

Entrepreneurship, Startups,
Applied Research, Design &
Innovation:

HEIs Support Mechanism

Dr Shoab Ahmed Khan

Pakistan winning 2 Golds in APICTA 2014

- Winners in startup and students projects
- While competing with 18 economies of Asia Pacific Region





Pakistan Winning 3

3 Golds in APICTA 2015 |



- Pakistan winning 3 Golds

APICTA 2016

Pakistan winning Gold

- Startup Category in APICTA 2017





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Candela



Making Retail *Simple*

Candela is an enterprise retail software solution. It can manage a small retail outlet and can scale-up to manage a retail chain of hundreds of stores.

Download Software

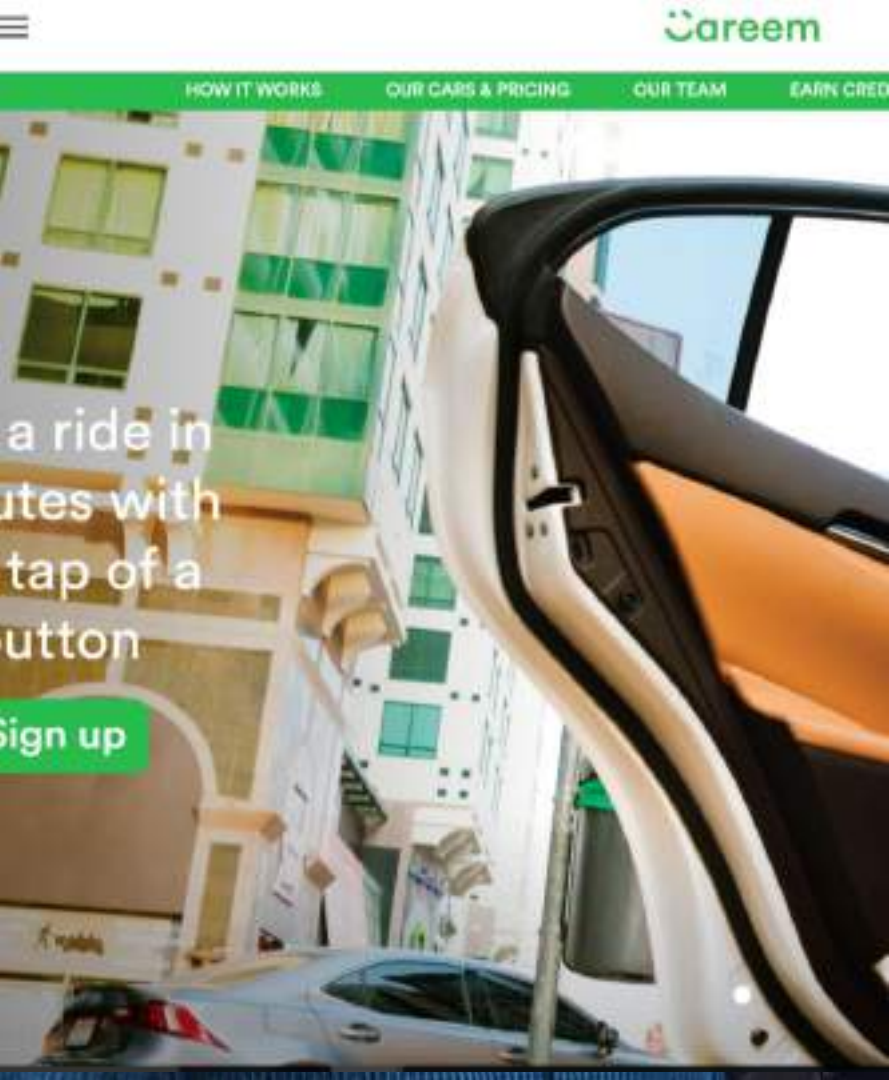


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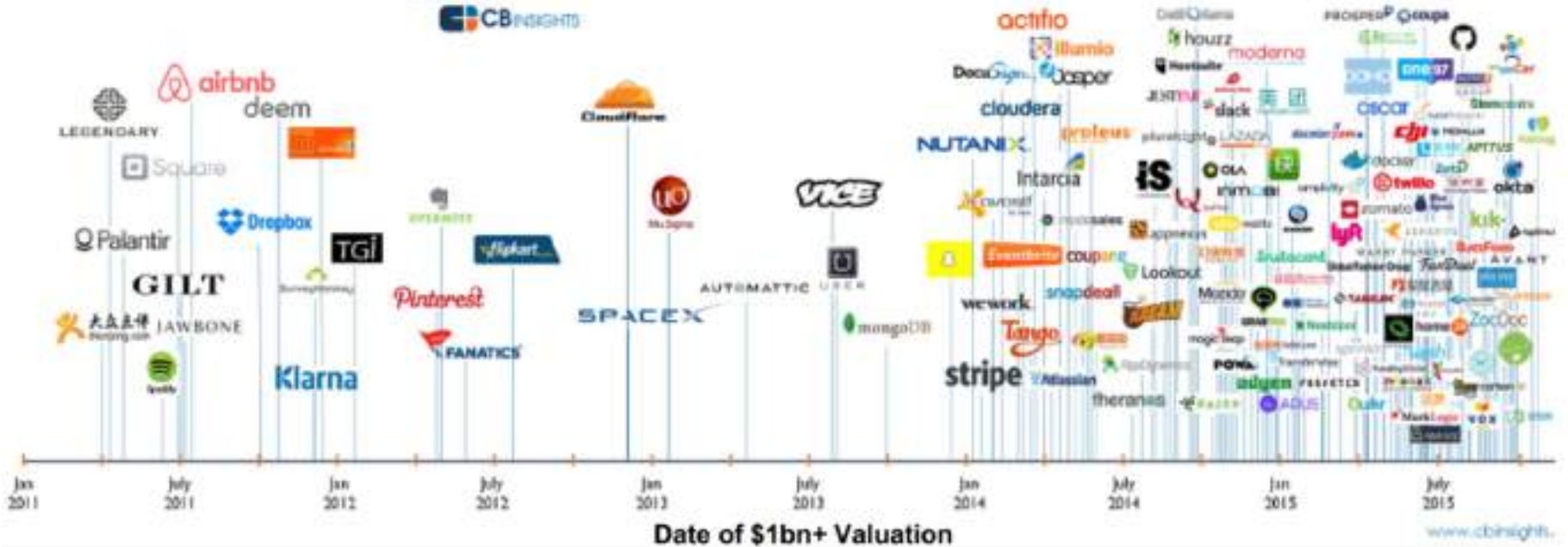




Rise of Unicorn

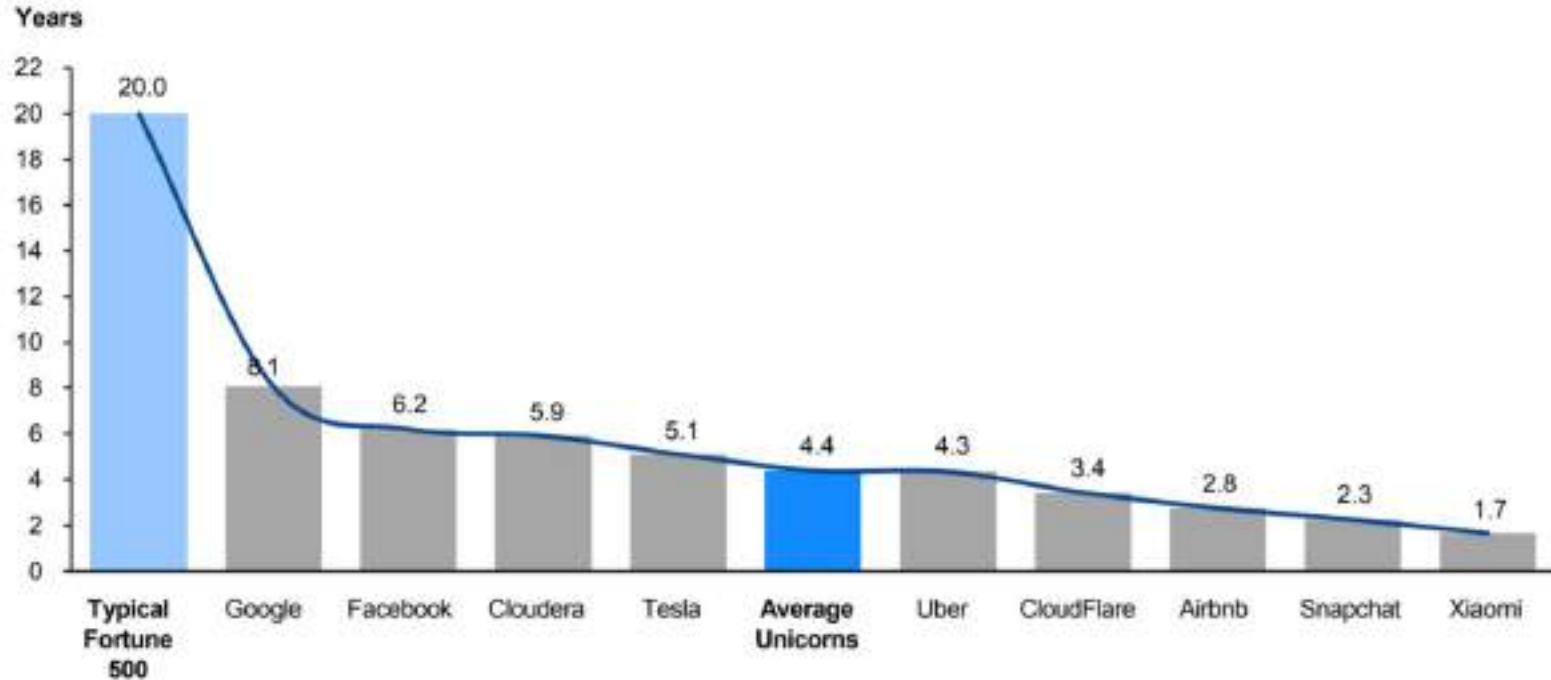
The Increasingly Crowded Unicorn Club
Private Unicorns since 2011

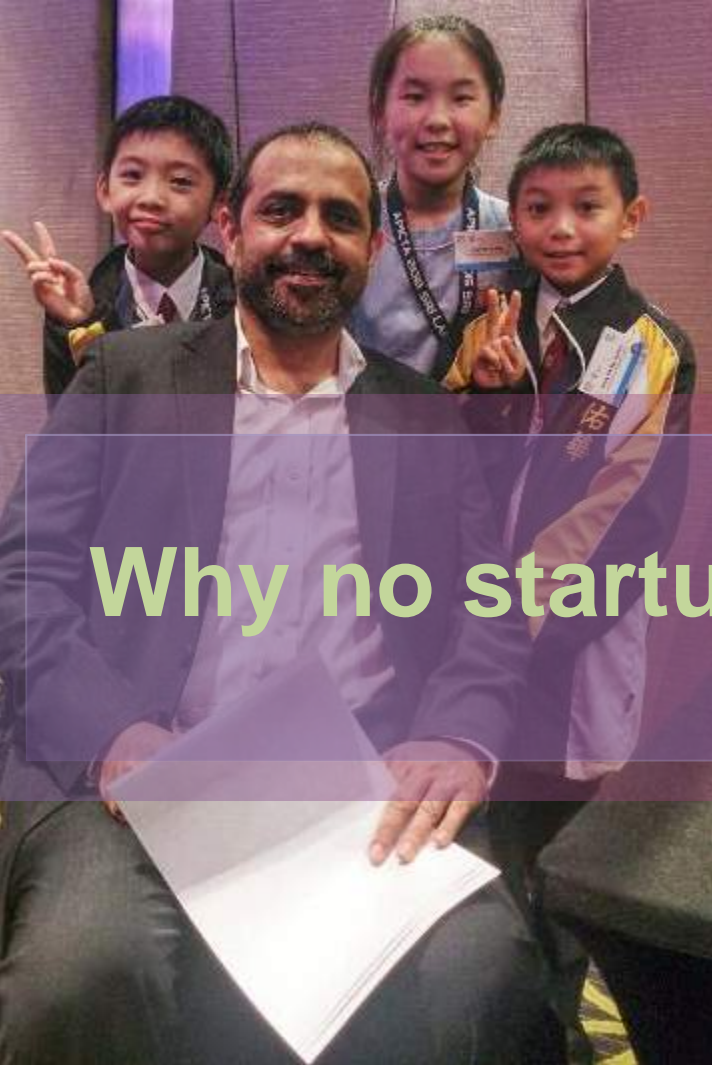
Created by:
CB INSIGHTS



Digital startups are achieving scale far quicker than analog companies ever did

Time to Rise





Why no startup is clicking in Pakistan?

