Business for Smart Cities Expocongress

Critical Success Factors of Smart City: A Case of Dubai

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Structure

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- **Identifying the CSFs of smart city**
- **Towards a readily-available framework of smart city for emerging smart cities**
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  - The anatomy of Dubai

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- **A way forward**
- **Takeaways: lessons learnt**

Objectives:

- To demonstrate what could be considered to be CSFs of smart city
- To provide readily-available framework of smart city for developing/ emerging smart cities
- To showcase Dubai's experience in smart city domain

CSFs: conceptual framework and methodology

Definition: those few key areas of activity in which favorable results are absolutely necessary for a decision maker/ manager/ planner to reach his/her goals

Methodology: through survey/ questionnaire (qualitative approach/ perceptions) distributed to various stakeholders (mainly policy advisors, urban planners and architects) in few major cities

Identifying the CSFs of smart city

CSFs	Countries	Reference
1. **Mobility** (Pedestrian walkways & cycle paths and parking facilities) 2. **Physical** (Water supply, power supply, urban development, infrastructure, solid waste, etc.) 3. **Innovation & learning** (R&D, innovation spirit, open mindedness, etc.) 4. **Political** (Governance, e-governance, public services, etc.) 5. **Information communication & technological** 6. **Environmental** (natural resources, consumption of energy, environmental protection, biodiversity, etc.) 7. **Operational & managerial** (Speed of work, productivity, workforce,) 8. **Social** (Poverty, employment, safety and security, literacy rate, etc.) 9. **Economical** (GDP growth rate per capita, cost of project, entrepreneurship, investment, FDI, etc.)	**India**	Sureshchandra et al. (2016)

1. **Vison and long term strategy** (mobility, e-government, information system, innovation, etc.) 2. **Public-private collaboration** 3. **Organizational transformation** (Environment, urban, ICT) 4. **Innovation and citizen's involvement** 5. **International promotion** (massive events abroad)	**Spain**	PWC (2014)
1. **Management and organization** 2. **Technology** 3. **Governance** 4. **Policy context** 5. **People and communities** 6. **economy** 7. **Built infrastructure** 8. **Natural environment.**	**North America**	Chourabi et al. (2011)

1. **Vision** (The human factor is what makes a smart city smart) 2. **Focus on humans instead of technology** 3. **Focus on a specific topic** 4. **Develop a city wide smart strategy** 5. **Bring Local government, businesses, knowledge institutes and citizens together**	**Netherlands**	Harms (2016)
1. **Citizens Engagement** 2. **Governance** 3. **Infra and ICT**	**S. Korea**	Kogan (2014)
1. **Environmental** 2. **Technical** 3. **Political support**	**China**	Yu and Xu (2018)
1. **Stakeholders' engagement** 2. **Regional alignment with a commodity focus** 3. **Momentum and foundational initiatives** 4. **Urban integration**	**USA, India,**	Peters (2017)

1. **Smart transportation** 2. **Focus on healthcare service** 3. **Allowing citizens to access digital services** and city information with its "large open data stores" 4. "**Smart Nation" initiative**	**Singapore**	Juniper Research (2018)

The Top 20 Global City Performance by Index, 2017

	Mobility	Health	Safety	Productivity
1	Singapore	Singapore	Singapore	Singapore
2	San Francisco	Seoul	New York	London
3	London	London	Chicago	Chicago
4	New York	Tokyo	Seoul	San Francisco
5	Barcelona	Berlin	Dubai	Berlin
6	Berlin	New York	Tokyo	New York
7	Chicago	San Francisco	London	Barcelona
8	Portland	Melbourne	San Francisco	Melbourne
9	Tokyo	Barcelona	Rio de Janeiro	Seoul
10	Melbourne	Chicago	Nice	Dubai
11	San Diego	Portland	San Diego	San Diego
12	Seoul	Dubai	Melbourne	Nice
13	Nice	Nice	Bhubaneswar	Portland
14	Dubai	San Diego	Barcelona	Tokyo
15	Mexico City	Wuxi	Berlin	Wuxi
16	Wuxi	Mexico City	Portland	Mexico City
17	Rio de Janeiro	Yinchuan	Mexico City	Rio de Janeiro
18	Yinchuan	Hangzhou	Wuxi	Yinchuan
19	Hangzhou	Rio de Janeiro	Yinchuan	Hangzhou
20	Bhubaneswar	Bhubaneswar	Hangzhou	Bhubaneswar

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2. PriceWaterhouseCoopers, (2014) "Barcelona as a Smart City: Lessons learned from the evolution of the concept and the influence in the city attractiveness", VIII Conferência Anual do Turismo Madeira, April 2014.
3. Chourabi, H., Nam, T., Walker, S., Gil-Garcia, J. R., Mellouli, S., Nahon, K., Pardo, T. A., and Scholl, H. J. (2011) "Understanding smart cities: An integrative framework. Proceedings of the Annual Hawaii International Conference on System Sciences, 2289-2297, 2011.
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5. Kogan, N., (2014) Exploratory research on success factors and challenges of Smart City Projects, Kyung Hee University.
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7. Yu, W., and Xu, C. (2018) "Developing Smart Cities in China: An Empirical Analysis", International Journal of Public Administration in the Digital Age, Volume 5 • Issue 3 • July-September 2018

CSF	Frequency
Mobility	5
Urban	7
Innovation	6
Political (governance and initiatives)	8
Info and communication	6
Environment	5
Management	5
Social and citizens engagement	7
Economic	2
Vision and passion	5
PPP	3
Infra	5

Towards a readily-available framework of smart city for emerging smart cities

CSFs in ascending order (as per the frequency)	Frequency
Political (governance and initiatives)	8
Urban	7
Social and citizens engagement	7
Innovation	6
Info and communication	6
Mobility	5
Vision and passion	5
Infra	5
Environment	5
Management	5
PPP	3
Economic	2

Dubai as a case study

Dubai's economy-at a glance

- The most fastly growing economy in the Middle East
- GDP grew between 1975 and 1990 around 6% per year, and for the last 15 years it has grown at almost 9% per year.

- The GDP by 2008 was **11 times** its size in 1975. Thanks to its:
  - Visionary leadership
  - Unique strategic location
  - State-of-the-art infrastructure
  - Economic freedom
  - Diversification
  - Openness

Real GDP Annual Growth Rate (%)

	1975 - 1990	1991 - 2008	1975 - 2008
Dubai	**6.0**	**8.7**	**7.3**
Hong-Kong	8.3	4.2	5.9
Singapore	7.7	6.4	6.8
United States	3.4	2.8	3.1

DubaiStatisticsCenter; IMF

Figure 1.1: % YoY Real Growth in Global GDP and in Dubai 2012-2019

Source: IMF, World Economic Outlook, October 2018, Dubai Statistics Center

Dubai population (million)

