

# THE DEMAND, USE AND SHARING OF OPEN DATA BY THE PRIVATE BUSINESS SECTOR IN NEPAL





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**THE DEMAND, USE AND SHARING OF OPEN DATA BY THE PRIVATE BUSINESS SECTOR IN NEPAL**

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# Foreword

Over the years, a common complaint among people in Nepal, whether they be from businesses, development agencies or just the common public, is the unavailability or inaccessibility of data. Though we have seen trends where more data is being disseminated from the government as well as from private businesses and development agencies, there is still much more to do for a successful data-culture in Nepal. The positives of a data-based decision-making culture far outweigh the negatives, and it is necessary to make the Nepali people aware about it and further accentuate their data usage capabilities.

Among the various ideas of propagating a data-culture in Nepal, a substantial step would be to focus on open data. Though the practice of open data has been a recent phenomenon, there have been many cases (especially in developed economies) where it has been harnessed to create opportunities, improve productivity and develop economic activities. Especially for the private sector, the availability and accessibility of data related to business activities or high-quality information related to respective sectors are immensely valuable.

However, in Nepal, the concept of open data is still in its nascent stage with only a few companies actively using open data in their business processes. Nonetheless, the concept has been able to enter the discourse among relevant stakeholders such as policy makers, business-persons and people of the academia. Even the government has started taking steps towards encouraging a practice and culture of open data. It is my belief that the concept of open data with enough focus will develop into an influential opportunity for the economy of Nepal.

This research and consequent publication are efforts to further increase the discourse surrounding open data, as well as being a directional sign towards where policy makers, business-people and developing agencies focusing on the private sector should focus on while talking about open data. We hope that this report will generate interest of open data among the people.

Finally, I would like to thank Data for Development (D4D) in Nepal Program, and especially their respective teams involved in this project that provided great support for the entire duration of the research project. The teams' crucial support and critical feedback were immensely valuable and necessary. Also, I express my grateful thanks to the participants of the research, who provided their valuable time and without whom this research would not have been possible. Along the same lines, FACTS would like to also express its thanks to Dr. Hemant K. Dabadi and Mr. Kuber Chalise for their expert opinions while conducting this research. Lastly, my colleagues at FACTS who put in an immense amount of effort and time deserve a huge amount of appreciation. Thank you all.



Manish Jha

CEO

**FACTS Research & Analytics Pvt. Ltd.**

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# Executive Summary:

## How can data support business in Nepal ?

### Insights on data and open data for government, business and the development community

The impact of data, and particularly of open data, on business in Nepal could be catalytic. Data from government can be used to create new innovations and business opportunities; improve business efficiencies and performance; and allow fairer competition based on free open market information. Data generated by businesses, if shared as open data<sup>1</sup>, also has important value to other actors both inside and outside government.

Until now, little has been known about the data needs of Nepali businesses, and there has been limited evidence to support efforts aimed at unleashing the potential for business to use and share data. A discourse is needed in Nepal among business, government and the development community to harness the potential of open data. The 'Research Study into the Demand, Use and Sharing of (Open) Data by Private Sector Business in Nepal', conducted by FACTS Research and Analytics, intends to initiate and inform this discourse with evidence of:

- How businesses in Nepal are currently using data
- The unmet demand for data amongst businesses in Nepal
- The potential supply of data from businesses in Nepal

In doing so, the study aims to improve understanding, and encourage action and supportive policy towards open data through increased and appropriate government and business data openness

### The potential impact of open data in Nepal

#### Open data can facilitate development

In line with what has been seen internationally, open data as a facilitator of development has become increasingly discussed, adopted and promoted by a growing community of actors in Nepal. Over the past five years, these actors have worked to progress the open government agenda and support the sharing of an increasing number of open datasets. From the perspective of these actors, the potential benefits of open data are wide ranging but are broadly seen to include improvements in: the efficiency and quality of public services; innovation and economic value; transparency, accountability and public participation. This latter area has been the driving force for many of Nepal's open data initiatives to date. However, while there has been growing recognition of the importance of open data by the federal government<sup>2</sup> and civil society<sup>3</sup>, little attention has so far been paid by Nepal's private sector on the benefits that open data could hold for them.

### Open data can support businesses to innovate, create jobs and build economic value

Macroeconomic studies have cited huge figures when calculating the economic impact of open data, estimating it contributing between 0.4% to 4.1% of an economy's GDP<sup>4</sup> – and in many middle and high-income countries, business is already effectively harnessing open data to deliver this value<sup>5</sup>. Research typically cites that open data can be used to: create new innovations and business opportunities; improve the marketing of products and services; and, allow fairer competition based on free open market information<sup>6</sup>. Open data can also: yield savings from enhancing efficiencies and optimising existing operations; improve levels of corporate governance, transparency and trust; and, support greater consumer empowerment. In an increasingly integrated and competitive global economy, open data further helps create a favourable environment for domestic and foreign investment. Moreover, data generated by businesses, if shared as open data following data protection rules, has important value to other actors both inside and outside of government.

### The impact of open data in low-income countries like Nepal could be catalytic.

Nepal's private sector is formed of small, medium and large businesses operating across a range of manufacturing, retail and service sectors, within a complex and often opaque business environment that is mired in information asymmetries. In addition to the benefits cited earlier, open data has the potential to level the business playing field in terms of access to high-value data and the opportunity to use it. In the past few years, the Nepali federal government has made some notable efforts to open up data relevant to business including data on government procurement<sup>7</sup> and company registrations<sup>8</sup>, however, currently, little is known about whether and how this data is being used by businesses and what further data is required by business to strengthen Nepal's economy.

1 Open data is data that can be freely used, shared and built on by anyone, anywhere, for any purpose. To be 'open data', data must be technically open (e.g. available in machine-readable formats) and legally open (e.g. with a licence that allows free use).

2 For example, in August 2017 a national action plan on open government data was accepted by the Prime Minister's office.

3 Many of whom interact as part of the Open Nepal community, <http://opennepal.net>

4 For example, a 2013 paper by McKinsey Global Institute estimated that open data could unlock US\$3-5 trillion in economic value, and a 2014 report commissioned by the Omidyar Network estimated the opportunity at \$13 trillion over the following five-year period. A helpful summary of macroeconomic studies is provided in a blog published by Medium. Available at: McKinsey Global Institute, 2013. Open data: Unlocking innovation and performance with liquid information. Available at: <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/open-data-unlocking-innovation-and-performance-with-liquid-information>; Omidyar Network, 2014. Open for Business: How Open Data Can Help Achieve the G20 Growth Target. Available at: [http://www.omidyar.com/sites/default/files/file\\_archive/insights/ON%20Report\\_061114\\_FNL.pdf](http://www.omidyar.com/sites/default/files/file_archive/insights/ON%20Report_061114_FNL.pdf); ODIHQ, The economic impact of open data: what do we already know? Medium, [web blog], 2 November 2015, <https://medium.com/@ODIHQ/the-economic-impact-of-open-data-what-do-we-already-know-1a119c1958a0>

5 The Open Data 500 details businesses that are currently building economic value from Open Data, <http://www.opendata500.com/us/list/>

6 For example, information on this is provided by the Open Data Institute and the World Bank. Available at: Open Data Institute, 2015. Open data means business: UK innovation across sectors and regions. Available at: <http://theodi.org/open-data-means-business-uk-innovation-sectors-regions>; World Bank, 2015. Open Data for Business (OD4B) Tool. Available at: [http://opendatatoolkit.worldbank.org/docs/odra/od4b\\_v2.8-en.pdf](http://opendatatoolkit.worldbank.org/docs/odra/od4b_v2.8-en.pdf)

7 Data on contracting from the Public Procurement Monitoring Office is due to be opened as part of the Public Procurement Transparency Initiative in Nepal. More information available here: <https://medium.com/open-nepal/open-contracting-paving-the-way-for-open-government-in-nepal-2da8f1971b3>

8 Basic data from the Office of the Company Registrar is available here: <http://www.ocr.gov.np/index.php/en/data/o-g-d>



## A discourse is needed among business, government and the development community to unleash the potential impact of open data in Nepal

Collaborative interventions – involving business, government and the development community – are needed to encourage action and supportive policy towards the appropriate publication of high-value open data, in a way that meets needs while protecting individual privacy, commercial confidentiality and national security. However, until now, there has been limited evidence on data needs and practices to guide such interventions. ‘Research Study into the Demand, Use and Sharing of (Open) Data by Private Sector Business in Nepal’ was conducted to address this evidence gap. Looking at both data and open data, and both government and non-government data, the study used an exploratory research methodology that combined: a literature review; a survey of senior business executives of 135 small, medium and large businesses across a broad range of sectors in Nepal’s main industrial hubs<sup>9</sup>; and key participant interviews and focus group discussions with 39 business executives and private sector experts. The research, conducted by FACTS Research and Analytics, was loosely based on the Open Data for Business Tool developed by the Center for Open Data Enterprise<sup>10</sup>.

### Key Findings Area 1: How businesses in Nepal are using data

#### 1. While businesses in Nepal are using data for a wide range of purposes, many businesses are still not using data in their decisions and operations.

- Participants reported that, in general, market research by businesses is rare and that decisions are primarily informed by instinct. One participant shared that, “If a business wants to develop a product for a restaurant, ideally they determine the price by looking at data on the market and how much people can afford. But in reality, most businesses use only observation”. Where market research does take place, however, the survey showed that 90% of businesses use data in the process.
- Data is widely used in the process of identifying customers, when pricing products and in product development. For example, 87% of businesses reported using data in the process of identifying customers with one executive explaining, “We use data related to business registration, types of companies, ownership and levels of investment – all such information helps us to approach new business customers”.
- However, the survey revealed that data is not used by all businesses who conduct these processes: 4 in 10 businesses do not use data as part of their organisational optimisation processes. Participants explained that this is because businesses, firstly, do not always realise that they produce data and secondly, do not understand the value of this data to their business decisions.
- Despite this, almost all businesses classed themselves as supportive of the idea of basing business decisions on data.

#### 2. The data used by Nepal’s businesses comes from a multitude of sources, including self-generated data, government data and media among others.

- The majority of data used by businesses is generated internally. 68% of businesses reported this to be the case. One participant shared that “We mostly use our data on sales and income each year. This helps us analyse trends and how we should move ahead”.
- Of the businesses surveyed, 56% use data from government sources. Although data from the media and from other private sector sources are also popular, being used by 51% and 48% of businesses respectively.
- Of the businesses that use data from the government, the vast majority (84%) use national level data from the federal agencies, whereas only around half use subnational data from the provincial and local governments.
- The most commonly used government data was from the Ministry of Industry, Commerce and Supplies. This was followed by data from the Ministries of Communication and Information Technology; Agriculture, Land Management and Cooperatives; Labour Employment and Social; and the Ministry of Finance.
- The most commonly used data from constitutional bodies and agencies comes from the Federation of Nepalese Chambers of Commerce and Industry; the Central Bureau of Statistics and the Office of Company Registrar.
- Approximately 3 in 10 businesses use data from academic and research sources, meaning that 70% of businesses do not use data from these sources.

#### 3. Businesses in Nepal reported mixed levels of confidence in their capacity to use data effectively to drive business decisions.

- In general, a low level of digital and data literacy among large portions of the population was seen as limiting the effective use of data. Participants broadly concurred that, on the whole, small businesses have more limited data use skills, whereas larger-scale and IT sector businesses have better technical infrastructure and are more capable of using data confidently.
- Interestingly, the survey contradicted this impression, with 6 in 10 businesses rating themselves as “fairly confident” in their skills and capacities to effectively use data to inform decisions. 2 in 10 rated themselves as “very confident”. The remaining 20% were less confident – the majority of which were small and medium-scale businesses.

#### 4. There is low familiarity with and use of open data – but there are emerging examples of initiatives that are building their business models around the use and provision of open data.

- From the interviews it was clear that there is a lack of clarity around the term ‘open data’. There was a general belief that data made available to the public was open data, regardless of the format used.
- Despite this, the vast majority of businesses reported that less than 10% of the data that they use from external sources was open data.

Business models driven by open data – as seen in many middle and high-income contexts – are still rare in Nepal, however, there

<sup>9</sup> The study took place in the ten districts of Nepal with the highest number of business registrations, namely Kathmandu, Lalitpur, Bhaktapur, Kavre, Makwanpur, Chitwan, Parsa, Bara, Kaski, and Rupandehi.

<sup>10</sup> Center for Open Data Enterprise, 2015. Open Data for Business (OD4B) Tool Version 2.8. Available at: [http://opendatatoolkit.worldbank.org/docs/odra/od4b\\_v2.8-en.pdf](http://opendatatoolkit.worldbank.org/docs/odra/od4b_v2.8-en.pdf)



are examples of organisations who are setting themselves up as data intermediaries by making data easier to find, access and understand. These groups are often working alongside federal, provincial and local governments to grow the value of their data. Many currently provide data to support development actors in their decisions and accountability efforts, rather than for use by business, and rely heavily on funding from donors to supplement the income earned from their commercial services. This includes groups such as Bikas Udhyami, who provide access to data alongside analysis and visualisation of that data; Digital Data System for Development, who combine satellite data with government data to inform the agricultural decisions; and, Young Innovations who build automated tools to collect, curate, share and analyse data for clients

## Key Findings Area 2: The unmet demand for data amongst businesses in Nepal

### 1. There is a high level of demand from across business sectors in Nepal for data from government and a strong belief that greater access to government data would benefit business.

- Two-thirds of businesses stated that government data was either “very” or “extremely important” to their work. Just 5% thought that government data is of no importance to them. Moreover, two-thirds of businesses also thought that greater accessibility of government data would be beneficial to them.
- Businesses believe that better access to government data could help them perform a range of processes better. These include: identifying new customers (reported by 68% of businesses), researching markets (61%), developing new products and services (59%) and making pricing decisions (49%). Participants also shared that the current limitations in access to government data impacted businesses’ ability to scale, effectively budget, forecast and segment markets.
- While there is a high level of demand, the articulation and awareness of this demand by businesses is low. One participant shared that, “The demand for data must be boosted. This will create awareness and a situation where people can ask for data. This will further promote a data culture in Nepal”.
- There was a particularly high level of demand for real-time and up-to-date data, and also a high level of demand for data from non-government sources. One participant explained that, “One particular need we have is data to help our hiring. Up-to-date data on how many engineering colleges and graduates there are, and the quality of their courses would definitely help our decisions on whom we are going to approach”.

### 2. Data on a diverse array of topics is required, from both government and other sources, to enable Nepal’s businesses to build economic value.

- Participants shared their need for a wide range of data, including on business and property registrations, geospatial data, commodity prices, taxes and tariffs, government budgets and procurement, employment, census and demographic data, and economic conditions.
- Survey results show that data of highest value to business includes that related to customers (reported by 59% of businesses), revenue and sales (54%), business opportunities (44%), market developments (43%) and government regulations/processes (35%).
- Government data of greatest interest for business included that which related to business, consumers, manufacturing, agriculture, tourism, law, economy, finance, and demography data. There was a strong demand for data that could be consolidated across agencies, as currently most datasets are not interoperable.
- Participants also revealed that government data on processes – such as business registration protocols, guidelines for taxes, information on contractual enforcement processes – as well as details of federal, provincial and local government plans and policies were of great interest.
- The business sector in which an individual was operating was a primary driver of data needs. Specific data needs highlighted by participants operating in the agriculture sector included data on import and export of grains, government agricultural allowances, poultry supplies, pesticide use, and import of veterinary medicines, etc.; whereas, participants in the manufacturing sectors expressed a need for data on demographics, average earnings and spending capacity, and customs related data on imports and taxation rates.

### 3. Nepal’s businesses have a range of practices and preferences for accessing government data, but the majority prefer online access.

