excelling in strategic sectors. For these sectors, the **decision makers can take deliberate steps and provide the necessary circumstances to attract international tech companies to set up full-fledged operations in KSA.**

Align regulations and digital policies governing tech entrepreneurship with international best practices

Harmonize commercial codes and digital policies with well-accepted global benchmarks

Taking on the challenge of starting off a personal venture is a stressful task, especially for Saudis who are used to working at large establishments where regulatory obligations and compliance are handled by experienced divisions. Therefore, **having clear and easy to follow commercial rules and regulations with entrusted enforcements would ease the concerns of aspiring entrepreneurs considering establishing a business.**

Participants in the Saudi tech entrepreneurship ecosystem believe that **many of the mature ecosystems already put in place accommodate commercial laws and digital policies based on their experiences from years of operation in this field.** Under the assumption that eventually Saudi tech entrepreneurship sector will become an integrated part of the global market, **the best course of action could be to review evolved regulatory systems and assess their suitability for the Saudi market, followed by a gradual adaptation plan of best fitting regulatory frameworks.**

Synchronize business procedures and requirements of multiple authorities

A common hurdle voiced by the tech entrepreneurs in the ecosystem is the fact that, even though much has been improved in the last two years, there are still several operational steps and circular processes that involve multiple authorities and sometimes conflicting requirements by local and federal agencies.

The one-stop-shop initiative **"Miras" created by the Ministry of Commerce in an effort to assemble representatives of all responsible parties under one roof in Riyadh and a website** is at its infancy. Ecosystem participants hope the system will **continuously improve to integrate multitude of requirements into one single streamlined interface that will satisfy all agencies. Making this process available to be completed online with minimum offline requirements is the desired end stage.**

Expedite implementation and enforcement of decrees and policies to build momentum in the ecosystem

Parties involved in tech entrepreneurship in Saudi Arabia point out that while decisions are taken to introduce, amend, or alter policies affecting the way the business will be run, the changes take a long time to go into force. This creates a prolonged time of uncertainty when parties refrain from taking a next step before the rules are established and begin to be practiced. As a result, the sense of urgency is lost at all related parties to adapt according to the new regulations and businesses go back to being conducted as usual.

This drawback is usually linked to a mismatch in the knowledgeability, qualification and readiness of the public agency middle management, who are responsible for making the changes in the systems. Accordingly, **there needs to be a systemized effort to prepare implementation plans and induce a project management approach to the implementation phases of decrees and policies.**

Train civil servants who are entrusted with implementing the new laws and rules

In order to address the qualification and knowledge gaps at the executor level of government institutions a **comprehensive training program should be considered by each agency to speed up the learning curve of their officers where the trainers can proactively address some of the issues** that could come up during regulation implementations.

Also, to **reinforce the capabilities of the executive levels during the transition period, qualified project management skilled individuals could be employed on a contractual basis** to become a part of the authorities and steer the change programs. These PMOs could also **form task forces within the organizations that both execute change and also train the broader civil servant pool.**

Invest in building the technical and entrepreneurial skills of the youth

Put emphasis on upgrading STEM skills at primary and secondary schools

In order to remain relevant and competitive in the digitalized global economy, KSA should recalibrate its education policies to ensure the economic relevance of its labor force for the future. **Strengthening STEM-related curricula at schools is the most critical lever in order to expand the proportion of qualified human capital within the workforce.**

Introduce coding and technology classes to education curricula

Including coding as a mandatory subject in primary and secondary school education will familiarize students with the skills required in tech entrepreneurship, give an opportunity to experiment, and build interest in digital professions. Prerequisites for the successful implementation of this initiative will be **developing literate teaching staff in school systems, and providing free or cheap access to computers and the internet to the younger generation.**

Post-secondary school options to strengthen software development capabilities would include **increasing the number of high-quality vocational schools on coding to accommodate the market need for coding skills and provide access to skill building outside of the university system.** By including technical universities, tech companies and representatives of entrepreneurship ecosystem, the Ministry of Education can take the lead in designing an upgraded vocation program to match *Vision 2030* ambitions.