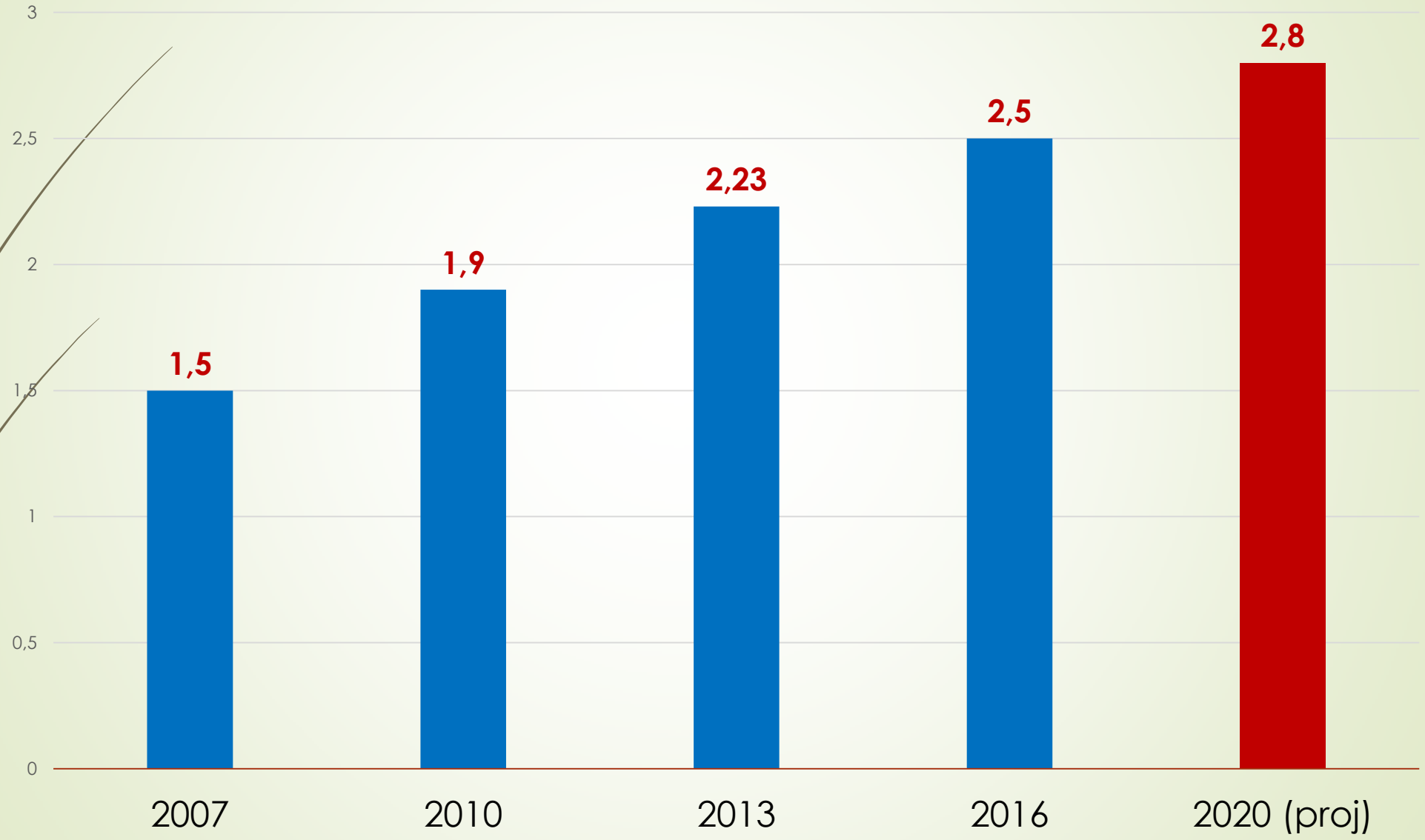
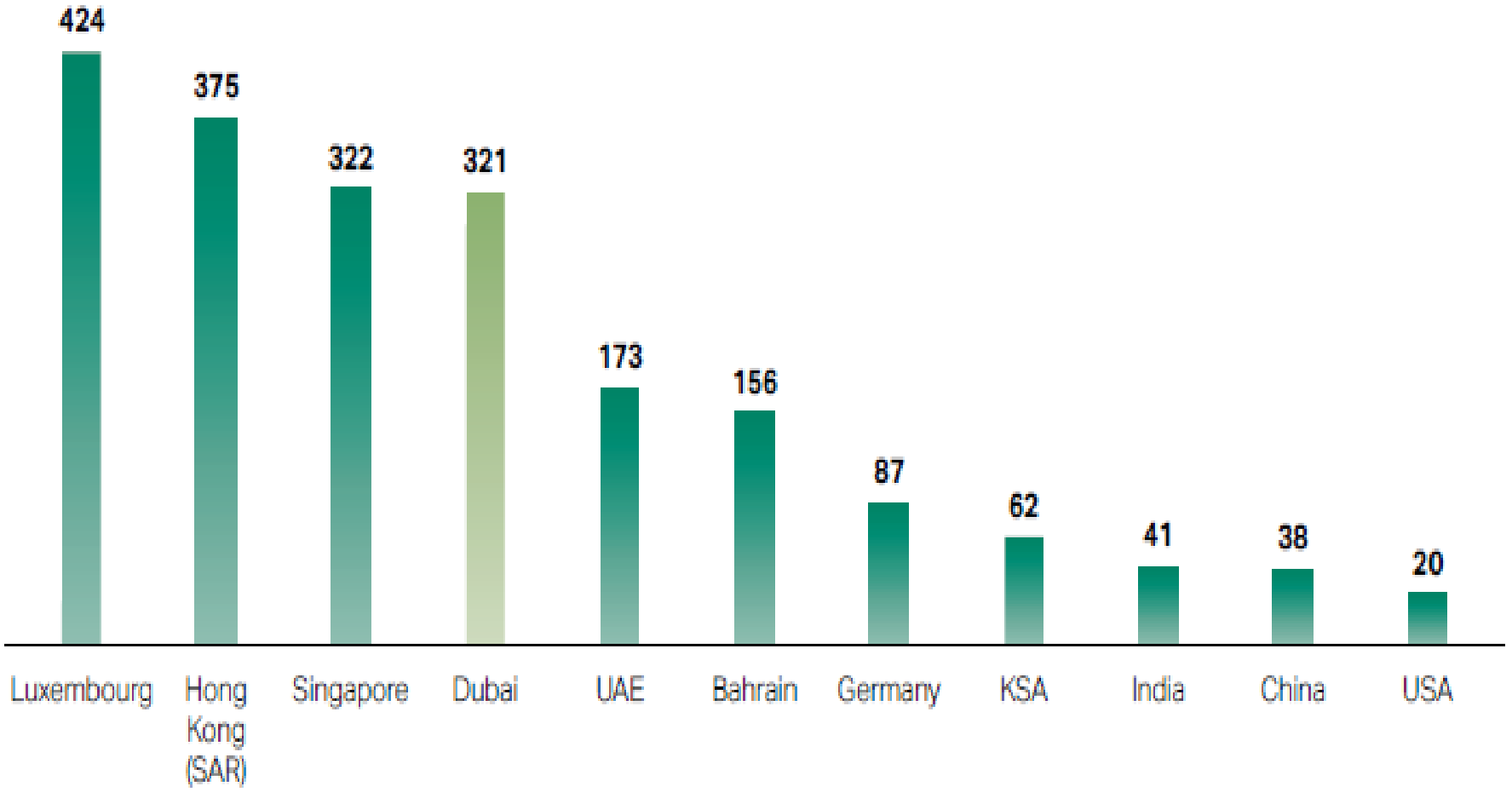