- Participants explained that it is very common for businesses to rely on personal connections, such as family, friends and professional contacts to gain access to government data. A third of businesses in the survey confirmed they use this route, although the survey findings showed that this was not the primary channel for obtaining government data.
- Around 6 in 10 businesses currently access government data mainly from government websites and via internet searches. Half of businesses stated that they obtain government data via social media, while 4 in 10 businesses stated that they obtain data from newspapers. Fewer than 1 in 10 businesses stated that they obtain government data through the use of professional services such as consultants or external analysts, although 2 in 10 businesses did report obtaining government data from websites belonging to civil society, academia, research houses and international non-governmental organisations.
- There was a strong preference by businesses for accessing government data online via portals and mobile apps – with around 6 in 10 businesses reporting this as a preferred method. Many businesses also wanted to access data by sending email requests or completing an online form – with around half of the businesses reporting this as a preferred method. The least preferred methods of gaining access to government data included the filing of Right to Information requests<sup>11</sup>, having individual formal meetings or sending formal written letters.

<sup>11</sup> The Government of Nepal’s Right to Information Act, 2007. recognises the right of citizens to seek and receive information on matters of their interest or of public interest, unless secrecy of information should be protected by law.

#### 4. There are many barriers to the effective use of government data by Nepal's businesses, with the major challenge being finding relevant data.

- The major challenge cited by businesses as a barrier to the use of government data was the difficulty in finding relevant data. This issue was cited by 64% of businesses.
- Participants also shared that a lack of systematic processes within government for sharing data creates confusion for them. Conversely, literature points to the limited public awareness of data generated and provided by the government, and of people's right to information<sup>12</sup>.
- Half of businesses find that available government data is out of date. One participant shared that, "Government websites are never updated. Their websites will have data that is four years old but which they will highlight as new".
- Businesses also stated that there is a lack of relevant data and that data is difficult to access due to restrictions or bureaucratic hurdles. The former was reported by 38% of businesses, and the latter by 34%. One participant shared that, "There is no easy access to government data. In Kathmandu, we can visit the ministries for the data we require, but for organisations located in the far west, they cannot get the data". Another shared that, "even for simple data we have to write a letter and register our name to get the data from the concerned authority. There are a lot of processes involved in getting signatures from officials to enable us to get the data". Local experts highlight the widespread culture of secrecy within the government bureaucracy as preventing equal access to high-value data and information.
- Alongside the lack of technical skills to use data, participants commonly cited the lack of disaggregated data and standardised data as a challenge in using government data.
- Participants also regularly stated concerns that data is inaccurate, unreliable or manipulated. One participant shared that, "One bad tradition in Nepal is that, for marketing purposes, data is often exaggerated, but for government purposes they provide data with decreased performance".
- Literature points to numerous technical reasons that hinder data-sharing by government. These include the lack of digitised systems within government, lack of technical skills within government to open up their data, and lack of adequate internet infrastructure in large parts of the country - where radio and community signboards are the most common channels for disseminating information<sup>13</sup>.

#### 5. Despite the lack of familiarity with the term 'open data', when using data, Nepal's businesses have a preference for machine-readable formats.

- Despite a lack of clarity around the term 'open data', when asked for their most preferred formats for receiving data, 6 in 10 businesses ranked spreadsheets such as Excel or CSV, as the most desirable format. (As stated earlier, in general, participants considered 'open data' to be data that is shared and accessible publicly, irrespective of the format of the data).

- Other popular formats were internet webpages, with 4 in 10 businesses ranking this as their preferred choice, and Word format, which was ranked as preferable by 3 in 10 businesses.
- There were calls from several participants for a centralised portal where government data could be accessed online.
- The least preferred format was hard copy, although significantly, this was still the preferred format for almost a quarter of businesses.
- Several participants noted that government agencies were not considering the users' needs when sharing their information, and that when information was provided it was highly aggregated. One respondent stated that, "if the government makes open format data easily accessible, it will benefit businesses by creating a better business environment and enabling existing businesses to grow". Another shared that, "The government should provide data in machine-readable formats rather than PDF. If the data were made available in Excel or Word format, we could use software to understand them".

### Key Findings Area 3: The potential supply of data from business in Nepal

#### 1. Businesses in Nepal produce a wide range of data but are not always aware that they do so.

- Two-thirds of businesses surveyed stated that they produce data, while the remainder stated that they did not produce data themselves or did not know if they did. One participant noted, "Businesses might say that we don't produce data, but we forgot to realise that the daily billing that happens is data. If we looked back at historical billing, we would be able to determine what our consumers' spending behaviours are".
- The data produced by businesses includes data related to: consumers (69% of businesses reported producing this), specific business sectors (66%), revenue and sales (57% of businesses) and employees (44% of businesses).

#### 2. Data produced by Nepal's businesses is often shared externally, both formally and informally, but rarely in open format.

- Three-quarters of businesses share data with the government, and over half share data with business associations. Around 40% of businesses share data with civil society, research groups and other businesses.
- Sharing data among closed groups is also common. One respondent stated that, "I have a group of friends who work in the hospitality sector. We tend to meet and share data related to our organisations on topics related to the hospitality business".
- Despite this, among the businesses surveyed, only 18% rated themselves as willing to share data publicly. 36% were somewhat willing and 21% of businesses were not willing to share data publicly.
- Respondents were most willing to publicly share data related to market shares, business opportunities, consumers, revenues and sales and employees.
- The majority of businesses reported that less than 10% of the data they shared is made available in open format.

<sup>12</sup> Asia Foundation, 2014. Citizen's Access to Information in South Asia, Available at: <https://asiafoundation.org/resources/pdfs/CitizensAccessToInformationInSouthAsia.pdf>

<sup>13</sup> Development Initiatives, 2017. Nepal's emerging data revolution. Available at: <http://devinit.org/post/insights-into-nepals-emerging-data-revolution/>

### 3. There are many perceived barriers to data sharing, although Nepali businesses are supportive of the idea of open data.

- Businesses cited a range of barriers to publicly sharing their data. However, interestingly, around a quarter of businesses also cited that they had a lack of data to share.
- The major challenge cited by businesses as a barrier for sharing data was concern about privacy. This was cited by 67% of businesses.
- In addition, businesses face concerns about competitive advantage. This was cited by 37% of businesses. One participant stated that, “Businesses working for profit are less likely to share data as they would be helping their competitors”.
- The unclear legal framework and concerns about losing intellectual property were also cited as important barriers to sharing data. One participant stated that, “One of the major problems for us to share data is that there are no clear laws that guide data sharing, and so there will be a high chance of data manipulation”. Another stated, “There are no specific policies and laws for data sharing and there is a lack of a credit giving culture”.
- Other challenges cited were a perceived lack of external interest in their data, technical challenges to sharing the data, and concerns about their data quality. Indeed, one business shared that they had never been approached for their data.
- Despite all of this, businesses were found to be very interested in supporting the growth of open data in Nepal: three-quarters of businesses were “extremely” or “very supportive” of the idea of sharing data in open format, while only 3% were not at all supportive of the idea. Participants from business associations also expressed strong interest in supporting the sharing of open data by business.

## Recommendations

In order to release the value of open data for Nepal’s business a series of interlinked efforts are required by business, government and the development community.

### Growing demand for data amongst Nepal’s businesses

Nepal’s businesses need to be supported in articulating their needs to suppliers of data and collaboratively advocating for open data, potentially via business associations. These interventions will involve, firstly, helping businesses to develop a more detailed understanding of the benefits of greater access to and use of data from government, academia, civil society and other private sector groups. This understanding could be enhanced by further, more in-depth, research into the data needs and motives of businesses operating in specific sectors, as well as the tangible benefits which data can bring to Nepal’s businesses.

### Improving the accessibility and usability of government data

Nepal’s federal, provincial and local governments need to be supported to better understand the potential value that their non-confidential data has for business and for economic growth if it is shared in open formats. The findings from this study can help Nepal’s governments to determine which of their data is of high value to business, identify how businesses want to access their data, and understand the barriers faced by businesses in using government data. However, further evidence and support will be needed to improve the accessibility and usability of government data.

Business associations, development partners and businesses specialising as data intermediaries could play an important role in supporting Nepal’s governments to establish concrete steps to improve accessibility and usability. These steps could include, for example: adding additional fields into data released by the Office of Company Registrar; developing user-friendly interfaces to support the use of government procurement data; using open data formats for releases of economic, trade and taxation data; sharing historic records of real-time government datasets such as vegetable pricing, etc. Governments will also need to be supported, by business and the development community, in the development of appropriate policies around data sharing and security, protection of intellectual property, and enforcement of licensing and copyrights to ensure appropriate data governance and protections are in place to support the enabling environment for open data.

### Building skills among businesses to use data in their decisions, processes and innovations

Nepal’s businesses need to be supported in developing greater technical capabilities to use data, and in improving their awareness of where to access data. Targeted data literacy trainings, guidance documents, mentoring and peer learning could play a key role in this, as well as government-run data-challenges as seen in other countries<sup>14</sup>.

There is also significant scope for the development of commercial value-added data services, such as market analytics firms, to link businesses with specialist analysis. In addition to this, efforts will also be required to help businesses understand the value of investing in their own data production, in incorporating these costs into their operations and to build their skills in sharing this data.

### Growing the will and feasibility of businesses to share their non-confidential data

Data from business has significant potential to support decision-making, implementation and monitoring by governments and other actors, as well as build trust and empower consumers; therefore, business and governments should work together to address the range of barriers preventing businesses from sharing their data. The development community could play an important role in promoting this dialogue and supporting interventions to address challenges.

In particular, efforts will be required to help businesses understand the value of their own data and improve their confidence in sharing certain datasets without fear of negative repercussion. To avoid concerns around privacy and competitive advantage, for example, businesses could be encouraged to share data via data collaboratives<sup>15</sup> – where participants from different sectors, including business, research institutions, and government agencies, exchange data within trusted groups to solve public problems. Business associations could play an important role in facilitating exchange of data between their members, and the analysis of data between members and external actors, such as government and the development community.

<sup>14</sup> For example, the Open Data Challenge Series run in the UK by Nesta, <http://www.nesta.org.uk/open-data-challenge-series>.

<sup>15</sup> More information can be found on the data collaboratives website, <http://datacollaboratives.org/>.



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# List of Abbreviations

AICC	Agriculture Information and Communication Centre
CBS	Central Bureau of Statistics
CT	Cross Tabulation
DDC	District Development Committee
FGD	Focus Group Discussion
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
GoN	Government of Nepal
ICDC	Integrated Community Development Campaign
ICIMOD	International Centre for Integrated Mountain Development
IDI	In-Depth Interviews International Non-Governmental Organization
INGO	International Non-Governmental Organisation
IPOs	Initial Public Offerings
IUCN	International Union for Conservation of Nature
KII	Key Informant Interview
KPI	Key Performance Indicator
MA	Multiple Answer
MoALMC	Ministry of Agriculture, Land Management and Cooperative
MoCIT	Ministry of Communication and Information Technology
MoICS	Ministry of Industry, Commerce and Supplies
MoLESP	Ministry of Labour Employment and Social Protection
MoF	Ministry of Finance

# Chapter I: Introduction

## 1.1 Introduction to the Study

The culture and practice of open data has been a major recent development, which if harnessed by the private sector and supported by government is believed to be an important facilitator of economic development. The economic value of open data and its contribution to economic development has been realised in many instances, but mostly in developed countries.

For private sector businesses, availability of relevant data and information is very crucial in the process of decision making. Access to relevant and high-quality information and data not only helps in making informed decisions, but also helps in developing new ideas, innovation and increasing operational efficiency. Globally, initiatives have been taking place over the past 10 years to make open data available on public portals that can be used by business for value creation.

In the context of Nepal, the concept of open data is still in its nascent phase and has only recently entered the discourse among policy makers, business-persons and people of the academia. The federal government has started taking initial steps towards encouraging a practice and culture of open data. For example, the public sharing of data on government procurement and company registrations. With growing evidence of both economic and social benefits, open data can be an important opportunity for Nepal.

In order to harness this opportunity, the "Data for Development in Nepal" Program is supporting Nepali organisations to conduct research and interventions aimed at improving the sharing and use of open data. As part of this, FACTS Research & Analytics have conducted a research project: "Research Study into the Demand, Use and Sharing of (Open) Data by Private Sector Business in Nepal".

## 1.2 Objective of the Study

The overall objective of this study is to assess the need, usage and sharing of (open) data by the private sector, so as to create evidence based discourse, through research, regarding the importance and value of open data to private sector businesses in Nepal.

The specific objectives of this study are:

1. To identify the business/private sector information needs
2. To identify emerging examples of data driven businesses in Nepal and similar country-context, and describing their products, data sources, business models and challenges for understanding the potential opportunities of open data in Nepal
3. To assess the data and information produced by the private sector and their willingness to supply the information to the government for an open data initiation
4. To identify the core challenges faced by the private sector actors in accessing and using data.

## 1.3 Limitation of the Study

A key limitation confronted during the study was the lack of familiarity among the respondents of the topic. As a consequence, many potential participants withdrew under the mistaken impression that the research sought private business information. Despite attempts at clarification, this decreased the intended number of participants.

Parallel to this limitation, the specific set of audience for the study i.e. personnel in the mid-to-senior level of management in a firm who are involved in business decision making, further affected the smooth completion of the research study because of frequent cancellation of the research appointments due to their unavailability and busy schedule.

Meanwhile, as a result of the frequent cancellation of appointments and also because of the low prevalence of usage of open data found among the businesses after rolling out the survey, the predetermined sample size for the study had to be revised and was reduced.

1 The Open Data 500 network provides a list of fortune 2000 businesses that are currently building economic value from Open Data (<http://www.opendata500.com/us/list/>)

2 Data on contracting from the Public Procurement Monitoring Office is due to be opened as part of the Public Procurement Transparency Initiative in Nepal. More information here - <http://opennepal.net/blog/open-contracting-paving-way-open-government-nepal>

3 Basic data from the Office of the Company Registrar is shared on this link <http://www.ocr.gov.np/index.php/en/data/o-g-d>

# Chapter II: Literature Review

## 2.1 Introduction

The world today is rich in quantity, quality, and diversity of data more than ever. The International Business Machines (IBM) corporation indicates 2.5 quintillion bytes of data is created every day.<sup>4</sup> Fuelled by modern technological developments and the internet, the world is moving towards a data revolution and practicing an open data system. As provided by the World Bank, "Data are considered to be open if anyone can freely access, use, re-use, and redistribute them, for any purpose, without restriction."<sup>5</sup> It is widely believed and is also evident that when data are made open and accessible to use, it can foster significant change through value addition by spurring economic innovation, social transformation, and in a broader sense, enable a sustainable development of the economies worldwide. In one of the first reports on the global value of open data, McKinsey provides the value to be over \$3 trillion.<sup>6</sup> Meanwhile, Omidyar Network estimated that open data could result in an extra \$13 trillion of output for G20 nations.<sup>7</sup>

According to the Growth Report, high-growing economies benefit immensely from the utilisation of information and its concurrent transformation into knowledge.<sup>8</sup> This is particularly achieved through the usage of open data by the private sector. Information drives innovation and informed choices, which in-turn produces benefits ranging from improved productivity, efficiency and reduced production costs to improved product timeliness, quality and performance.<sup>9</sup> Moreover, many developing and under-developing economies can derive immense benefits through the usage of open data as it can help existing businesses in delivering new products and services, and optimize their operations and enable establishment of new private sector ventures in various sectors including healthcare, ICT, agriculture, energy, education, and many others. Business opportunities from open data did not exist a decade ago, but these days there are many companies that use open data for generating value. Interestingly, some of these companies are valued at more than USD 1 billion.<sup>10</sup>

Realising the importance and value of open data as a key driver for economic growth and development, governments around the globe are now focusing on ways to make the data that they control available to the public as open data. For making data available to businesses and citizens, many governments have launched and are launching programmes to make their data digital, machine readable, and easily accessible. Especially in developed economies such as the United Kingdom, the United States, Canada, and Australia among others, governments and public authorities have been making exemplary efforts in making data open and have observed some tangible value creation through open data. For example, in

