Data entrepreneurship: exploring successful business models with open data

Jamie Fawcett, Lucia Chauvet and Ryan Goodman
Open Data Institute in partnership with ODINE

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About

This report is based on research carried out by the Open Data Institute as a partner in the Open Data Incubator for Europe. Specifically, it draws upon the ODI's primary research for the ODINE D6.3 business models, lessons learned and success stories deliverable.[1]

About the ODI

ODI works to build a strong, fair and sustainable data economy by helping governments and businesses around the world get data to people who need it. It is independent, nonprofit and nonpartisan, founded in 2012 by Sir Tim Berners-Lee and Sir Nigel Shadbolt. From its headquarters in London and via its global network of startups, members and nodes, the ODI offers training, research and strategic advice for organisations looking to explore the possibilities of data.

Since its inception in 2013, the ODI startup programme has supported 33 startups spread across five 'cohorts'. Initially the programme focussed on businesses that placed open data at the core of their business model and had a triple-bottom-line impact socially, environmentally and economically. The evolution of the data-enabled economy sector demonstrated that most business models, whilst adopting an open-innovation approach, incorporated a blend of open and shared data. In response to this, we broadened the scope of the latest cohort to include a wide range of data-enabled startups.

As a whole, startups incubated by the ODI while in the programme have secured around £16m in sales and investments and directly employed more than 130 people.

About ODINE

The Open Data Incubator for Europe (ODINE) was a six-month incubator programme for startups and SMEs across Europe looking to innovate with open data. The programme was delivered by seven European partners and funded by the EU's Horizon 2020 initiative. It looked to help startups and SMEs to innovate with open data to develop or improve products and services. Over 20 months, the ODINE project funded 57 companies from 18 different European countries across a range of industries and markets. Alongside funding, the programme provided a number of services, including mentoring and coaching sessions, as well as peer to peer support and networking. Across the eight cohorts of startups, ODINE has resulted in €23.7M of sales, investment and efficiencies, and generated 278 jobs.[2] Furthermore, the startups have created over 50 open data products or services, which in turn provide new opportunities for other companies within the ecosystem.

Authors: Jamie Fawcett, Lucia Chauvet and Ryan Goodman

Editors: Anna Scott and Charlotte Fleming
Design and art direction: Adrian Philpott / PHILPOTT design

ODI open data institute

ODINE Open Data Incubator Europe

1 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.
2 IDC (2017), 'Impact Assessment of ODINE Programme', https://opendataincubator.eu/files/2017/07/ODINE_Final-report_2.0.pdf.

Executive summary

Data is infrastructure on which the modern economy is built. Data's increasing ubiquity and abundance makes it vital in every sector, and businesses of every size are becoming more and more dependent. Open data is creating value for society and the economy.[3] In this age of data abundance the amount of open data available will keep increasing. Individual businesses, especially startups and SMEs, can take advantage of open data in many ways.

> By analysing data alone or together with third parties, retailers By pioneering value propositions and business models that take advantage of open data now, businesses can get ahead of the competition.

This paper presents key lessons learned about the role of open data in successful business models, based on the ODI's experience incubating startups and on research carried out as part of the Open Data Incubator for Europe (ODINE) programme.[4]

These lessons are not exhaustive, however we hope they can help guide new and existing startups and SMEs to create value with open data. Although the exact business models surrounding open data are still evolving, the value of open data to business is clear. What these lessons show is the unique opportunity that open data creates for startups and SMEs to create growth, extract value and ensure sustainability while defining the successful business models of the future.

Key lessons for businesses

- **You don't have to be an 'open data startup' to benefit from open data.**

  While some businesses are set up to explicitly take advantage of the opportunities presented by open data, many other businesses are building new products and services or enhancing their existing offering with open data.

- **Beyond consumption: open data publishing is creating value for small business.**

  Access to open data presents businesses with a valuable opportunity to innovate but increasingly businesses are publishing open data to attract new customers, improve customer experience and capture new markets.

- **Freemium subscription models are being used to generate revenue from publishing open data.**

  Revenue models for products and services based on open data tend to adopt 'as-a-service' subscription revenue models and when it comes to publishing open data, businesses are increasingly using freemium models to derive revenue while keeping data open.

- **Greater value is created by combining different data from multiple sources.**

  Strong value propositions are often built to solve very complex problems. Businesses often address them by combining a wide variety of data types from different open, shared and closed sources.

- **Services built on open data are of value to a wide range of organisations and individuals.**

  The products and services built with open data are useful to a diverse range of businesses, governments and individuals from across the whole economy.

3 The ODI (2016), 'The value of open data', https://theodi.org/the-value-of-open-data.
4 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.

Introduction

More businesses are recognising the opportunities available to build and enhance their value proposition using open data.

Open data is data that anyone can access, use and share,[5] by virtue of the limited set of constraints imposed by publishing data under an open licence.[6] With increasing amounts of open data available, more businesses are recognising the opportunities available to build and enhance their value proposition using open data. Open data brings more than just access to new data sources – it is allowing businesses to explore innovative business models that include publishing open data or supporting others to publish it.

The unique selling point for businesses using data does not arise from exclusive access to the data, but what they do with it and how that helps customers make decisions.

The ODI has been working with open data startups and SMEs since it was founded in 2012. This report shares some lessons learned about innovative startups and SMEs that have built unique value propositions based on open data. We draw upon recent research[7] that was carried out by the ODI for the EU-funded Open Data Incubator for Europe (ODINE) programme,[8] additional analysis of the data from this research and our own experiences with the ODI Accelerator programme.[9]

The goal of this report is to help startups, SMEs and Venture Capitalists (VCs) to understand the business value that can be created through open data and to explore some of the new models that can capture that value. We do this by sharing lessons from our research into the successful ODINE companies and our work with other businesses. We believe that these new business models provide a glimpse of the future data economy.

The value of open data

Current estimates suggest the value of public sector open data sits between 0.4% and 4.1% of GDP.[10] However, existing research tends to focus on the benefits of open data to the wider economy, rather than the benefits it can bring to individual organisations.

Research has revealed the huge amount of value created by individual open datasets, primarily those published by governments. For example, a study of the US Landsat data – comprising satellite imagery of the Earth's surface published under an open licence – found that the dataset generated an estimated $2.19bn economic benefit in 2011 alone.[11]

Other research has been able to quantify the overall value of an organisation publishing open data. For instance, Transport for London's release of open transport data was recently estimated to be worth up to £130m per year for travellers; London and TfL itself in saved time, operational efficiency and jobs.[12] However, there are few estimates of the value created for individual private sector companies, and next to none on the value they derive from publishing their own open data.

The ODI has been working with companies of various sizes and capturing the lessons learned through research into open data businesses. This report represents the third in a trio of products sharing these lessons, alongside the 'Open data means business'[13] and 'Open enterprise'[14] studies.

Building business models involving open data

Categorising business models is often done through frameworks, the most widely used of which is the Business Model Canvas.[15] This breaks down any business model into nine core building blocks. Academics, businesses and research organisations have been using these frameworks to evaluate emerging trends and patterns among those building products and services with open data. The Creative Commons team have developed an Open Business Model Canvas[16] to describe business models built on openly licensed content. This fed into their work on the Made with Creative Commons[17] project, designed to document such businesses.

Others who have begun to categorise different trends include Ferro and Osella,[18] Howard,[19] Zeleti,[20] Ojo and Curry, Jeni Tennison,[21] the World Wide Web Foundation[22] and Deloitte.[23] In our research for ODINE, we compiled a synthesis of the emerging trends and patterns identified in existing research. This report, however, will not build on these categories but will explore broader findings relating to components of models currently used by SMEs and startups.

Better understanding of open data business models through ODINE

The ODINE programme provided diverse examples of successful value propositions and business models involving open data. The 57 companies that were given funding came from 12 industries, 18 European countries and varied between established SMEs and startups born within the programme. On completion of the programme, the estimated return on investment (ROI) was 300x, with an independent evaluation[24] projecting this to grow to 540x return on investment by 2020.

The goal of the research on which this paper is based was to explore the business models of the ODINE-funded companies, and use them to help inform wider research into open data and business models.[25]

5 The ODI (2016), 'What is open data?', https://theodi.org/what-is-open-data.
6 Open Definition, 'Open Definition 2.1', http://opendefinition.org/od/2.1/en.
7 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.
8 See: https://opendataincubator.eu.
9 See: https://theodi.org/start-ups.
10 The ODI (2015), 'The economic impact of open data: what do we already know?', https://medium.com/@ODIHQ/the-economic-impact-of-open-data-what-do-we-already-know-1a119c1958a0.
11 NASA Landsat Science (2015), 'Landsat Benefited U.S. Economy by $1.8 Billion in 2011', https://landsat.gsfc.nasa.gov/landsat-benefits-u-s-economy-by-1-8-billion-per-year.
12 Transport for London (2017), 'Assessing the value of TfL's open data and digital partnerships', http://content.tfl.gov.uk/deloitte-report-tfl-open-data.pdf.
13 The ODI (2015), 'Research: Open Data means business', https://theodi.org/open-data-means-business.
14 The ODI (2016), 'Open enterprise: Executive summary', https://theodi.org/open-enterprise-big-business.