What is a Startup?

- A startup is a company working to solve a problem where the solution is not obvious and success is not guaranteed
 - The founders are the entrepreneurs

Entrepreneur

- Someone who exercises initiative by **organizing a venture** to take benefit of an **innovation** or a novel idea
- An entrepreneur supplies risk capital as a **risk taker**, and monitors and controls the business activities
- The entrepreneur is usually a sole proprietor, **a partner**, or the one who owns the **majority of shares** in an incorporated venture.
- **Entrepreneurs are not necessarily motivated by profit but regard it as a standard for measuring achievement or success.**

MAPPING TECH STARTUPS



More than 90%
of tech startups fail.

The reasons for these failures
are as varied as the methods to
success. Why do some startups
succeed while others fail?

Recipe of Success for the 10%

- **The product is perfect for the market: right timing**
- **The entrepreneur does not ignore *anything***
 - *A good product idea*
 - *A strong technical team*
 - *Business processes*
- **The company grows *fast***
 - Highly accelerated growth required to secure later-stage venture capital
- **The team knows how to recover**
 - A startup fails once the founders give-up



2017

Most Exciting Startups of 2017

Hudl is a tech tool for sports teams.

Where it's from: Lincoln, Nebraska

What it is: Hudl is a key component in helping [more than 100,000 sports teams](#) nationwide win games. The startup allows coaches to record or upload video to its platform, annotate it with text, drawings, or voice, and share it with players on their mobile devices.

Founders: David Graff, Brian Kaiser, and John Wirtz

Funding: \$77 million from Accel Partners, Nelnet, Nebraska Angels, and others.



Hudl CEO David Graff. Hudl

Nowait lets you get in line at restaurants without leaving your house.

Where it's from: Pittsburgh, Pennsylvania

What it is: Nowait allows users to virtually "get in line" at a restaurant and track their place without stepping foot through the door ahead of time. In August, Yelp made an \$8 million investment in Nowait and integrated Nowait's technology into the Yelp app. Now, if Yelp users find a restaurant they like, they're now able to get in line using Nowait directly within the Yelp app.

Founder: Robb Myer

Funding: \$22 million from Yelp, Birchmere Ventures, Carnegie Mellon University, and others.



Nowait CEO Ware Sykes. Nowait

Nucleus is building the intercom of the future.

Where it's from: Philadelphia, Pennsylvania

What it is: Intercoms aren't the sexiest home technology, but Nucleus wants to turn it into one of the most useful. Backed by Amazon, the startup built a touch-screen device that can be placed anywhere inside a home and responds to voice commands using Amazon's Alexa technology.

It's a lot more than a typical intercom: the Nucleus also lets you audio and video chat between rooms or with other homes that have the system. Plus, you can tap into Alexa to do things like read headlines or listen to music. Nucleus went on the market in August and sold out on Amazon on the first day.

Founder: Jonathan Frankel

Funding: \$9 million from The Alexa Fund, SV Angel, and others.



A Nucleus intercom device. Amazon

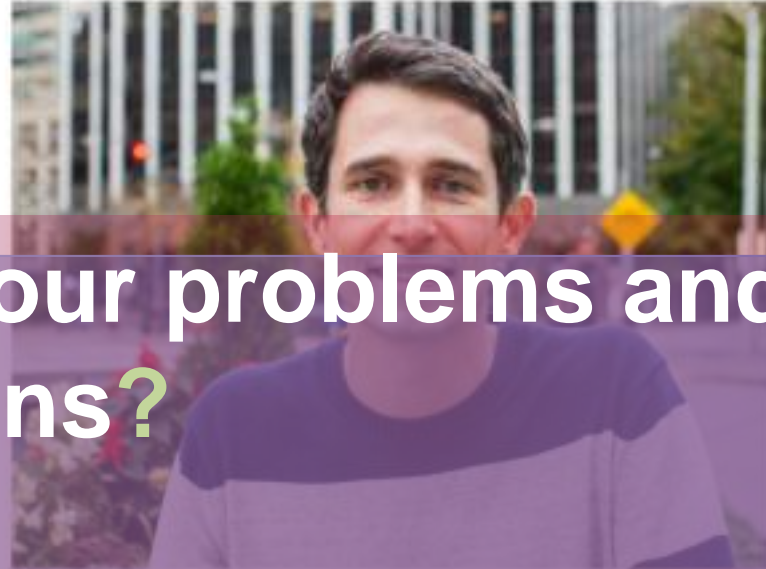
Convoy wants to revamp the multibillion-dollar trucking industry.

Where it's from: Seattle, Washington

What it is: Convoy wants to be the "Uber for trucks": an online service that, with the click of a button, lets shippers order a truck and keep track of drivers. Convoy cuts out a part of the trucking industry — brokers — by companies who need things shipped directly to the trucking companies.

Founders: Dan Lewis and Grant Goodale

Funding: \$18.5 million from Greylock Partners, Bezos Expeditions, Marc Benioff, and others.



Convoy CEO Dan Lewis. Convoy

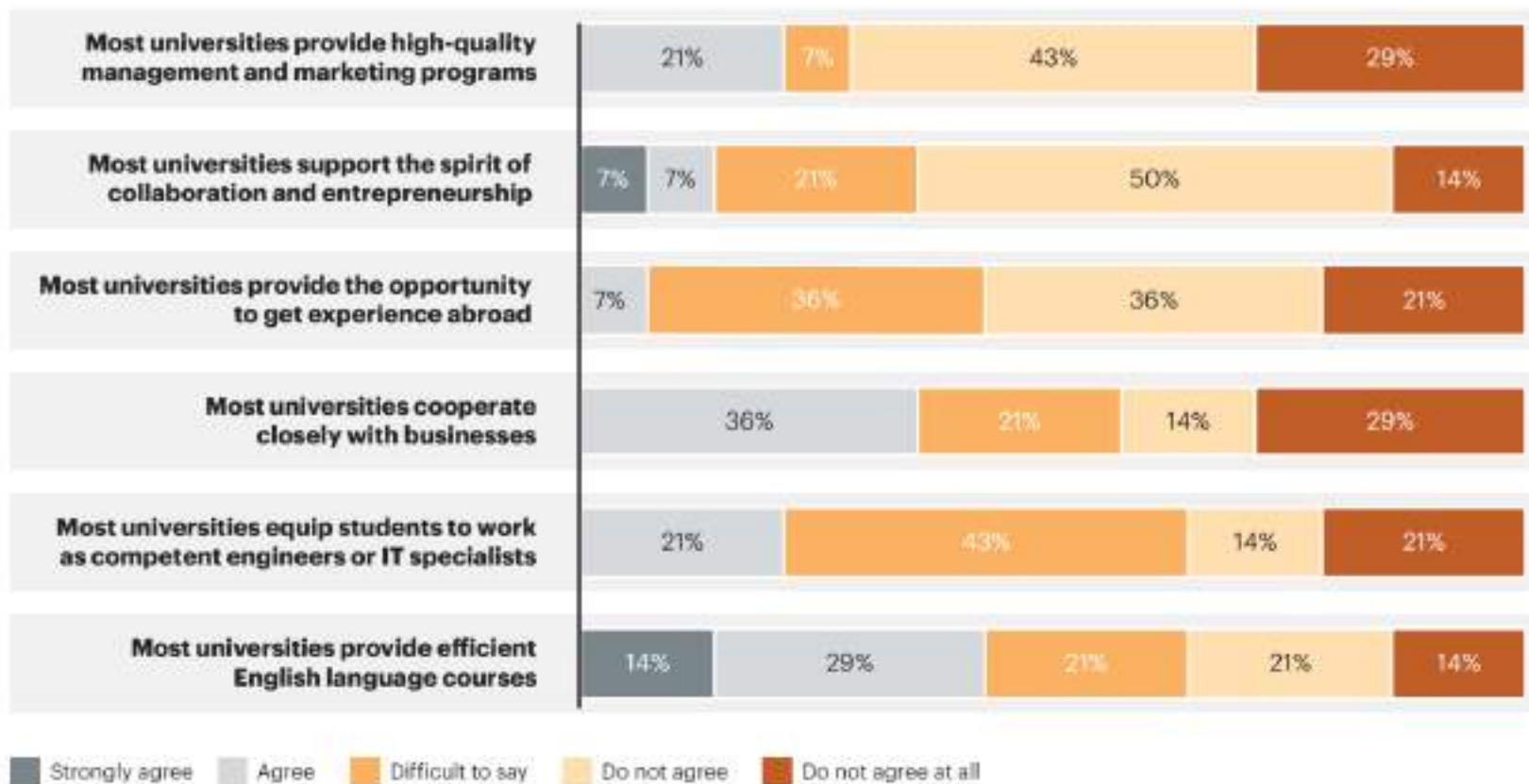
No relevance to our problems and pains?

HEIs Support Mechanism

- Becoming an entrepreneur is an increasingly popular career choice among graduates
- University careers support focusses on getting an internship or a job
- HEIs current support for startup
 - A course in entrepreneurship
 - Invited talks from Alumni
 - Business ideas competitions
- No seed capital, no space and no technical assistance
- Professors are busy in tracking on their tenure tracks, teaching & publishing, compiling SARs, OBE documentations etc