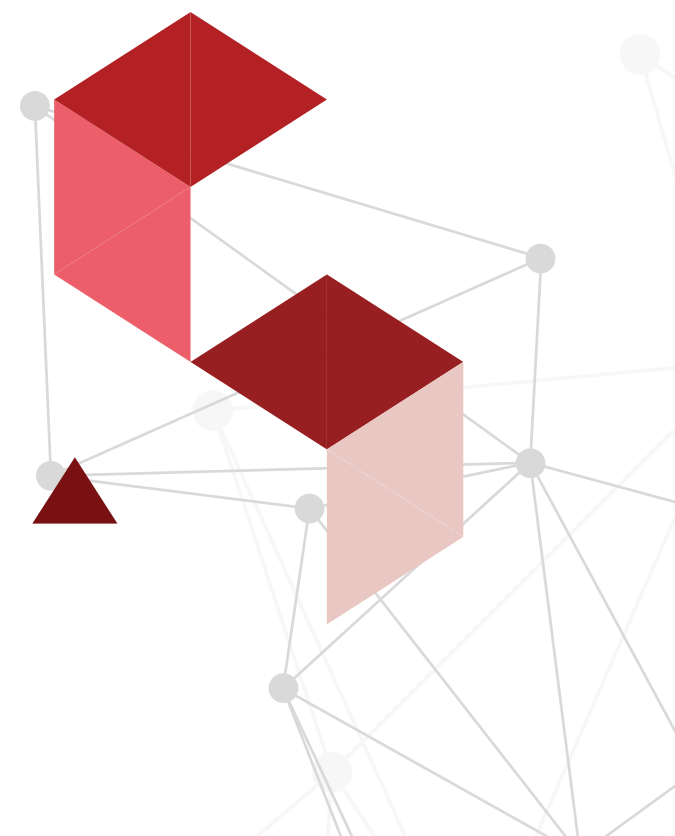
a study of 270 UK businesses using open data, it was found that such companies had a combined annual turnover of £92 billion and over 500 thousand employees.<sup>11</sup> Companies such as Zoopla, which is based in the UK and uses housing sales data, has annual sales revenue of £72 million.<sup>5</sup>

On the other hand, the open data revolution in developing economies is still in its early days of development. As mentioned by Prasanna Lal Das, "The commercial value of open data remains untapped, especially in developing countries".<sup>12</sup> However, there is a growing enthusiasm from both the government and the private sector towards open data. Many developing economies in Asia, Africa, and Latin-America have started adopting open data plans and policies, and publishing government datasets that previously remained with the governments only.<sup>13</sup>

In context of Nepal as well, the open data culture is in its infancy. The government, civil society, and some private firms are taking initial steps towards the development of open data culture in Nepal. For example, the Government of Nepal has opened data publicly in areas like trade from the Department of Customs, and the Trade and Export Promotion Centre, among others. Likewise, with the combined efforts of private sector businesses and the civil society, different open data platform/portals like Open Data Nepal and Nepal in Data have been developed. Similarly, related events, seminars, and trainings on open data such as Open Data Day are being held regularly. These efforts from the nascent and dynamic community of data enthusiasts are playing an important role in the advancement of digital data collection, opening of official datasets, and development of data-sharing and e-governance platforms. On the other hand, private sector actors are also increasingly becoming aware about open data and its importance, and are also using open data for improving their business or even creating new opportunities such as Young Innovations and DB2Map (discussed later on this report). However, a lot is yet to be achieved in Nepal to reap the benefits of open data in economic value creation as well as driving social and economic development.

Despite the evident potential of open data and the growing amount of information being released by governments and corporations, little is known about its use and impact. Moreover, even less is known about the need, use, and impact in developing countries. This lack of understanding of need, use, and impact of open data could create a mis-match of the supply and actual demand of data; which will eventually limit the impact of open data and constrain the benefits and opportunities which can be derived from it.

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- 4 Jacobson, Ralph, 2013. 2.5 quintillion bytes of data created every day. How does CPG & Retail manage it?, IBM <https://www.ibm.com/blogs/insights-on-business/consumer-products/2-5-quintillion-bytes-of-data-created-every-day-how-does-cpg-retail-manage-it/>
  - 5 Open Data in 60 Seconds, <http://opendatatoolkit.worldbank.org/en/open-data-in-60-seconds.html>
  - 6 McKinsey Global Institute. November 12, 2013. "Open Data: Unlocking Innovation and Performance with Liquid Innovation". [http://www.mckinsey.com/insights/business\\_technology/open\\_data\\_unlocking\\_innovation\\_and\\_performance\\_with\\_liquid\\_information](http://www.mckinsey.com/insights/business_technology/open_data_unlocking_innovation_and_performance_with_liquid_information)
  - 7 Omidyar Network. February 2014. "Open for Business: How Open Data Can Help Achieve the G20 Growth Target". [https://www.omidyar.com/sites/default/files/file\\_archive/insights/ON%20Report\\_061114\\_FNL.pdf](https://www.omidyar.com/sites/default/files/file_archive/insights/ON%20Report_061114_FNL.pdf)
  - 8 World Bank, C. o. , 2008. *The Growth Report: Strategies for Sustained Growth and Inclusive Development*. Washington D.C., USA: The World Bank.
  - 9 Bureau of Communications Research, February 2016. *Open government data and why it matters: A critical review of studies on the economic impact of open government data*. Australia: Australian Government's Department of Communications and the Arts. Retrieved from, <http://BCR%20Open%20government%20data%20report%20-%20final%20-%205%20Feb2016.pdf>
  - 10 World Bank, June 25, 2014. "Open Data For Economic Growth: Transport & ICT Global Practice" <http://www.worldbank.org/content/dam/Worldbank/document/Open-Data-for-Economic-Growth.pdf>
  - 11 Open Data Institute, 2015. *Open Data Means Business* <https://theodi.org/article/the-value-of-open-data-for-the-private-sector/>
  - 12 From open data to development impact - the crucial role of the private sector, January 08, 2014, <http://blogs.worldbank.org/opendata/open-data-development-impact-crucial-role-private-sector>
  - 13 Verhulst S. G., Young A., 2017. "Open Data in Developing Economic: Toward Building an Evidence Base on What Works and How, The GovLab" <http://odimpact.org/files/odimpact-developing-economies-executive-summary.pdf>





## 2.2 A Review of Known Business Information Needs in Nepal and Other Country Contexts

With businesses showing interest in utilising open data for optimising their businesses, many companies have developed their business using open data, while a lot of data-driven companies are being established around the world who are developing their business intelligence using governmental web-sites, including data from neighbouring countries.

Globally, business information needs are mainly spread across several verticals including demographical, geographical, metrological, financial, health-related, as well as those related to the incorporation and establishments of business, and so on. As provided by Joel Gurin,<sup>14</sup> open data sets such as that of weather, GPS, census, securities and exchange, healthcare, energy and so on, are those that are often sought by the private sector. Such data sets are expected to generate some of the highest economic value and have the highest potential civic values.

Likewise, through the open data readiness assessment (conducted in countries like Mexico, Kazakhstan, Uganda, Tajikistan, Sierra Leone, India and so on), the World Bank provides that companies in different countries have shown great interest in national business registries and in finding more accurate and interoperable statistical data. Likewise, in the assessment it was found that entrepreneurs are interested in regional data, such as census data that could help them understand and scale into larger markets.<sup>15</sup> It was also found that both small and large companies have a great interest in geospatial/satellite data, which can be used to improve business processes such as improving shipping, transportation, and mapping.

In the context of Nepal, much of the literature provides that there is a need and further opportunities for the use of open data in the transparency and accountability of the government and civil societies. Such data needs include governmental budget details and aid mobilisation of civil societies. However, little is known about the need and usage of open data by the private sector for business value creation. Also, the need and use of open data for decisions making among investors and entrepreneurs is yet to be known. However, it is anecdotally perceived that businesses in Nepal use data from the government.

Some of indicative need and use of data in Nepal are related to business registration, taxes, government budgets, property registrations, trade information, contract enforcements, insolvency settlement and public procurement. Likewise, in a workshop on Open Street Maps conducted by Kathmandu Living Labs, participants expressed how maps and navigation could play a key role in businesses like 'Foodmandu' (a food-delivery service based business) and other online shopping sites in the delivery of goods and services. Besides, the data, such as that of the census and household surveys which provide demographic and socio-economic data, are often sought and used in the private sector but there is very little literature on the subject. So, indicative data needs by the private sector in Nepal includes census, geospatial/satellite information, business registration, taxation, government budgets, property registration, trade information, contract enforcements, insolvency settlement, public procurement, and so on.

## 2.3 A Review of Key Challenges Cited as Being Faced by The Private Sector in Accessing and Using Government Data

Although there is growing consensus about the benefits and opportunities of open data in the development and enhancement of private sector businesses, there has only been limited business activities in the data sector in developing economies. When it comes to the challenges being faced by the private sector in accessing and using governmental data, especially in developing countries, the first issue that comes up is that many governments are not yet able to provide real-time data that companies need either because of lack of necessary technological knowledge and/or lack of technical manpower to maintain public data inventories or basic directories.<sup>10</sup> Meanwhile, even if the data is available, firms (especially SMEs) lack technical resources needed to utilize the open dataset. SMEs are more likely to face a lot of challenges in collecting, storing, and using open and shared data. Such challenges include difficulties in accessing open data, problems concerning data quality and consistency, insufficient financial and human resources, and issues surrounding privacy.

In Nepal, challenges in accessing and using governmental data by the private sector is not only limited to the lack of technical infrastructure and manpower, but also includes the information divide between communities as there is a disparity in access to digital data sources as a result of inconsistent internet penetration and social exclusion due to geographically remote locations of peoples and businesses.<sup>18</sup> On the other hand, even if communities and businesses have access to data, the low level of digital literacy among large portions of the Nepali population limits the production of meaningful information or action from the data. Additionally, there is low-level of articulated demand for data from the civil society and the private sector, which is not enough for the government to share more of its data.<sup>11</sup>

Similarly, there seems to be inadequate public awareness about the data provided by the government and the people's right to information.<sup>19</sup> The limited understanding of how to request information is another challenge. Local experts highlight that the widespread culture of secrecy within the government bureaucracy is another challenge for accessing and using governmental data in Nepal.<sup>20</sup> Moreover, accessing information from the government in Nepal is often cited to be bureaucratic and time-consuming.

Along the same lines, from the supply side, there are numerous technical reasons that are considered as hindrances for data sharing. Issues such as the lack of digitised systems in government, lack of technical skills in the government to open up data and the lack of adequate internet infrastructure in large parts of the country - where radio and community sign boards are the most common channels for disseminating information. Among all of these challenges of data sharing and accessibility in Nepal, the political, bureaucratic and cultural issues is referred to be the greatest barrier.<sup>13</sup>

14 Gurin, J. (2014). "Open data now: the secret to hot startups, smart investing, savvy marketing, and fast innovation. McGraw Hill Professional.

15 Manley, Laura (2015). "Open Data for Business Tool: learning from initial pilots. World Bank <http://blogs.worldbank.org/ic4d/open-data-business-tool-learning-initial-pilots>

16 Freedom Forum, (2014), "Exploring the emerging impacts of open aid data and budget data in Nepal". <http://www.opendataresearch.org/sites/default/files/publications/Open%20Aid%20and%20Budget%20Data%20in%20Nepal%20-%2015th%20Sept-print.pdf>

17 World Bank (2018) Doing Business 2018: Reforming to Create Jobs Economic Profile Nepal. <http://www.doingbusiness.org/~media/WBG/DoingBusiness/Documents/Profiles/Country/NPL.pdf>

18 Dennison, L., Rana, P.; April 2017. "Nepal's emerging data revolution: background paper". Development Initiatives <http://devinit.org/wp-content/uploads/2017/04/Nepals-emerging-data-revolution.pdf>

19 The Asia Foundation, 2014. Citizens' access to information in South Asia. Chapter 4, page 22 and Chapter 8, page 42. Available at: <http://asiafoundation.org/resources/pdfs/CitizensAccessToInformationInSouthAsia.pdf>

20 1 Cf. for example Kasajoo, 2013, Right to Information, a think piece, Enabling State Programme. Available at: [http://www.cmr.org.np/esp\\_rti\\_policy\\_brief.pdf](http://www.cmr.org.np/esp_rti_policy_brief.pdf)

## 2.4 A Review of Examples of Private Sector Innovation and Business Opportunities Being Seen in Similar Context That are Built on Open Data

Many businesses are using open data to create a variety of new business offerings ranging in three different categories - (1) data-driven products; (2) data-driven platforms; and (3) data intermediaries.<sup>21</sup> Such business offerings include platforms that provide analysis, insights and decision-making information; data-driven products such as insurance and loans; data interfaces and visualisations that help increase access to information; consulting services; new software, web and mobile applications; and services and educational platforms for code and data literacy.

Examples of private sector innovation and business opportunities built on open data that are seen in similar country context like Nepal include Excel Geomatics of India and Sagaci Research of Kenya. Excel Geomatics is a private consultancy firm that is involved in the usage of open data to provide geospatial insights i.e. data mapping consultation, to private and public-sector clients. The company uses data from the Indian census, publicly available accessible village and district boundary maps of more than 700 towns and cities, and satellite image-enabled population distribution maps. Moreover, the company uses the Earth Observing System Data and Information System (EOSDIS) and ASTER database from NASA for its products and services.<sup>22</sup> In this way, Excel Geomatics India is using open data for business value creation.

On the other hand, Sagaci Research, which is a market intelligence firm based in Kenya and working across countries in Africa, is another example of business innovation and opportunity that is built on open data. The firm offers strategic knowledge offerings to its clients in sectors like consumer goods, agriculture and telecom, that is based on reports of researchers and field surveyors active across their operational points. More importantly the firm uses open census and national statistical data from the Kenyan and Nigerian governments.<sup>23</sup>

Likewise, another opportunity that is being observed in similar country context is the collaboration of open data practitioners with like-minded people, organisations and institutions, including foreign actors. For example, Ghana's Esoko, an agriculture information service, is now a part of the Global Open Data for Agriculture and Nutrition (GODAN) network, which is helping agricultural companies of Ghana as well as of other nations tap into knowledge of similar organisations around the world, working to leverage open agricultural data for business development.<sup>24</sup>

## 2.5 A Review of Emerging Data-Driven Companies in Nepal, Including Short Case Studies Describing Their Products, Data Sources, Business Models and Challenges to Better Understand Potential Opportunities in Nepal

Though the sphere of businesses that are built on open data in Nepal is small, there are some emerging data-driven companies related to ICT, agriculture, research and intelligence, such as Db2Map, Young Innovations, Bikash Udhyami, Rooster Logic, FOSS Nepal, FACTS Nepal, and others. This sphere of businesses using open data for creating business offering in Nepal are growing.

Kathmandu based ICT firm Db2Map initiated their innovative solutions in utilizing information and communications technology to improve agricultural productivity with its GEOKrishi programme that integrates satellite data with government and crowd-sourced information to assess land and soil conditions to help farmers maximize crop yields. They have been communicating data/information to rural farmers regarding the shifts in weather patterns, soil content, and market prices that can cause adverse ripple effects across the agriculture sector. Their sources of agricultural data are from the satellites, weather stations, governmental agencies, and researchers.<sup>25</sup>

Similarly, Young Innovations is another private company in Nepal that specializes in data to create tailored, innovative solutions in the area of data and technology. It caters its services to both public and private sector businesses including institutions from the civil society. They offer services such as data visualisation, applications and platform development, such as that of mobile application developed to create feedback loops for local governments or to monitor post-disaster infrastructure, and so on. Similarly, they also build automated data tools to collect, curate and analyse data for their clients to help them use that data to aid in their effective decision making. One of their notable work is AidStream, which enables organizations to publish their aid information in accordance with the International Aid Transparency Initiatives (IATI).