Work with education institutions to prepare and launch extracurricular entrepreneurial and personal development programs

Since the embedded culture in the Kingdom has not been supportive of entrepreneurship in the past, current youth in the workforce would need to build certain soft skills that are required to become successful such as being comfortable with ambiguity, becoming assertive, people management, and building resilience to failure. Becoming equipped with personal skills will help those with entrepreneurship instincts to become more serious contenders in the marketplace.

These training programs could be designed with accelerators and entrepreneurship centers and could also be integrated into extracurricular activities of the school generation.

Promote early success stories to create visible role models for the youth

Recognizing successful Saudi tech entrepreneurs with prizes, grants, or subsidies and using their stories to create a buzz in the KSA business community and among the young generation can help to build aspirations and the appetite to get involved in entrepreneurship.

Providing roadshow opportunities for Saudi success cases in the regional venues could lead to making connections with international talent and investors and broaden the founder's vision on how to expand the business.

Populate the number of support networks to make tech entrepreneurship flourish

Streamline and coordinate all public support programs under a single secretariat to better guide the efforts

Various ministries and authorities have developed separate initiatives to cultivate technology, innovation, and entrepreneurship. The pace of change is fast and several of the initiatives are launching simultaneously, making it difficult for the ecosystem to stay abreast and use these programs. Pacing the initiatives to monitor their development with periodic feedback from stakeholders could enable timely intervention to modify the programs to better fit the needs in the ecosystem.

In addition, some interventions cut across ministerial jurisdictions or could necessitate joint involvement of different bodies to design

comprehensive implementation plans. A single body – perhaps the SMEA - could be tasked as the coordinator, much like Singapore's Economic Development Board, to oversee the progress of the programs serving the tech entrepreneurship ecosystem.

A single point of contact in the form of an office with the authority to interact with both public and private ecosystem stakeholders could enhance the effectiveness and timeliness of public policy interventions. Moreover, it would create a market information channel enabling government bodies to remain attuned to developments in the tech entrepreneurship ecosystem and assess policy effectiveness.

The center could disseminate information on policies, incentives, and programs, and a portal could become the go-to address for entrepreneurship enquiries.

Create linkages with other ecosystems that offer best-practice applications and proven programs

Accessing foreign markets, understanding how to operate in more advanced ecosystems, establishing contacts with international mentors, and presenting to reputable international VCs are the next level of opportunities the Saudi entrepreneurs will want to have as their businesses scale up.

The government can task a quasi -government agency to **engage in outreach initiatives such as partnerships with international accelerator programs to upskill Saudi entrepreneurs and expose them to global entrepreneurship practices to expand globally.**

As local promising tech scale-ups want to expand beyond borders, assisting them to navigate internationalization bureaucracies would expedite their reach to international audiences.

Increase the number of incubators/ accelerators to provide training opportunities for a greater number of aspiring tech entrepreneurs

The **need for a higher number and quality of incubators and accelerators can be fulfilled by programs designed and run by private corporates** leveraging their experienced professionals as mentors, access to resources, and existing customer relationships. Run independently or as partnerships with university accelerator programs, private-sector companies can contribute coaching and resource access as well as funding support.

Rating agencies could track program performances that would serve as eligibility for further public support and also signal program attractiveness to the ecosystem.

Ease the establishment of physical clusters/ co-working spaces to facilitate informal knowledge and expertise sharing

The accelerator and incubator programs provide much needed training to get acquainted with becoming an effective tech entrepreneur and building one's idea into a validated business proposal.

However,**the entrepreneurs' need for guidance, support, knowledge-sharing, and networking to create collaboration opportunities continues beyond these training programs. Especially in an ecosystem where the number of tech startups is just beginning to build up, clustering and working in communities will help provide these functions in an informal voluntary manner.** According to research published in the Harvard Business Review, people who belong to co-working spaces thrived more on average than people working in regular offices.[60] Among the reasons identified were that working close to people doing different kinds of work can also make one's own work identity stronger and workers in these spaces have unique skill sets that they can provide to other community members. Also, these spaces offer flexible hours, allowing the user to have more control over their work schedule. But this flexibility does not lead to a lack of productivity.

