

# Dubai Data Economic Impact Report



بيانات دبي  
dubai data

SMART DUBAI ESTABLISHMENT



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# 1

## PURPOSE OF THE STUDY

The Smart Dubai Office commissioned KPMG to undertake a study to provide the Government with insight into the potential impacts of opening and sharing data in Dubai. This study's objective is to provide a high level estimate of the anticipated economic and social impacts of the Dubai Data initiative and the impact of open and shared data more generally, based on a benchmarking of similar initiatives in other jurisdictions.

# 2

## INTRODUCTION

Dubai has an ambitious and far-reaching smart city strategy. It aims for Dubai to be the world's best-connected, smartest and happiest city. This vision is underpinned by the Dubai Data initiative which aims to open or share 100 per cent of public sector data by 2021.

The Dubai Data initiative is led by the Dubai Data Establishment (DDE) and decreed by the Dubai Data Law of 2015 (Law No (26) of 2015 on Regulating Data Dissemination and Exchange in the Emirate of Dubai). It underpins the Smart Dubai strategy and is an essential component that facilitates connectivity and access to services and information, and enhances decision-making and seamless service delivery for both the public and private sectors.

Dubai Data refers to datasets relating to any aspect of the Government, economy, culture and life within the Emirate of Dubai. The initiative calls for 100 per cent of government data to be open or shared by 2021, and also allows for the opening and sharing of some private sector datasets



# Everyone Benefits from Dubai Data



### OPEN DATA

Data published by the Government or private sector entities, to be used or exchanged with individuals or third parties openly.



### SHARED DATA

Data made available for sharing and re-use among entities, subject to certain terms and conditions



### BIG DATA

Extremely large amounts of data that may be analysed to reveal patterns, trends, and associations. Typically answers 'what?' questions.



### RICH DATA

What Big Data turns into after being subject to deeper, often qualitative analyses, extracting insights. Typically answers 'why?' questions.

Figure 1



# 3 METHODOLOGY

The estimates of the potential economic impacts of data in Dubai are based on a benchmarking approach, drawing on evidence of the impacts from other jurisdictions.

A number of studies that sought to quantify the economic impacts of open data were identified and the benchmark drew only on those that were the most relevant to Dubai in terms of:

- the impact being measured – for example, did it measure impact in terms of GVA, GDP or output or something else, such as consumer detriment;
- the scope of open data being assessed and if this included only public sector information;
- the timeliness of the study
- the applicability of findings to Dubai considering differences in consumer and business behaviour.

In particular, as the objective of the study was to assess the economic impact of both open and shared data from government and the private sector (as envisaged under the Dubai Data Law), and to estimate the impact in terms of economic activity (GVA or GDP), the selection of benchmarks drew on studies that allowed these estimates to be derived.

The two benchmark approaches used were:

1. Global estimates of the GVA impact of open data (broken down for Europe, the USA and the rest of the world) from the McKinsey report titled Open data: Unlocking innovation and performance with liquid information. These estimates consider seven different sectors and include both private sector and public sector data.
2. Estimates of the GVA impact of open data in Europe (broken down for ten industry sectors) from the Capgemini study titled Creating value through Open Data. This study focuses only on the opening of public sector data.

These benchmark estimates were adopted to the economy of Dubai and its sectoral makeup.