## 2.6 A Review of Methodologies to Ground the Research Process and Tools.

Among the research conducted in the domain of open data, a variety of methodologies were used by researchers and institutions as per their research needs and objectives. Most of the related studies focused on open governmental data and open data readiness in different economies. With regards to private sector needs, use, and sharing of open data, there are a few research studies such as that conducted by GovLab in different countries for private sector use of open government data - the Open Data 500. In their approach for the assessment of value of open data in the private sector, GovLab used desk research for researching and identifying possible company candidates and surveyed companies that are using open data for commercial value creation.<sup>26</sup> They first used this approach in the USA expanding it to other countries like Canada, Mexico, Australia, Italy, and Korea for assessing the value and usage of open data in each of these nations.

21 Verhulst S., Caplan R., April 2015. "OPEN DATA: A TWENTY-FIRST-CENTURY ASSET FOR SMALL AND MEDIUM-SIZED ENTERPRISES". <http://www.tegovlab.org/static/files/publications/OpenData-and-SME-Final-Aug2015.pdf>

22 Open Data Fact Sheet, "IT and Geospatial", [http://opendataimpactmap.org/IT\\_Factsheet.pdf](http://opendataimpactmap.org/IT_Factsheet.pdf).

23 Open Data Fact Sheet, "Business, Research and Consulting", Fall 2016, [http://opendataimpactmap.org/BUS\\_Factsheet.pdf](http://opendataimpactmap.org/BUS_Factsheet.pdf)

24 Verhulst S. G., Young A., 2017. "Open Data in Developing Economies: Toward Building an Evidence Base on What Work and How" African Minds.

25 Retrieved from <http://www.db2map.com/Geokrishi.aspx>

26 Open Data 500, <http://www.opendata500.com/>

Similarly, the World Bank also developed a toolkit, aptly named – Open Data Toolkit for Business (OD4B Toolkit) – for assessing current and potential use of government data by the private sectors in various nations.<sup>27</sup> This toolkit serves as a guide through a demand-driven approach to assess the need, usage and sharing of open data by the private sectors. This approach examines four key areas such as private sector capability, high value data, barrier to use and engagement. In all these key areas, a series of questions are provided to further understand the context on the business use of open government data. The questions are then administered through interviews, roundtable discussions and local partners. In the interviews, the tool suggests in selecting a diverse spectrum of private sector respondents for gaining in-depth insights into current business uses of government data. The tool suggests identifying interviewees in such a way that it would ensure representation across the private sectors in terms of size of the business, industrial sectors, and those which are specifically data-driven organisations.

Another private sector study, which is not related to open data but is very relevant to the scope of private sector study on open data, is the World Bank's Enterprise Survey which is a firm-level survey of a representative sample of an economy's private sector conducted to collect data related to the business environment.<sup>28</sup> A representative sampling method was used for the study, whereby the survey was stratified based on criteria like sector of activity, firm size, and geographical location. The objective of this stratification was to allow an acceptable level of precision for estimates, first, within size levels (small, medium and large), second, at different regional stratification and third, for different economic sectors. Based on this, the overall sample size for the enterprise survey was determined.

Based on the reviewed methodologies and literature, an exploratory research methodology was applied for this study, using both quantitative (surveys) and qualitative (interviews and FGDs) tools. And in order to select an indicative and representative sample for the study, the private sector businesses from different industrial sectors in major industrial hubs of Nepal in proportion to the industrial registrations in different sectors in the Department of Industry (DoIND) were considered. While stratifying the sample, first it was classified based on the proportion of the locations (top 10 districts with highest number of industrial registration) selected for the study, and second in terms of the industrial sectors as per the Nepal Standard Industrial Classification (NSIC).

Meanwhile, primary data was collected through surveys, interviews and group discussions to gather information and insights using the demand driven approach provided in the OD4B tool, which focuses in examining four key areas – private sector capability, high value data, barrier to use and engagement, to assess the need, use, and sharing of open data private sector.

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27 World Bank, (2015), *Open Data For Business (OD4B) Tool*; [http://opendatatoolkit.worldbank.org/docs/odra/od4b\\_v2.8-en.pdf](http://opendatatoolkit.worldbank.org/docs/odra/od4b_v2.8-en.pdf)

28 World Bank Enterprise Survey, <http://www.enterprisesurveys.org/>



# Chapter III: Methodology

## 3.1 Methodology

The research methodology including the research tools, sample size and study areas were finalised in close consultation with the Data for Development (D4D) team. The fieldwork was initiated only after getting a formal approval from D4D on the research methodology, tools, work-plan and research instruments.

For the study, an exploratory research methodology using a combination of both quantitative and qualitative research method was used to gather the information predetermined in the research objectives. The study followed a cross-sectoral approach for studying the private sector businesses from among different industrial sectors in major industrial hubs of Nepal. This was based on their industrial registrations in different sectors in the DoIND as per the Industrial Statistics 2015/16.

Primary data was collected through surveys, interviews and group discussions to gather information and insights as specified in the objectives of the study. The following tools were used in the study to accomplish the objectives:

1. Desk Study/Literature Review
  2. Survey Questionnaire
  3. Key Informant Interviews (KIs) (for qualitative insights)
  4. In-Depth Interviews (IDIs) (for qualitative insights)
  5. Focus Group Discussions (FGDs) (for qualitative insights)
- 
1. Desk Study/Literature Review: Literature review involved careful examination of literature that were relevant to the research and its objectives. This involved going through necessary reports, publications, and internet searches to collect relevant information on the demand for, use of and supply of open data by the private sector, how open data is beneficial to the private sector and identification of potential opportunities for growth of private enterprises through open data.
  2. Survey Questionnaire: A structured survey questionnaire was developed to collect quantitative data from private sector business personnel in the 10 selected districts regarding the use, need, demand, and sharing of data by private sector businesses in Nepal.
  3. In-depth Interviews (IDIs): Face-to-face in-depth interviews with a wide range of audience including business people/entrepreneurs, representatives from private businesses including operational level managers who possibly use (or intend to use) data frequently for informed/evidence-based decision-making. The sample audience were identified purposively from the major business and industrial hubs of Nepal. A separate set of interview checklist specific to the identified audience was developed in close coordination with D4D.
  4. Key Informant Interviews (KIs): One-on-one interviews were also conducted with specialised data driven private sector businesses, whose core business activities are directly linked with open data. With this set of audience as well, efforts were made to understand their data needs, access points, use, benefits, opportunities, and challenges of open data and information in Nepal.
  5. Focus Group Discussions (FGDs): Discussion and extraction of information and insights about data availability, needs, challenges and opportunities from various sectors were considered important for the study. Hence, samples for the FGDs were drawn from private businesses/enterprises from different sectors representing varied business sectors, scales and business models.

## 3.2 Sample Frame and Study Approach

In order to meet the study objectives, four sets of sample frames were identified, which are explained below:

1. **Private Sector Business people and Entrepreneurs:** The private sector business operators and entrepreneurs are major agents that require data and information related to the economy and society. This set of research audience not only included business people and entrepreneurs, but also management professionals and operational level managers who are directly involved in business decision-making. For this set of audience, both quantitative and qualitative study tools were administered. They were surveyed with the questionnaire along with some IDIs and FGDs.
2. **Specialist Data Driven Businesses:** Another set of audience for this research was private sector actors who are into open data as a part of their business. Business people, entrepreneurs, managers, and professionals who are directly or indirectly working in the field of open data can provide useful insights about the overall demand-supply dynamics for open data in Nepal. KIs were used as a study tool for this set of audience.
3. **Private Sector Development Experts and Commentators:** This set of audience included business associations and donors, who are directly involved in enhancement and development of private sector businesses. KIs were used as a study tool for this set of audience.

## 3.2 Sample Design for Quantitative Study

The quantitative survey was carried out in the 10 top districts with high presence of industries. Private sector business personnel/entrepreneurs were selected purposively for the quantitative surveys. Following are the ten districts that were selected for this study based on the number of industrial registrations:

Table 1: Top 10 Districts with Highest Number of Industrial Registrations, 2015/16

S.N.	District	Number of Registered Industries*
1.	Kathmandu	2,934
2.	Lalitpur	729
3.	Bhaktapur	151
4.	Kavre	139
5.	Makwanpur	103
6.	Chitwan	176
7.	Parsa	151
8.	Bara	214
9.	Kaski	333
10.	Rupandehi	188

Source: Department of Industry, 2016; \*Industrial Registration up to 2015/16

A total of 135 samples were taken from the 10 districts for the study, which is a statistically valid sample size, calculated based on the Cochran formula, used in smaller populations, to estimate proportion in a sample with a known level of confidence and precision to reflect the proportion in the population. The sample size was calculated with a known population of 6,524<sup>29</sup>, a 95% confidence level and around ±5% (0.05) precision i.e. level of significance by using the formula presented hereafter.

$$\text{Sample Size (n)} = \frac{\frac{Z^2 \cdot pq}{e^2}}{[1 + (\frac{Z^2 \cdot pq}{e^2} - 1)/N]}$$

Here, N = Population size

e = Margin of error

Z = z-score

p = Prevalence i.e. (estimated) proportion which has the attribute in question.

= 0.1

29 Department of Industry, 2016; Industrial Registration up to 2015/16



Here, the prevalence (p) was taken as 10 percent since the concept of open data is new and is known by few. In line with this, the literature provides that the data culture in Nepal and open data to be in its nascent stage in comparison to developed countries. Even though the sample size during the inception of the research project was projected at 363, it was reduced to 135, due to the low prevalence of open data usage among businesses in Nepal. Hence, it was assumed that 10 percent of the population used open data.

After calculation of the sample, it was then distributed proportionately on the basis of each number of industries registered in each district and then proportionally divided into different industrial sectors in each district based on the sectoral-classification of industry as per the Department of Industry. The table below depicts the final proposed sample size per district cum sector.

Table 2: District-wise Sectoral Classification of Samples for Quantitative Study

	Kathmandu	Lalitpur	Kaski	Bara	Rupandehi	Chitwan	Bhaktapur	Parsa	Kavre	Makwanpur	Total
Agro and Forestry Based	5	1	1	0	0	1	0	0	0	0	8
Construction	1	0	0	0	0	0	0	0	0	0	1
Energy Based	3	1	0	0	0	0	0	0	0	0	4
Manufacturing	31	8	4	2	2	2	2	2	2	1	56
Mineral	1	0	0	0	0	0	0	0	0	0	1
Service	21	5	2	2	2	1	1	1	1	1	37
Tourism	15	4	2	1	1	1	1	1	1	1	28
Total	77	19	9	5	5	5	4	4	4	3	135

For the survey, the data was collected from either municipality, metropolitan, and sub-metropolitan areas; whichever fitted the survey purpose. Thus, a purposive random selection of industries was done in each of the study location.

### 3.3 Sample Design for Qualitative Study

For gathering qualitative insights for the research project, qualitative study tools such as IDIs, KIIs, and FGDs were used in 3 districts with top industrial registrations i.e. Kathmandu, Lalitpur and Kaski, as it represents more than 50 percent of the industries registered under DoIND. For the qualitative study, the following samples were selected:

Table 3: District-wise Distribution of Samples for the Qualitative Study

District	IDI (Business Peoples)	KII			FGD
		Data Driven Business	Business Association	Developmental Partner	
Kathmandu	5	3	3	2	1
Lalitpur	3	0	0	0	1
Kaski	3	0	0	0	1

For identification of the specific audiences for interviews and group discussions, a purposive sampling technique was applied in conjunction with snowball sampling method, whereby other possible audiences were identified and finalised based on referrals and recommendations from the primary audience.

### 3.4 Data Collection

Considering the accuracy and quality of data, a Computer-assisted Personal Interview (CAPI) was conducted for quantitative data collection using Android computer tablets. The tablets recorded response times, dates and GPS locations, where the questionnaire was administered. The offline software 'Droid Survey System' with the questionnaire pre-loaded onto the tablets was used for data collection.

For administering qualitative studies, separate interview and FGD checklists were developed for each set of audience and finalised in close consultation with D4D Nepal. For data collection, FACTS deployed qualitative interviewers and focus group facilitators who were thoroughly trained on the study instruments and protocols.

All FGDs, IDIs and KIIs, except two KIIs in Pokhara, were taped using audio recorders, after obtaining informed consent from the research participants. A summary of each interview and group discussion was prepared by the field researchers for data analysis and report writing purposes.

### 3.5 Recruitment and Training of Field Research Team

FACTS deployed three research supervisors for the 10 sample districts, with proficiency in conducting FGDs, KIIs and surveys. Enumerators were recruited locally for the quantitative survey. Three research assistants were deployed for assisting the research supervisors in conducting the qualitative study.

FACTS provided one-day training to the research supervisors and research assistants to brief them on the data collection tools, and orient them on the research tools. The supervisors were capacitated to train local enumerators in each district to enhance their knowledge and skills on the essence of the survey including data collection techniques, rapport building, and interview skills. The key objective of their training was to give a personal face-to-face briefing to the field team as specified fieldwork guidelines. The field team was thoroughly trained and briefed on all parts of the study protocol, administration of the questionnaire and style of questioning. The training imparted knowledge and developed skills of the interviewers, enabling them to conduct the survey, FGDs and KIIs effectively and accurately.

### 3.6 Pre-test of the Study Tool

Prior to initiation of the final survey in the sampled districts, a pre-test of the survey questionnaire and interview checklist was held in Kathmandu to know the time duration required for each interview and to test the questionnaires' acceptability and understanding by the respondents. Based on the pre-test, necessary changes were made on the questions that were felt not-understandable and unacceptable by the respondents.

The training and pre-test helped ensure that the field team members understood the questionnaire perfectly and prepared them to carry out the study according to the set guidelines.

### 3.7 Data Quality Control Mechanism

During the data collection period, quality control was given high emphasis through supervisors' review of minimum 30% filled-in questionnaire within 72 hours of fieldwork completion, which allowed appropriate and timely feedback to interviewers for re-administering the questionnaire, wherever required. The checks by the supervisors were also rechecked by FACTS executives involved in the study. Approximately 5% fieldwork, a mix of checked as well as non-checked fieldwork by the supervisors, was cross-checked by the executives.

Quality of collected data was ensured through the following measures:

1. By assuring that no data was lost or missed to be taken during the data collection process and post fieldwork
2. By assuring that the sources of data were correct and appropriate
3. By assuring that the questionnaire was consistent in all locations and among all respondents
4. By rechecking the gathered data for accuracy and omission of errors

### 3.8 Data Analysis

FACTS used quantitative data analysis tool SPSS to carry out effective interpretation of the collected data. Meanwhile, for qualitative interviews, transcripts of all the interviews and discussions were made and later the major points from the transcripts that were relevant to the research objectives were identified and included in the report.

### 3.9 Ethical Consideration

The following key ethical aspects were considered and followed in this study.

1. **Informed consent:** FACTS sought informed consent from the participants to participate in the study. Each participant who expressed interest to participate in the study were briefed about the purpose of the study, the procedures to be followed and the questions to be asked. The participants were given an opportunity to ask questions, and were told to feel free not to participate or end the interview at any time without any prejudice from FACTS. Separate consents to have the FGD and KII recorded were also sought.
2. **Confidentiality:** Privacy and moral integrity of participants was respected throughout the research process. FACTS maintained a list of study participants which was submitted to D4D while submitting the final report. All interviewers were trained on the importance of confidentiality. All interviews were conducted in auditory privacy. Personal identification of participants was not disclosed to anyone. All findings of the research was written up so that the identity of the participants was concealed. All interviewees were assured that the transcribed notes of their interview would not contain any information that would allow their identity linked to specific statements made during the interview.
3. **Risks related to the research:** No direct harm to participants was expected from the research. Hence, there was no case of participants experiencing distress (either emotional or physical) in the middle of any KII or FGD. All interviews and discussions took place smoothly and in absolute harmony.
4. **Potential benefit:** There was no direct benefit to the survey respondents.
5. **Harm due to the study:** None occurred.

# Chapter IV: Key Findings

The findings of this report is based on both quantitative and qualitative research conducted during the duration of the project. Efforts have been made to consolidate all important points shared during the research, especially those that were pointed out in the FGDs and KIs.