Figure 1.5: Foreign Trade Ratio to GDP % in 2017



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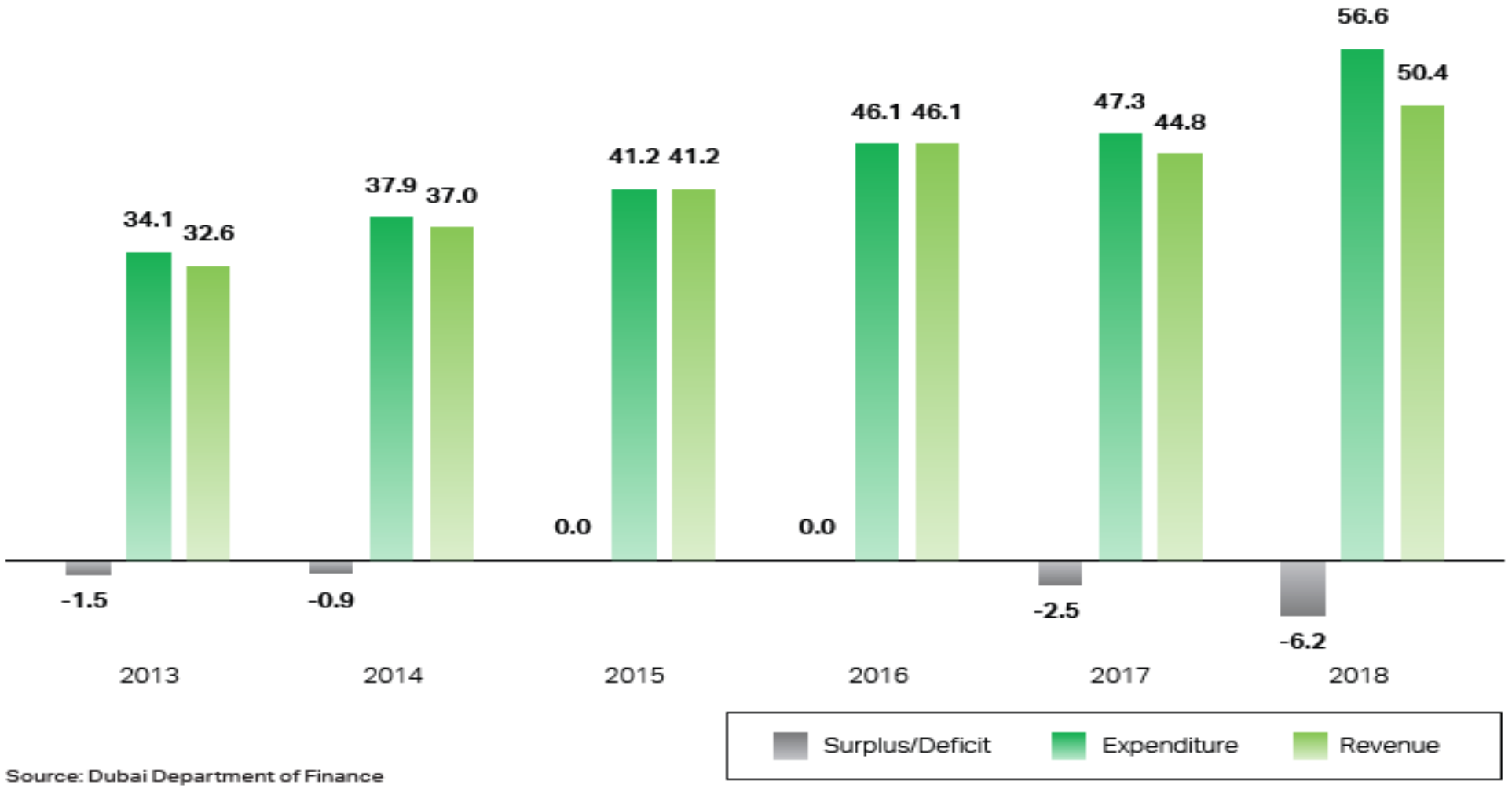
Recent Developments in Dubai's Economy

Figure 2.4: Structure of Dubai's GDP (%)

Source: Dubai Statistics Center

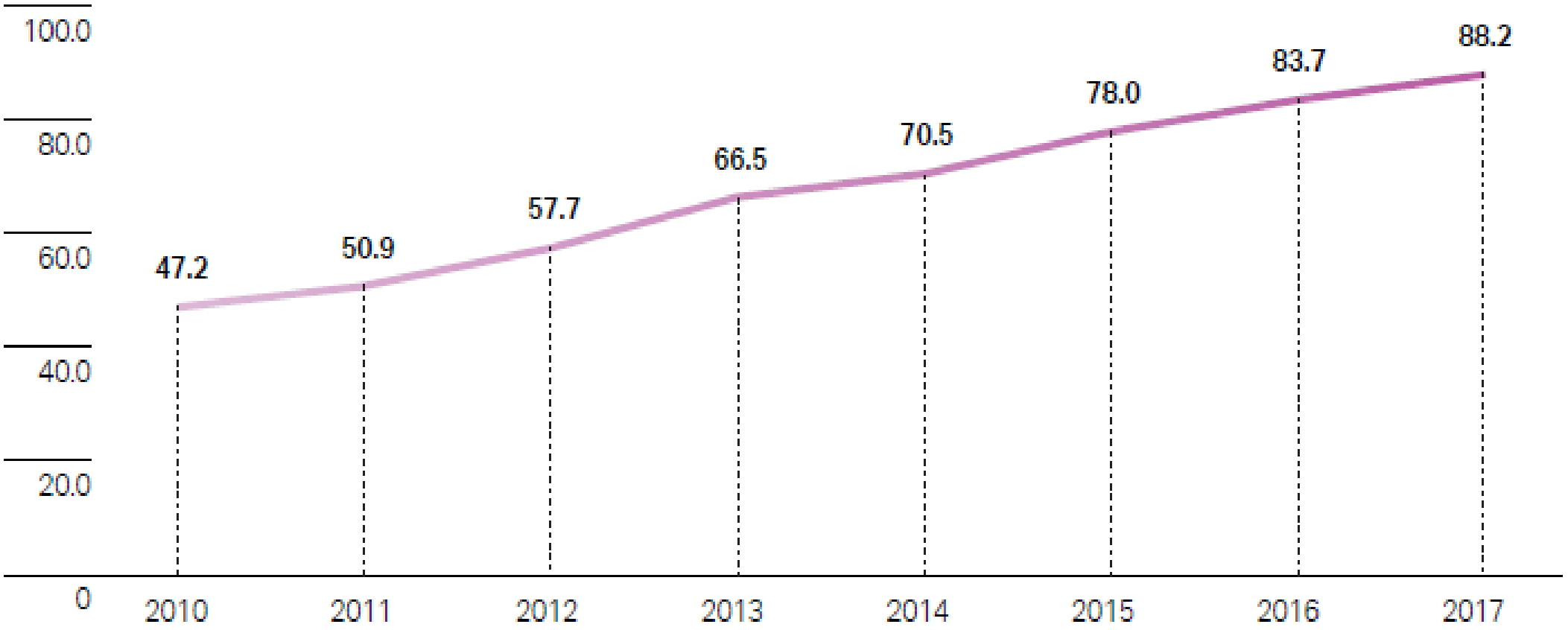
Figure 2.12: Budget Structure of the Government of Dubai (AED billion)