15 See: https://strategyzer.com/canvas/business-model-canvas.
16 Stacey (2016), 'What is an Open Business Model and How Can You Generate Revenue?', https://medium.com/made-with-creative-commons/what-is-an-open-business-model-and-how-can-you-generate-revenue-5854d2659b15.
17 See: https://medium.com/made-with-creative-commons.
18 W3 (2013), 'Eight Business Model Archetypes for PSI Re – Use', https://www.w3.org/2013/04/odw/odw13_submission_27.pdf.
19 Howard (2013), 'Open data economy: Eight business models for open data and insight from Deloitte UK', https://www.oreilly.com/ideas/open-data-business-models-deloitte-insight.
20 See: https://dl.acm.org/citation.cfm?doid=2612733.2612745.
21 Tennison, J. (2012), 'Open Data Business Models', http://www.jenitennison.com/2012/08/20/open-data-business-models.html.
22 Web Foundation (2015), 'Open Data Intermediaries: Their Crucial Role', https://webfoundation.org/2015/08/open-data-intermediaries-their-crucial-role.
23 Deloitte (2012), 'Open growth', https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/deloitte-analytics/open-growth.pdf.
24 IDC (2017), 'Impact assesment of ODINE programme', https://opendataincubator.eu/files/2017/07/ODINE_Final-report_2.0.pdf.
25 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.

More than just 'open data startups'

Organisations are increasingly building open data into their businesses; some without even realising it.

Where in the past, open data may have seemed like a niche field, populated by specialist 'open data businesses', increasingly we are seeing organisations of all types building open data into their business, some without even realising it.

Open data is simply data that has been published under an open licence for anyone to access, use or share. All modern businesses are now looking to make better use of data. Whatever field, industry or market a business is in, there is likely to be useful and relevant data available. Our research into the ODINE companies found clear evidence that a range of different businesses from different sectors and geographies were integrating open data into their business models.

How core is open data to your business?

We asked the ODINE companies how important open data was to the existence of their companies. Of those who responded, there was a fairly even split between three different ways in which they were taking advantage of open data.

29% said their company would not exist without open data. These are what might typically be described as 'open data companies'. They tend to build services specifically around open data. They are often members of 'the open data community' and are likely to have built a value proposition around openness.

34% said their company would struggle to exist without open data. These businesses are more focused on a value proposition that is enabled by data, using open data to lower costs or time to market. While open data may not be at the core of their products and services,it has become a key factor in their overall success.

37% said their company would be able to exist without open data. These businesses, especially in the ODINE context, are typically businesses with an existing value proposition. While they are not dependent on open data, they tend to be exploring the opportunity presented by open data for building new products or services, or enhancing their existing offering. As well as offering access to a wider variety of data, open data allows them to try things out and experiment more quickly – without having to buy access to data or negotiate data-sharing agreements.

None of the respondents to our research said they would be able to easily exist without open data. This clearly indicates that all the businesses believe open data is playing some role in their overall success, even if it is not necessary for their survival.

Diversity of industry

We asked companies which industry best described their area of business. Just over half the respondent companies did not consider themselves first and foremost a tech company. These companies placed themselves across 10 different industries, from healthcare to education. While it is likely that most of the companies are technologically advanced and data-savvy, they are attempting to build products and services with open data to tackle existing industry problems. Those who do consider themselves a tech company are most likely to be working across several traditional market sectors.
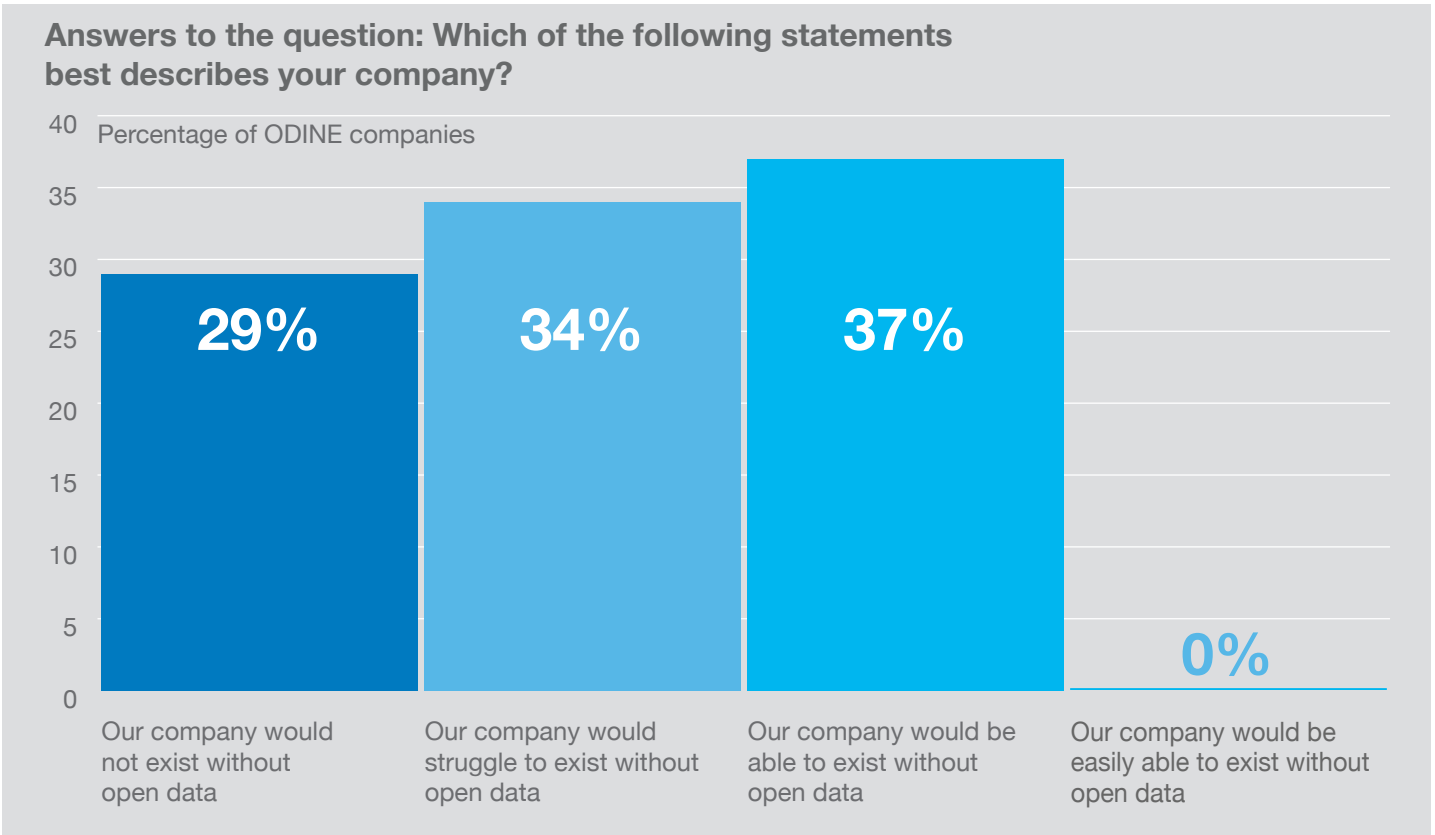
Figure 1: ODINE companies' answers to the question: Which of the following statements best describes your company?[26]