The findings have been structured in the following manner:

1. Demographics of Quantitative Survey
2. Data Use Practice by Private Sector Businesses
3. Need and Demand of Data
4. Usage and Significance of Government Data
5. Production and Supply of Private Sector Data
6. Usage and Sharing of Open Data
7. Challenges and Barriers for Accessing, Using, and Sharing of Data
8. Promoting Open Data Culture in Nepal
9. Data-driven Business Case Studies

Except the first section, the other headers have a mix of qualitative and quantitative findings. Further, since the KIs and FGDs were taken with specific persons from various sectors, the findings have been developed in such a manner as to reflect their takes on the data culture and open data. The sectors comprise of

- Private Sector Businesses
- Specialized Data-Driven Businesses
- Developmental Partners (Business Associations/INGOs)

**Note: The percentage figures in the analysis have been rounded off to the nearest whole-number percent.**

## 4.1 Demographics of the Quantitative Survey

### 4.1.1 District-wise Sample Distribution

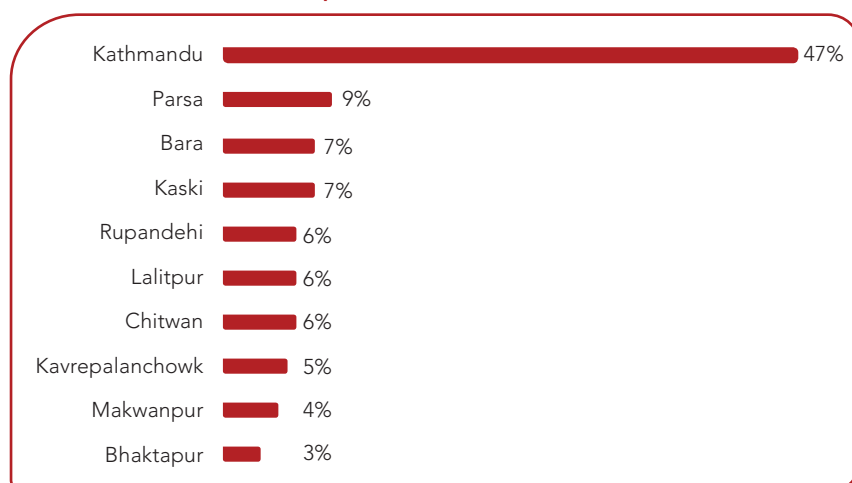


Figure 1: District-wise Respondents

Out of the total respondents of 135 that were surveyed, almost half the respondents (47%) were from Kathmandu; 9% each were from Parsa; 7% each from Bara and Kaski, 6% each from Rupandehi, Lalitpur and Chitwan; and 5%, 4%, and 3% respectively from Kavrepalanchowk, Makwanpur, and Bhaktapur.

### 4.1.2 Scale of Businesses Surveyed

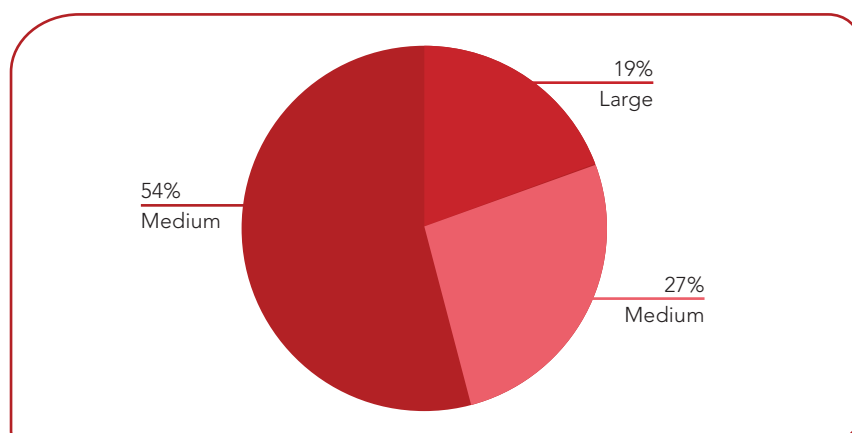


Figure 2: Scale of Business Sampled in the Research

Among the total of 135 private sector businesses surveyed, more than half (54%) were small scale, 27% were medium-scaled, while the remaining 19% percent were large-scale businesses. It clearly shows that the majority of the respondents that participated in the study belong to small-scale business.

### 4.1.3 Organisation Type of the Businesses

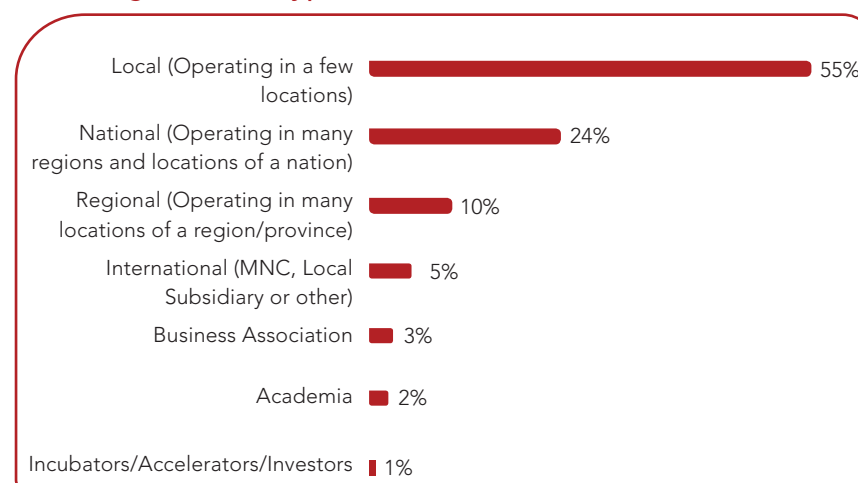


Figure 3: Organization Type

Most of the respondents that participated in the survey were local businesses, which generally operated in a few locations (55%), followed by 24% businesses representing businesses operating nationally. Meanwhile, 10% of the respondents represented regional businesses. Subsequently, 5% of the businesses surveyed were international, 3% represented business associations, and 2% were from the academia. The remaining 1% included business development centres (incubators/accelerators) or investors.

### 4.1.4 Business Registration in Governmental Authority

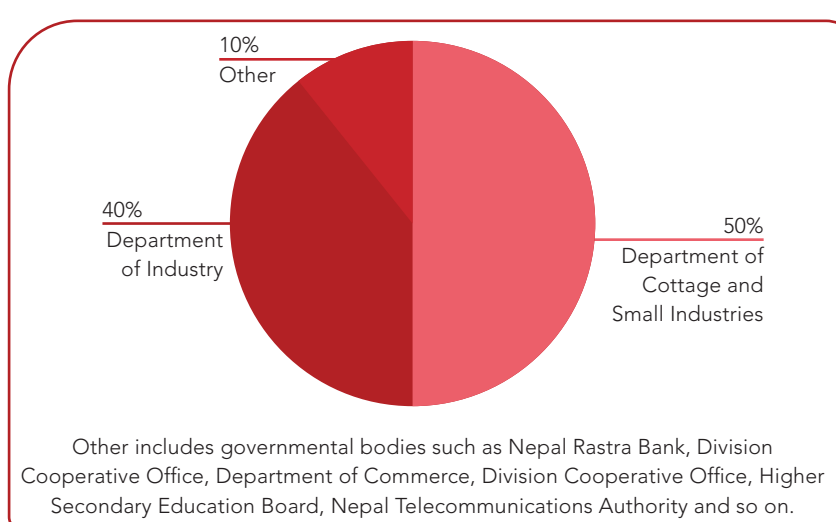


Figure 4: Registration of Business in Governmental Bodies

Among the surveyed businesses, 50% of the businesses were registered with the Department of Cottage and Small Industries. Meanwhile, 40% were registered with the Department of Industry. The remaining 10% of the businesses were registered with other governmental bodies such as Department of Commerce, Division Cooperative Office, Higher Secondary Education Board, Nepal Telecommunications Authority and so on.

4.1.5 Number of Employees Employed Among the Businesses Studied

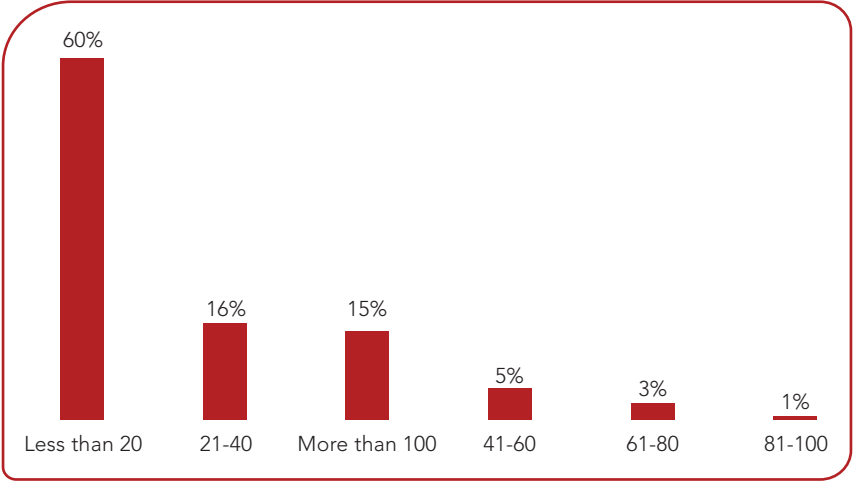


Figure 5: Number of Employees in the Surveyed Businesses

During the time of study, a majority (60%) of the businesses had less than 20 employees employed. 16% had 21-40 employees, 5% had 41-60 employees, 3% had 61-80 employees, and only 1% had employees in the range of 81-100. The remaining 15% had more than 100 employees.

4.1.6 Primary Business Activities of Businesses

In the study, mining/manufacturing, tourism, customer service, data/IT, agriculture, construction, and finance and investment were the major activities that were cited by the majority of businesses surveyed. 19% of the businesses cited manufacturing as their primary business activity, followed by 16% citing tourism, 12% for customer service, 11% data/IT, 9% for agriculture, 7% for housing, real estate and construction, and 5% for finance and investment. Meanwhile, each of the remaining business activities were cited less than 5% by the participants in the survey.

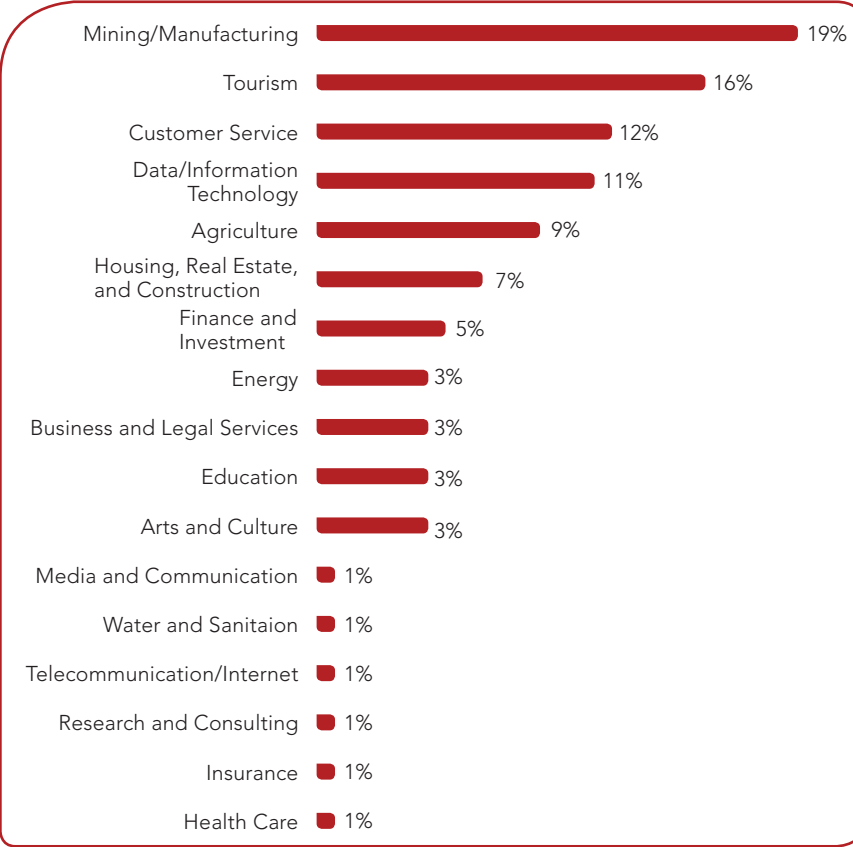


Figure 6: Primary Activities of Businesses

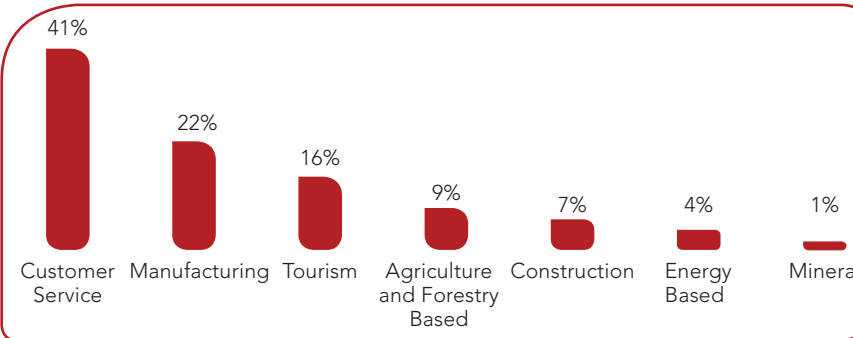


Figure 7: Sectoral Classification of Businesses

Of the businesses surveyed, 41% belonged to the service sector which included businesses with primary business activities such as customer service, health care, insurance, research and consulting, telecommunication/internet service providers, water and sanitation, media and communication, education, business and legal services, finance and investment, and data/information technology. On the other hand, 22% of the businesses surveyed belonged to the manufacturing sector, 16% to tourism, 9% to agriculture and forestry, 7% to construction, 4% to energy, and the remaining 1% percent to the mines and mineral sector.

4.1.8 Business Model of the Surveyed Businesses

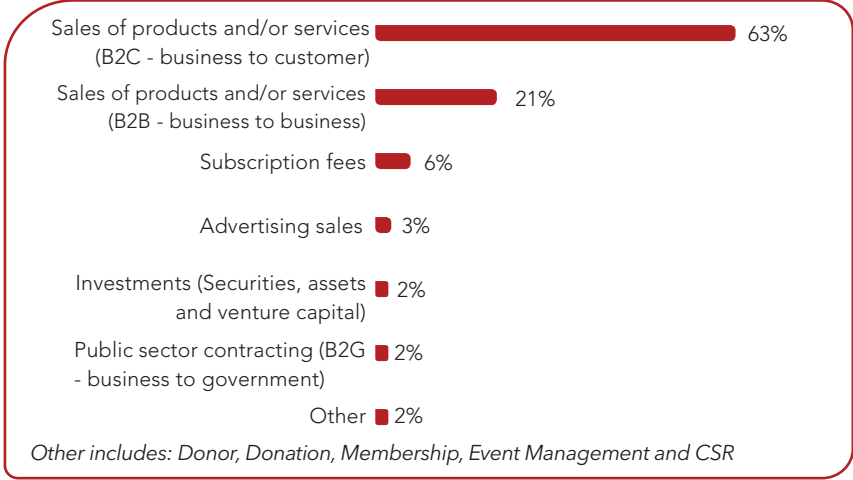


Figure 8: Primary Business Model/Source of Revenue

Majority (63%) of the businesses that participated in the study had B2C as their primary business model, followed by 21% with B2B revenue model. Meanwhile, 6% of the businesses were based on a subscription model, while 3% on advertising sales. On the other hand, 2% had investments, and another 3% had B2G as their primary business model. Meanwhile, 2% of the respondents also cited grants/funds, donations, memberships, event-management and CSR as their primary source of revenue.