Source: Dubai Department of Finance

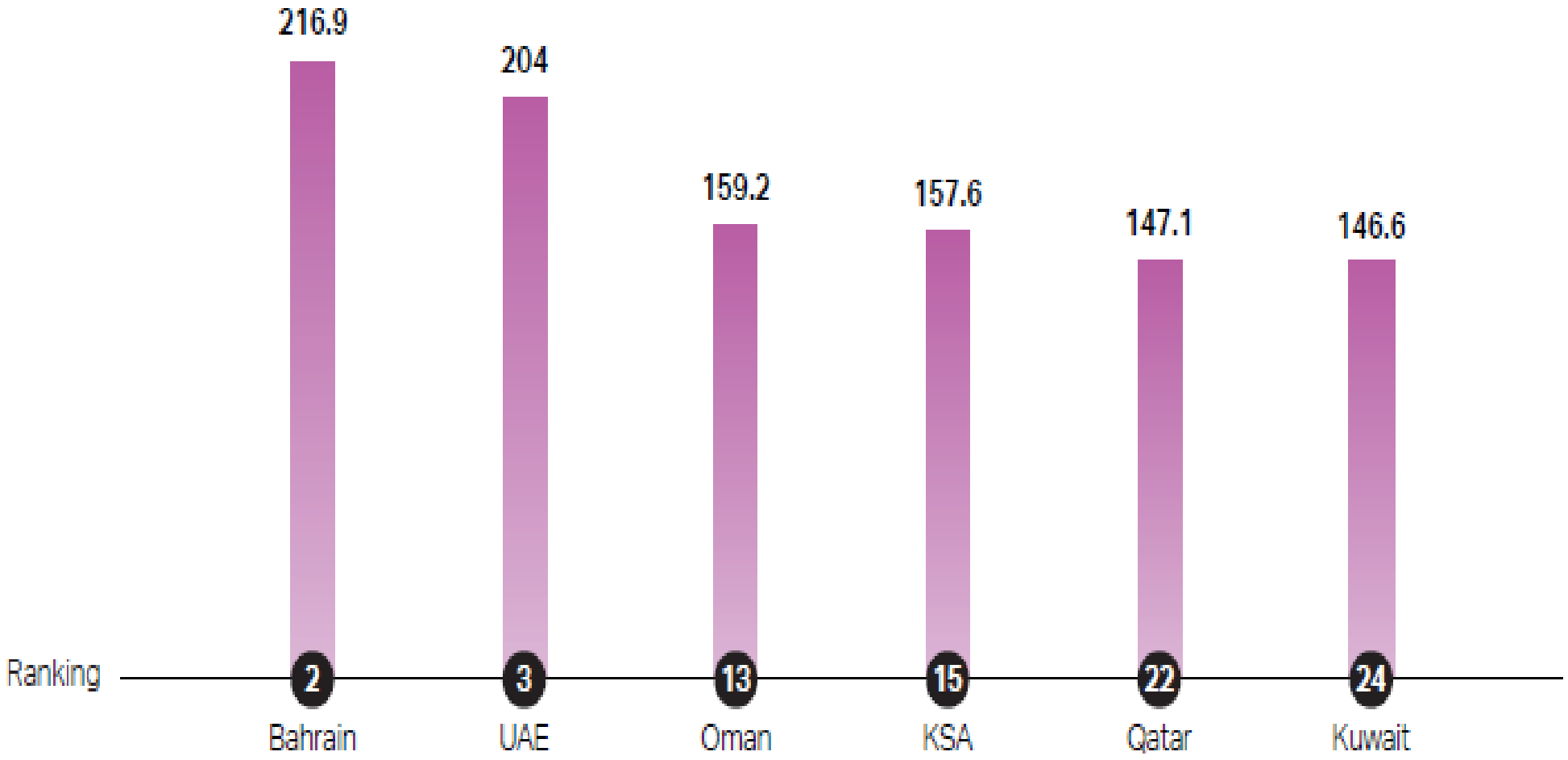
Openness

Figure 7.14: Number of Dubai International Airport passengers 2010-2017 (in million)