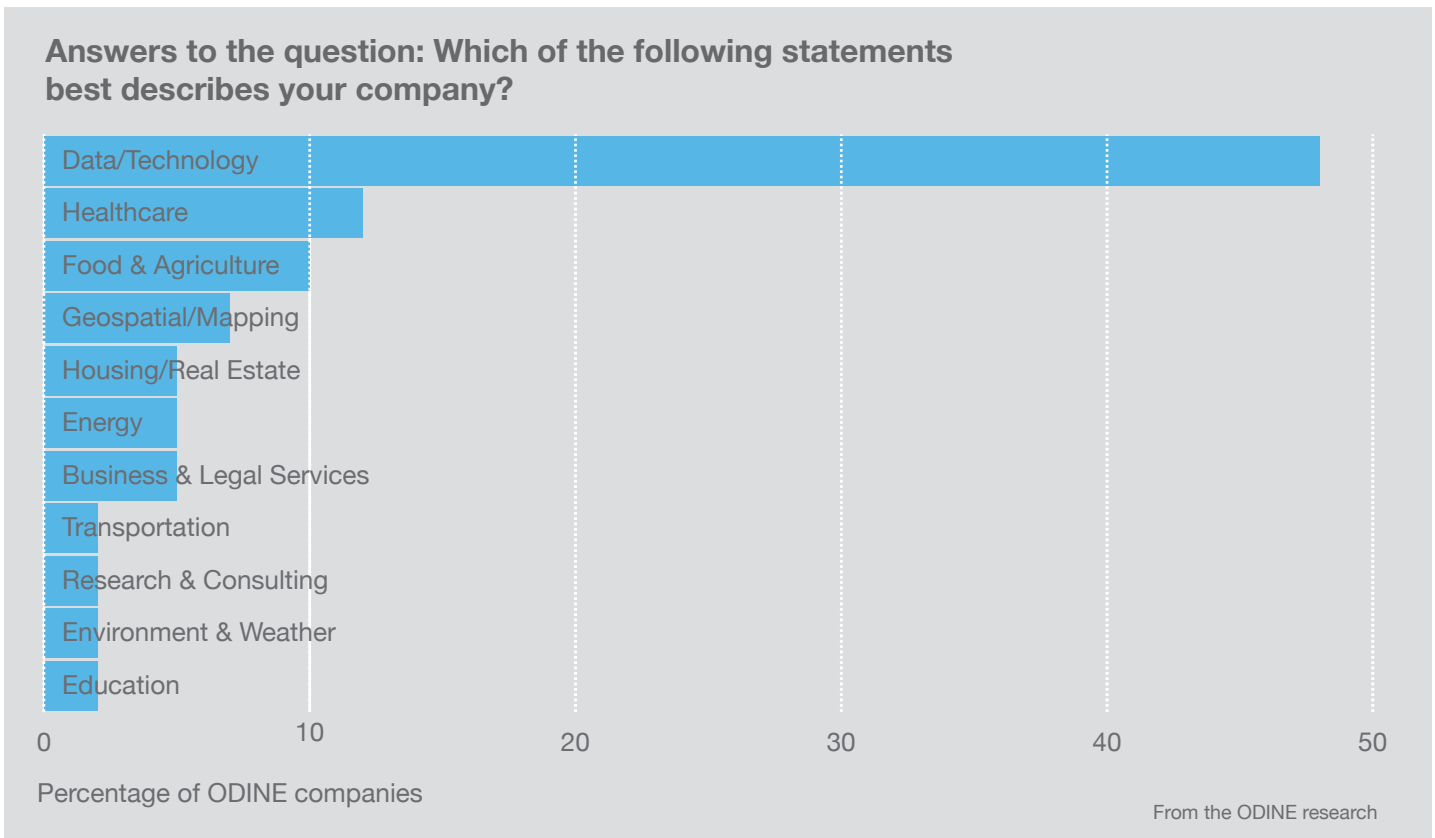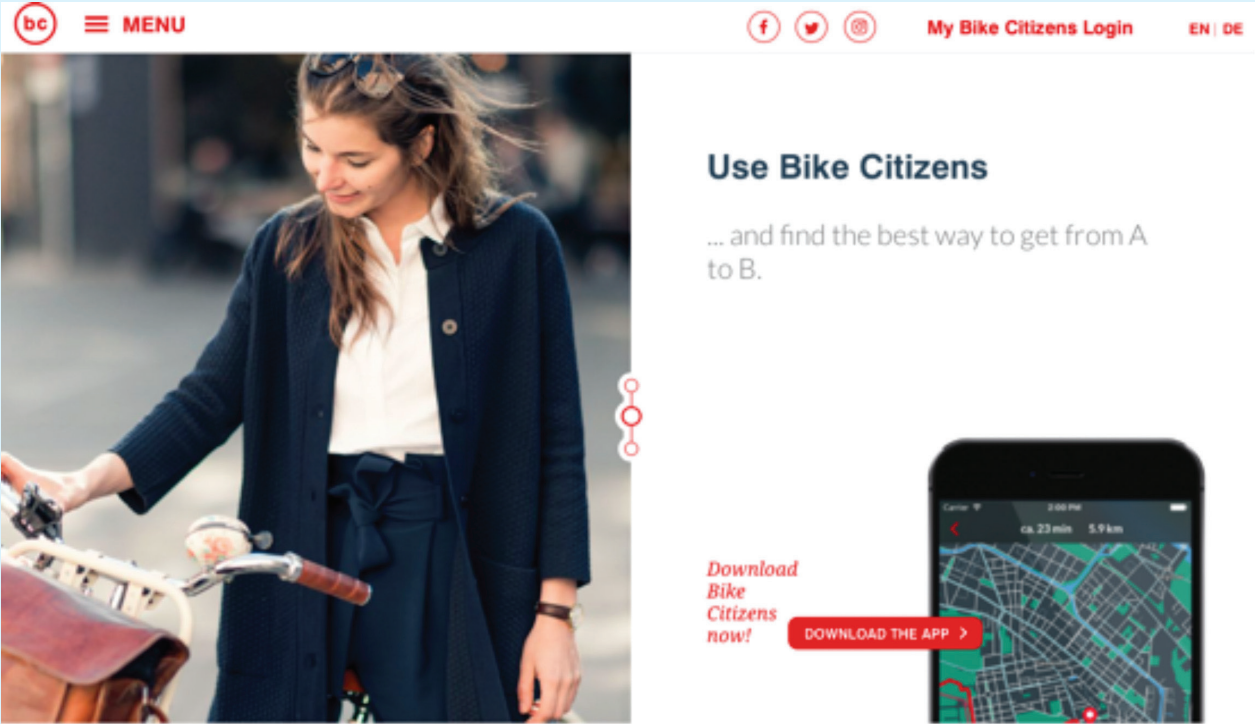**Figure 2:** ODINE companies' answers to the question: Which category best describes your company's area of business?[27]

26 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.
27 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.

Case study: BikeCitizens

BikeCitizens is a good example of a startup benefitting from open data without being an 'open data startup'.[28] The company's primary offering is a smartphone application which offers cyclists route planning services. BikeCitizens also sell smartphone mounts, which enable the cyclist to attach their smartphone to the handlebars of any bike.

BikeCitizens business model revolves around partnering with cities to license their cycling app in order to make it free to download for their citizens. BikeCitizens also collect data from users and provide aggregated data to cities to help them understand cycling in the city and explore ways to improve city design for cyclists.

However, after obtaining funding from ODINE, the company could use and publish open data on bike-sharing service locations to improve access to bike-sharing services in cities through their application. They also use OpenStreetMap and open weather data in their application and this has enhanced their value proposition so they now reach over 430 cities

https://www.bikecitizens.net

28 See: https://www.bikecitizens.net.

Beyond consumption: creating value through publishing

> New models building on and republishing data are challenging the notion that data's value comes from limiting access to it.

Open data has begun to play a much wider role in businesses, with new models looking not only to use open data but to build on and republish data, support others to publish and generally drive open data publishing further. These models run counter to the dominant position on data, which is that value can only be derived from data by limiting access to it. What makes these models particularly appealing for startups is their ability to capture existing markets, create new markets and produce network effects. This leads to greater value creation for the startups themselves and the industries or markets they operate in.

The role of open data

We asked companies whether they used, published or supported others to publish open data; 93% used it, 55% were publishing and 60% were supporting others to publish it. While open data use is high, over half the respondents were publishing or supporting others to publish indicates the wider role businesses play in the data economy.

Open data plays more than one role in 81% of respondent companies, suggesting that businesses generate value from open data in more diverse ways than simply by ingesting and selling it. One in four companies used, published and supported others to publish open data, compared to less than one in five only using open data.

Half of the respondents both used and published open data, which indicates that they built products and services based on it, which in turn led to data being published. This might indicate that the companies are 'infomediaries' – businesses that clean or improve open data to re-publish and sell access to it. However, there are also a number of companies who publish open data as part of the wider products and services they provide.

The importance of the role that open data plays

We asked companies about how important role was for their products and services, and their value propositions. The research showed that on the whole, use of open data played a core role in 25% of the businesses and a key role in a further 63%. This was much higher than either publishing (14% core, 32% key) or supporting open data (4% core, 44% key).
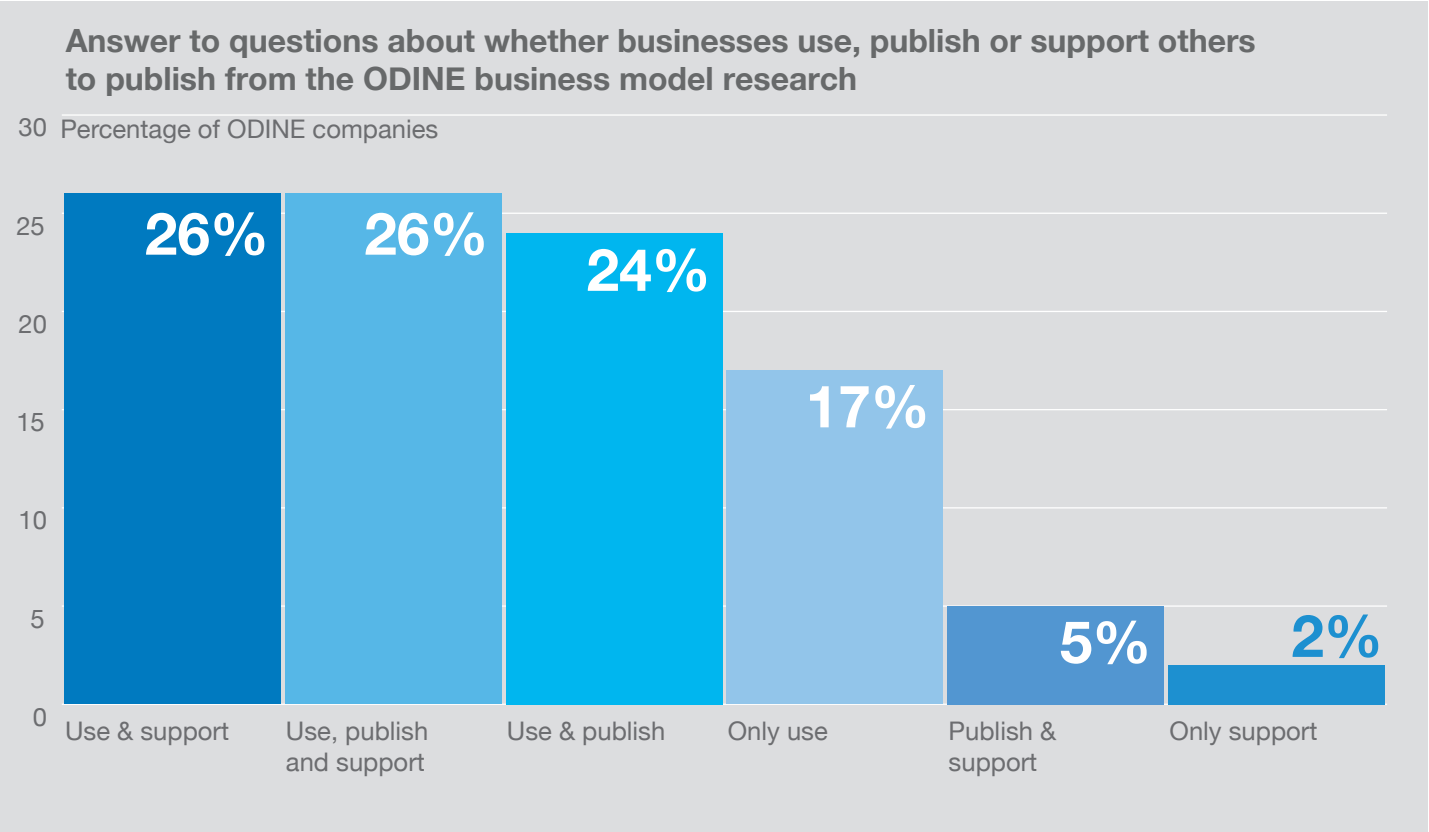
Answer to questions about whether businesses use, publish or support others to publish from the ODINE business model research