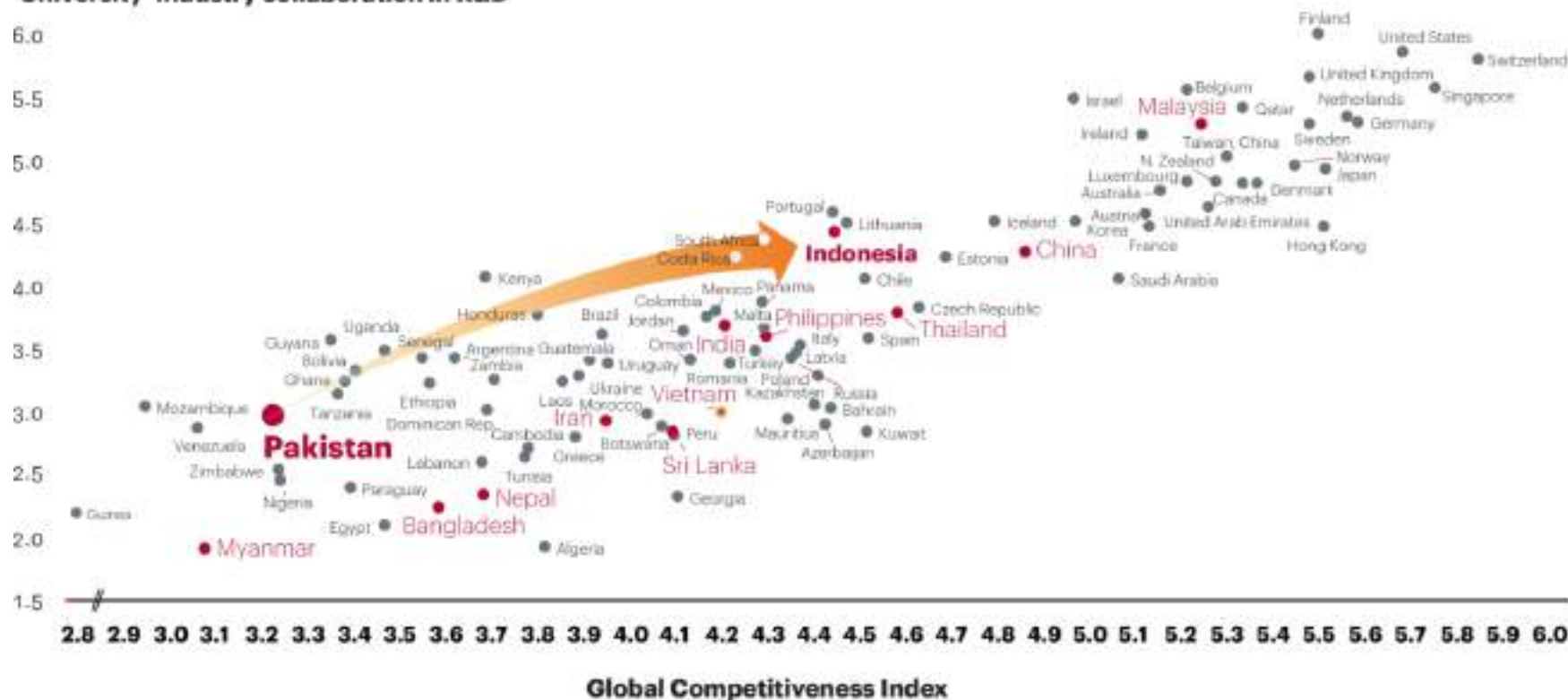


Entrepreneurs have qualms about higher education in Pakistan

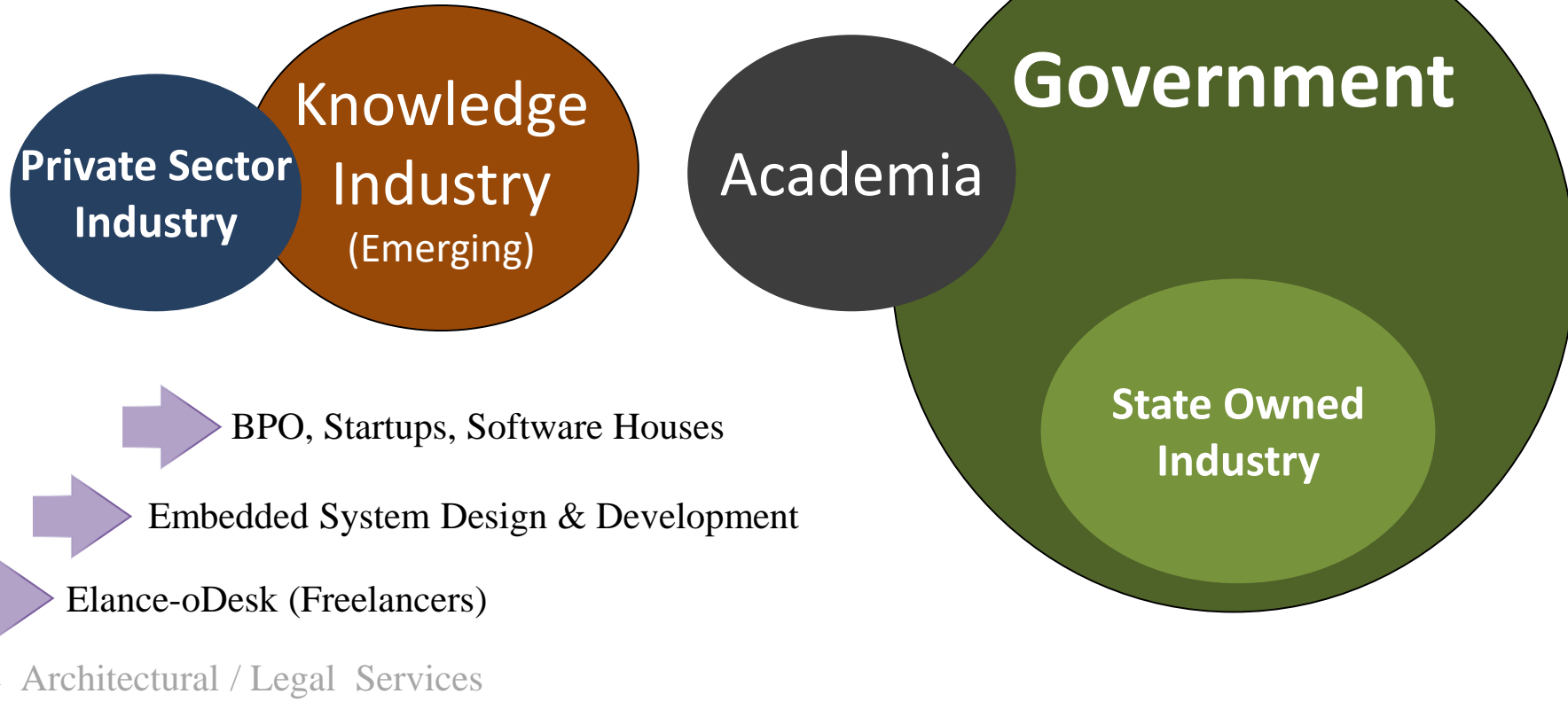


Countries thrive when industries and universities work together

University-industry collaboration in R&D



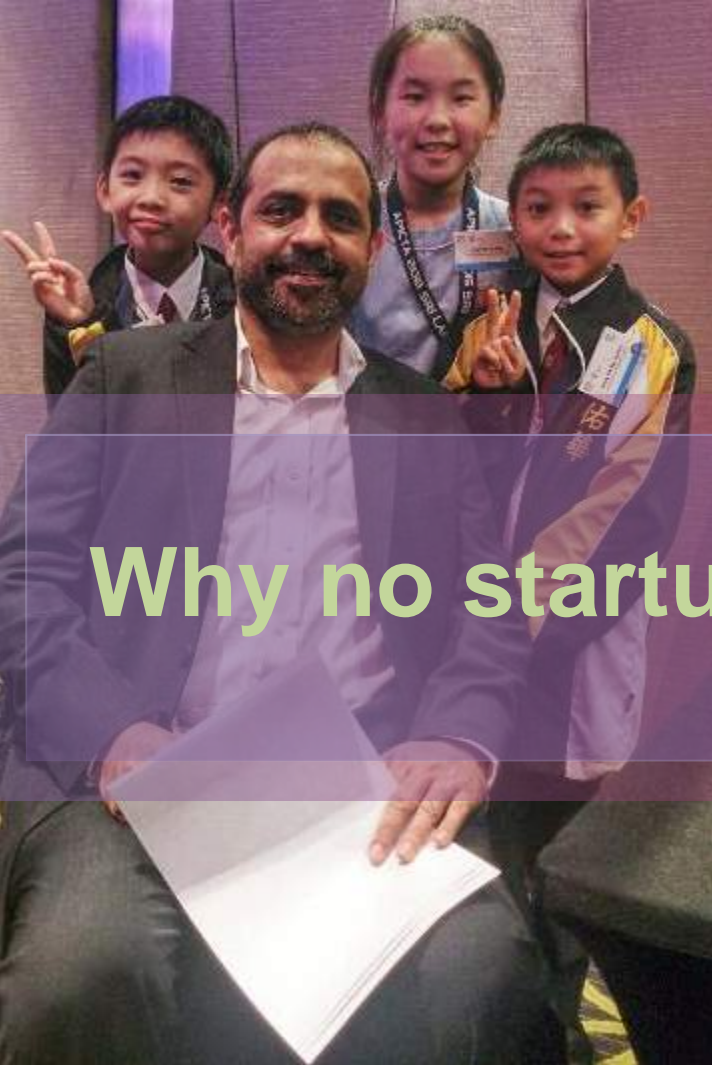
Reason: We Live in Silos



ICT Fund Eco-System Cycle

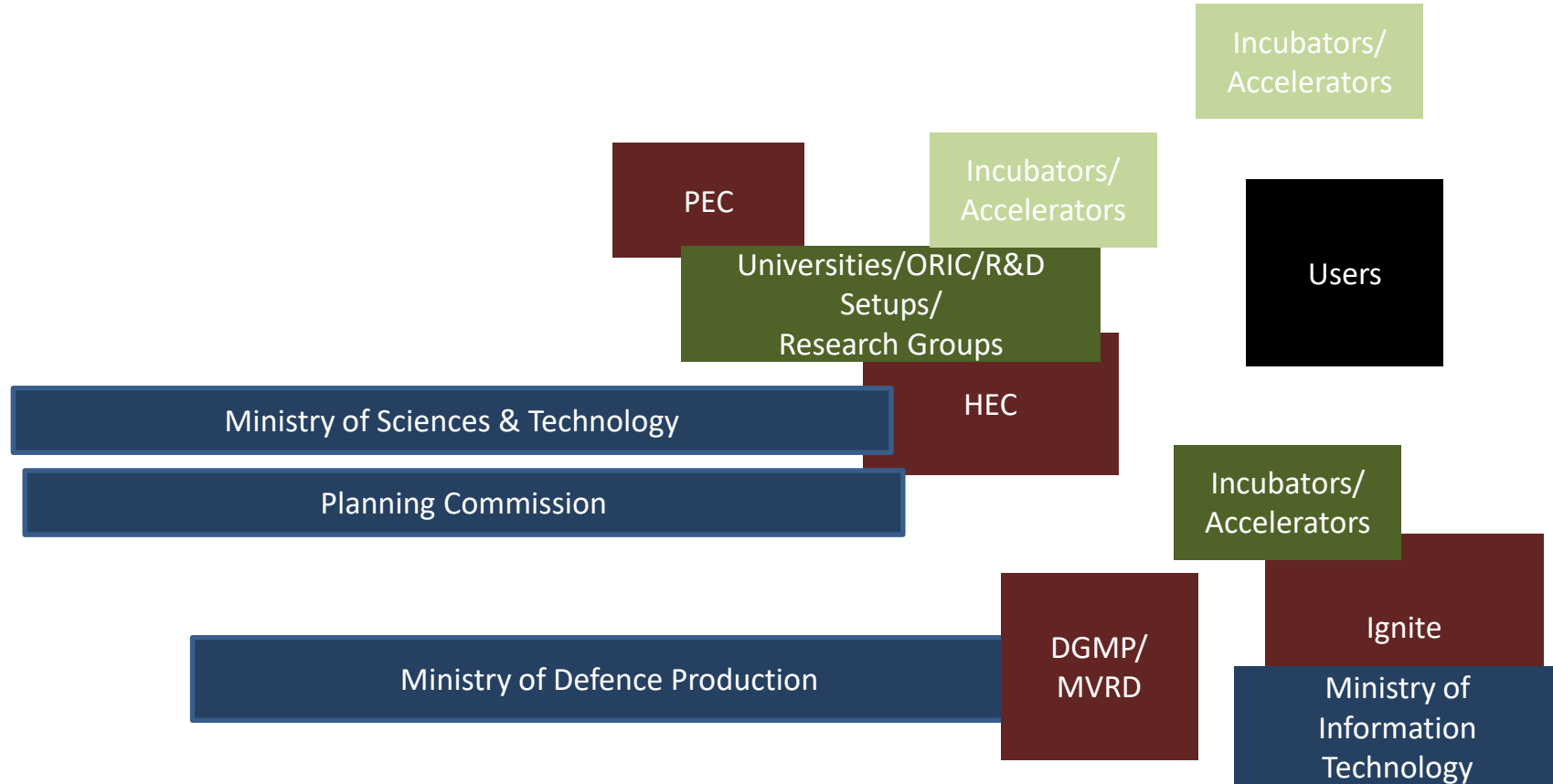


Ecosystem:
Ignite new focus

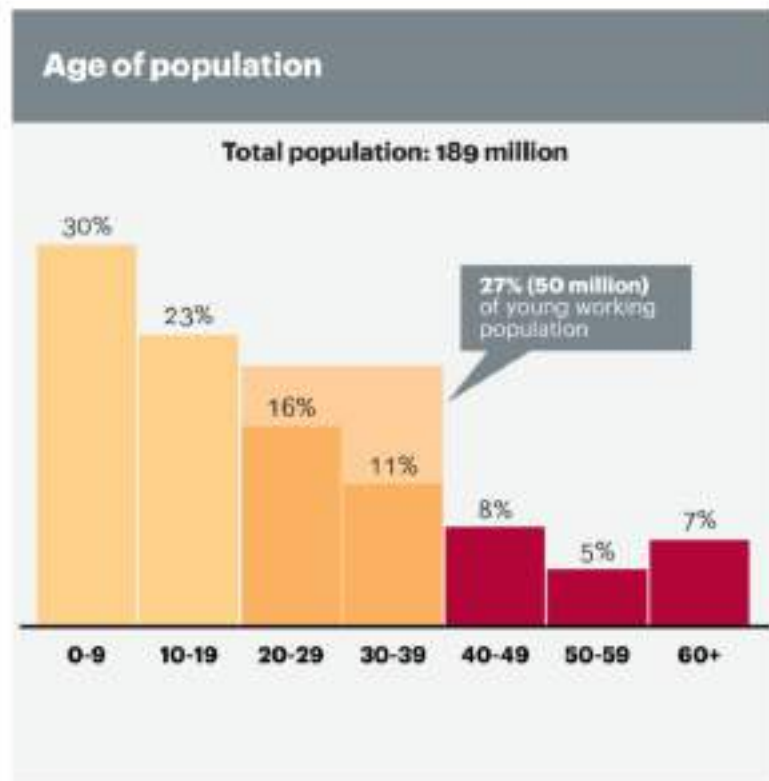
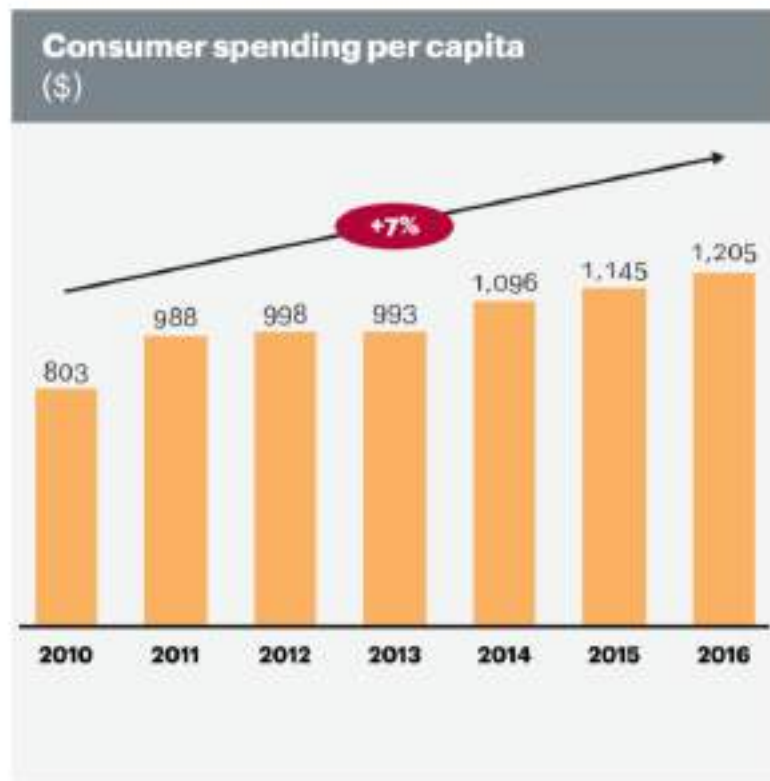


Why no startup is clicking in Pakistan?