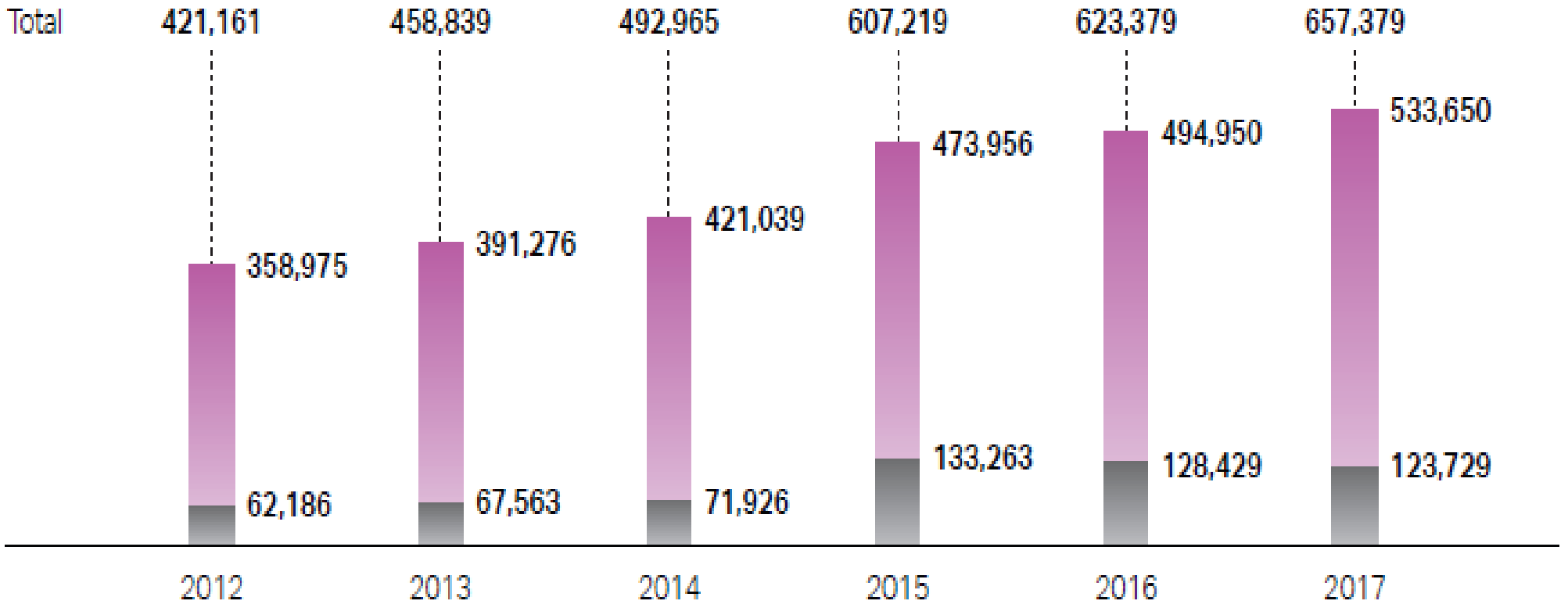
Source: Dubai Statistics Center

Figure 7.22: Mobile lines per 100 inhabitants



Source: World Bank: Information Technology Statistics

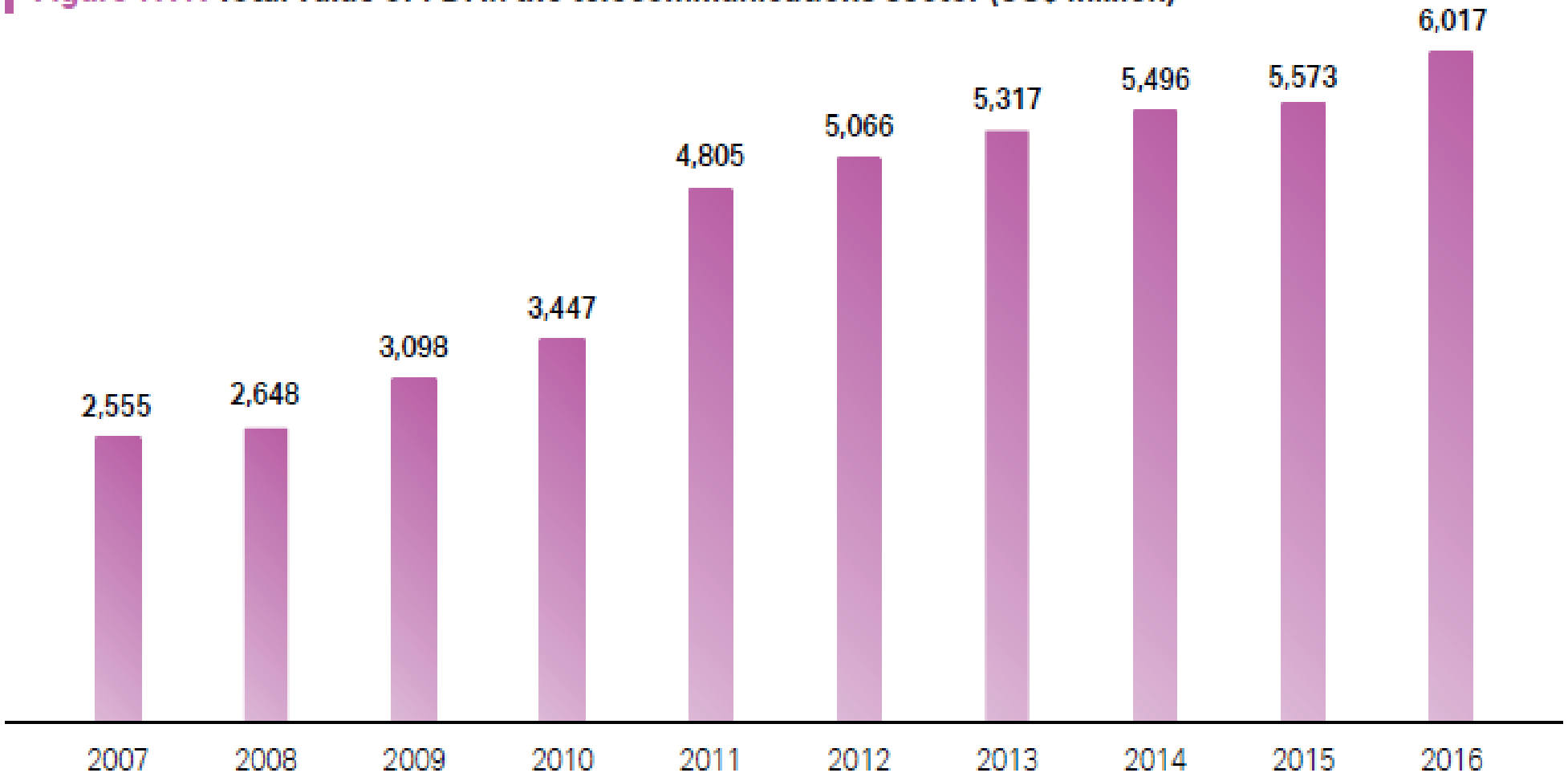
Figure 7.23: Broadband lines in Dubai



Source: Telecommunications Regulatory Authority (DU & ETISALAT)

ICT

Figure 7.17: Total value of FDI in the telecommunications sector (US$ million)



Source: Dubai Statistics Center

CSF # 1: Political (governance and initiatives)

دبـــي الذكية
SMART DUBAI

VISION

TO MAKE DUBAI THE HAPPIEST CITY ON EARTH

STRATEGY

Stakeholders engagement- residents, visitors, business owners, parents and families

MANDATES

facilitating Dubai's citywide smart transformation, to empower, deliver and promote an efficient, seamless, safe and impactful city experience for residents and visitors.