Percentage of ODINE companies

Use & support	26%
Use, publish and support	26%
Use & publish	24%
Only use	17%
Publish & support	5%
Only support	2%

Figure 3: ODINE companies' answers to the question of whether they use, publish or support others to publish open data. [29]

Answer to questions about the importance of use, publishing or supporting others to publish from the ODINE business model research

It forms the core of our products or services — Use 24%, Publish 14%, Support 4%

It is a key ingredient in our products or services – it forms an essential feature — Use 63%, Publish 32%, Support 43%

It is a marginal ingredient in our products or services – it forms a non-essential feature — Use 13%, Publish 45%, Support 48%
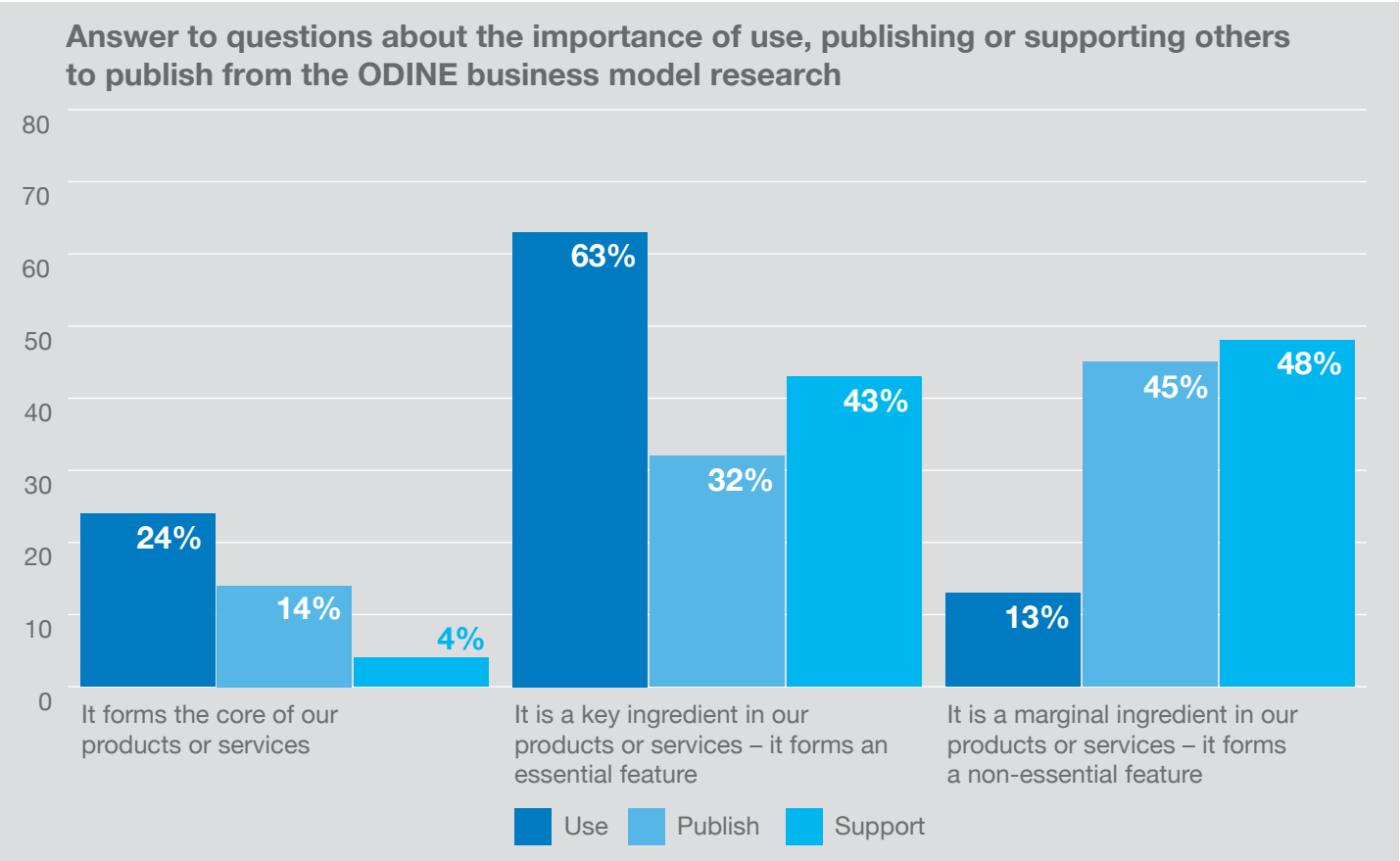
■ Use ■ Publish ■ Support

Figure 4: ODINE companies' answers to the question on the importance of using, publishing or supporting others to publish open data.

29 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.

Case study: Green City Solution

Open data is playing a role in Green City Solutions' business model and product, CityTree, which addresses the global problem of air pollution.[30]

A CityTree is a free-standing vertical plant display, which combines a special moss culture with the company's own Internet of Things (IoT) technology. The moss is attached to air vents in order to speed up the air cleansing process and collect data about the types and levels of pollution in the city. The plant is capable of targeting and reducing air pollution, such as fine dust and nitrous oxides, up to 275 times more efficiently than a normal tree.

CityTrees have been implemented in several European cities, with vertical plant displays in city streets of Oslo (Norway), Paris (France), Hanover, Dresden and Berlin (Germany) and Hong Kong. Green City Solutions ensure profitability by

implementing visual and digital information on the product for marketing purposes. The product also contains smart sensors, which collect environmental and climatic data, allowing regulation and control units to ensure that moss culture survives. The business can also integrate benches with wi-fi spots and e-bike charging services for an additional cost.

CityTrees collect data on air quality and Green City Solutions use and publish it to benefit the cities where the trees are being used. Open data therefore generates new possibilities to analyse data about air quality, enabling cities to make better environmental decisions.

https://greencitysolutions.de/en

30 See: https://greencitysolutions.de/en.

Generate revenue through publishing

Many businesses are already using, publishing and supporting others to publish open data as part of viable paid-for products and services.

Where businesses are not charging directly for products or services, there are usually indirect revenue strategies in place.

One common approach to non paid-for services, especially around the publication of open data by businesses, is the use of freemium models. Freemium models grant access, normally to openly licensed data, free of charge under some conditions, while introducing premium paid tiers for certain types of access or value-added services. Businesses can also employ cross-subsidy models where they use free open data services to attract customers to other paid-for services or to generate leads for other business opportunities.

Freemium models for open data services

We asked companies if their product was ever free at the point of use in order to examine the prevalence of the freemium model, and to understand other sales strategies including free trial services. Over three fifths of companies employed a freemium model for their product or service, whether that was data itself or another service.

Deriving revenue from open data

We asked businesses how they derived revenue from the products and services they had developed with open data, including but not limited to data itself. 86% of businesses derived revenue using a subscription fee – with 49% using subscription fees as their only revenue model – suggesting that, on the whole, ODINE companies are selling ongoing access to data, platforms and services.

Only 32% of companies used one or more revenue streams that did not involve direct payment from the customer. Just over a fifth of companies were employing some form of cross-subsidy model – either attracting customers to other paid-for products and services, or using open data to generate leads for other transactions. However, only 5% of businesses were relying exclusively on this strategy, while the rest also employed direct revenue models.
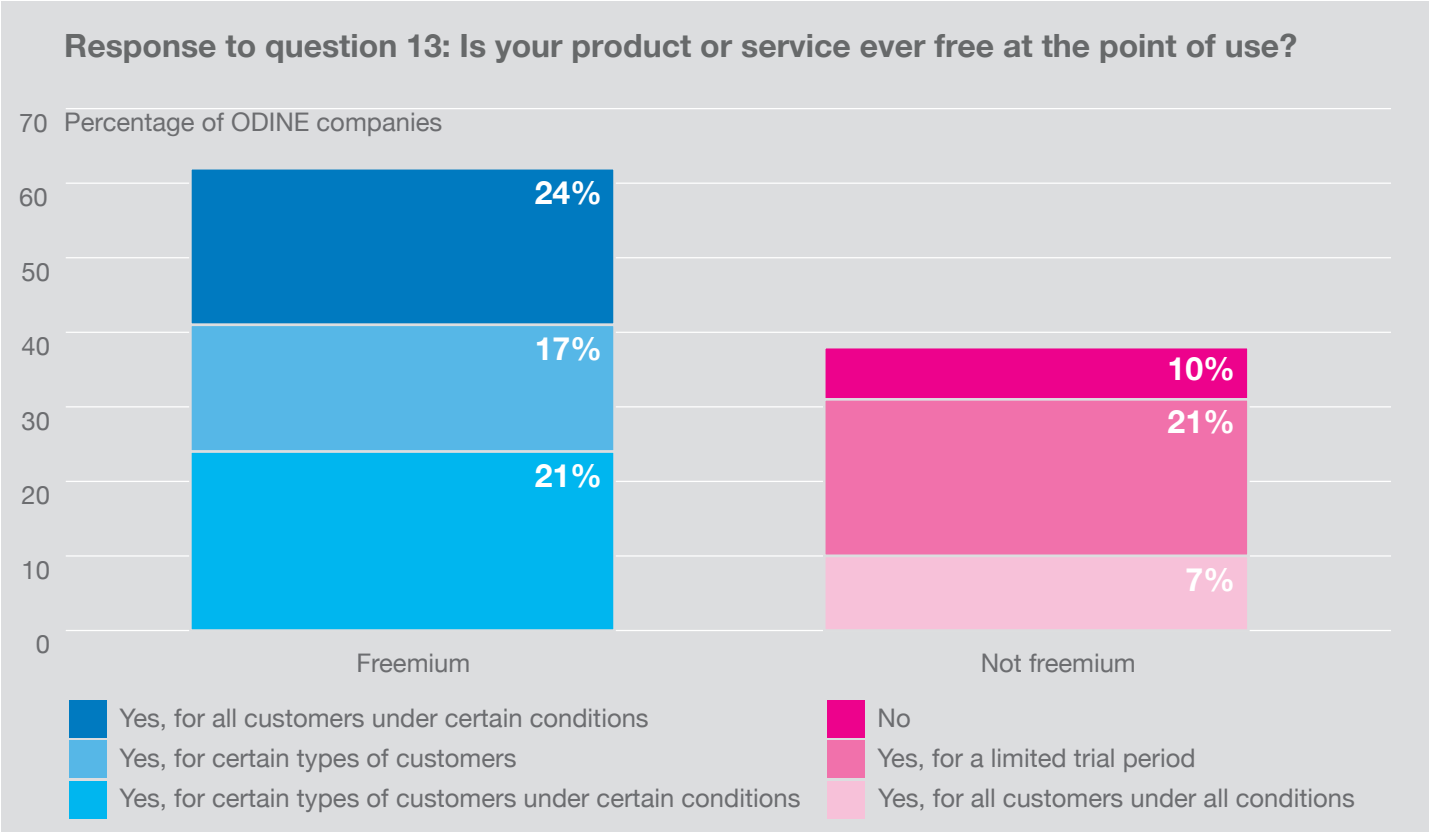