Stakeholders

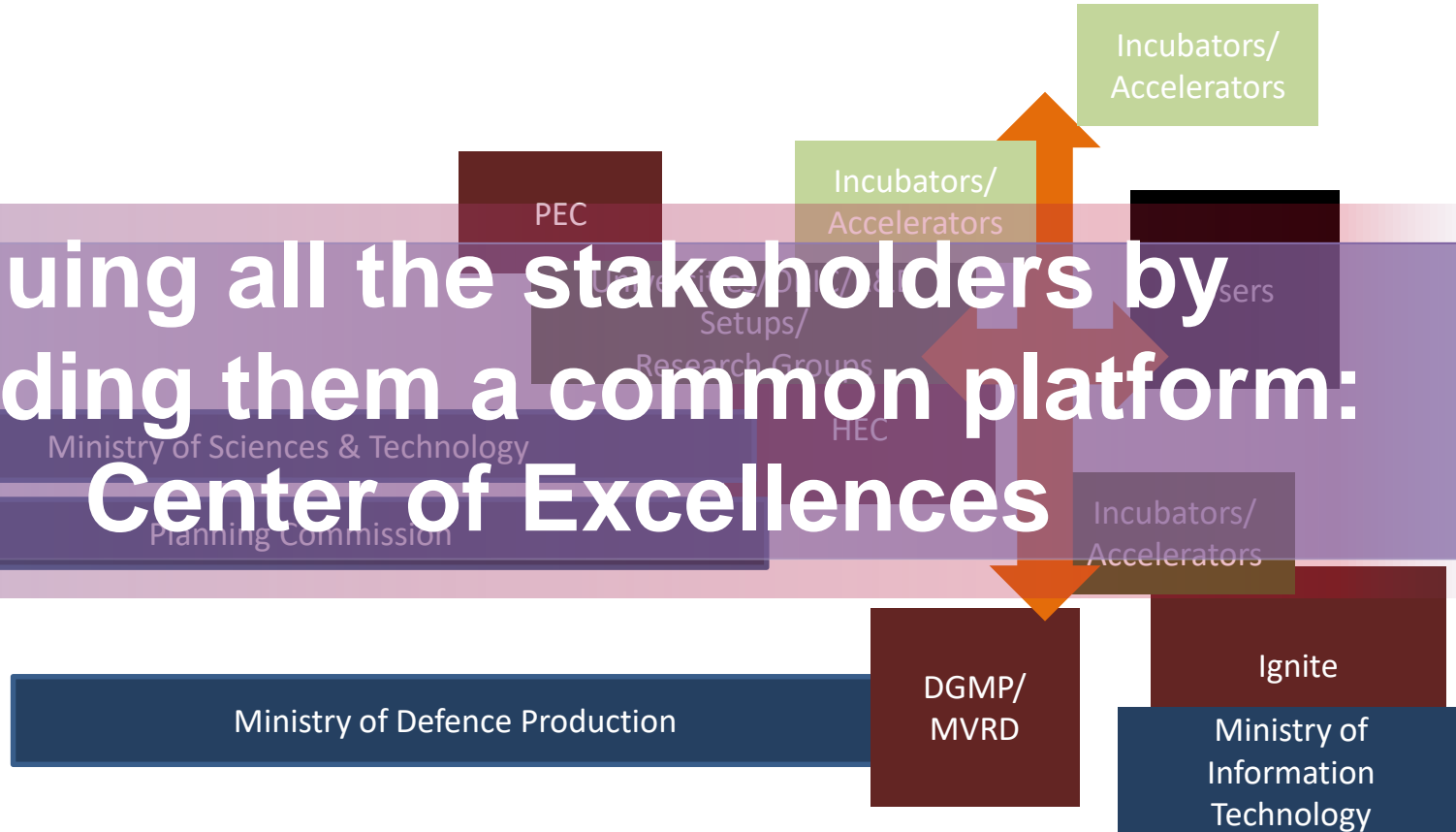


Pakistan's consumer market is expanding



Glue?

Gluing all the stakeholders by
providing them a common platform:
Center of Excellences



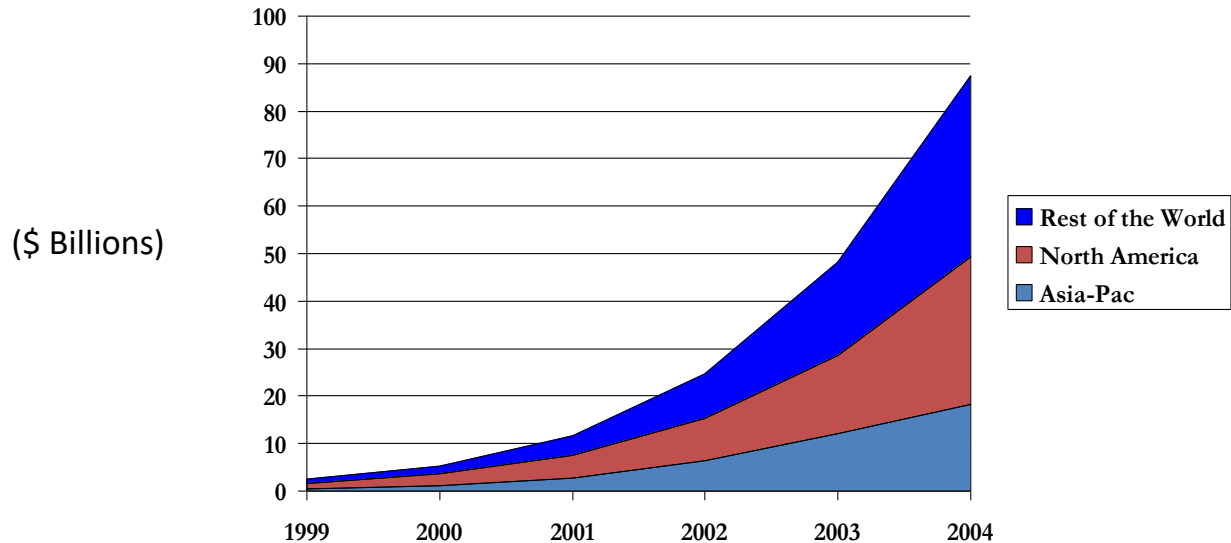


Case Study: Local Problem with Global Scope

CMMI Level II
ISO 9001-2000
ISO-27001 (in progress)
Information Security Management System

Product Development

World Wide VoIP Market View in 1999



World Highest Density Media Processor Chip

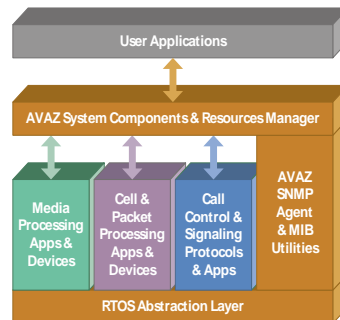
Enabling Technologies / Avaz Networks Inc

(\$17 million in venture funding in 1999-2002)

2016 VoIP channels SoC
TDM and IP interfaces



World Highest Density
Media Processing Chip
developed in Pakistan in 2000



Avaz Team

- Established 1997 in Irvine California
- Pakistan office initiated in Sep 1997 in Rawalpindi
- Largest team of Highly Skilled Engineers in Private Sector in Pakistan

Corporate Headquarter:

Avaz Networks,
7545 Irvine Center Drive,
Suite 100 Irvine,
California
USA

Research and Development Office:

Communications Enabling Technologies,
Software Tech. Park
5-A Constitution Ave. Islamabad
Pakistan

(STP)
ISLAMABAD

Failing one of the most exciting startups in Pakistan,
when everything was right in the start



CARE has developed many best in class solutions in the areas of telecommunications, information security, networks centric systems, enterprise software for local users