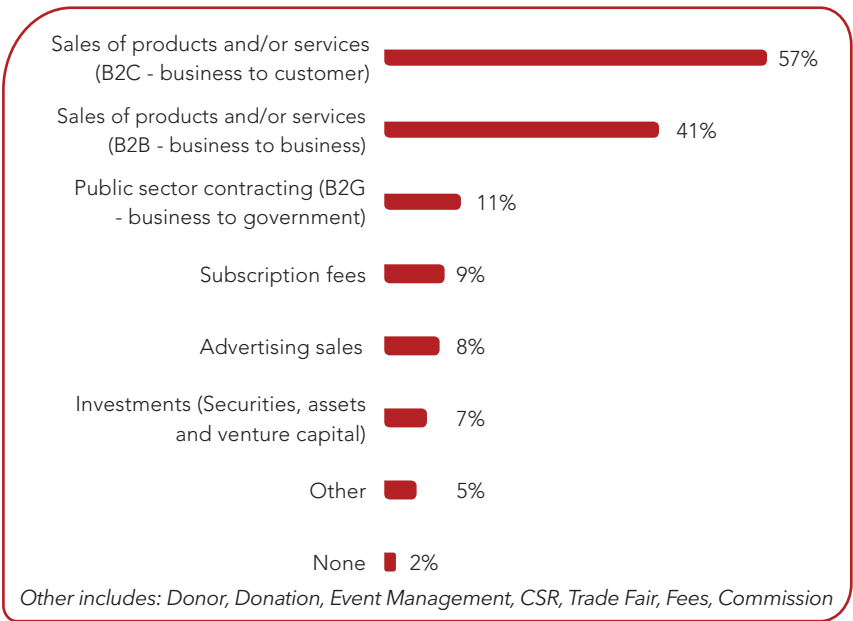
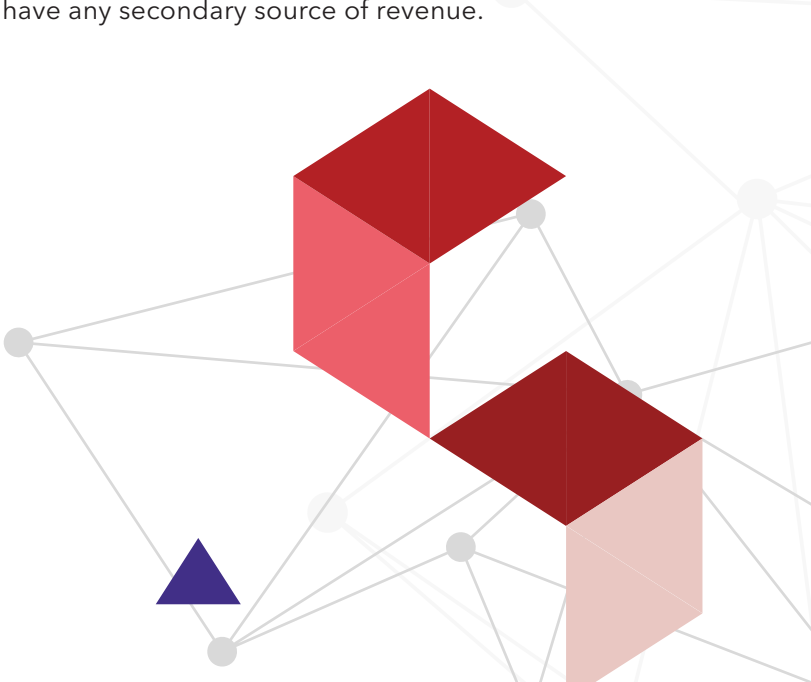


Figure 9: Secondary Source of Revenue for Businesses (MA)

B2C also was the major (57%) secondary revenue model among the participants followed by 41% citing B2B. Other than this, 11% of the businesses had B2G, 9% had subscription fees, another 8% had advertising sales, and 7% had investment as their secondary revenue model. While 5% of the businesses indicated other sources of revenue including donations, event-management, trade-fairs, fees and commissions as their secondary sources of revenue. Whilst, 2% of businesses didn't have any secondary source of revenue.





## 4.2 Data Use Practice by Private Sector Businesses

### 4.2.1 Businesses Use of Data

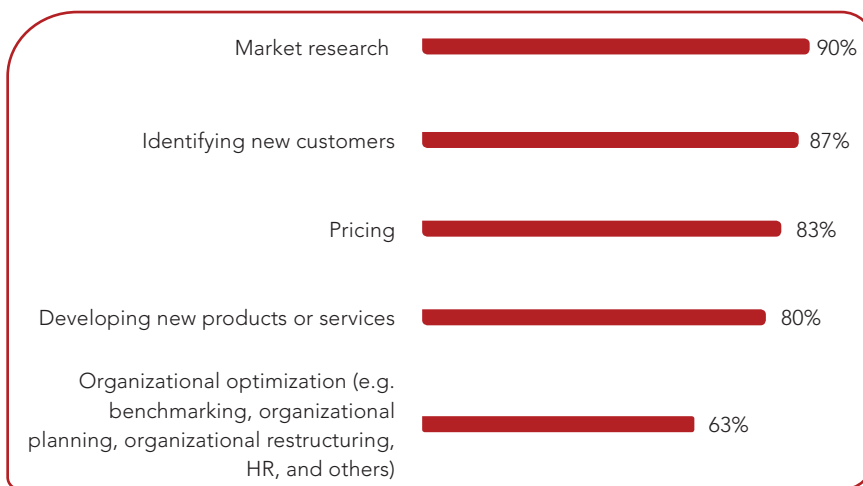


Figure 10: Business Use of Data (MA)

It can clearly be seen that private sector businesses highly use data for various business purposes. Among the businesses that use data, 90% use it for market research followed by 87% using data for identifying new customers. Similarly, it was found that businesses commonly used data for pricing products (by 83% of businesses) and in product development (by 80% of businesses). Meanwhile, the usage of data for organisational optimisation was comparatively low than that of other usage, only 63% of the businesses said to be using data for organisational optimisation. One reason for this is less realisation among the private sector that they themselves produce data which they can use internally. A respondent in an FGD conducted in Kathmandu provided that, "Data is being produced by the private sector in many ways - be it through cash counter sales, swipe machines, employee's data, or other forms of data - but private sector businesses don't realise it". Moreover, it was discussed that businesses don't accept them as proper data and do not manage them properly.

Considering the business uses of data in relation to their primary source of revenue/business model (figure-11), among businesses with B2C as their primary business model, 76% used data for identifying new customers, 73% for market research, 72% for determining pricing, and 66% for developing new product and services.

Similarly, among the major uses of data by businesses having a B2B model, 72% of such businesses used data for identifying new customers, 69% used data for market research and 66% reported using data for developing new products.

Meanwhile, since the sample for companies with other business models such as investment, subscription, B2G, and advertising had low participation in the survey, the findings could not be generalized. Nonetheless, of those businesses, all the business with a B2G model surveyed provided using data for market research. On the other hand, businesses with advertising as their primary source of revenue essentially used data for developing new products or services. In the same way, those businesses with subscription fees as their primary business revenue model principally used data for pricing, identifying new customers, developing new products/ services and organisational optimisation. Interestingly, businesses with investment as their primary business model highly used data for all purposes.



"We use data related to business registration, type of companies, its ownership, and levels of investments - all such information helps us to approach new customers".

- CEO, Private Sector Business, B2B Kathmandu

"We use governmental data such as that related to household, population size, market average growth rate, and other demographic data from the macro level for doing market research".

- Co-founder/Director, Private Sector Business, B2C, Kathmandu

"We use data related to business registration, type of companies, its ownership, and levels of investment - all such information helps us to approach new customers".

- CEO, Private Sector Business, B2B Kathmandu

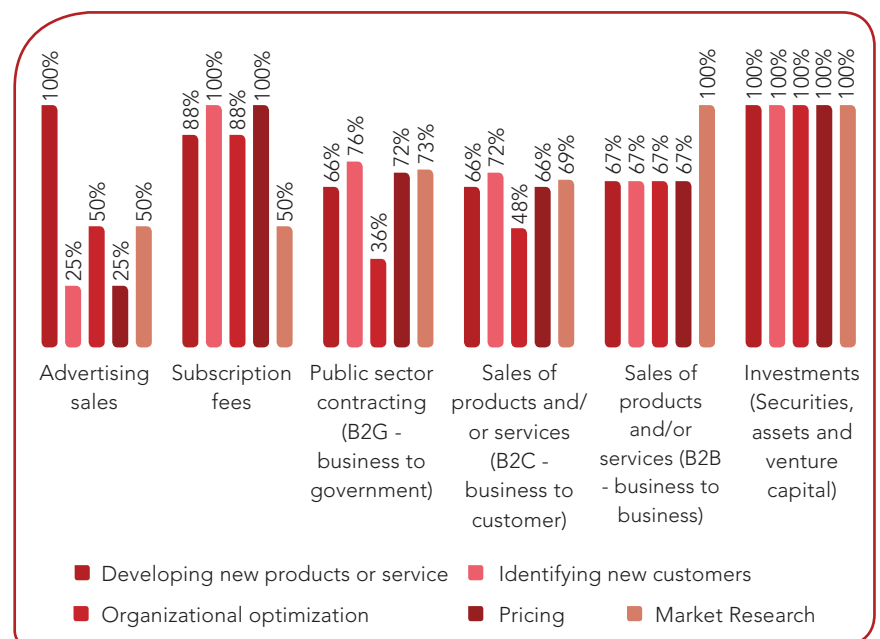


Figure 11: Data Uses by Businesses with Different Primary Business Model (CT)

Table 4: Sample Distribution of Data Uses by Businesses with Different Primary Business Model

Primary Business Model	Developing new products or service			Identifying new customers			Organizational optimization			Pricing			Market Research		
	We use data for this	We do not use data for this	We do not do this	We use data for this	We do not use data for this	We do not do this	We use data for this	We do not use data for this	We do not do this	We use data for this	We do not use data for this	We do not do this	We use data for this	We do not use data for this	We do not do this
Advertising sales	4	0	0	1	1	2	2	0	2	1	1	2	2	1	1
Subscription fees	7	1	0	8	0	0	7	0	1	8	0	0	4	1	3
Sales of products and/or services (B2C - business to customer)	56	15	14	65	9	11	31	26	28	61	11	13	62	5	18
Sales of products and/or services (B2B - business to business)	19	7	3	21	4	4	14	9	6	19	7	3	20	4	5
Public sector contracting (B2G - business to government)	2	1	0	2	1	0	2	0	1	2	0	1	3	0	0
Investments (Securities, assets and venture capital)	3	0	0	3	0	0	3	0	0	3	0	0	3	0	0
Other	3	0	0	2	0	1	2	1	0	2	1	0	3	0	0

Through interviews with business persons/entrepreneurs, businesses in general were found to be using data for conceptualising ventures, studying and identifying market segments, developing business strategies and for assessing sector growth or profitability. Some of the respondents said that they used data to identify their clients, meet the client’s requirements and objectives, assess the need and demand in the market and for driving organisational learning. For example, a hospitality business owner during the qualitative study mentioned that data helps them to make new upgrades, learn and implement ideas through which they can provide something new to their customers, whether it is food, ambience or music”.

When it comes to the uses of data by data-driven businesses, it was understood that data was used for developing innovative products and services, providing services of analysis and data visualisation. Moreover, they claimed that data enabled the development of new business avenues such as development of tools like business dashboard, data-visualisation and so on, which can help clients and different stakeholders including those in the private sector, government, and civil society to support them in planning and decision making.

Meanwhile, business associations essentially used data for sharing issues and challenges that the private sector is facing and then lobbying the government to solve those issues.

One interesting finding from the FGDs and KIIs/IDIs was that there was a clash of definition on data and information. It was found that people used data and information interchangeably i.e. they also referred information as data.

“Private sector entrepreneurs primarily use data for conceptualising their ventures, identifying their market segments and developing their businesses”.

- Advocacy and Communications Officer, Development Agency, Kathmandu

“Data drives innovation for businesses. And it has been fostering collaborations and strategic-alliances among the private sector for developing new business/service platforms based on data. Through the use of data, different tools that help the private sector, government, and civil-society to support them in planning and decision making can be developed”.

- Founder, Data-driven Business, Kathmandu

4.2.2 Sources of Data for Private Sector Businesses

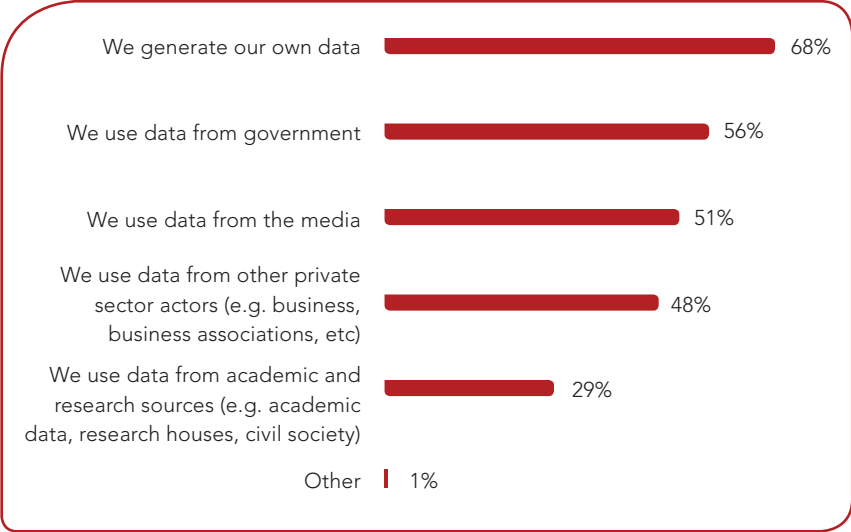


Figure 12: Source of Data (MA)

Private businesses indicated using data from different sources, first mentioning their own data as a source. It was found that the majority (68%) of businesses generated their own data for usage followed by data from governmental sources (56%) and those from the media (51%). At the same time, a considerable number of businesses used data from private sector actors (45%) as well as from academic and research sources (29%). Meanwhile, the remaining 1% used data from other sources which included social networks.

During KII interviews, it was deduced that businesses mostly used data internally produced and that procured from governmental sources, irrespective of the types or sector of the business, as per their need and the sector they were involved in. Meanwhile, some businesses also mentioned using data from developmental agencies such as the World Bank, UN, and so on.

Beside these, data-driven businesses also mentioned using data from national and international journals and publications.

4.2.3 Skill/Capability of Businesses to Confidently Use Data to Make Informed Decision

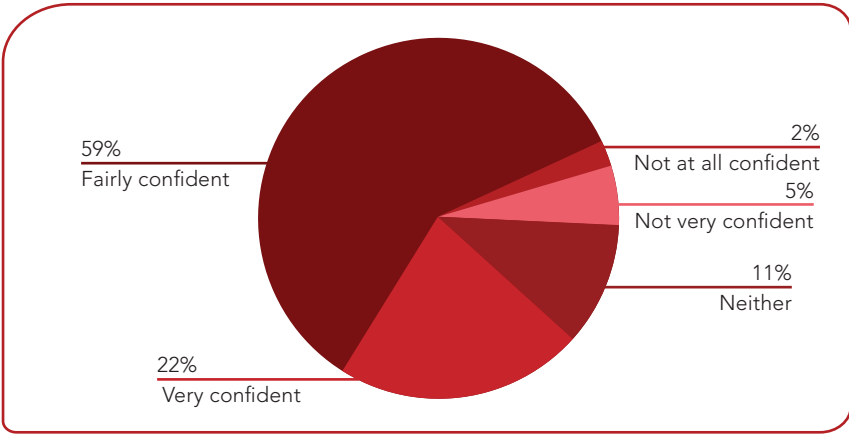


Figure 13: Businesses' Confidence in Their Ability to Effectively Use Data

81% of the businesses identified themselves as being confident in their skill and capability to use data to make informed decisions. More specifically, 22% felt very confident while 59% were fairly confident on their skill and capability to use data. On the other hand, 11% of the businesses were neither confident nor unconfident on their skill and capability to use data. While 5% of the respondents reported being not very confident, the remaining 2% were not at all confident in their skill and capability to use data.