Figure 5: ODINE companies' answers to the question: is your product or service ever free at the point of use?[31]
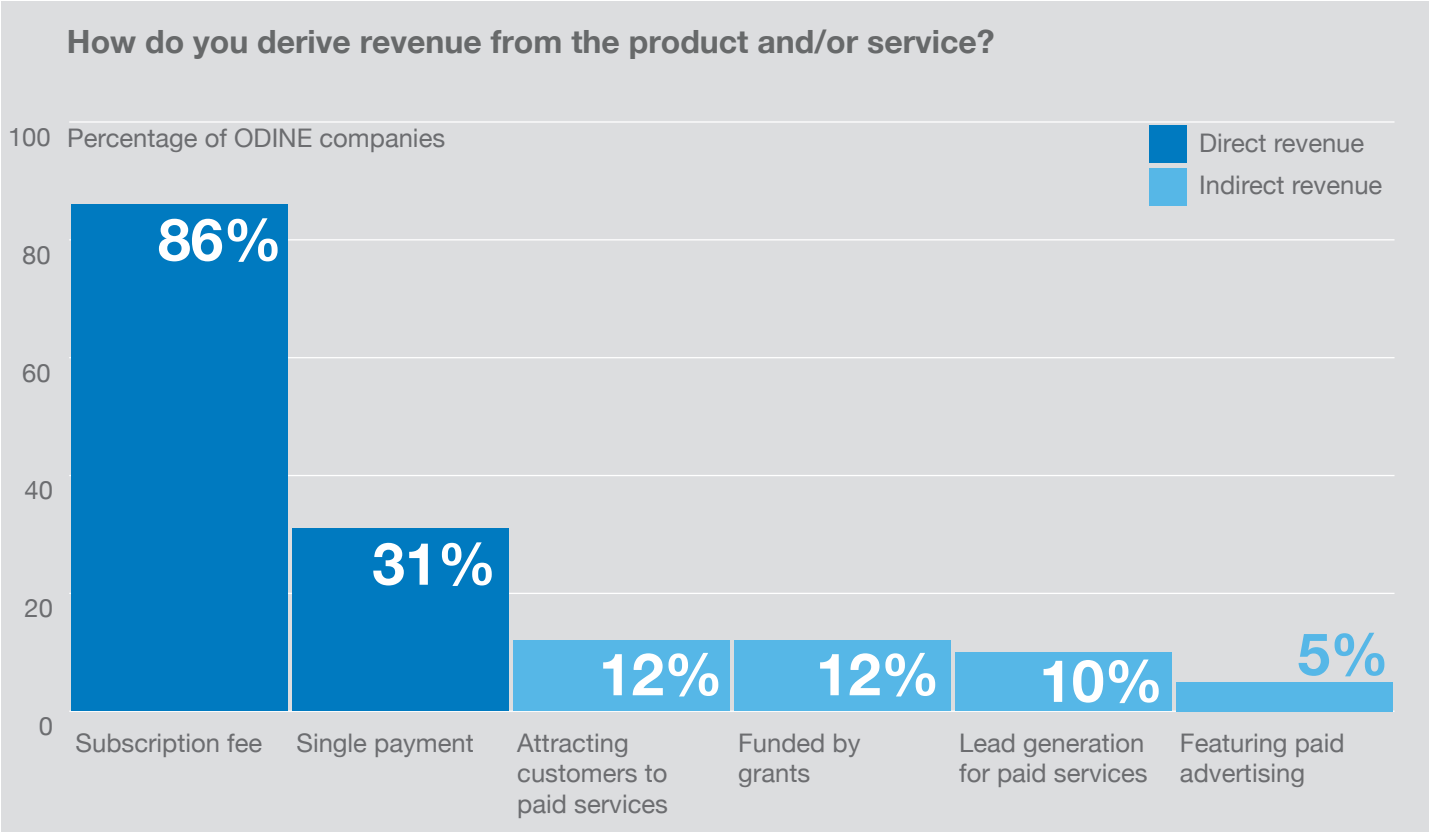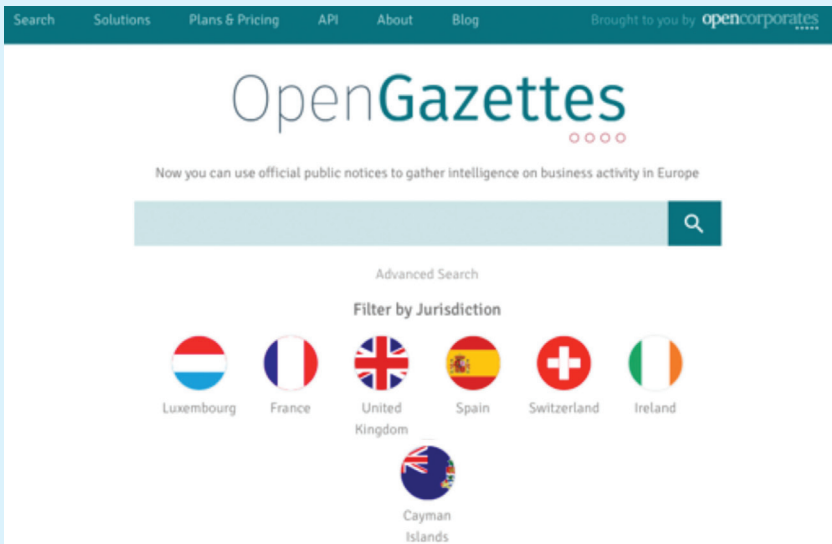

Figure 6: ODINE companies' answers to the question: how do you derive revenue from your product and/or service?[32]

31 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.
32 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.

Case study: OpenGazettes

OpenGazettes aim to make government gazettes more accessible to companies and individuals around the world.[33] Gazettes are official journals published online and accessed globally, which are used for research or for private companies assessment. They contain information such as notices of incorporation, dissolutions, mergers and more. However, these notices are hardly ever linked to the right companies. Run by OpenCorporates, which manages the largest open database of companies in the world, OpenGazettes aim to connect companies with the correct notices and contracts.

OpenGazettes derive their revenue from open data using a freemium subscription model: users are able to access some of the data for free if using it for public benefit, but must pay fees for personal or corporate use of the database. At present, fees are charged in accordance with a user's daily or monthly access to API documentation.

Open data was crucial in allowing gazettes to be published and accessed openly in order for companies to be better informed and build a profitable business.

http://opengazettes.com

33 See: http://opengazettes.com.

Combine data from multiple sources

Products and services provided by businesses often rely on various data sources to be combined in innovative ways to help customers solve problems.

This variety can be a necessity of the sector or subject of the data, but it can also arise from the terms under which the business has access to the data.

While in some cases all the data a business uses will be open, often it will come from across the Data Spectrum.[34] For example, open data can be mixed with data shared by customers to make analysis more relevant to them. Value arises not from the data's content, but from combining different data sources in a way that meets the customer's needs.