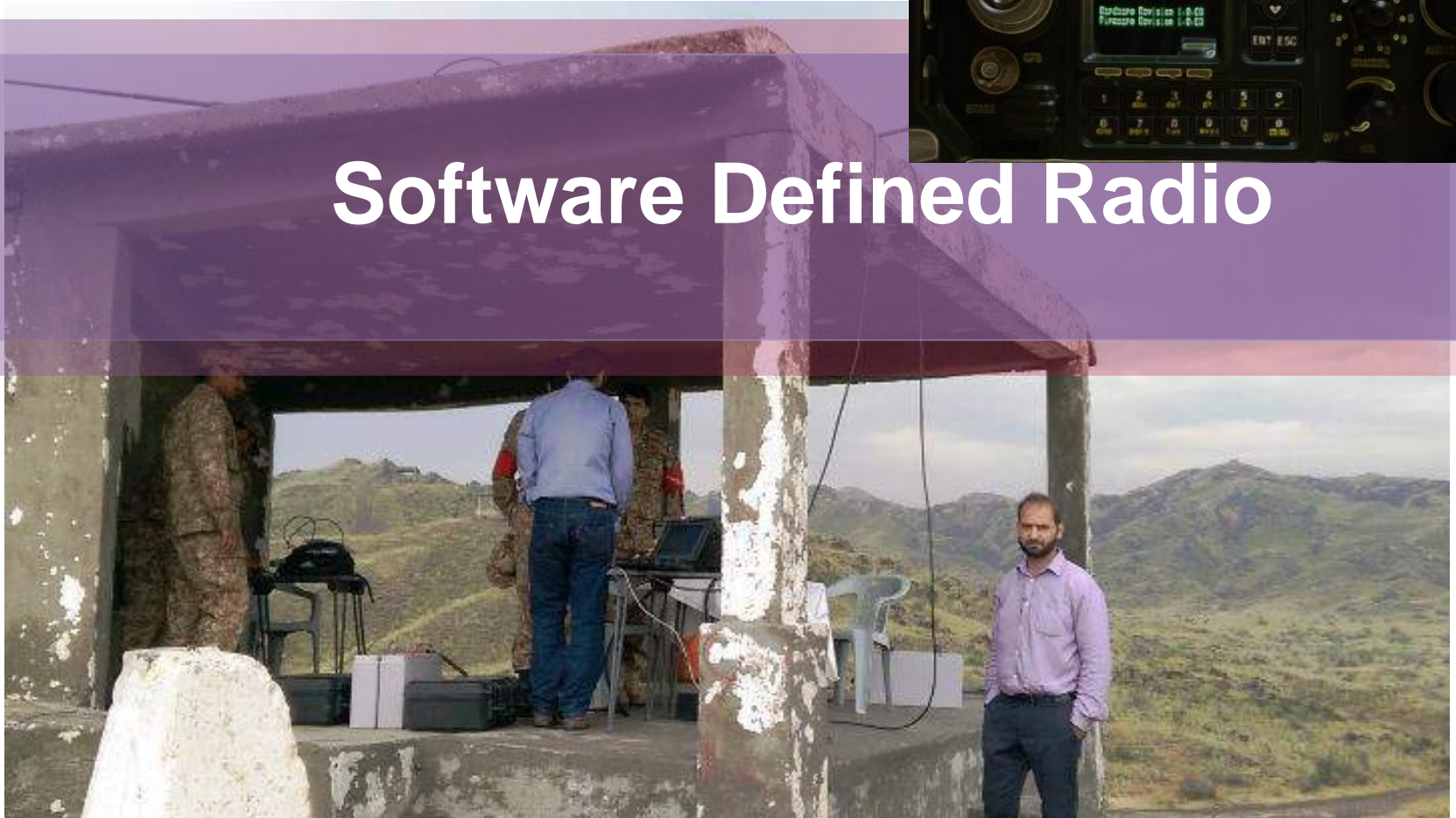


10 Asia Pacific ICT Alliance (APICTA) Awards and 12 P@SHA Awards in last four years



Software Defined Radios

Software Defined Radio

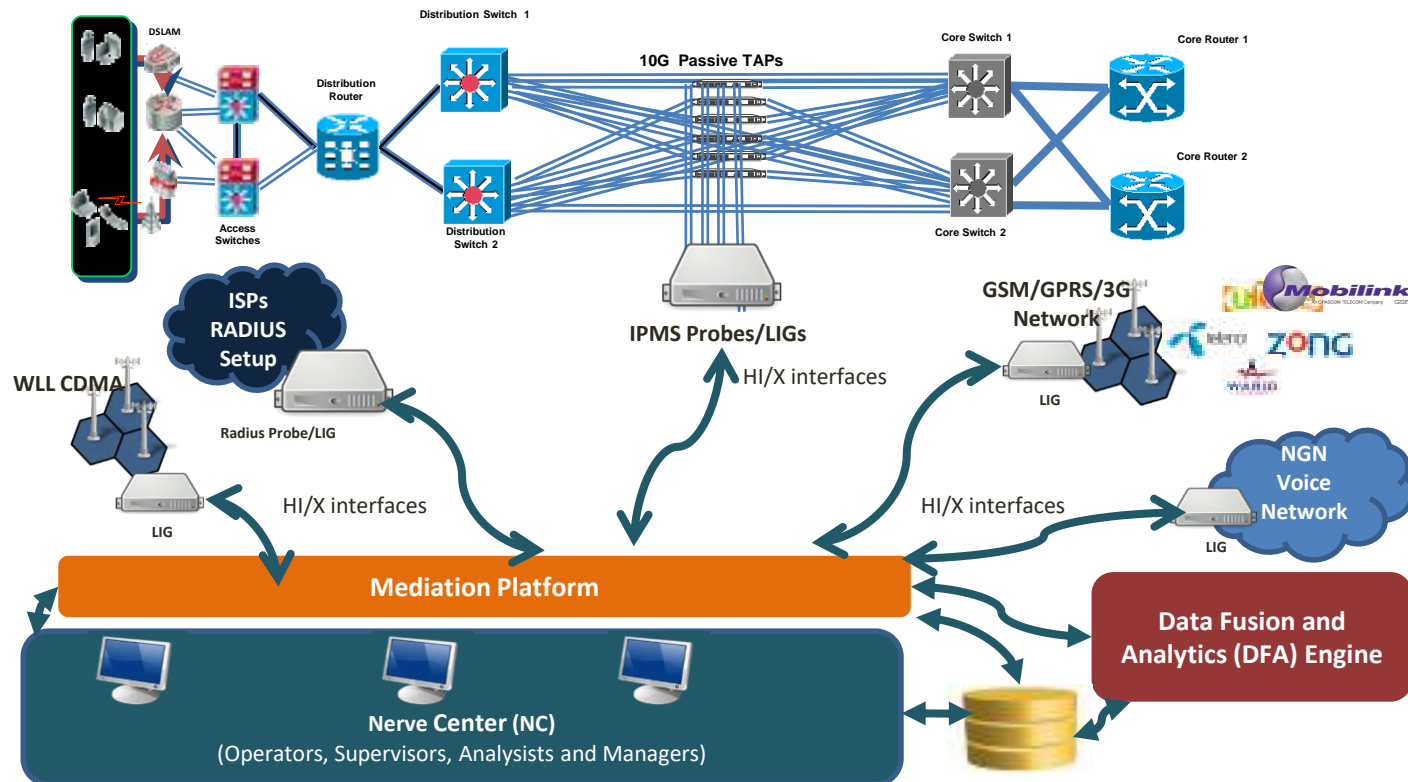


The background of the slide is a low-resolution, pixelated aerial photograph. It shows a landscape with various shades of green, brown, and blue, possibly representing different terrain types or vegetation. A semi-transparent purple rectangular band is positioned horizontally across the middle of the image, serving as a backdrop for the title text.

Air Space Management System

National IP & Telecommunication Networks

Multi Giga bit real time network analysis





ERP & MES

Transitioning PAC Kamra to i4.0



Digital segment		Maturity	Description	Examples
Soft	ICT services		The most mature ICT segment with huge IT outsourcing market	
Internet Services	e-commerce and delivery		The biggest online business, high fragmentation, cash on delivery is 95%	Kayme, Daraz.pk
	e-transportation		E-parking, rickshaw ordering, e-taxi, and other services for private transport	ShaahSawari, Rixi
	e-health		Early-stage companies, distribution of healthcare services via mobile in focus	DocHers, Healthwire
	e-learning		Early-stage companies focusing on primary and secondary education	Intertive Solutions
	e-finance		Low penetration of banking accounts, high potential of mobile financial services	Jazz Cash, Easypaisa
	e-travel		Low level of development	ChutUpit
	Classifiers		Very popular segment in several industries (property, cars, education, jobs)	Educative, Zameen.com
	Communication and social platforms		Popular international platforms and several local platforms	Facebook, Whatsapp, Viber
	Content (video, music, games)		Fast-developing segment with focus on global markets	Wonderful, Soundcloud
Transaction platforms	Payment platforms		High need but several legal barriers, PayPal not present	Easypay
	Advertising and big data		Emerging segment with a few local companies	Interacta
	Marketplaces (many to many)		Very popular segment in all industries (education, jobs, cars, commerce)	Rozee.pk, OLX
Internet of Things	Smart home		Emerging segment, technical capabilities (robotics programs, mechanical engineering in universities)	E4 Technologies
	Other smart things			Cricbox

 Nonexistent
  Emerging
  Peaking
  Maturing
  Saturated

Note: ICT is information and communication technology.

Sources: market experts interviews; A.T. Kearney analysis

A self-sustaining entrepreneurial ecosystem can take countries up to a decade to build

Evolution of a start-up



**Pakistan
2016**



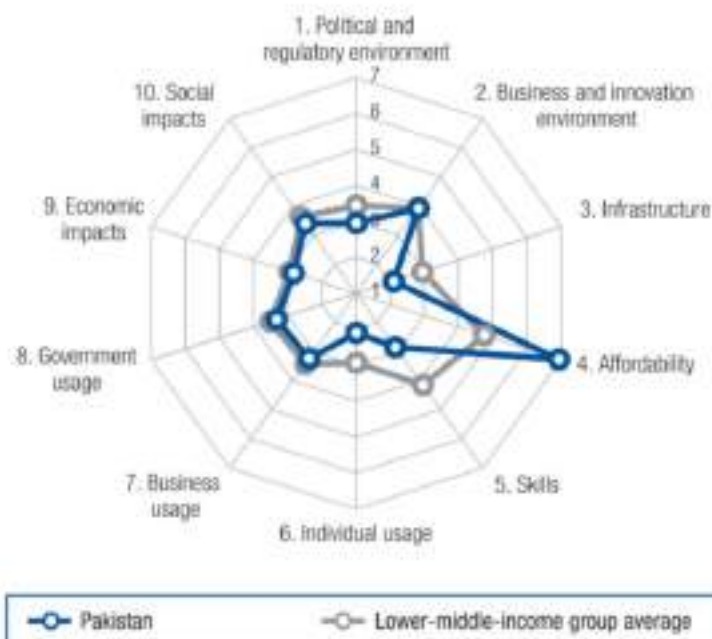
**Pakistan
2020**

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Croatia	84	Kazakhstan	109	Pakistan	154	United States	189
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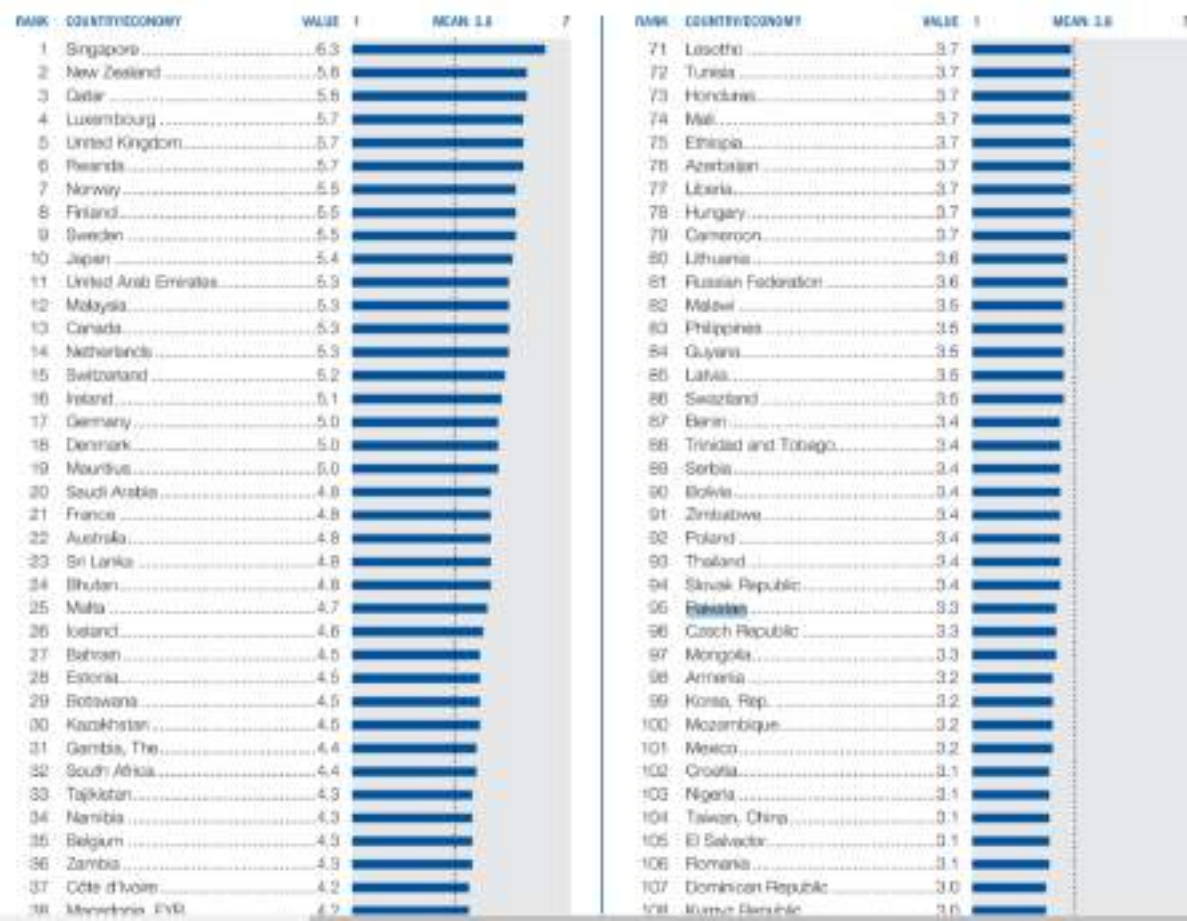
Pakistan

	Rank (out of 139)	Value (1-7)
Networked Readiness Index.....	110..	3.4
Networked Readiness Index 2015 (out of 143).....	112	3.3
Networked Readiness Index 2014 (out of 146).....	111	3.3
Networked Readiness Index 2013 (out of 144).....	105	3.3
A. Environment subindex.....	115	3.4
1st pillar: Political and regulatory environment.....	128	3.0
2nd pillar: Business and innovation environment.....	98	3.9
B. Readiness subindex	104	4.0
3rd pillar: Infrastructure.....	126	2.1
4th pillar: Affordability.....	1	6.9
5th pillar: Skills.....	127	2.8
C. Usage subindex.....	118	2.9
6th pillar: Individual usage.....	123	2.1
7th pillar: Business usage.....	110	3.2
8th pillar: Government usage.....	103	3.3
D. Impact subindex	105	3.1
9th pillar: Economic impacts.....	105	2.8
10th pillar: Social impacts.....	106	3.4



1.01 Effectiveness of law-making bodies

How effective is the legislative process in your country? (1 = not effective at all—it is deadlocked; 7 = extremely effective) | 2014–15 weighted average



1.04 Efficiency of legal framework in settling disputes

In your country, how efficient are the legal and judicial systems for companies in settling disputes? [1 = extremely inefficient, 7 = extremely efficient] | 2014-15 vs average



1.05 Efficiency of legal framework in challenging regulations

In your country, to what extent can individuals, institutions (bail society), and businesses obtain justice through the judicial system against arbitrary government decisions?
 (1 = not at all; 7 = to a great extent) | 2014-15 weighted average