## Methodology

# How was the potential impact of data for Dubai calculated?

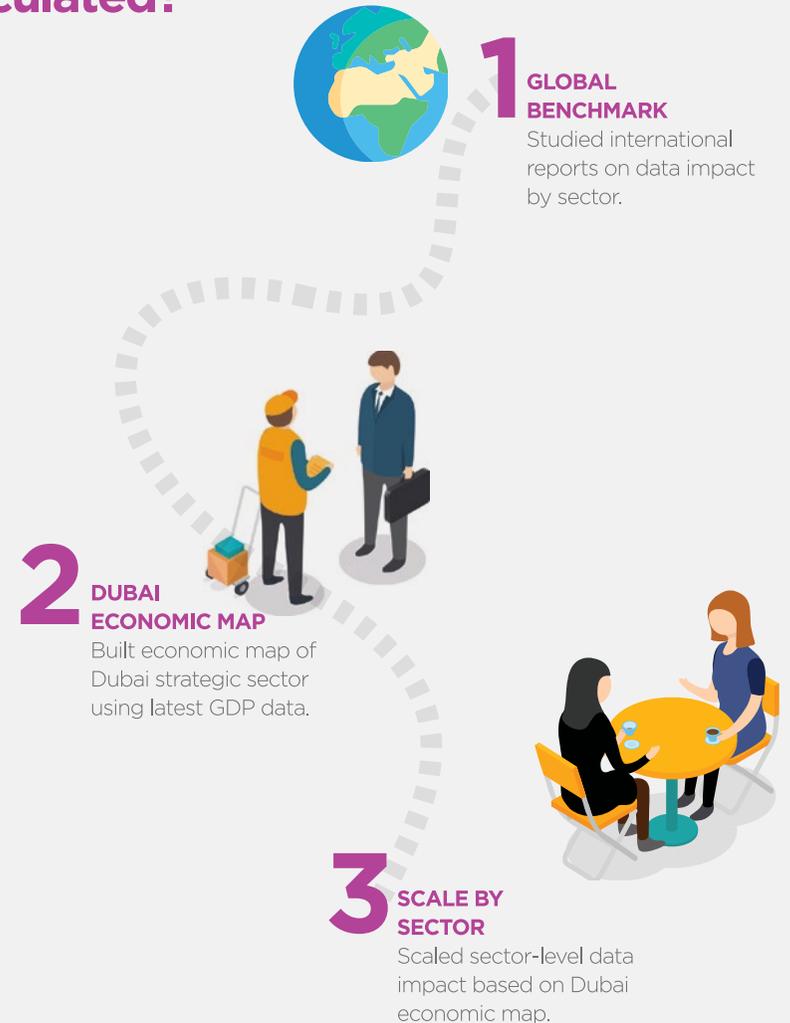


Figure 2

# 4 THE ECONOMIC IMPACT OF DATA

By 2021, open and shared data has the potential to add 10.4 Billion AED to the economy every year. This estimate includes the impact of publishing and sharing both private and government sector data. That's an additional 4,000 AED per person added to the economy.

Our high level estimates demonstrate the potential contribution of open and shared data to the Dubai economy in terms of Gross Valued Added (GVA). GVA is a measure of the contribution to an economy made by a firm, sector or activity. GVA is directly linked to Gross Domestic Product (GDP), however it excludes taxes and subsidies on products/ services.

Opening government data alone will result in an added value of in the range of AED 4.3 to 6.6 billion annually as of 2021. This is equivalent to approximately 0.8% to 1.2% of Dubai's forecasted GDP for 2021.

The high level estimates set out above provide an indication of the potential overall impact at the aggregate Dubai economy level. However, how this economic value of AED 6.6 billion is attributed to various sectors of the economy varies depending on the extent to which open data is valuable and useful in each sector.

It is clear that the big value drivers of impact for Dubai are the transport, storage and communication sector; the public administration sector; wholesale, retail trade, restaurants and hotels sector; and the real estate sector. These four sectors account for approximately three-quarters of the estimated potential GVA impact of open data in Dubai.

## Potential Value Added by Sector for Opening Government Data in Dubai

### Opening government data alone will result in an additional value in AED 6.6 billion annually as of 2021

This is equivalent to approximately 0.8% to 1.2% of Dubai's forecasted GDP for 2021. This potential value to be realized from opening government data will differ for each sector.