That said, profitable business models do not rely on selling access to data. In many cases, startups and SMEs are looking to disrupt markets by publishing open data. By publishing open data – sometimes just cleaning, enhancing and re-publishing existing open data – they can encourage further open innovation. In doing so, they can directly benefit, principally by creating an ecosystem of companies that rely on their data, build complementary services and are potential customers for their paid-for
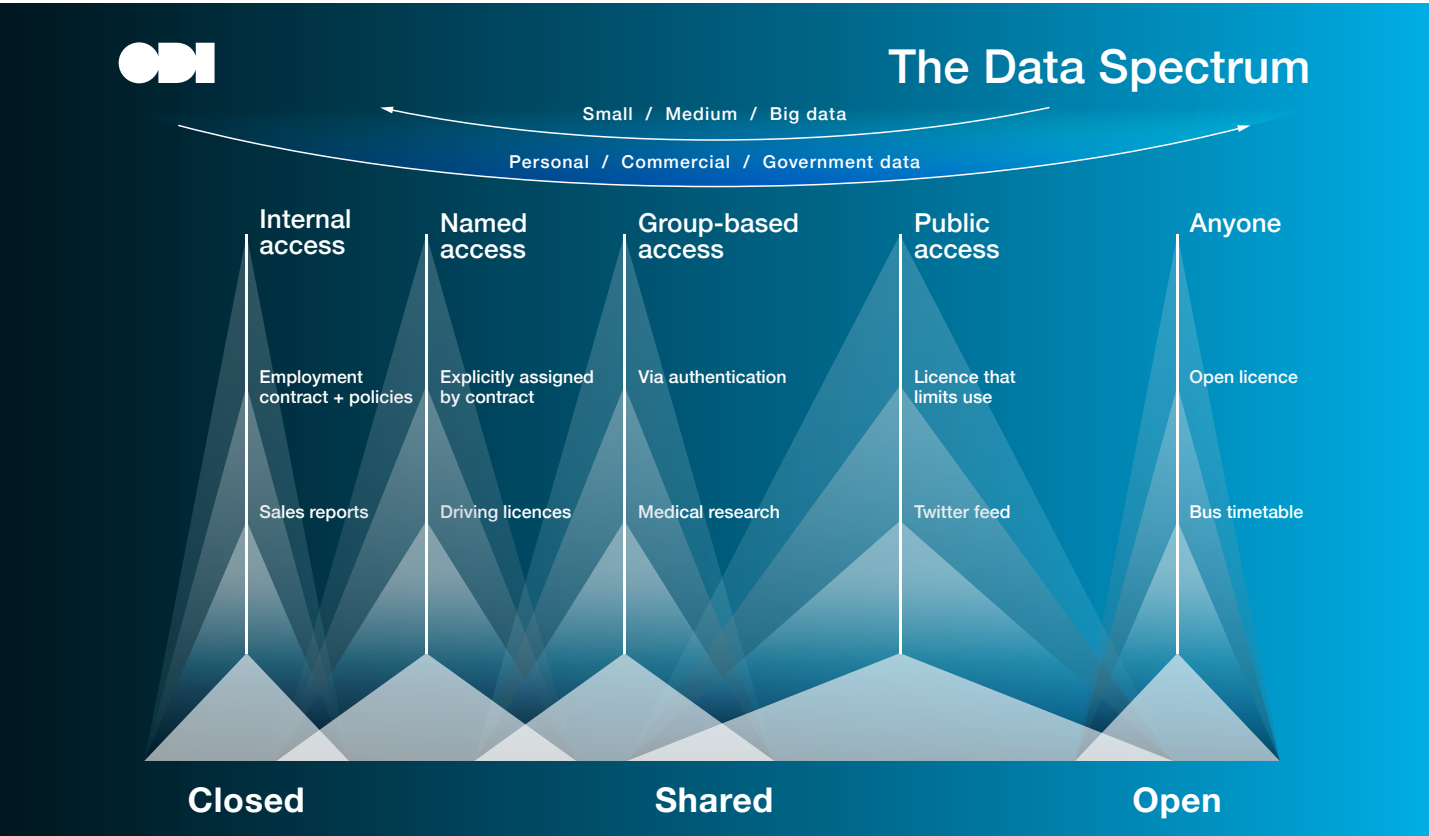

Figure 7: The Data Spectrumr.

34 The ODI (2017), 'The Data Spectrum helps you understand the language of data', https://theodi.org/data-spectrum.

services. TransportAPI provide an early example of this model, aggregating and cleaning various open transport data feeds,[35] leading to the development of companies like CityMapper.[36]

Using multiple open data sources

We asked businesses what open data sources they used. 87% of companies using open data used data published by government. Over 55% were using open data published by other businesses despite there being much less available than public sector data – clearly indicating the usefulness of private sector data. Of the companies using open data, 74% were using data published by two or more types of publisher, with 11% using data from all five sources, demonstrating the variety of sources being used.

In hindsight, one type of open data publisher that was not clearly represented by this question was community data initiatives. These were specifically named by users: OpenStreetMap was mentioned by 13% of users, while others mentioned initiatives such as DBpedia, Geonames and Wikidata. 47% of companies using data noted that they used data either published by individuals, the third sector, or both, which could refer to these types of initiatives.

In turn, several companies were contributing to these 'community' initiatives. They were not doing this for altruistic reasons but to help the data better meet their own needs, without the need to build and maintain their own infrastructure. Examples of this collaborative approach are not limited to startups or SMEs, for example Facebook uses, and improves, OpenStreetMap to support their own services,[37] while reducing costs that would be associated with maintaining their own mapping data infrastructure.

We also asked businesses what types of open data they were using. While 29% said they were only using data on only one topic, on average businesses were using data on four different topics with 16% were using data on eight or more different topics.

Combining open, shared and closed data sources

We asked companies about the types of products and services they were developing. 43% were providing a product/platform for analysing, visualising and/or interpreting customer data and 29% a product/platform for hosting, managing and/or publishing customer data. Only 5% of all companies who were developing these types of services were not using open data; in most cases the value was unlocked by combining shared customer data with open data sources.
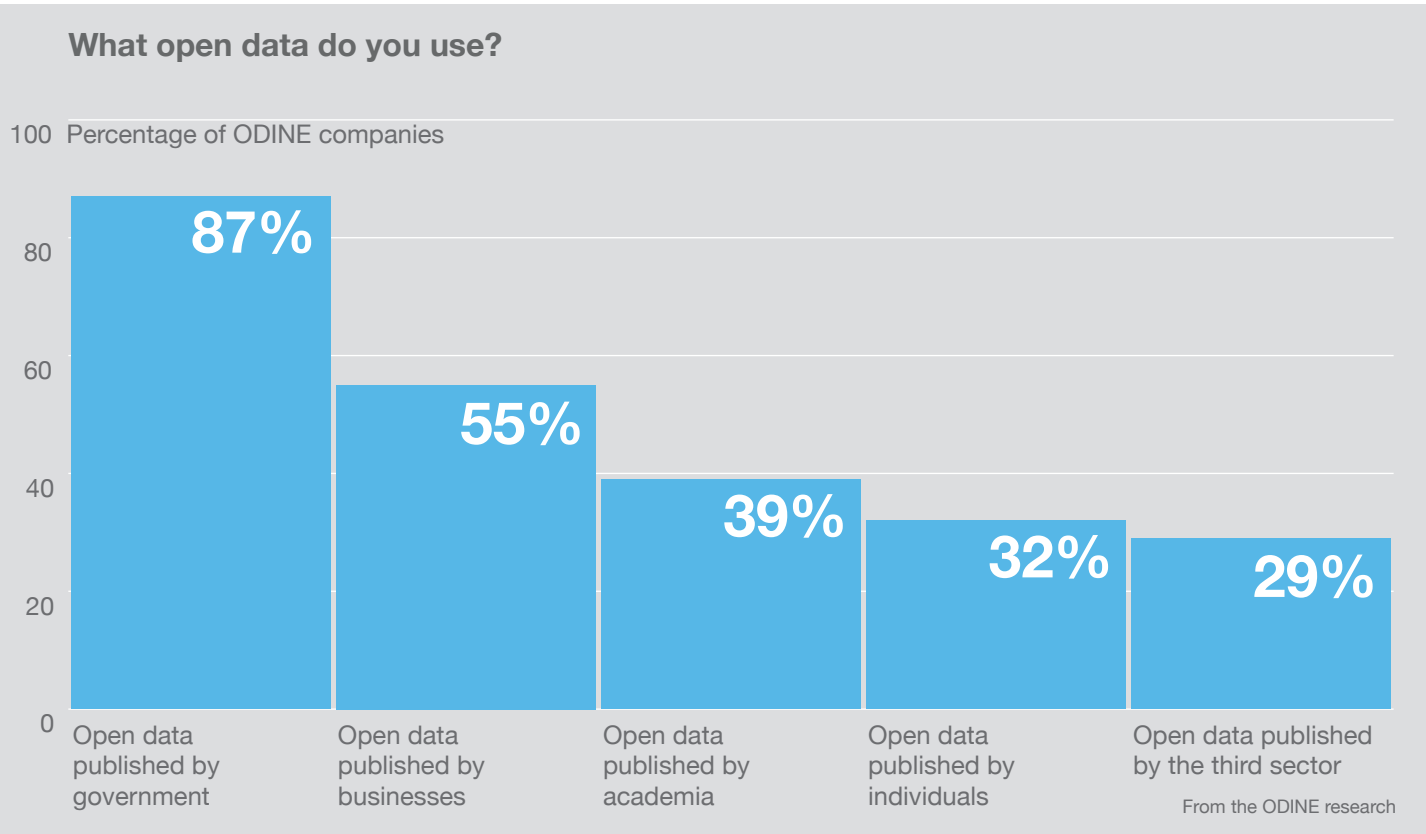
What types of open data do you use?

Figure 9: ODINE companies' answers to the question: what types of open data do you use?[39]

What open data do you use?

Figure 8: ODINE companies' answers to the question: what open data do you use?[38]

35 See: https://www.transportapi.com.
36 See: https://citymapper.com/london.
37 See: https://forum.openstreetmap.org/viewtopic.php?id=55220.
38 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.

39 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.