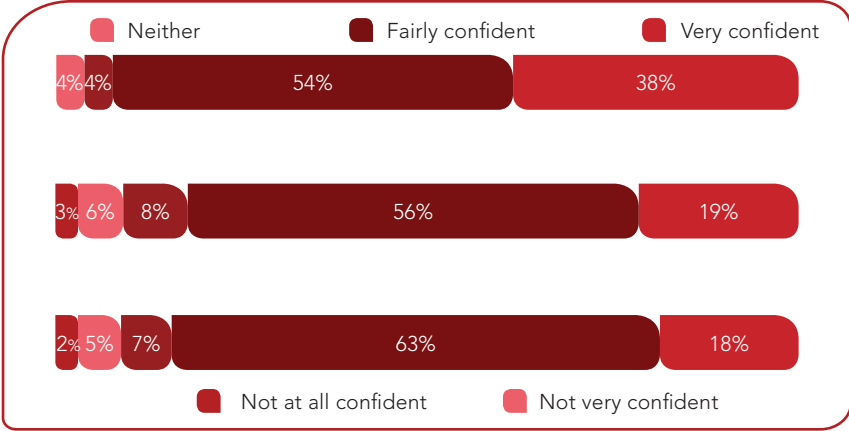


Figure 14: Scale-of-Business-wise Classification of Businesses in Terms of Their Confidence in Their Ability to Use Data Effectively (CT)

Table 5: Sample Distribution of the Scale of Business on in Terms of Their Confidence in Their Ability to Use Data Effectively

	Small	Medium	Large
Not at all confident	2	1	0
Not very confident	4	2	1
Neither	5	3	1
Fairly confident	46	20	14
Very confident	13	7	10
Don't know / Cannot answer	3	3	0
Total	73	36	26

Meanwhile, among the 2% of businesses that claimed that they were not at all confident in their ability to effectively use data, most were small and medium-scale businesses. On the other hand, 38% of large-scale businesses cited being more confident, while 19% of medium-scale businesses and 18% of small-scale businesses claimed to be very confident in using data effectively.

Through the qualitative interviews and discussions, it was found that businesses, especially small businesses, have less or no skill and capacity to use data. It was also deduced that businesses in the IT sector and large-scale businesses and corporations that have huge capital and resource along with good IT infrastructure and are capable of using data confidently. Unsurprisingly, small businesses claimed to have less capacity and skill and hence, less confidence in using data.

Through a KII with a private sector development expert, it was found that it was difficult to find people with the right skills to make use of data, especially in SMEs. There are few such people in comparison to the need of the market. However, INGOs/NGOs and big corporates do have such capacities.

“When it comes to pulling out data from metadata and analysing; I haven’t seen such competencies in the private sector”. – Project Officer, Kathmandu

“If a businessperson wants to develop a product for a restaurant, for instance. Then ideally, they determine the pricing looking at the market and how much people can afford. In reality, most of the business houses are in the market only through observation”. – Advocacy and Communication Officer, Development Agency, Kathmandu

An interesting finding through the qualitative study was that businesses in Nepal conducted very few market researches, instead basing their decisions on instincts and gut-feelings which is particularly true in many SMEs. This shows that, they are yet to realise about the importance of data and research.

4.3 Usage, Significance and Accessibility of Government Data

4.3.1 Use and Source of Government Data

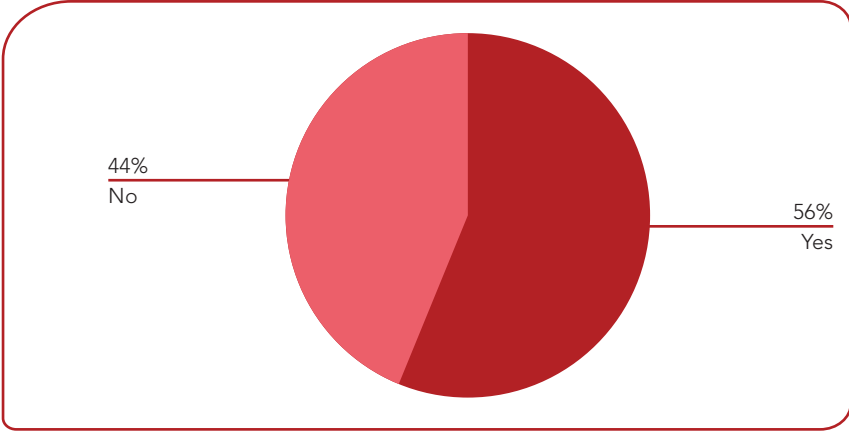


Figure 15: Use of Government Data by Private Sector Businesses

More than half (56%) of the businesses claimed to be using government data, while around 47% indicated not using it.

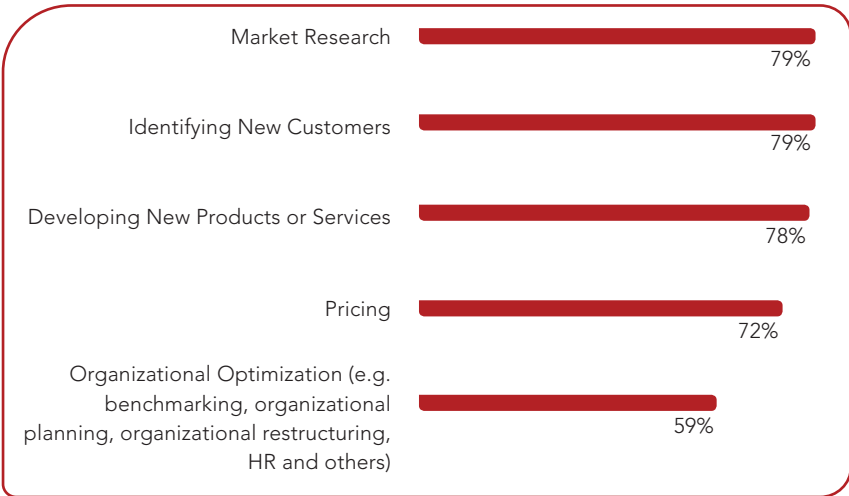


Figure 16: Business Usage of Government Data (MA)

Among the 56% of the businesses that used government data, it can be seen that government data was used for almost every business aspect. More specifically, more than three-fourths of the businesses used data for market research (79%), identifying new customers (79%) and developing new products or services (78%). Subsequently, 72% of the businesses used government data for pricing and 59% used it for organisational optimisation.

Through the qualitative interviews and discussions, it was deduced that businesses used government data for several purposes depending on their need. Some of the most referred uses were for market research, assessing macro-level conditions, formulating business matrix and KPIs, innovation and business development.

In interviews with developmental agencies, respondents mentioned that they used governmental data for planning and implementation of their projects.



“Whenever we have to implement a project in a certain area, we mostly rely on government data. For example: when finding data for a project implementation, we rely on government’s Human Development Index (HDI) and run the project in an area with the lowest value”.

- DM&E Manager, Development Agency, Kathmandu

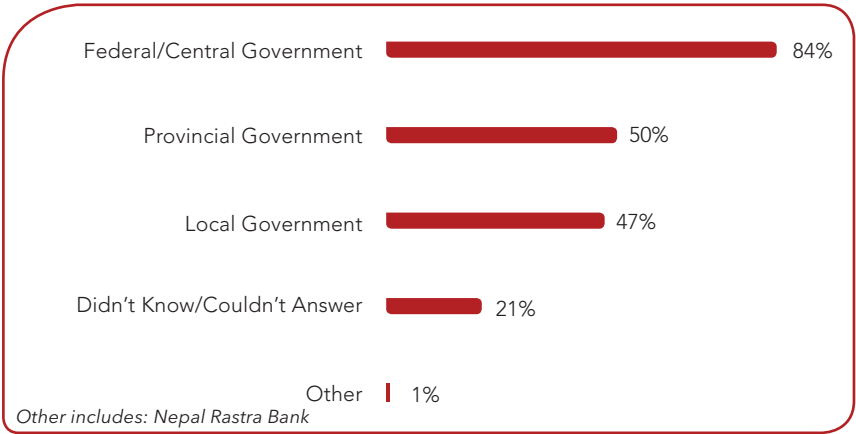


Figure 17: Sources of Governmental Data Classified on the Basis of Federal Structure (MA)

Among those businesses using government data (76 businesses or 56%), 84% used data from the federal/central government. Similarly, 50% specified using data from the provincial government and 47% from the local government. Meanwhile, 21% of the respondents who mentioned using government data didn't know or couldn't answer from which of the governmental structures they had acquired the said data. This is particularly because the respondents were not clear where they accessed the government data from. This can be inferred from the major challenges for using government data, where the top challenge cited was that business people find it difficult to find data i.e. businesses were not clear where to find the necessary data from.

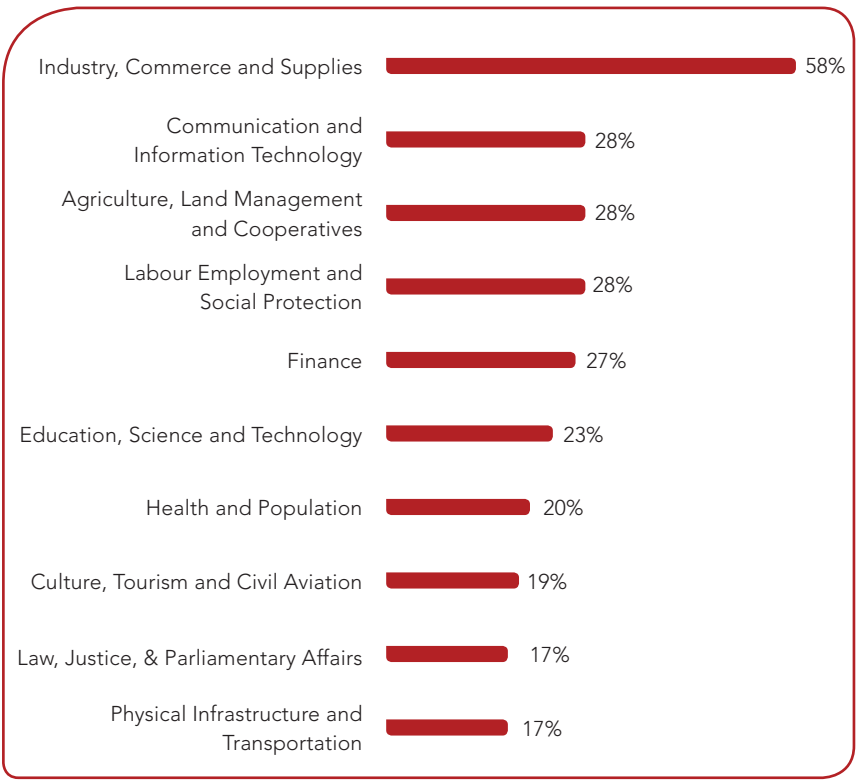


Figure 18: Top 10 Ministries from Which Private Sector Use Data (MA)

When using governmental data from different ministries, majority of the businesses (58%) used data from the Ministry of Industry, Commerce and Supplies. Meanwhile, more than a quarter of the businesses used data from the Ministry of Communication and Information Technology (28%), Ministry of Agriculture, Land Management and Cooperatives (28%), Ministry of Labour Employment and Social Protection (28%) and Ministry of Finance (27%).

#### 4.3.2 Usage of Data from the Government’s Constitutional Bodies and Agencies

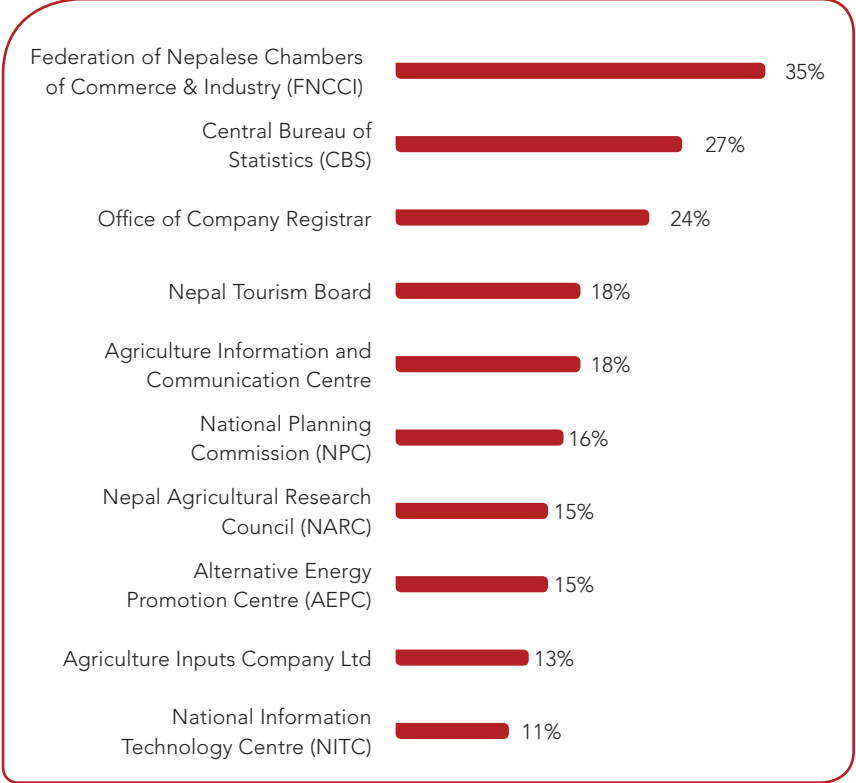


Figure 19: Top 10 Constitutional Bodies and Agencies from Which the Private Sector Uses Data (MA)

Among the government’s different constitutional bodies and agencies, businesses mainly referred data from the FNCCI (35%), CBS (27%), and OCR (24%). As provided in the interviews, one business stated that through the CBS, they used data related to demographics, social statistics, poverty and so on. While another business provided that they used data related to business registrations and level of investments of businesses in different sectors. Similarly, other bodies and agencies that were among the top ten most referred constitutional bodies and agencies by private businesses included Nepal Tourism Board (18%), Agriculture Information and Communication Centre (18%), National Planning Commission (16%), Nepal Agricultural Research Council (15%), Alternative Energy Promotion Centre (15%), Agriculture Inputs Company Ltd. (13%), and National Information Technology Centre (11%).

Through the qualitative interviews and discussions, it was found that businesses quite often used data relevant to their specific sector. For example, businesses belonging to agriculture sector used data from ministries and constitutional bodies related to agriculture sector such as Department of Agriculture Development, Agriculture Information Centre, Vegetable Development Directorate and so on. Meanwhile, there were other government data which were used in general. These included data-related to demography, legal information, policies and so on.

Some of the common sources of the data for the private sector included the CBS, NRB, Department of Customs, TEPC, DCC, local-level units, as well as different ministries and departments of the government. Some of the datasets that were commonly referred were population census, agricultural census and import-export datasets, among others.

#### 4.3.3 Significance and Accessibility of Government Data

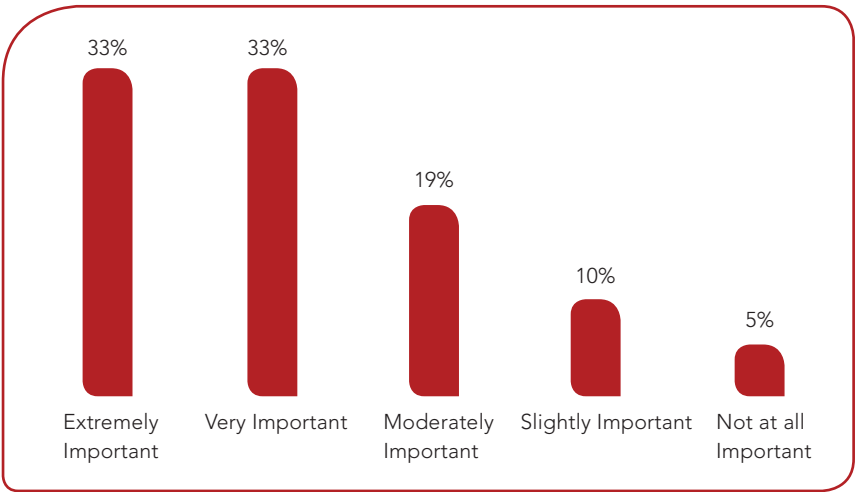


Figure 20: Importance of Government Data to Private Sector Businesses

As indicated in figure-20, it is clear that government data is important to private sector businesses. Specifically, about one-third of the respondents (33%) found government data to be both extremely important and very important for their businesses.