RANK	COUNTRY/ECONOMY	VALUE	MEAN: 3.6	7	RANK	COUNTRY/ECONOMY	VALUE	MEAN: 3.6	7
1	Finland	5.8			71	Portugal	3.4		
2	Catar	5.7			72	Tanzania	3.4		
3	Switzerland	5.6			73	Cameroon	3.4		
4	Hong Kong SAR	5.6			74	Korea, Rep.	3.4		
5	New Zealand	5.5			75	Seychelles	3.4		
6	Netherlands	5.5			76	Czech Republic	3.4		
7	Norway	5.4			77	Malawi	3.4		
8	Luxembourg	5.4			78	Cape Verde	3.4		
9	United Kingdom	5.3			79	Vietnam	3.4		
10	Singapore	5.2			80	Philippines	3.3		
11	Germany	5.2			81	Latvia	3.3		
12	Sweden	5.1			82	Guatemala	3.3		
13	Iceland	5.1			83	Romania	3.3		
14	Canada	5.0			84	Montenegro	3.3		
15	Malaysia	5.0			85	Algeria	3.3		
16	Ireland	5.0			86	Greece	3.3		
17	South Africa	5.0			87	Panama	3.2		
18	Rwanda	5.0			88	Macedonia, FYR	3.2		
19	United States	4.8			89	Benin	3.2		
20	Austria	4.7			90	Turkey	3.2		
21	United Arab Emirates	4.7			91	Nigeria	3.2		
22	Belgium	4.7			92	Swaziland	3.1		
23	Australia	4.7			93	Lithuania	3.1		
24	Japan	4.6			94	Trinidad and Tobago	3.1		
25	Estonia	4.5			95	Nepal	3.1		
26	Saudi Arabia	4.4			96	Ethiopia	3.1		
27	France	4.4			97	Poland	3.1		
28	Bahrain	4.4			98	Mongolia	3.0		
29	Namibia	4.4			99	Kyrgyz Republic	3.0		
30	Jordan	4.3			100	Colombia	3.0		
31	Mauritius	4.3			101	Pakistan	3.0		
32	Costa Rica	4.3			102	Mexico	3.0		
33	Botswana	4.2			103	El Salvador	3.0		
34	Israel	4.2			104	Gabon	3.0		

1.06 Intellectual property protection

In your country, to what extent is intellectual property protected? (1 = not at all; 7 = to a great extent) | 2014-15 weighted average

RANK	COUNTRY/ECONOMY	VALUE	WEIGHTED AVERAGE	F	RANK	COUNTRY/ECONOMY	VALUE	WEIGHTED AVERAGE	F
1	Finland	6.3			71	Philippines	3.9		
2	Luxembourg	6.3			72	Romania	3.9		
3	Switzerland	6.2			73	Liberia	3.9		
4	Singapore	6.2			74	Ghana	3.8		
5	New Zealand	6.1			75	Seychelles	3.8		
6	Japan	6.1			76	Mexico	3.8		
7	United Kingdom	6.0			77	Ecuador	3.8		
8	Netherlands	6.0			78	Bahrain	3.8		
9	Hong Kong SAR	6.0			79	Colombia	3.7		
10	Iceland	5.9			80	Hungary	3.7		
11	Qatar	5.9			81	Kenya	3.7		
12	Canada	5.9			82	Turkey	3.7		
13	Australia	5.9			83	Brazil	3.7		
14	France	5.8			84	Kuwait	3.7		
15	United States	5.8			85	Montenegro	3.7		
16	Sweden	5.8			86	Dominican Republic	3.6		
17	Norway	5.8			87	Croatia	3.6		
18	Belgium	5.7			88	Vietnam	3.6		
19	Austria	5.7			89	Mali	3.6		
20	Germany	5.7			90	Tunisia	3.5		
21	Denmark	5.6			91	Guatemala	3.5		
22	United Arab Emirates	5.6			92	Azerbaijan	3.5		
23	Malaysia	5.4			93	Armenia	3.5		
24	South Africa	5.4			94	Gabon	3.5		
25	Ireland	5.3			95	Switzerland	3.5		
26	Estonia	5.2			96	Zimbabwe	3.4		
27	Taiwan, China	5.2			97	Cape Verde	3.4		
28	Rwanda	5.1			98	El Salvador	3.4		
29	Israel	5.0			99	Trinidad and Tobago	3.4		
30	Saudi Arabia	5.0			100	Laos PDR	3.4		
31	Bahrain	4.8			101	Georgia	3.3		
32	Portugal	4.7			102	Uganda	3.3		
33	Malta	4.6			103	Ethiopia	3.3		
34	Czech Republic	4.6			104	Peru	3.3		
35	Jordan	4.6			105	Algeria	3.3		
36	Namibia	4.6			106	Guyana	3.3		
37	Panama	4.5			107	Bolivia	3.2		
38	Uruguay	4.5			108	Egypt	3.2		
39	Ghana	4.5			109	Mongolia	3.2		
40	Oman	4.4			110	Algeria	3.2		
41	Mauritius	4.4			111	Tanzania	3.2		
42	Sri Lanka	4.4			112	Bahrain	3.2		

1.07 Software piracy rate

Unlicensed software units as a percentage of total software units installed - 2013



1.08 Number of procedures to enforce a contract

Number of procedures to enforce a dispute resolution from the moment the plaintiff files a lawsuit in court until payment 1 (2018)



1.09 Time required to enforce a contract

Number of days to resolve a dispute, counted from the moment the plaintiff decides to file the lawsuit to court until payment. 1/2019



2.01 Availability of latest technologies

In your country, to what extent are the latest technologies available? (1 = not at all; 7 = to a great extent) | 2014–15 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	MEAN: 4.8	7	RANK	COUNTRY/ECONOMY	VALUE	1	MEAN: 4.8	7
1	Finland	5.6				71	Romania	4.6			
2	United States	5.5				72	Poland	4.6			
3	Norway	5.5				73	Bulgaria	4.6			
4	Sweden	5.5				74	Montenegro	4.6			
5	United Kingdom	5.5				75	Cape Verde	4.6			
6	Iceland	5.4				76	Zambia	4.6			
7	Switzerland	5.4				77	Senegal	4.6			
8	Israel	5.4				78	Philippines	4.6			
9	United Arab Emirates	5.3				79	Pakistan	4.6			
10	Netherlands	5.3				80	Ecuador	4.6			
11	Canada	5.2				81	Ghana, The	4.5			
12	Germany	5.2				82	Colombia	4.5			
13	Singapore	5.2				83	Tunisia	4.5			
14	Luxembourg	5.2				84	Peru	4.5			
15	Belgium	5.2				85	Guat.	4.5			
16	Japan	5.2				86	Guyana	4.5			
17	Ireland	5.1				87	Armenia	4.4			
18	Portugal	5.1				88	Mongolia	4.4			
19	Austria	5.1				89	Kazakhstan	4.4			
20	Costa	5.1				90	Lebanon	4.4			
21	France	5.0				91	Mauritania	4.4			
22	Hong Kong SAR	5.0				92	Moldova	4.4			
23	Denmark	5.0				93	El Salvador	4.3			
24	Australia	5.0				94	Tajikistan	4.3			
25	New Zealand	5.0				95	China	4.3			
26	Estonia	5.0				96	Ukraine	4.3			
27	Latvia	5.0				97	Georgia	4.3			
28	Lithuania	5.0				98	Botswana	4.2			
29	Bahrain	5.1				99	Nigeria	4.2			
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32	Czech Republic	5.0				102	Uganda	4.2			
33	Chile	5.0				103	Bosnia and Herzegovina	4.2			
34	Spain	5.0				104	Zimbabwe	4.1			
35	Panama	5.0				105	Bhutan	4.1			
36	Taiwan, China	5.0				106	Bangladesh	4.0			
37	Slovak Republic	5.0				107	Sierra	4.0			
38	Slovenia	5.0				108	India	4.0			
39	South Arabia	5.4				109	Paraguay	4.0			
40	Mali	5.4				110	Nicaragua	4.0			
41	South Africa	5.3				111	Iran, Islamic Rep.	4.0			
42	Guatemala	5.3				112	Vietnam	4.0			
43	Jamaica	5.2				113	Mali	4.0			
44	Cyprus	5.2				114	Madagascar	4.0			
45	Reunion	5.0				115	Albania	3.9			
46	Hungary	5.1				116	Gabon	3.9			
47	Jordan	5.1				117	Laos PDR	3.9			

2.02 Venture capital availability

In your country, how easy is it for start-up entrepreneurs with innovative but risky projects to obtain equity funding? [1 = extremely difficult; 7 = extremely easy] | 2014-15 weighted average

RANK	COUNTRY/ECONOMY	SCORE	1	MEAN 2.8	7	RANK	COUNTRY/ECONOMY	SCORE	1	MEAN 2.8	7
1	Qatar	5.1				71	Azerbaijan	2.7			
2	Malaysia	4.8				72	Denmark	2.7			
3	Singapore	4.6				73	Uruguay	2.7			
4	Israel	4.5				74	Cambodia	2.7			
5	United States	4.5				75	Cape Verde	2.7			
6	Finland	4.5				76	Ethiopia	2.7			
7	United Arab Emirates	4.4				77	Mali	2.6			
8	Luxembourg	4.3				78	Belarus	2.6			
9	Hong Kong SAR	4.3				79	Algeria	2.6			
10	Norway	4.2				80	Botswana	2.6			
11	New Zealand	4.1				81	Ghana	2.6			
12	Taiwan, China	4.1				82	Namibia	2.6			
13	India	4.0				83	Bhutan	2.6			
14	United Kingdom	3.9				84	Kyrgyz Republic	2.6			
15	Sweden	3.8				85	Madagascar	2.6			
16	China	3.8				86	Korea, Rep.	2.6			
17	Indonesia	3.8				87	Lao PDR	2.6			
18	Switzerland	3.7				88	Nepal	2.6			
19	Jordan	3.7				89	El Salvador	2.6			
20	Canada	3.7				90	Armenia	2.5			
21	Japan	3.6				91	Egypt	2.5			
22	Panama	3.6				92	Brunei	2.5			
23	Bahrain	3.6				93	Turkey	2.5			
24	Netherlands	3.5				94	Paraguay	2.5			
25	Germany	3.5				95	Dominican Republic	2.5			
26	Ethiopia	3.5				96	Poland	2.5			
27	Saudi Arabia	3.5				97	Gambia, The	2.4			
28	Belgium	3.5				98	Lesotho	2.4			
29	France	3.4				99	Tanzania	2.4			
30	Rwanda	3.4				100	Uganda	2.4			
31	Czech Republic	3.3				101	Hungary	2.4			
32	Chile	3.3				102	Ukraine	2.4			
33	Thailand	3.3				103	Romania	2.4			
34	Ghana	3.3				104	Slovenia	2.4			
35	Tajikistan	3.3				105	Ecuador	2.3			
36	Oman	3.3				106	Bosnia and Herzegovina	2.3			
37	Ireland	3.2				107	Cyprus	2.3			
38	Iceland	3.1				108	Cameroon	2.3			
39	Philippines	3.1				109	Greece	2.3			
40	Australia	3.1				110	Venezuela	2.3			
41	Bolivia	3.1				111	Turkmenistan	2.3			
42	Lebanon	3.1				112	Costa Rica	2.3			

2.03 Total tax rate

Sum of profit tax, labor tax and social contributions, property taxes, turnover taxes, and other taxes, as a share (% of commercial profits) 1: 2014