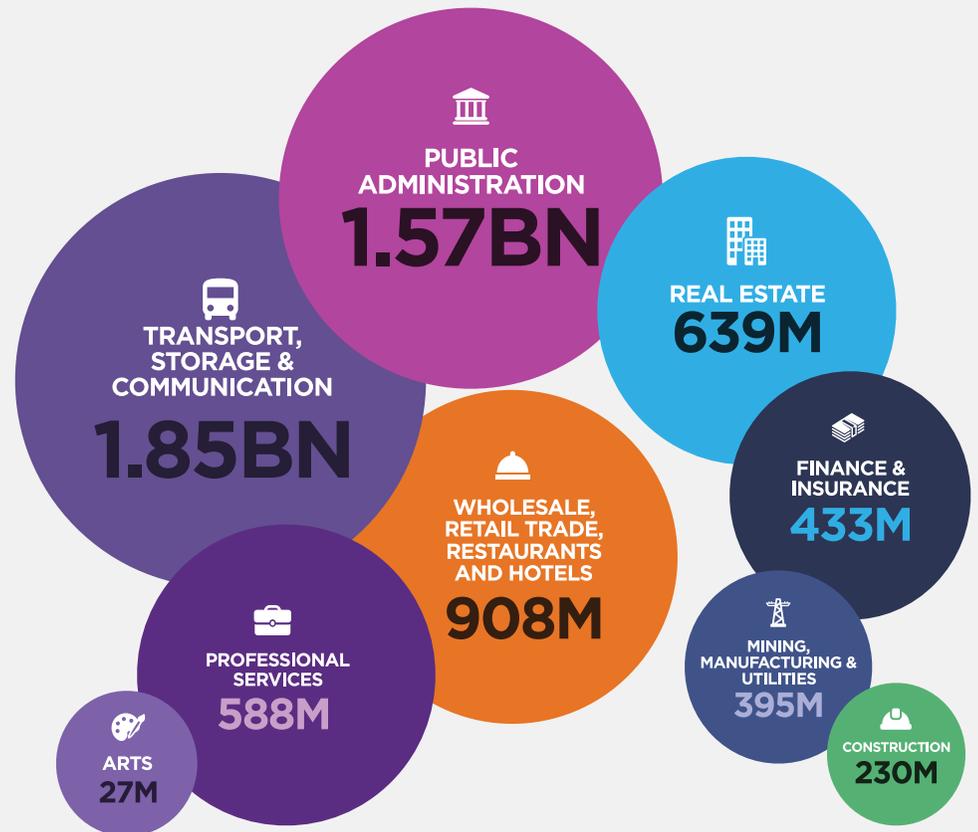


Figure 3

The estimates of economic impact represent the increase in economic activity (or output), measured in terms of Gross Value Added (GVA), attributable to the opening of data.



We will unlock the benefits of data for the city

10.4 Billion AED

value added to the economy **every year** from data by 2021.





## 5 HOW ECONOMIC IMPACT IS CREATED FROM DATA

There are a number of key stakeholders involved in the supply, use and re-use of open and shared data in Dubai. These stakeholders play an important role in the process of generating the economic and social impacts.

The Dubai Government and its Entities have an important role in each stage of the supply, use and re-use of data (as value creators). The value creators can also be private sector actors that use the data to create additional value or uses.

There are a number of ways value is created, including by:

- **Data Enrichers**, who combine open data with their own sources and or knowledge;
- **Data Enablers** who do not profit directly from the data, but do so via the platforms and technologies they are provided on;
- **Data Developers** who design and build Application Programming Interfaces (APIs); and,
- **Data Aggregators** who collect and pool data, providing it to other stakeholders.

The extent to which enrichers, enablers, developers and aggregators engage with, and create value from, open and shared data varies across different 'types' of data, with evidence suggesting that geospatial, environmental and meteorological information and economic and business information data generate the greatest value from use and re-use.



## We will prioritise the most valuable data sets for Dubai



More Valuable\*  
Less Valuable\*

Figure 4

\*Value generation potential from opening data

The insights on how different types of data create value will inform the prioritisation of the opening of datasets over the period up to 2021.