Case study: urban Data Analytics (uDA)
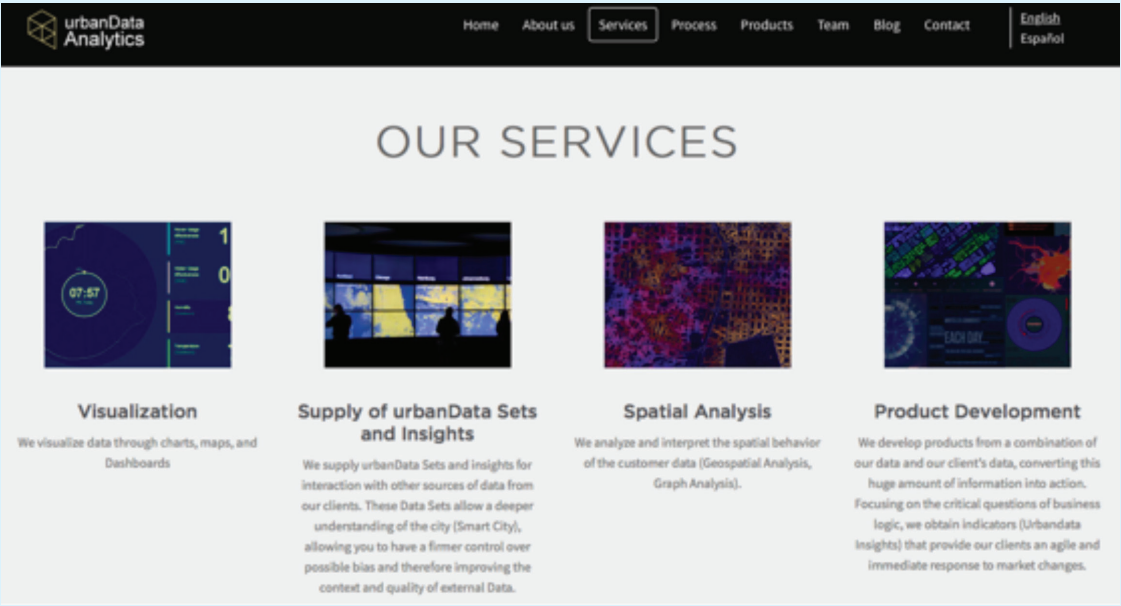
Founded in Madrid, Spanish startup urban Data Analytics (uDA) offers access to a huge amount of high-quality, accurate and real-time real estate data.[40] The company is using this data to help people make informed decisions around buying, renting, selling, investing or refinancing properties.

uDA's central product is the Real Estate Dynamics System, a database which provides people with access to real-time estate data. The company creates this database using open and shared data sources, which are classified into 160 sets and divided into six categories: Urban People (eg. population, education), Urban Economics (employment, production), Urban Shape (compactness, housing density), Urban System (parks and gardens, road networks), Urban Environment (noise

level, sun exposure) and Urban Move (private transport network, time access parking areas). The business then uses georeferenced data within these categories to create visualisations, such as maps, charts or infographics, and analyse the results according to identified indicators.

The right combination of open data has enabled uDA to create a service that is bringing transparency to estates data. This is helping people make better property decisions faster.

http://www.urbandataanalytics.com/en/

Services built on open data have wide-reaching value

Startups and SMEs are using open data to create successful B2B services and products for the third sector and academia.

Products and services built on open data are not limited to consumer-facing applications or services that enable governments to make better use of data, but are are creating value in a wide variety of situations and sectors. Increasingly, startups and SMEs are creating successful business-to-business (B2B) services built with open data, along with products targeted at the third sector and academia.

Targeting customers and markets

All the responding companies were targeting organisations as customers, and of the respondents, 93% were targeting businesses and 38% were exclusively targeting businesses. While 52% were targeting public sector clients, only 7% were exclusively targeting governments. 38% were targeting individual end users but all of these were also targeting businesses, while some also targeted other types of customer.

The companies were also targeting their products across a wide range of industries beyond the 'tech sector'. Contrary to expectation, only 33% of companies were targeting the 'data/technology' sector and only 3% were exclusively targeting this sector. Over a third of companies – 36% – were only targeting one industry or sector, while 46% were targeting between two and four industries. The diversity demonstrates the role of open data across a range of sectors, and that value can be created across sectors and not only by targeting other businesses in the same sector.
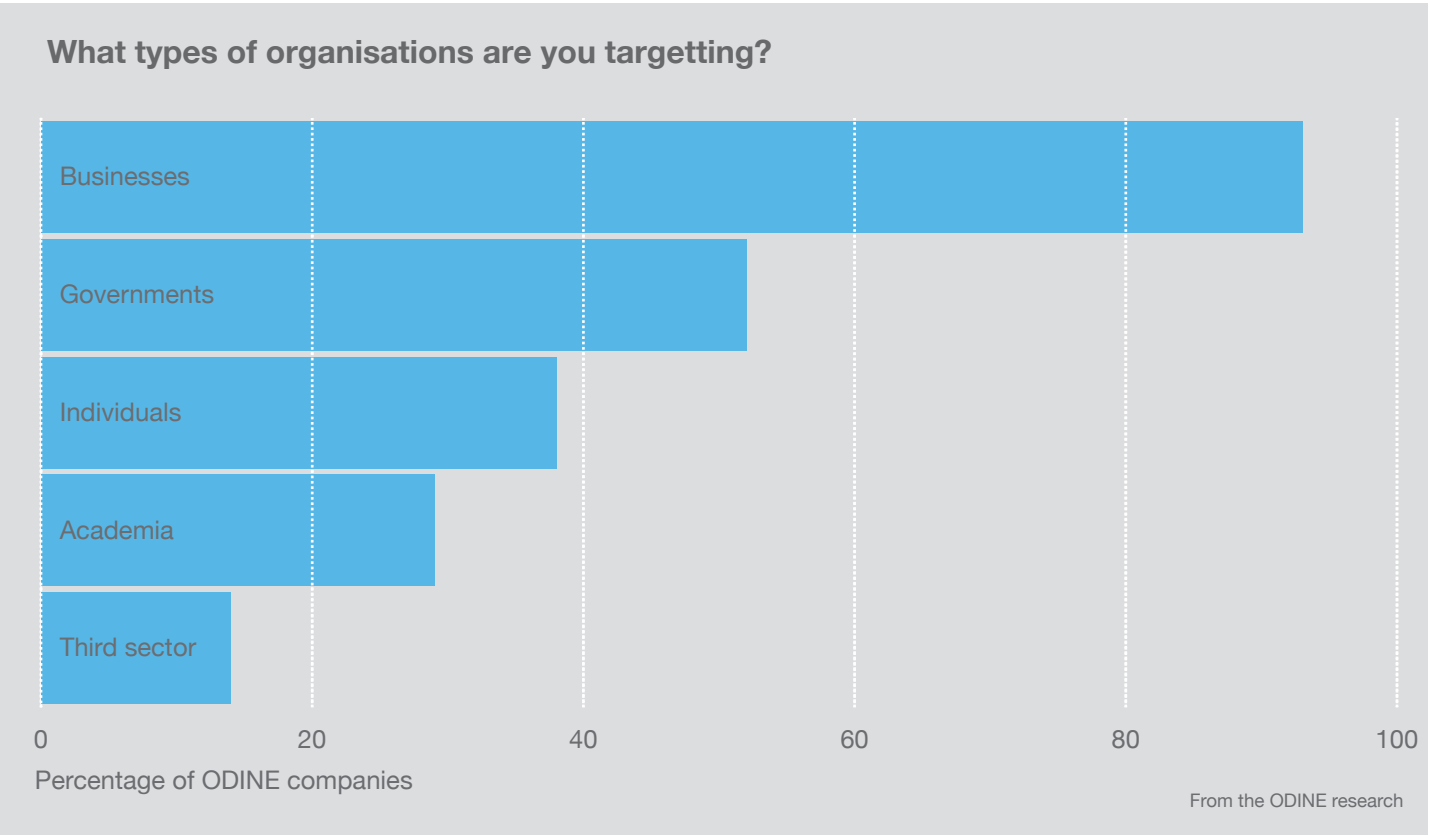
What types of organisations are you targeting?

Figure 10 chart with bars:
- Businesses
- Governments
- Individuals
- Academia
- Third sector

X-axis: 0, 20, 40, 60, 80, 100
Percentage of ODINE companies

From the ODINE research

Figure 10: ODINE companies' answers to the question: which types of organisations are you targeting?[41]

Answer to the question: which of the following sectors are you targeting with your product or service?

Figure 11 chart with bars:
- Data/Technology
- Governance
- Food & Agriculture
- Environment & Weather
- Scientific Research
- Healthcare
- Insurance
- Finance & Investment
- Business & Legal Services
- Housing/Real Estate
- Energy
- Research & Consulting
- Transportation
- Education
- Geospatial/Mapping