CSF # 2: Social and citizens engagement

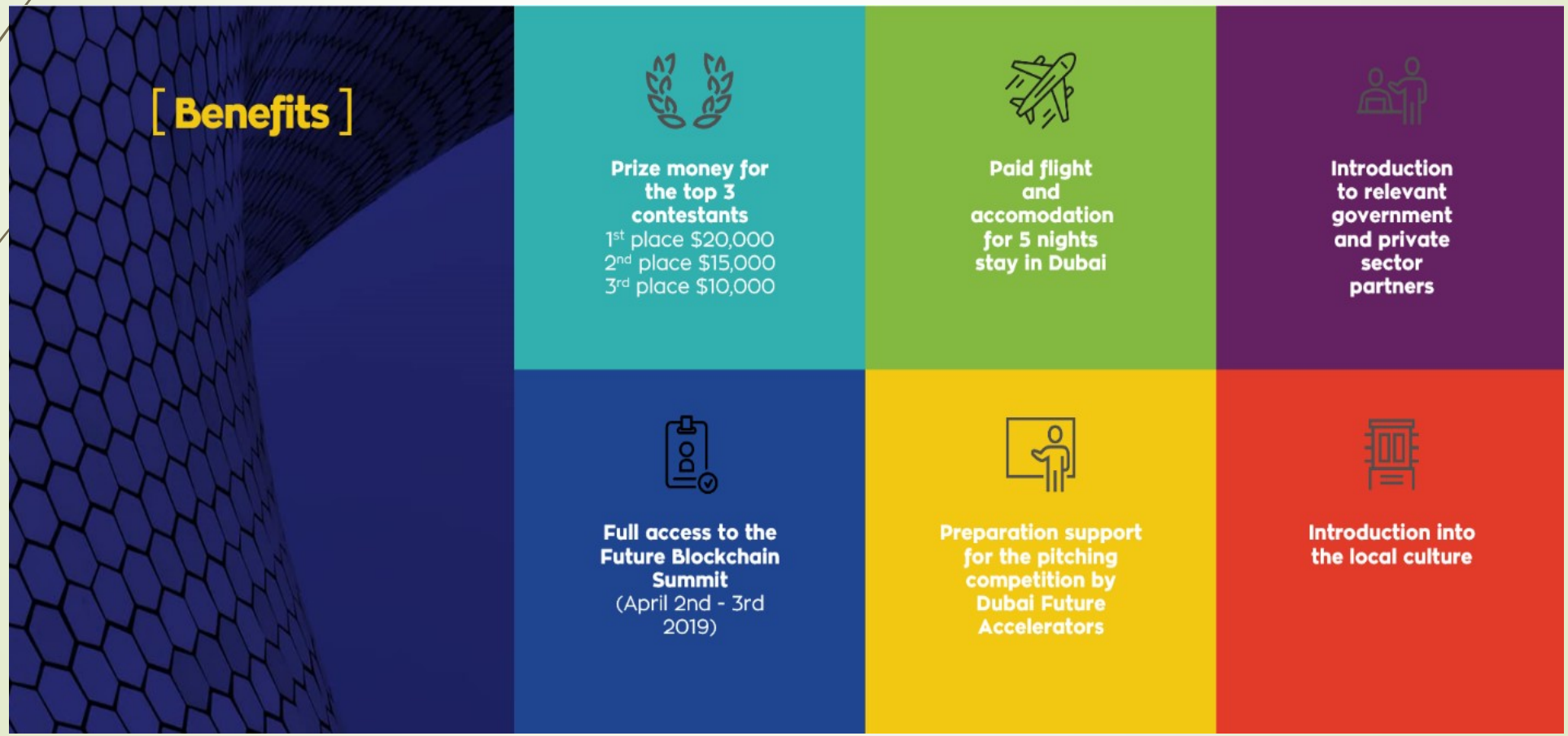
INITIATIVES

Since its inception, the Smart Dubai Office has launched over **130 initiatives** in partnership with government and private sector entities

1. Dubai Blockchain Strategy

Dubai [will be] the first city fully powered by Blockchain by 2020

In line with the Dubai Blockchain Strategy 2020, Smart Dubai Office alongside the Dubai Future Accelerators is hosting the **Smart Dubai Global Blockchain Challenge 2019**.



CSF # 3: Innovation

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10X

DUBAI | دبي

The Dubai 10X sets the Government of Dubai on a mission to be 10 years ahead of all other cities

i.e., out-of-the-box future oriented exponential thinking

2. Dubai Paperless Strategy

“Dubai Government will issue its last paper transaction in 2021”

That means government will no longer issue or ask for paper documents across all of its operations.

3. Happiness Agenda

To make Dubai the happiest city on earth.

By addressing the fundamental needs of our residents and visitors, we can enhance everybody's short- and long-term happiness and wellbeing, and create a global benchmark for other cities to follow our lead.

4. Dubai AI Roadmap

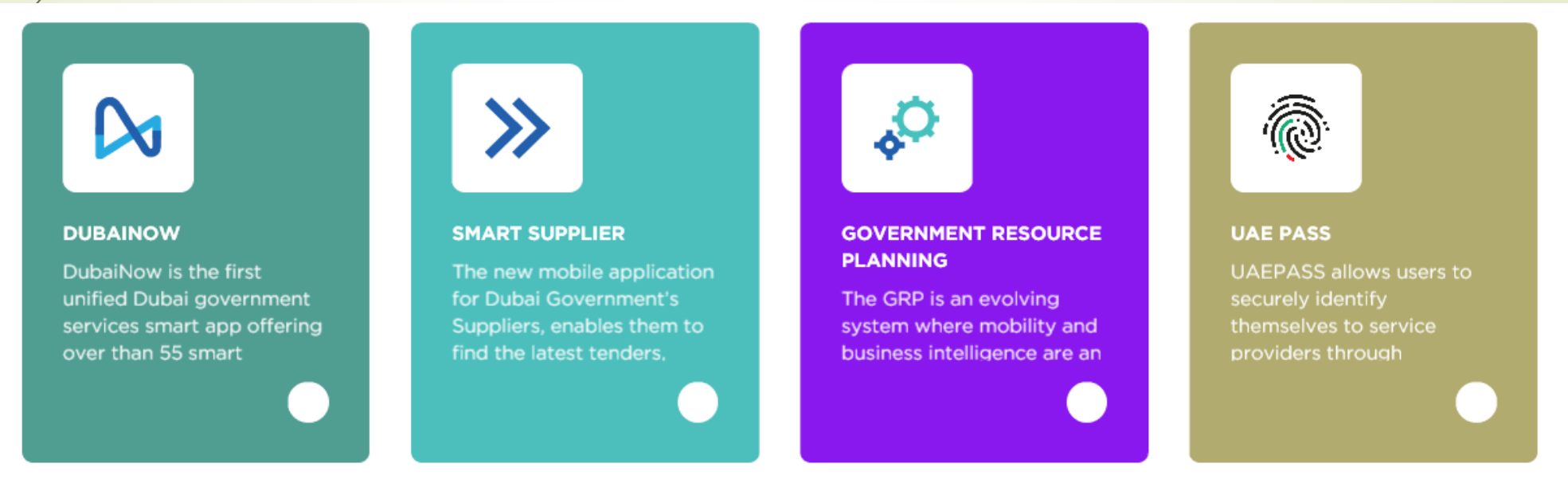
Our first-of-its-kind Artificial Intelligence (**AI**) Lab

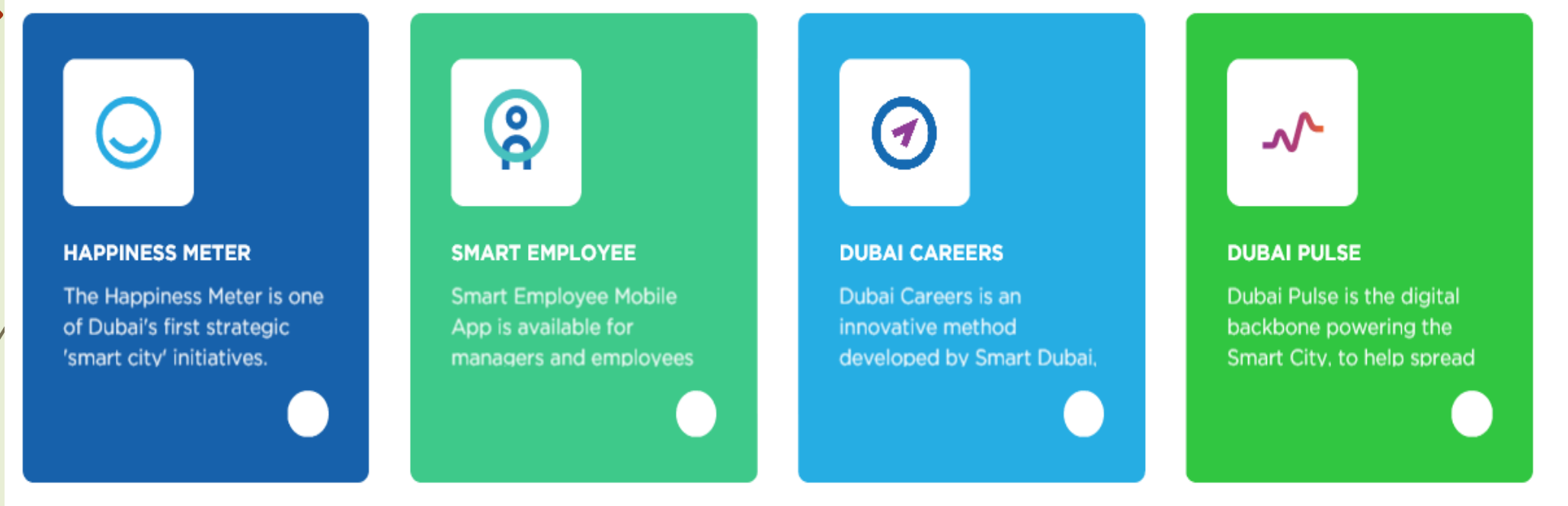
Harnessing the power of machine learning to integrate **AI** into government services and city experiences in order to improve citizens' overall quality of life, boost happiness levels and maximize visitor satisfaction.