The extent to which different types of data create value for a city or country is to some extent dependent on its economic make-up and the consumer and business behavior within that context. For example, if agriculture is a small aspect of a city's/ country's economy, the importance of data relating to agriculture is much lower. Therefore, for Dubai, data that relates to the sectors that contribute most to the economy (such as tourism and logistics) are likely to be of the most importance.

## 6 SOCIAL AND ECONOMIC IMPACTS OF DATA

A range of social and economic impacts arise from the use and re-use of data. As a result of the enrichers, enablers, developers and aggregators and the products/ services they produce, a number of activities are enabled that create social and economic impacts. These impacts include:

- Additional collaboration and engagement with Government (by different stakeholders, including: citizens; the private sector; and other Government Entities);
- Private sector innovation and efficiency gains, including the creation of new businesses, growth of existing businesses as a result of new products and services enabled through open data ; and greater efficiency in operation; and
- Enhanced engagement of residents and visitors directly with data to influence or inform their decisions.

## 7 BARRIERS TO REALIZING FULL POTENTIAL OF OPEN AND SHARED DATA

While there is clearly significant potential to realise economic and social impacts from the opening and sharing of data, there are a range of barriers (or dependencies) that may inhibit this. These include:

**Legislative barriers:** These include disclosure policies, which limit data transparency, and copyrights, which may reduce clarity of ownership of datasets.

**The quantity and quality of data available:** The quantity and quality of data that is available for use and re-use clearly impacts on the extent to which economic impacts can be realised.

Data that is made available must have particular characteristics to enable its use and re-use. To be valuable data needs to be:

- Accessible – that is, data must be made available in disaggregated forms and in an electronic format. The format in which the data are made available should be convenient and modifiable and should be machine-readable (for example, pdfs are not always machine-readable).
- Discoverable – this means the data should be findable via a data catalogue, information asset register or other sorts of cataloguing.
- Timely – rapid disclosure is required, for example, by builders of certain apps that rely upon using the very latest data.
- Linked – this allows for more sophisticated user queries.
- Available for re-use without discrimination.



**Economic barriers:** Charging can significantly impact the usage of data and, therefore, the potential value realisation. Charging for datasets is likely to be a particularly significant barrier for SMEs and individuals who face financial constraints, potentially acting as a barrier for entrepreneurship.

**Access barriers:** These relate to the format and reliability of data, the reluctance to use data, and the lack of skills and understanding that will reduce the realisable value from the data.

The Dubai Government has put in place a range of measures to ensure that these barriers are addressed and tackled through setting the right policies and standards, enabling data sharing through the Smart Dubai Platform, and raising the skills necessary to realize the social and economic value of data.

## 8 CONCLUSION

While the high level estimates provide an indication of what could possibly be achieved, the actual impacts that are realised from open and shared data should be monitored and evaluated over time.

The high level estimates only provide an ex-ante assessment of the potential size of opportunity from opening and sharing data. Achieving this scale of impacts is by no means certain and will require inputs and activities from the Government and from other public and private sector players in the Dubai economy to realise them.

# 9

## APPENDIX

### ASSUMPTIONS

A number of assumptions were made for the purposes of developing the ex-ante estimates of the impact of open data in Dubai. These include the following:

- Data made available for use and re-use will be useful, of high quality and meet the standards, as set out in the Dubai Data Manual.
- All data meeting the requirements to be open, as per the relevant policy, will be made available to other Government Entities, businesses and citizens.
- The Smart Dubai Platform will be fit for purpose and meet the requirements to share and download data.
- Data will be provided at no charge for use and re-use.
- The Government's own role as a value-added reseller of services built on open data will not impact on private-sector investment in Dubai data (i.e. there will be no crowding out).
- The estimates relate to open public sector data. The Government Entities in Dubai aim to have 100 per cent of their datasets open, where applicable, or if not, available to share with permitted users, by 2021.
- The studies we use to provide estimates for earlier years. To make these relevant to 2016, relevant growth rates observed until 2015 were applied. To generate estimates for 2021 onwards, the average Dubai GDP growth rate of 5.9 per cent (average from 2006-2015) was applied.
- As the estimates were calculated in United States dollars (USD) they were converted to United Arab Emirates Dirham (AED) using the 2015 exchange rate sourced from the World Bank.