X-axis: 0, 10, 20, 30, 40
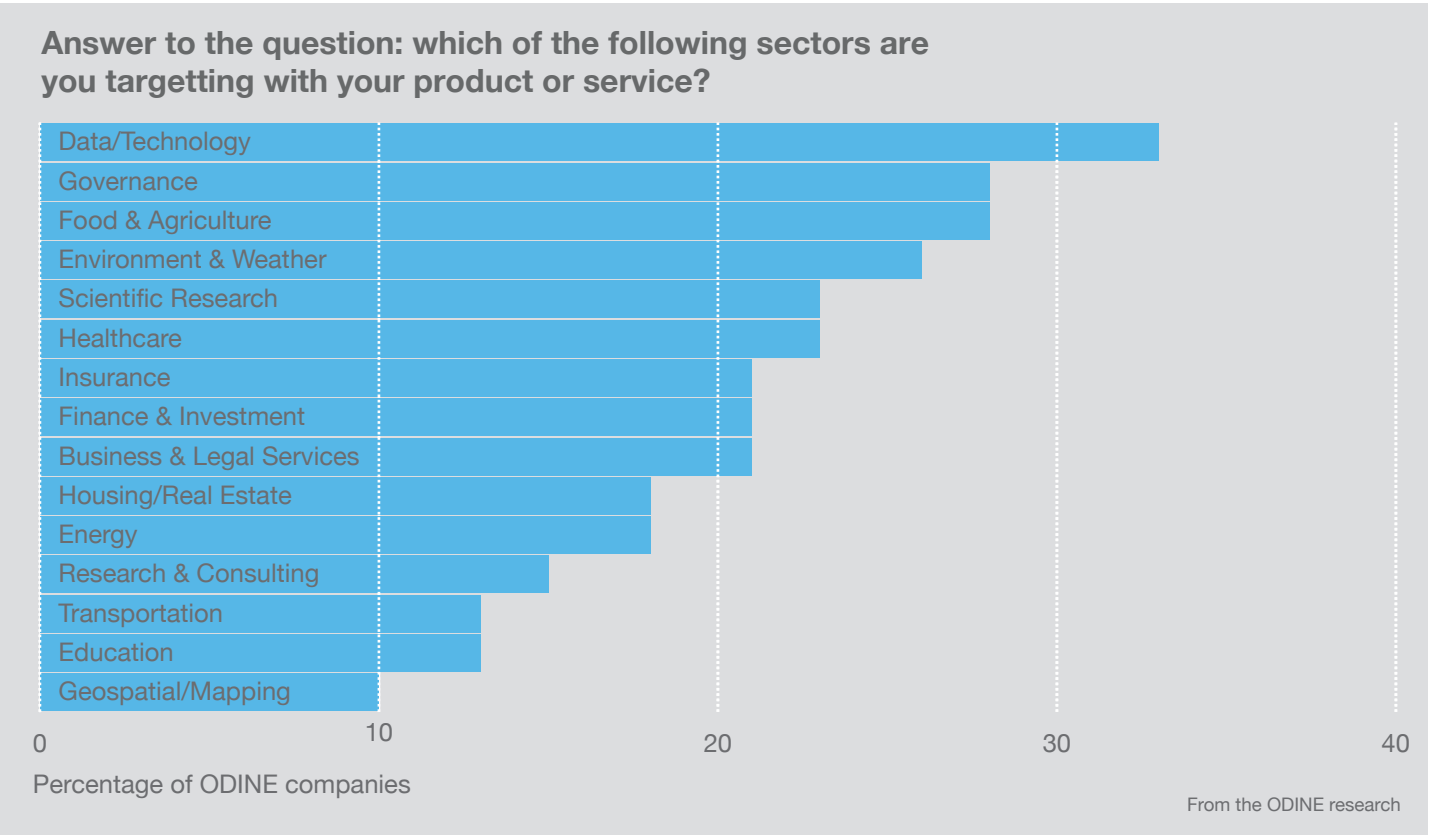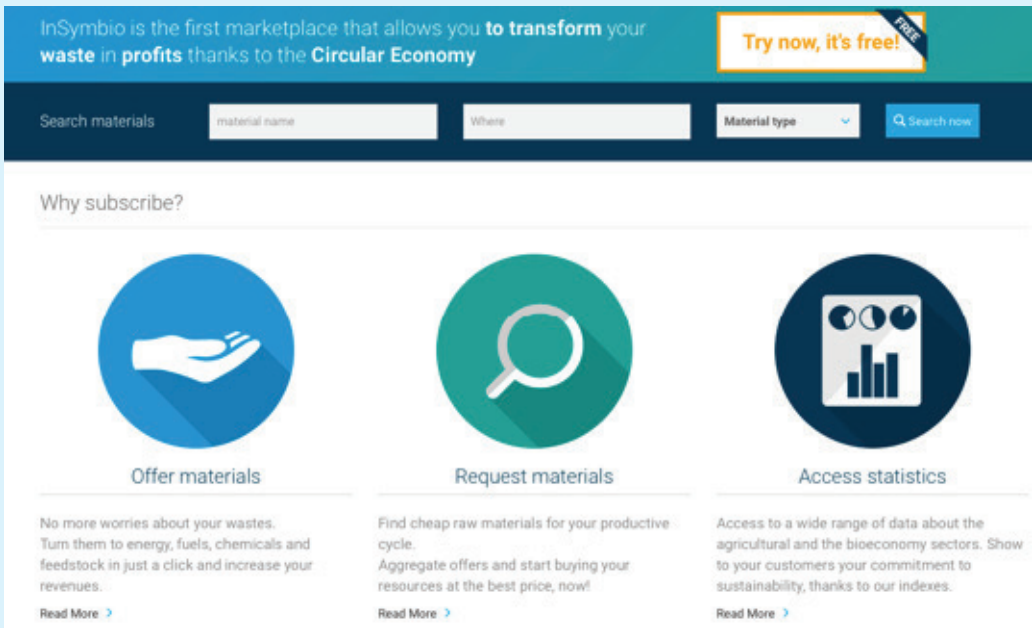Percentage of ODINE companies

From the ODINE research

Figure 11: ODINE companies' answers to the question: which of the following sectors are you targeting with your product or service?[42]

41 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.
42 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.

Case study: InSymbio

Research shows that 33 million tons of bio-based waste are produced in the EU per year. InSymbio is a business-to-business environmental engineering company which uses open data, such as the EUROSTAT database, to help decrease bio-based waste. It does this by informing businesses about how bio-based residues could be treated and how their use can increase revenues up to 40%.

The company are raising awareness through a digital platform where businesses can find the best opportunities to convert and reuse bio-based residues and by-products. They see waste as a resource out of place. The platform links the Agriculture and Forestry sectors with bio-economy businesses and those producing fuels, fibres, food, feed and chemicals.

By connecting these actors and allowing one company's waste to become another company's raw material, InSymbio hope to reduce biological waste and promote environmental sustainability.

http://www.insymbio.com

Conclusion:
open is the future
of business

The movement towards open data allows businesses to experiment with new, innovative business models.

Businesses are increasingly recognising the opportunities to build and enhance their value propositions with open data. Beyond access to new, cheap data sources, the movement towards open data is allowing businesses to experiment with new, innovative business models.

The ODINE programme has given new startups and SMEs the opportunity to explore how these propositions and models might function. The lessons they have learnt – along with other startups and SMEs in the ODI global network – can help lower the barriers for others by sharing what has been working.

These lessons are not exhaustive – there are plenty of potential business models which are yet to be fully utilised and tested. Some of the models and lessons might apply in certain contexts or circumstances, in others they might not. Business models that involve open data are still in early stages of development, but what is clear is the potential value of open data to business.

Trying, testing and experimenting with these models will enable startups and SMEs to leverage this value. Open data creates a unique opportunity for businesses to create growth, extract value and ensure sustainability while defining the successful business models of the future.

Methodology

This report is based on research done as part of the ODINE programme.[43] The goal of that research was to explore the business models of ODINE-funded companies and use them to help inform wider research into open data and business models. In order to do this, we chose to develop a survey based on the existing literature exploring business models.

This short survey (available under an open licence) was then distributed amongst the 57 ODINE-funded companies between November 2016 and January 2017, with a response rate of 74%. The results were then analysed with a view to understanding how the companies operate. The tables of the results developed from the analysis are also made available alongside this research under an open licence.

Because of the constraints placed on the analysis, and with the aim of stimulating further research, companies were able to opt into releasing their answers as open data – either with their company identified or not, with 90% opting to have their data released. This data is made available via the ODI Lab's Octopub tool, under an open licence.[44]

43 ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf.
44 See: http://toolbox.theodi.org/tools/octopub/.

Bibliography

Deloitte (2012), 'Open growth', https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/deloitte-analytics/open-growth.pdf

Howard (2013), 'Open data economy: Eight business models for open data and insight from Deloitte UK', https://www.oreilly.com/ideas/open-data-business-models-deloitte-insight

IDC (2017), 'Impact Assessment of ODINE Programme', https://opendataincubator.eu/files/2017/07/ODINE_Final-report_2.0.pdf

The ODI (2015), 'The economic impact of open data: what do we already know?', https://medium.com/@ODIHQ/the-economic-impact-of-open-data-what-do-we-already-know-1a119c1958a0

The ODI (2016), 'The value of open data', https://theodi.org/the-value-of-open-data

The ODI (2016), 'What is open data?', https://theodi.org/what-is-open-data

ODINE (2016), 'Business models, lessons learned and success stories', https://opendataincubator.eu/files/2016/01/D6.3-Final.pdf

The ODI (2016), 'Open enterprise: Executive summary', https://theodi.org/open-enterprise-big-business

The ODI (2015), 'Research: Open Data means business', https://theodi.org/open-data-means-business

The ODI (2017), 'The Data Spectrum helps you understand the language of data', https://theodi.org/data-spectrum

Open Definition, 'Open Definition 2.1', http://opendefinition.org/od/2.1/en

NASA Landsat Science (2015), 'Landsat Benefited U.S. Economy by $1.8 Billion in 2011', https://landsat.gsfc.nasa.gov/landsat-benefits-u-s-economy-by-1-8-billion-per-year

Stacey (2016), 'What is an Open Business Model and How Can You Generate Revenue?', https://medium.com/made-with-creative-commons/what-is-an-open-business-model-and-how-can-you-generate-revenue-5854d2659b15

Tennison, J. (2012), 'Open Data Business Models', http://www.jenitennison.com/2012/08/20/open-data-business-models.html

Transport for London (2017), 'Assessing the value of TfL's open data and digital partnerships', http://content.tfl.gov.uk/deloitte-report-tfl-open-data.pdf

W3 (2013), 'Eight Business Model Archetypes for PSI Re – Use', https://www.w3.org/2013/04/odw/odw13_submission_27.pdf

Web Foundation (2015), 'Open Data Intermediaries: Their Crucial Role', https://webfoundation.org/2015/08/open-data-intermediaries-their-crucial-role