CSF # 4: Information and communication

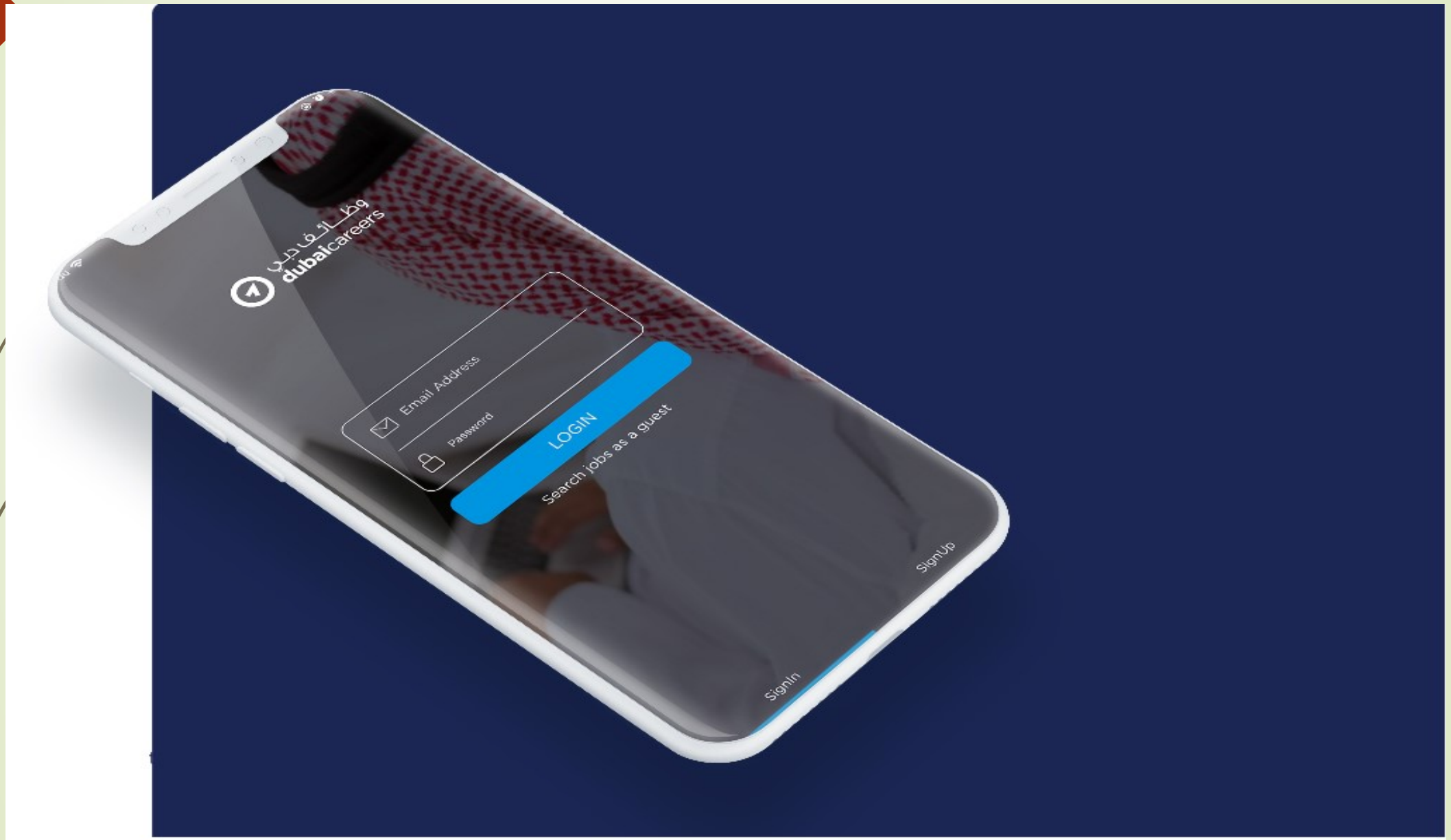
APPS & SERVICES

Smart Dubai plays host to a number of emerging technology backed applications powering the everyday lives of residents and visitors in the city. These include:





The Happiness Meter is one of Dubai's first strategic 'smart city' initiatives. As the world's first, city-wide, live sentiment capture engine, the meter represents a measurement gauge for the happiness goal.


وظائف دبي
dubaicareers
Email Address
Password
LOGIN
Search jobs as a guest
SignIn
SignUp

CSF # 5: Vision and passion

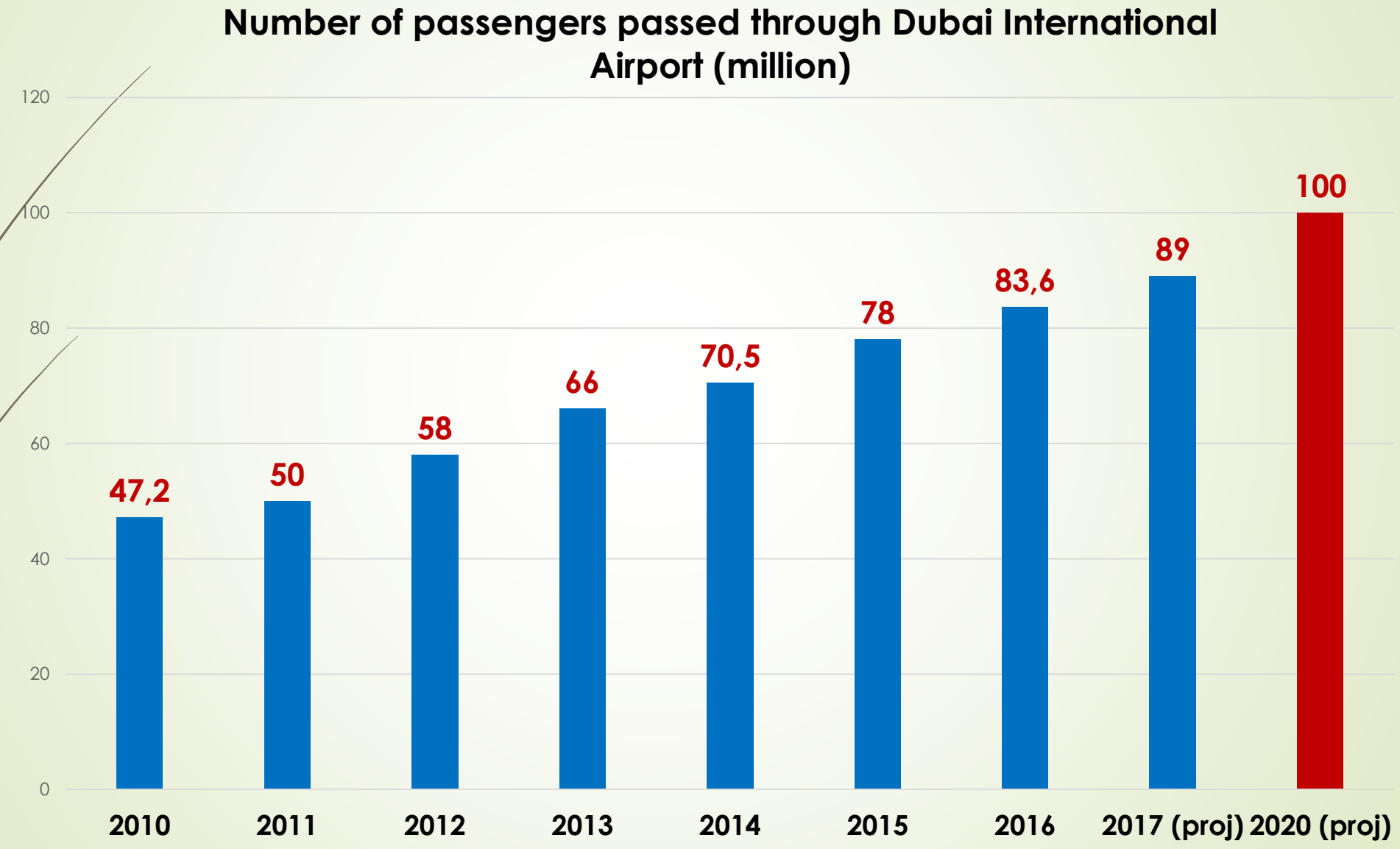
Aviation being the government top priority