RANK	COUNTRY/REGION	SCORE	RANK	COUNTRY/REGION	SCORE
1	Qatar	11.3	71	Guatemala	37.5
2	Macedonia, FYR	12.9	72	Finland	37.9
3	Kuwait	13.0	73	Madagascar	38.1
4	Bahrain	13.5	74	Q. Bahrain	38.1
5	Laos	13.8	75	Vietnam	38.4
6	South Africa	15.0	76	Norway	39.0
7	United Arab Emirates	15.9	77	Gambia	39.7
8	Georgia	18.4	78	Azerbaijan	39.8
9	Singapore	18.4	79	Malaysia	40.0
10	Zambia	18.6	80	Moldova	40.2
11	Armenia	19.0	81	Burundi	40.3
12	Croatia	20.0	81	Haiti	40.3
13	Luxembourg	20.1	81	Poland	40.3
14	Cambodia	21.0	84	Turkey	40.9
15	Czechia	21.1	85	Netherlands	41.0
16	Namibia	21.3	85	Portugal	41.0
17	Montenegro	21.6	87	Mali	41.3
18	Mauritius	22.4	88	Uruguay	41.6
19	Hong Kong SAR	22.5	89	Romania	42.0
20	Oman	22.9	90	Dominican Republic	42.4
21	Burma and Myanmar	23.3	91	Lithuania	42.6
22	Cyprus	24.4	92	Philippines	42.9
23	Mongolia	24.4	93	Tanzania	43.0
24	Denmark	24.6	93	United States	43.0
25	Botswana	25.1	95	Iran, Islamic Rep.	44.1
26	Lesotho	25.3	96	Indonesia	44.3
27	Israel	25.9	97	Egypt	45.0
28	Butana	27.0	98	Chad	45.7
29	Thailand	27.5	99	Russian Federation	47.0
30	South Africa	28.8	100	Senegal	47.3
31	Switzerland	29.8	101	Algeria	47.6
32	Chile	29.9	102	Liberia	47.8
33	Kyrgyz Republic	29.0	103	Mali	48.3
34	Kazakhstan	29.2	104	Hungary	48.4
35	Jordan	29.5	105	Cameroon	48.8
36	Nepal	29.6	106	Germany	48.8
37	Tajikistan	29.6	107	Morocco	49.1
38	Indonesia	29.7	107	Sweden	49.1
39	Belarus	30.1	109	Estonia	49.4
40	Latvia	30.3	110	Greece	49.6
41	Israel	30.6	111	Spain	50.0
42	Ghana	31.0	112	Czech Republic	50.4
43	Maurice	31.4	113	Greek Republic	51.2
44	Bangladesh	31.6	114	Japan	51.3
45	United Kingdom	32.0	115	Austria	51.7
46	Ethiopia	32.1	115	Mexico	51.7
47	Trinidad and Tobago	32.2	117	Cote d'Ivoire	51.8
48	Guyana	32.3	118	Lesotho	52.2
49	Paraguay	32.6	119	Q. Latvia	53.2
50	Ghana	32.7	120	Costa Rica	56.0
51	Zambia	36.6	121	Russia	56.4

2.04 Time required to start a business

Number of days required to start a business | 2015

RANK	COUNTRY/ECONOMY	VALUE
1	New Zealand	1
2	Macedonia, FYR	1
3	Canada	2
3	Hong Kong SAR	2
5	Georgia	2
6	Australia	3
6	Portugal	3
6	Singapore	3
9	Armenia	3
9	Azerbaijan	3
9	Denmark	3
9	Jamaica	3
13	Estonia	4
13	Lithuania	4
15	Belgium	4
15	Burundi	4
15	France	4
15	Iceland	4
15	Korea, Rep.	4
15	Malaysia	4
15	Moldova	4
15	Netherlands	4
15	Norway	4
24	Liberia	5
24	United Kingdom	5
26	Hungary	5
26	Kazakhstan	5
28	Albania	6
28	Chile	6
28	Italy	6
28	Latvia	6
28	Rwanda	6

RANK	COUNTRY/ECONOMY	VALUE
70	Trinidad and Tobago	12
72	Benin	12
72	Croatia	12
72	Jordan	12
72	Serbia	12
76	Greece	13
76	Israel	13
76	Madagascar	13
76	Myanmar	13
76	Nicaragua	13
81	Finland	14
81	Ghana	14
81	Honduras	14
81	Spain	14
85	Dominican Republic	15
86	Bhutan	15
86	Cameroon	15
86	Czech Republic	15
86	Iran, Islamic Rep.	15
86	Lebanon	15
91	El Salvador	17
92	Nepal	17
93	Bulgaria	18
93	Guyana	18
95	Guatemala	19
95	Luxembourg	19
97	Ethiopia	19
97	Mozambique	19
97	Pakistan	19
97	Saudi Arabia	19
101	Bangladesh	20
102	Algeria	20

2.06 Intensity of local competition

In your country, how intense is competition in the local market? (1 = not intense at all; 7 = extremely intense) | 2014–15 weighted average

RANK	COUNTRY/REGION	VALUE	MEAN 5.8	7	RANK	COUNTRY/REGION	VALUE	MEAN 5.8	7
1	Japan	6.2			71	Vietnam	5.0		
2	Hong Kong SAR	6.2			72	Botswana	5.0		
3	United Kingdom	6.0			73	Morocco	5.0		
4	United States	6.0			74	Hardyana	5.0		
5	Taiwan, China	6.0			75	Bangladesh	5.0		
6	Belgium	6.0			76	Ecuador	5.0		
7	Germany	6.0			77	Russian Federation	5.0		
8	United Arab Emirates	6.0			78	Mongolia	5.0		
9	Australia	5.9			79	Paraguay	5.0		
10	Turkey	5.8			80	Senegal	4.9		
11	Netherlands	5.8			81	Bahrain	4.9		
12	Malta	5.8			82	Nepal	4.9		
13	Hong Kong	5.8			83	Croatia	4.9		
14	Czech Republic	5.7			84	Island	4.8		
15	Austria	5.7			85	Armenia	4.8		
16	New Zealand	5.7			86	Oman	4.8		
17	Sri Lanka	5.7			87	Switzerland	4.8		
18	Lithuania	5.6			88	Zimbabwe	4.8		
19	Spain	5.6			89	Finland	4.8		
20	Costa Rica	5.6			90	Turkmenistan	4.7		
21	Singapore	5.6			91	Georgia	4.7		
22	Chile	5.6			92	Uruguay	4.7		
23	Kenya	5.6			93	Gambia, The	4.7		
24	Canada	5.6			94	Kazakhstan	4.7		
25	Qatar	5.5			95	Oman	4.7		
26	Zambia	5.5			96	Nicaragua	4.7		
27	Slovak Republic	5.5			97	Cameroon	4.7		
28	Guatemala	5.5			98	Paraguay	4.7		
29	France	5.5			99	Ukraine	4.7		
30	Switzerland	5.5			100	Norway	4.6		
31	Macronesia, FMR	5.5			101	India	4.6		
32	Mauritius	5.5			102	Brunei	4.6		
33	Sweden	5.5			103	Moldova	4.6		
34	Lebanon	5.4			104	Bulgaria	4.6		
35	Colombia	5.4			105	Cote d'Ivoire	4.6		
36	China	5.4			106	Cameroon	4.6		
37	Malaysia	5.4			107	Tajikistan	4.6		
38	Latvia	5.4			108	Mozambique	4.6		
39	Jamaica	5.4			109	Madagascar	4.6		
40	Saudi Arabia	5.4			110	Guyana	4.5		
41	Brazil	5.4			111	Tanzania	4.5		
42	Thailand	5.4			112	Bosnia	4.5		
43	South Africa	5.4			113	Mali	4.5		

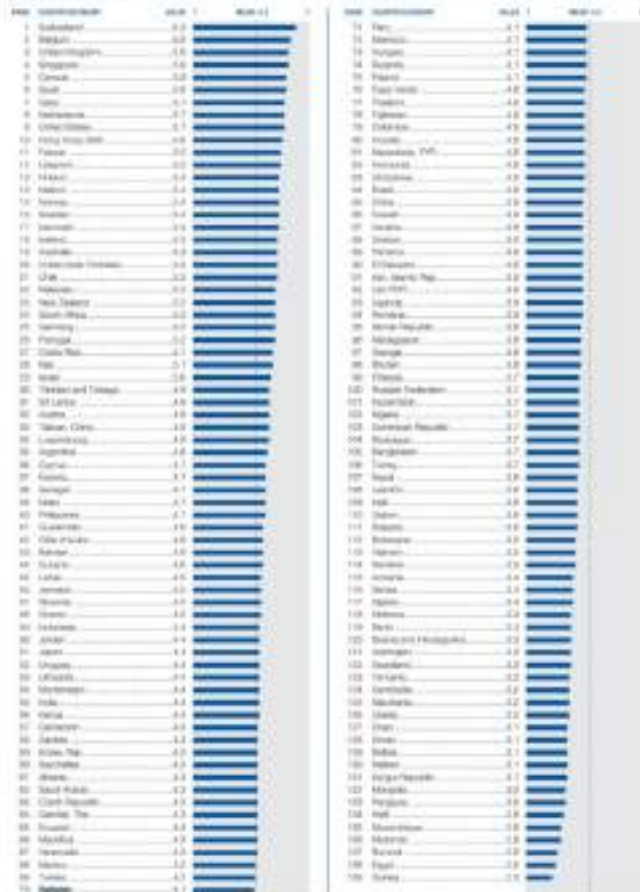
2.07 Tertiary education enrollment rate

Tertiary education gross enrollment rate (%) | 2013 or most recent

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Qatar	110.2	71	Burkina Faso	36.4
2	Korea, Rep. ¹¹	95.3	72	Belarus ¹¹	36.3
3	Finland	91.1	73	Philippines ¹¹	36.3
4	United States	90.9	74	Paraguay ¹¹	36.1
5	Spain	87.1	75	Nigeria ¹¹	34.8
6	Australia	86.6	76	Turkey ¹¹	34.6
7	Greece	85.2	77	Indonesia	31.3
8	Taiwan, China	83.9	78	Vietnam ¹¹	30.5
9	China	83.8	79	Egypt	30.5
10	Singapore	82.7	80	China	30.3
11	Ukraine ¹¹	82.3	81	Mexico	30.2
12	Iceland ¹¹	82.2	82	El Salvador	29.2
13	Denmark	81.2	83	Oman ¹¹	28.0
14	Austria ¹¹	80.0	84	Botswana ¹¹	27.5
15	Argentina	80.0	85	Jamaica	27.4
16	New Zealand	79.7	86	Kuwait	27.0
17	Turkey	79.0	87	Tajikistan ¹¹	26.4
18	Netherlands ¹¹	78.5	88	Morocco ¹¹	24.6
19	Russian Federation	78.0	89	India	23.9
20	Venezuela ¹¹	77.0	90	Azerbaijan ¹¹	23.2
21	Norway	76.1	91	Cape Verde ¹¹	23.0
22	Israel	73.2	92	Bonaire and Netherlands ¹¹	22.1
23	Estonia	72.9	93	United Arab Emirates ¹¹	22.0
24	Belgium	72.3	94	Honduras ¹¹	21.2
25	Lithuania	72.0	95	Si Leone ¹¹	20.7
26	Poland	71.2	96	South Africa	19.7
27	Bulgaria ¹¹	70.8	97	Luxembourg ¹¹	19.4
28	Hong Kong SAR ¹¹	68.8	98	Ghana ¹¹	18.3
29	Latvia	67.0	99	Lesotho ¹¹	17.3
30	Israel	66.3	100	Nicaragua ¹¹	17.2
31	Portugal	66.2	101	Cambodia ¹¹	15.9
32	Iran, Islamic Rep. ¹¹	66.0	102	Nepal ¹¹	15.6
33	Czech Republic	65.4	103	Gambia ¹¹	15.6
34	Mongolia ¹¹	64.3	104	Ghana ¹¹	15.6
35	Italy	63.5	105	Benin	15.4
36	Sweden	63.4	106	Myanmar ¹¹	13.5
37	Uruguay ¹¹	63.1	107	Bangladesh ¹¹	13.4
38	Albania ¹¹	62.7	108	Ghana ¹¹	12.5
39	Japan	62.4	109	Tanzania and Tanzania ¹¹	12.0
40	France	62.1	110	Cambodia ¹¹	11.9
41	Croacia ¹¹	61.7	111	Liberia ¹¹	11.6
42	Saudi Arabia ¹¹	61.1	112	Bhutan	10.9
43	Germany	61.1	113	Ghana ¹¹	10.8
44	Serbia ¹¹	58.1	114	Nigeria ¹¹	10.4
45	Hungary	57.0	115	Belarus ¹¹	10.4
46	United Kingdom	56.9	116	Lesotho ¹¹	8.8
47	World (excl. EU)	56.8	117	Lesotho ¹¹	8.8

2.08 Quality of management schools

to give country's five top business schools the quality of business education (1 = lowest quality—strongly agreed to the worst; 7 = best quality—strongly agreed to the best of the world; 7 = 2014-15 weighted average)



2.09 Government procurement of advanced technology products

In your country, to what extent do government purchasing decisions foster innovation? (0 = not at all, 5 = to a great extent) / 2014-15 weighted average



3.01 Electricity production

Electricity production (kWh) per capita, 1 2012 or most recent



5.01 Quality of the education system

In your country, how well does the education system meet the needs of a competitive economy? (1 = not well at all; 7 = extremely well) | 2014–15 weighted average