On the contrary, for entrepreneurs having a community to work in helps them create structures and provides a work discipline that motivates them.

The **networking opportunities in co-working spaces may also work to improve one cultural setback i.e. a lack of willingness to collaborate and share experiences.**

Also starting off from **a co-working space should allow the tech entrepreneur to manage his costs, as he would be growing his office as his business grows.** The interviewees indicated that prior inhibitions on having multiple entities registered under one address were alleviated, thus creating the legal backdrop for the establishment of co-working spaces.

[60] "Gretchen Spreitzer et al. "Why People Thrive in Coworking Spaces", September 2015, Harvard Business Review (https://hbr.org/2015/05/why-people-thrive-in-coworking-spaces)

Conclusion

The Kingdom of Saudi Arabia has embarked on a courageous national change management program with the announcement of *Vision 2030* by the Crown Prince Mohammed bin Salman. The aim is to calibrate the country's economic model to carry its growing young population into the future. It calls for increased private-sector involvement, especially fostering entrepreneurship, and developing top-notch technology and innovation-driven industries. Championing tech entrepreneurship in the country is a perfect lever that can be used to meet change ambitions.

Saudi public authorities have dedicated significant financial resources to meet their targets. The government's current task is to modify the established structures and mode of operation on multiple fronts in order to maximize the effects of committed resources and deliver the expected results.

In order to cultivate a prosperous tech entrepreneurship ecosystem, the regulatory framework needs to be aligned with the requirements of the sector and with global practices. It is necessary to put increased emphasis on meticulous and timely execution, with continuous monitoring and updates. Creating formal and informal linkages with best-practice ecosystems and experienced, international talent will expedite the learning process for Saudi ecosystem participants. There is a need to populate a variety of support networks to draw more aspiring tech entrepreneurs into private ventures. Most important of all, the government and its officers should continue to spearhead the cultural mindset shift necessary to create more scope and acceptance for tech entrepreneurship in the Saudi community.

With these efforts, the Kingdom's ample resources and inherent market dynamics, the burgeoning tech entrepreneurship ecosystem is poised to become a regional powerhouse.

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Appendix

Definitions – Tech entrepreneurship frame of reference

For the purposes of this paper, entrepreneurs are distinguished from self- employed individuals with regard to their motivation to create a rapidly scalable business venture with the aim of innovating, improving or transforming the given way of doing things.[61, 4]

The entrepreneurship domain includes startup and scale-up phases of the business cycle where companies are experiencing high growth in revenues and employees' numbers while validating their value proposition and building up.

Technology-driven entrepreneurship bases its business proposition on the use of new technologies as an enabler and focuses on hyper connectivity among of networks, people, businesses, things, and hardware that's internet-enabled. Technological applications in conventional sectors and new businesses in emerging sectors fall under its definition.

agents of change who create new value propositions by means of new products, services, innovative processes, and organizational innovations that lead to evolution or obsolescence of current way of things

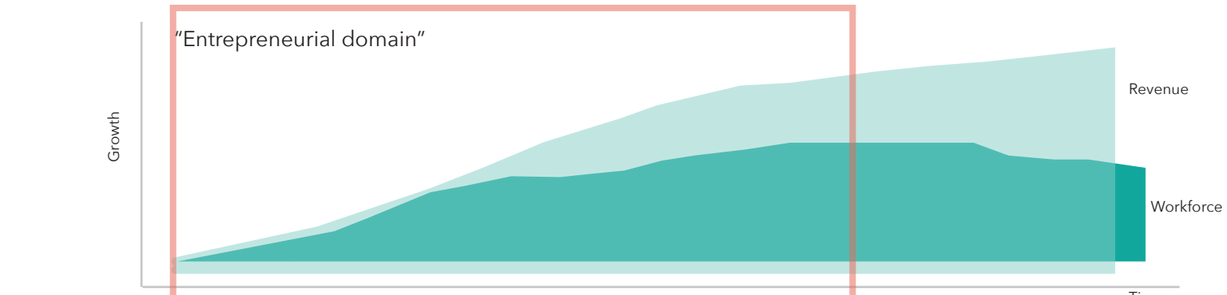
business owners who seek to generate value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets

… different from self-employed individuals who seek to generate income by using existing products, processes or markets

initiators whose business ventures result in the development, growth and well-being of their societies through job creation and level of innovation[2]

[61] Schumpeter, J. 1942. Capitalism, Socialism, and Democracy. New York: Harper & Bros.

FIGURE I. THE MAIN INDICATOR OF AN ENTREPRENEURIAL ENTERPRISE IS ACHIEVING YEAR ON YEAR HIGH GROWTH IN REVENUES OR EMPLOYEE BASE

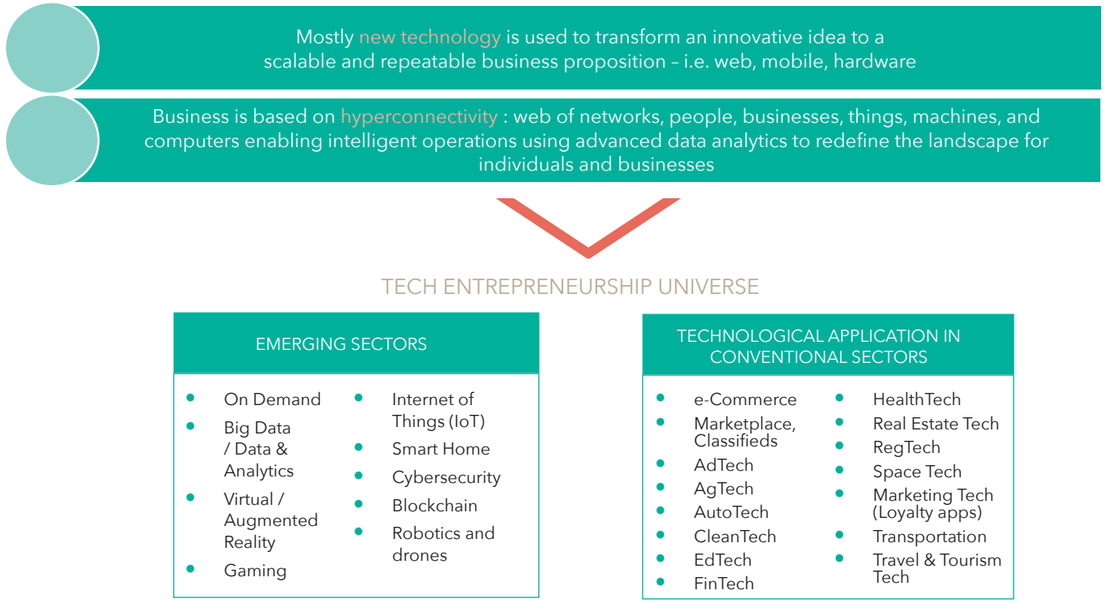


ATTRIBUTES

	"Start -up"	"Scale -up"	"Expansion to exit"
Entrepreneur's motive	• to create a business by introducing an innovation to the way a product or service is designed, produced, delivered or performs that is preferred over existing alternatives	• to scale up the business to address a wider customer base and to repeat it in different markets	• to expand and capture greater share of wallet and grow market share with new products / services • to grow along the value chain or customer experience
Entrepreneur's role	• organizing, managing, and assuming the risks of an enterprise to generate commercial benefit out of the innovative idea • validating value proposition, setting strategic direction • engaging external resources	• improving the value proposition through employment of technological advancements or introduction of new goods, services and processes utilizing these advancements	• continuing the entrepreneurial activity within the corporate by utilizing organizational resources to carry out innovative activities
Business goal	• establishing product – market fit • achieving fast ramp up (at least 20% annually) by establishing a new value proposition • attracting professionals to build skills and capabilities • bringing in seed and initial rounds of equity investment	• sustaining high growth – at least 20% CAGR[1] and generating profits • scaling up workforce and building an effective organization • strengthening equity base by additional venture funding • raising capital by using financial leverage	• increasing profitability while maintaining growth • achieving operational excellence and organizational efficiency • growing inorganically • optimizing debt to equity levels • preparing for initial or secondary public offering