His Highness Sheikh Mohammed Bin Rashed Al Maktoum, Vice President Prime Minister of the UAE and Ruler of Dubai said

"Our vision for Dubai is clear: we are not building the largest airport in the world. We are building the aviation capital of the world".

Dubai International Airport

- Four terminals (Terminals 1-3, plus the concourse A-D terminals dedicated mostly to giant aircrafts) **serve more than 150 local, regional and international airlines**.
- Cargo capacity increased av. **13.5% per annum** (1990-2013), double the world's average.
- Currently, the **largest cargo airport in MENA**, and the **4th globally** among the list of 50 airports.


Number of passengers passed through Dubai International Airport (million)
120
100
80
60
40
20
0
47,2
50
58
66
70,5
78
83,6
89
100
2010
2011
2012
2013
2014
2015
2016
2017 (proj)
2020 (proj)

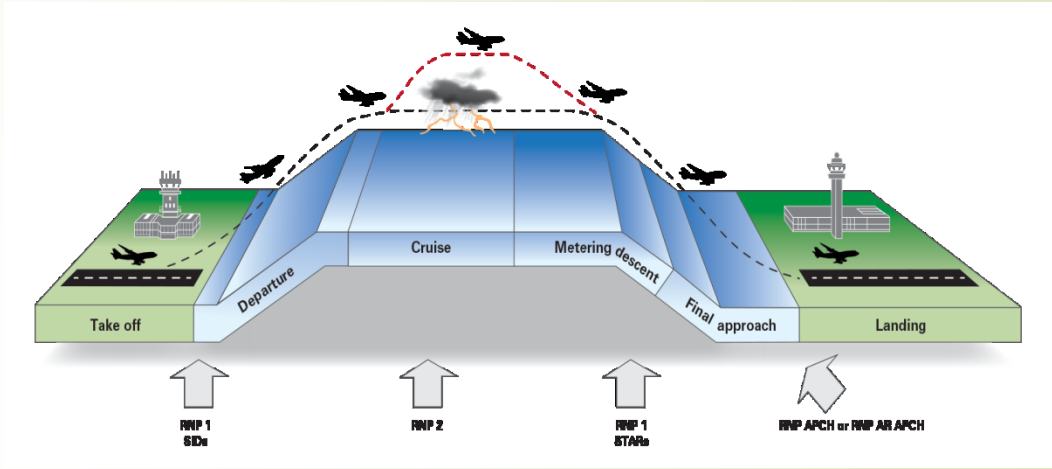
Record numbers

- The world’s busiest airport with 78 million passengers
- The first place globally as the best airline in the Skytrax World Airline Awards.

Cont'd Quick Facts

Next generation technology such as '**Performance Based Navigation**' **(PBN),** and '**Dynamic Airspace Management**' **(DAM)** will be deployed over the coming years to harness the capabilities of modern fleets and increase airspace capacity.

PBN



PBN is navigation that uses global navigation satellite systems (GNSS) and computerised on-board systems.

The Dynamic Airspace Management (DAM) is an important approach to extend limited airspace resources by using them more efficiently and more flexibly. It makes dynamic decisions on when and how to adjust the current air-route network with the minimum cost.

Good news!

Passenger wait times at Dubai Airport have dropped by as much as **10%.**

- **84% of transfer passengers** were processed within **5 minutes**
- **68% of arrival passengers** were processed within **15 minutes**
- **87% of departing passengers** were processed within **10 minutes.**

Smart Gates— Completely free of charge and requiring no pre-registration, the service enables the use of Emirates ID cards to pass through automated immigration gates at DXB. Since its introduction 2 years ago, over 1.3 million UAE users have taken advantage of the service.

A sophisticated motion sensor system

It allows the airport to track queues in real time.

530 sensors installed at crucial passenger processing areas in Terminal 1 and Terminal 3 at DXB to track the movement of people, collecting and computing valuable data like passenger wait times and queue lengths, and based on those factors, calculating the prevailing level of service.

- Via **mobile application** in use by more than 5,000 operational staff across Dubai Airports

Energy savings

Dubai Airports' efforts to reduce its carbon footprint resulted in total **energy savings of 5.17 million kWh in 2016** across Dubai International and Dubai World Central (DWC) **= powering 235 homes for a full year.**

WOW-Fi!!

Dubai Airports has unleashed the world's fastest free wi-fi connectio at an airport to **millions of passengers** that travel through DXB. It is now named **WOW-Fi**, the service provides internet connection up to a staggering **100mbps** surpassing all other airports.

Lessons learnt

- Strong passion and will
- Modern infra and connectivity
- Citizens and stakeholders engagement
- Enhanced regulatory framework
- Inspiring investment climate
- Ongoing state initiatives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thank you
danke
謝謝
ngiyabonga
рахмат
teşekkür ederim
Баярлалаа
спасибо
faafetai lava
vinaka
спасибі
blagodaram
dank je
misaotra
matondo
paldies
grazzi
mahalo
tapadh leat
gracias
хвала
asante
manana
obrigada
tenki
murakoze
chokrane
mamnun
дякую
mochchakkeram
djiere dieuf
tau
akun
dankon
ačiū
köszönöm
mauruuru
hvala
gràçie
bayarlalaa
enkosi
bedankt
nanni
nandri
kiitos
dankie
dhanyavad
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obrigado
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didi madloba
sagolun
sukriya
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gratias ago
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ありがとう
najis tuke
terima kasih
tanemirt
rahmet
grazie
dhanyavadagalu
diolch
shukriya
merçé
мерси
rahmat
kam sah hamnida
তোমাকে ধন্যবাদ
감사합니다
xièxie
ευχαριστώ
merci