### APPROACH

Below are the two methodological approaches to derive the high level estimates of the economic impact of data in Dubai:

#### OPEN DATA: UNLOCKING INNOVATION AND PERFORMANCE WITH LIQUID INFORMATION

##### How we have adapted the approach for Dubai

The original global estimates are broken down into the impact for Europe, the USA and the Rest of World (ROW). They are also detailed by seven sectors, these include: education; transport; consumer products; electricity; oil and gas; health care; and consumer finance. The details of how this has been used and calibrated for Dubai, using both methods are detailed below.

##### Method A: Scaling by economy level GDP

The first method involves calibrating by Dubai's total GDP. We know that, as a proportion, Dubai's GDP makes up 0.2% of the ROW GDP (in 2013 values). Scaling purely by GDP means that Dubai will realise 0.2% of the impacts estimated for the ROW.

As the original study estimates are in terms of output, a broader measure than GDP alone, we then translated this to GVA using Dubai's National Accounts and the level of output to GVA for the economy as a whole. The study involved looking at the value of public and private sector data and therefore had to be scaled to reflect public sector data only. It was assumed that half of the impact is attributable to public sector data and that three-quarters is still yet to be realised (i.e. a quarter is already realised as some data is already available for download). This is in line with assumptions made by Gruen et al.



## Method B: Scaling by sector level GDP

The second approach involves calibrating by Dubai's GDP by sector or economic activity. Global GDP is available broken down by broad sector<sup>104</sup>, these sectors include: agriculture, hunting, forestry, fishing; mining, manufacturing, utilities; construction; wholesale, retail trade, restaurants and hotels; transport, storage and communication; and other activities. The impact from each of the seven sectors was put into the relevant broad sector.

In 2013 Dubai's GDP received contributions of 0.0%, 0.1%, 0.3%, 0.6%, 0.5% and 0.2% from the respective sectors above and therefore could realise the pro-rated amount of impact, i.e. 0.3% of the impact from wholesale, retail trade, restaurants and hotels.

This level of output was then scaled to reflect the GVA contribution of public sector data in the same way described above.

**For all estimates:** As the estimates related to 2013, we applied relevant growth rates observed until 2015. For future periods the average growth rate of 5.9%, average from 2006-2015, was used to increase the impact. As the estimates were calculated in United States dollars (USD) they were then converted to United Arab Emirates Dirham (AED) using the 2015 exchange rate<sup>105</sup>.

*(1) Manyika, J., Chui, M., Growves, P., Farrell, D., Van Kuiken, S. and Almasi Doshi, E. 2013, McKinsey Global Institute*



## CREATING VALUE THROUGH OPEN DATA

### How we have adapted the approach for Dubai

The impact of open data was categorised by ten sectors, these included: arts, entertainment, recreation; public administration; profession services; real estate; finance and insurance; ICT; trades and transport; construction; industry; and agriculture. The impact from each of these sectors was put into the relevant broad sectors.

The Capgemini estimates were presented for Europe and therefore we scaled the impacts to the ROW using the same ratio found by McKinsey. We then applied to same two methods (scaling by economy level GDP and scaling by sector level GDP) as detailed above to the Capgemini estimates to establish an estimate for Dubai.

The estimates were presented in GVA terms and for public sector data solely and therefore did not require scaling in that respect. Estimates were presented in terms of direct and total impacts (direct plus indirect). This was used to estimate the same for Dubai.

*(2) Capgemini, 2015, European Commission*



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