[1] High-growth Enterprises and Gazelles –Sensitivity Analysis, Ditte Rude Petersen and Nadim Ahmad, OECD 2007
Source: Global Entrepreneurship Monitor (GEM) Global Report 2016/17, Global Entrepreneurship Research Association 2017

FIGURE II. "TECHNOLOGY ENTREPRENEURSHIP" CAN BE DISTINGUISHED FROM OTHER FORMS OF ENTREPRENEURIAL ACTIVITY



Definitions- Tech entrepreneurship success outputs

Output	Indicator	Definition	Source	Date
Economic Contribution	Tech start up prevalence in the country[1]	Number of active tech start-ups founded after 2010 per million urban population	Crunchbase	2017
	Tech startup longevity	Survival rate of tech startups that were founded after 2010	Crunchbase	2017
	Number of exits over USD 100m	Number of acquisitions and IPOs between 2012-2016 that had a valuation over USD 100 million	Crunchbase	2017
	Entrepreneur's growth aspiration score	A scoring based on percentage of entrepreneurs with a sophisticated growth strategy aspiring to grow at least 50% in the next 5 years and attract VC funding	GEDI	2016
	High job creation expectation	Percentage of those involved in Total Entrepreneurial Activity[2] who expect to create 6 or more jobs in 5 years	GEM	2016
	Ability to create globally recognized "Unicorns"[3]	Number of unicorns is used an indicator of global reach since they operate beyond their local markets and are highly international and large in scale	CB Insights	2017
	Contribution of knowledge sectors to economy	An index to approximate the value of global flows that are linked to knowledge economy: • ICT exports[4], • high tech exports[5], • international data flow connections • intellectual property receipts of a country (excluding domestic receipts)	World Bank, McKinsey, INSEAD	2015, 2016
Innovation Creation	Innovative output density	An index on the abundance of knowledge creation (patents, publications etc.) and intangible assets (density of trademark applications, industrial designs, creation enabled by ICT)	INSEAD	2016
	Entrepreneurial innovation creation	Percentage of those involved in entrepreneurial activity who indicates that their product or service is new to at least some customers AND that few/no businesses offer the same product	GEM	2016

1. The urban population of China and India were normalized using the city populations of tech entrepreneurship activity
2. Total Early-Stage Entrepreneurial Activity measures the percentage of working age population (18-64) both about to set up their businesses and have set up at most 42 months ago
3. Unicorns are startup companies that are valued over USD 1 billion
4. ICT service exports include computer and communication services and information services including computer data transactions
5. High tech exports are R&D-intensive products, which can be found in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery

Disclaimer

This report was prepared independently by OC&C Strategy Consultants in collaboration with Wamda who have both been commissioned by Google to research the tech entrepreneurship ecosystem in KSA (in addition to other developing countries in the GCC, East Europe and Africa region) to identify policy recommendations to improve tech entrepreneurship. Information provided herein, including policy recommendations are prepared and intended for use as discussion materials on the ways to support the growth of tech entrepreneurship.

The report is based on a variety of inputs from multiple sources including official data sources such as various public institutes and foundations focusing on entrepreneurship, and other privately published data sources such as news articles, sector reports and interviews with tech entrepreneurship ecosystem actors. Recommendations are based on statements of ecosystem actors. Accuracy of analysis and recommendations are dependent on the detail and accuracy of declared data. Parties do not guarantee and are not responsible for the currency, propriety, accuracy or reasonableness of any statements, information or conclusions contained in the source documentation used.

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