RANK	COUNTRY/REGION	SCORE	WEIGHTED AVERAGE	RANK	COUNTRY/REGION	SCORE	WEIGHTED AVERAGE
1	Switzerland	6.1		71	Equador	3.0	
2	Qatar	5.9		72	Cameroon	3.0	
3	Singapore	5.8		73	Poland	3.0	
4	Finland	5.7		74	Thailand	3.0	
5	Hong Kong	5.5		75	Indonesia	3.0	
6	Malaysia	5.4		76	Ghana	3.0	
7	New Zealand	5.4		77	Colombia	3.0	
8	Netherlands	5.4		78	Vietnam	3.0	
9	Israel	5.4		79	Venezuela	3.0	
10	Germany	5.4		80	Switzerland	3.0	
11	Norway	5.3		81	Uganda	3.0	
12	United Arab Emirates	5.3		82	Russian Federation	3.0	
13	Australia	5.1		83	Uzbekistan	3.0	
14	Canada	5.1		84	Armenia	3.0	
15	Ireland	5.0		85	Spain	3.0	
16	Denmark	4.9		86	Chad	3.0	
17	Cyprus	4.8		87	Sri Lanka	3.0	
18	United States	4.8		88	Kyrgyzstan	3.0	
19	Lebanon	4.8		89	Tunisia	3.0	
20	Hong Kong SAR	4.8		90	Romania	3.0	
21	United Kingdom	4.7		91	Algeria	3.0	
22	India	4.7		92	Turkey	3.0	
23	Luxembourg	4.7		93	Myanmar	3.0	
24	Sri Lanka	4.7		94	Paraguay	3.0	
25	Sweden	4.6		95	Iran, Islamic Rep.	3.0	
26	Bahrain	4.6		96	Namibia	3.0	
27	Japan	4.6		97	Moldova	3.0	
28	Costa Rica	4.5		98	Tanzania	3.0	
29	Algeria	4.5		99	Hungary	3.0	
30	France	4.5		100	Cameroon	3.0	
31	Philippines	4.5		101	Georgia	3.0	
32	Jordan	4.4		102	Colombia	3.0	
33	Turkmenistan	4.4		103	Chad	3.0	
34	Egypt	4.4		104	Mali	3.0	
35	Zambia	4.3		105	Senegal	3.0	
36	Kenya	4.3		106	Oman	3.0	
37	Armenia	4.3		107	Azerbaijan	3.0	
38	Seychelles	4.3		108	Argentina	3.0	
39	Gambia, The	4.3		109	Mali	3.0	
40	Portugal	4.3		110	Burkina Faso	3.0	
41	Indonesia	4.3		111	Mongolia	3.0	
42	Zimbabwe	4.2		112	Kyrgyz Republic	3.0	
43	India	4.2		113	Uganda	3.0	
44	Laos	4.2		114	Greece	3.0	
45	Burkina Faso	4.2		115	Madagascar	3.0	
46	Taiwan, China	4.1		116	El Salvador	3.0	
47	Saudi Arabia	4.1		117	Mexico	3.0	
48	China, PRC	4.1		118	Myanmar	3.0	

5.02 Quality of math and science education

In your country, how do you assess the quality of math and science education? (1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world) | 2014–15 weighted average

RANK	COUNTRY/REGION	SCORE	GLOBAL A.V.	T	RANK	COUNTRY/REGION	SCORE	GLOBAL A.V.	T
1	Singapore	6.4			71	Kazakhstan	4.1		
2	Finland	6.1			72	Thailand	4.0		
3	Belgium	6.0			73	Tajikistan	4.0		
4	Switzerland	6.0			74	Morocco	4.0		
5	Qatar	6.7			75	Hungary	4.0		
6	Latvia	6.6			76	Brazil	4.0		
7	Netherlands	6.6			77	Cape Verde	4.0		
8	Hong Kong SAR	6.5			78	Kenya	3.9		
9	Japan	6.3			79	Turkmenistan	3.9		
10	New Zealand	6.3			80	Moldova	3.9		
11	United Arab Emirates	6.2			81	Dominica	3.9		
12	Malaysia	6.2			82	Senegal	3.9		
13	Slovenia	6.2			83	Shanghai	3.9		
14	Estonia	6.2			84	Spain	3.9		
15	Taiwan, China	6.2			85	Trinidad	3.9		
16	Germany	6.2			86	Switzerland	3.7		
17	Cote d'Ivoire	6.2			87	Timor	3.7		
18	Canada	6.1			88	Niger	3.7		
19	France	6.1			89	Belgium	3.6		
20	Lithuania	6.1			90	Laos PDR	3.6		
21	Iceland	6.0			91	Madagascar	3.6		
22	Greece	6.0			92	Burkina Faso	3.6		
23	Malta	6.0			93	Gambia, The	3.6		
24	Norway	5.9			94	Kenya	3.6		
25	Sri Lanka	5.8			95	Botswana	3.6		
26	Romania	5.8			96	Jamaica	3.6		
27	Russia	5.8			97	Ghana	3.6		
28	Austria	5.8			98	Burundi	3.6		
29	Peru	5.8			99	Kuwait	3.6		
30	Korea, Rep.	5.8			100	Lesotho	3.6		
31	Costa	5.8			101	Kenya	3.6		
32	Luxembourg	5.8			102	China	3.5		
33	Sweden	5.8			103	Turkey	3.5		
34	Mongolia	4.7			104	Australia	3.5		
35	Trinidad and Tobago	4.7			105	Algeria	3.5		
36	Ker, Island, Rep.	4.6			106	Singapore	3.5		
37	Kuwait	4.6			107	Chile	3.5		
38	Ukraine	4.6			108	Qatar	3.5		
39	Montenegro	4.6			109	Bahamas	3.5		
40	Lebanon	4.6			110	Mali	3.5		
41	Italy	4.6			111	Uganda	3.5		
42	Romania	4.6			112	Ghana	3.5		
43	Sweden	4.5			113	Argentina	3.5		
44	United States	4.5			114	Paraguay	3.5		
45	Portugal	4.5			115	Ghana	3.5		
46	United Kingdom	4.4			116	Venezuela	3.5		
47	Armenia	4.4			117	Colombia	3.5		
48	Russia	4.4			118	Brazil	3.5		

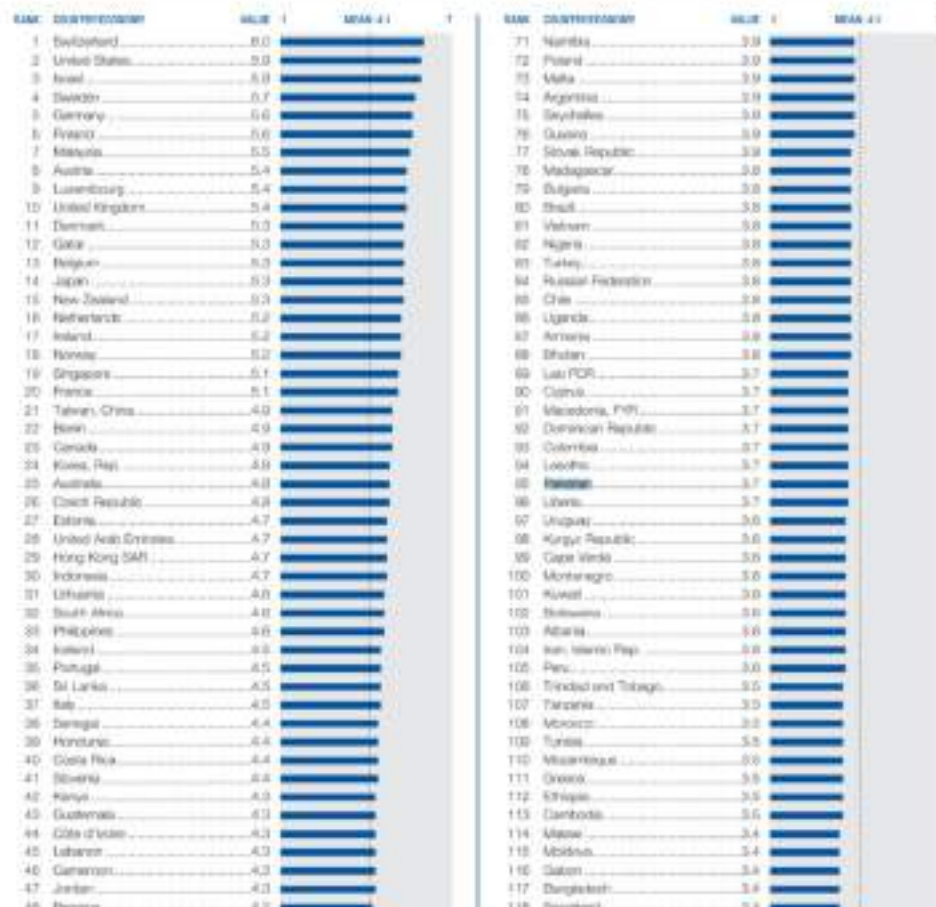
5.03 Secondary education enrollment rate

Secondary education gross enrollment rate (%) | 2012 at most recent



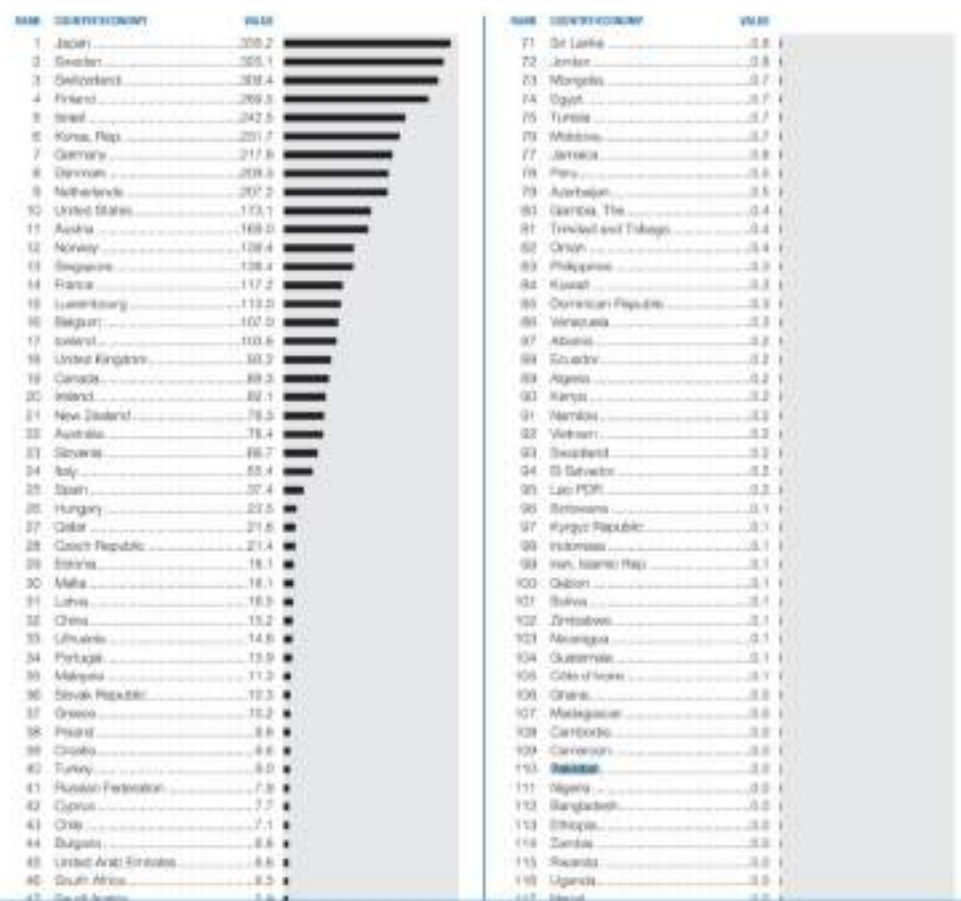
7.02 Capacity for innovation

In your country, to what extent do companies have the capacity to innovate? (1 = not at all, 7 = to a great extent) : 2014–15 weighted average



7.03 PCT patents applications

Number of applications filed under the Patent Cooperation Treaty (PCT) per million population | 2012-13 average



9.04 Share of workforce employed in knowledge-intensive activities (%)

Share of workforce employed in knowledge-intensive activities (%): 2014 or most recent



Summary

- Together we need to find out ways to make Pakistan jump 10-15 positions ahead in maximum of the knowledge economy indicators
- HEIs to play a key role
 - **True implementation of OBE** focusing on solving complex engineering problems
 - Making entrepreneurs central to the university, letting them use all resources, students and professors as mentors
 - Providing seed money, space and technical support to startups
 - **Best utilization of center of excellences: providing platform for industry-academia collaboration**



ساختیوں توڑدو شب کی دیوار کو
کوئی سورج کہیں سے نکل آئے گا
کام مل کے کرو محنتوں سے اگر
سب خزیینہ ہیں سے نکل آئے گا

13 مئی 2019