Meanwhile, 19% of the businesses indicated it to be moderately important and 10% claimed it to be slightly important. Whereas, 5% of the private sector businesses indicated government data as being of no importance for them.

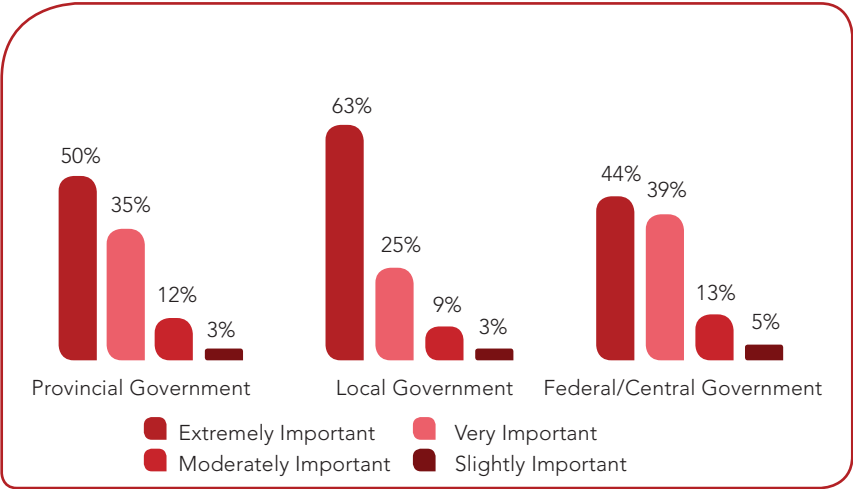


Figure 21: Importance of Government Data from Different Federal Structures (CT)

As seen in figure-21, among the businesses that used data shared by different federal structures, 63% of the businesses using data from the local government consider the data shared by the local government to be of extreme importance. Similarly, 50% of the businesses using data from the provincial level cited such data to be of extreme importance. On the other hand, 48% of the businesses using data from the federal/central government provided such data to be of extreme importance for them.

Table 6: Sample and Percentage Distribution of Top 5 Ministries Via Which Private Sector Uses Data from (N=63)

	Ministry of Industry, Commerce and Supplies (MoICS)	Ministry of Labour Employment and Social Protection (MoLESP)	Ministry of Finance (MoF)	Ministry of Agricultural, Land Management and Cooperatives (MoALMC)	Ministry of Communication and Information Technology (MoCIT)
No. of Businesses Using Data (n)	37	18	17	18	18
% of Business Using Data from	59%	29%	27%	29%	29%

Among the different ministries through which the private sector business used data from, MoICS was the most cited ministry followed by MoLESP, MoALMC, MoCIT, and MoF. 59% of the

businesses cited using data from MoICS, followed by 29% of businesses using data each from MoLESP, MoALMC, MoCIT and 27% businesses using data from MoF.

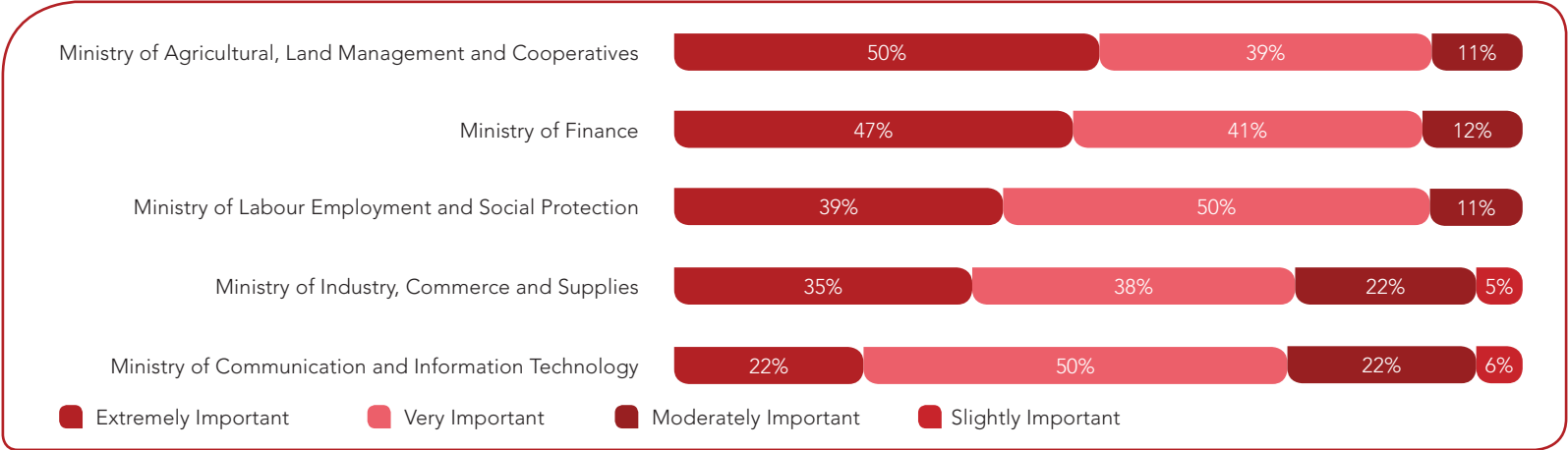


Figure 22: Importance of Government Data from Top 5 Ministries Via Which Private Sector Uses Data From (CT)

Among the top five government ministries through which private businesses accessed data from and those businesses that cited using data from MoICS, 35% cited that the data from the ministry is extremely important for their business. Meanwhile, 38% cited it to be

very important. On the other hand, 39% of those businesses using data from MoLESP referred the data from the ministry to be important and 50% cited it to be very important.

Table 7: Sample and Percentage Distribution of Top 5 Constitutional Bodies/Agencies Via Which Private Sector Uses Data from (N=59)

	Agriculture Information and Communication Centre (AICC)	Central Bureau of Statistics (CBS)	Federation of Nepalese Chambers of Commerce & Industry (FNCCI)	Nepal Tourism Board (NTB)	Office of Company Registrar (OCR)
No. of Businesses Using Data (N)	11	17	22	11	15
% of Business Using Data from	19%	29%	37%	19%	25%

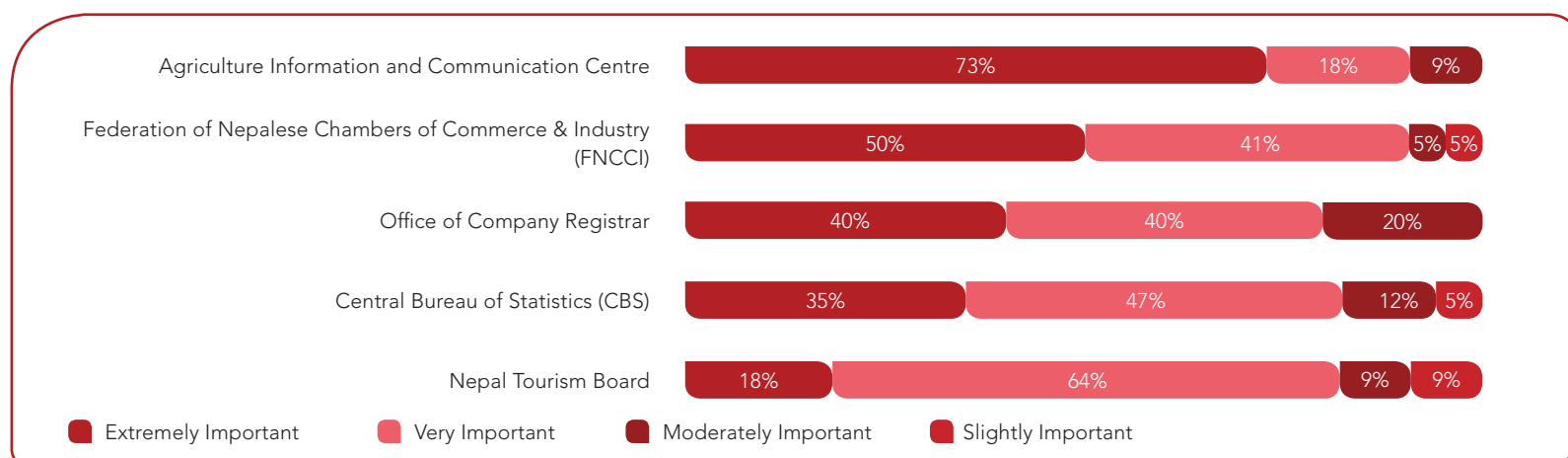


Figure 23: Importance of Government Data from Top 5 Constitutional Bodies/Agencies Via Which Private Sector Uses Data from (CT)

When it came to the importance of data via the top 5 constitutional bodies/agencies from which the private sector used data from, the data from the AICC (73%) was of extreme importance, followed by the data from the FNCCI (50%), OCR (40%), and the CBS (35%). Meanwhile, only 8% of the businesses indicated that the data from Nepal Tourism Board to be of extreme importance for them.

Through the discussions and interviews in the qualitative study, private sector businesses cited that government data was of great importance for them. This is essentially because data from the government helps them in operational and expansion decisions. More importantly, when government data are made available, it enabled innovation and fostered new businesses.

Almost all types of respondents in the qualitative interviews shared facing challenges when accessing government data. In general, businesses shared that it was very hard to approach governmental offices and access data, and that it was often bureaucratic and time-consuming. Further, the format was also cited as one of the challenges in accessing data.

Meanwhile, a private sector development expert mentioned that there is a geographical divide in terms of accessibility of data in Nepal i.e. compared to businesses/people operating/residing near the central government to those residing farther away and those who are in rural areas.

“Data is very important for the private sector. This is because the private sector requires them to bring new innovation, creativity and new products”.

- CEO, Data-drive Business, Kathmandu

“There is no easy accessibility to governmental data. In Kathmandu, we can visit the ministries for the data we require, but for organisations located in the far-west, they cannot get those data”. - Former Deputy Director, Private Sector Development Expert, Kathmandu

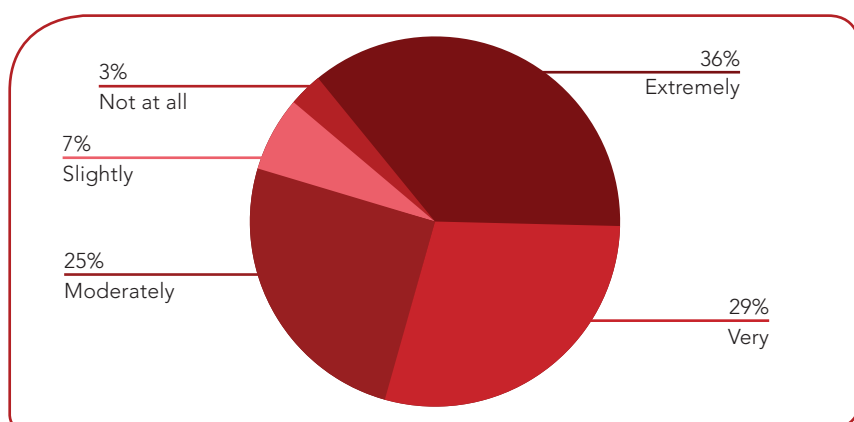


Figure 24: Importance of Greater Accessibility of Government Data for Businesses

About one-third of the respondents (36%) felt it was extremely important to have greater accessibility of government data for their business, while 29% felt it was very important. Overall, more than two-thirds of the respondents agreed that greater access to government data was important for their business. The businesses provided that greater accessibility to government data would enable them in various decision making such as identifying new customers, market research and developing new products and services, among others. This is further depicted in figure-25.



Figure 25: Better Access to Government Data Would Help Businesses In

The private sector businesses claimed that better access to government data would help them in many business applications. Mostly, businesses indicated that better access to government data would help them in identifying new customers (62%), conducting market research (61%) and developing new products and services (59%). Similarly, 47% believed that it would help them in pricing decisions, while 33% believed that it would help them for organisational optimisation. Among others (1%), businesses also claimed that access to government data would help them identify market opportunities, and for market expansion as well.

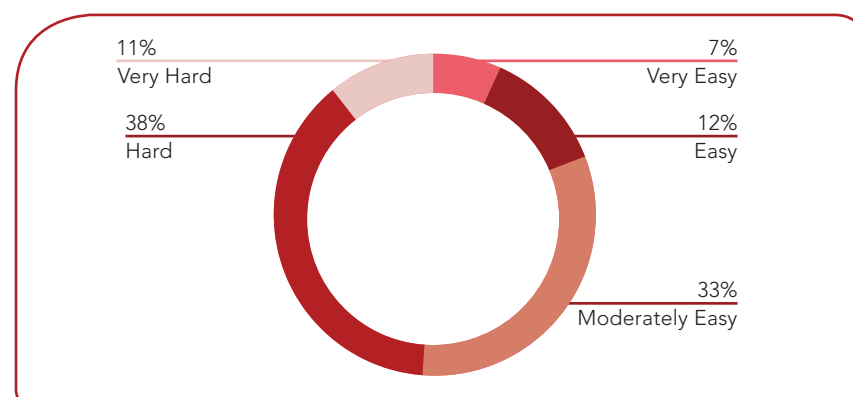


Figure 26: Level of Ease Felt by Businesses in Accessing Needed Data from the Government

Overall, almost half of the respondents (49%) found it hard to access data from the government. In comparison, 19% found it easy to access government data. Meanwhile, 34% of the respondents found it moderately easy. This indicates that considerable number of private sector businesses find it difficult to access data from the government, which they need for supporting their business decisions.

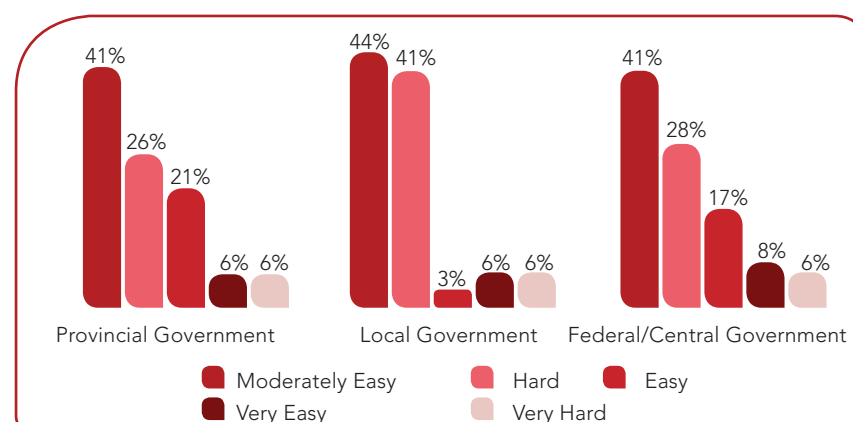


Figure 27: Ease to Access Data from Different Federal Structures (CT)

When it came to accessing data from different federal structures, 27% of the businesses cited that the data from provincial government was easy to access. Subsequently, 25% of the businesses indicated that the data from the central government was easy to access, while only 9% of businesses indicated that the access of data was easy from the local governments. Meanwhile, among the 49% of businesses that found it hard to access government

data, 47% found it hard to access data from the local government, and one-third (34%) found it hard to access data from the provincial government and 32% found it hard to access data from the central government. All in all, it can be deduced that businesses comparatively found it hard to access data from any of the federal structures and many businesses found it particularly hard to access data from the local government.

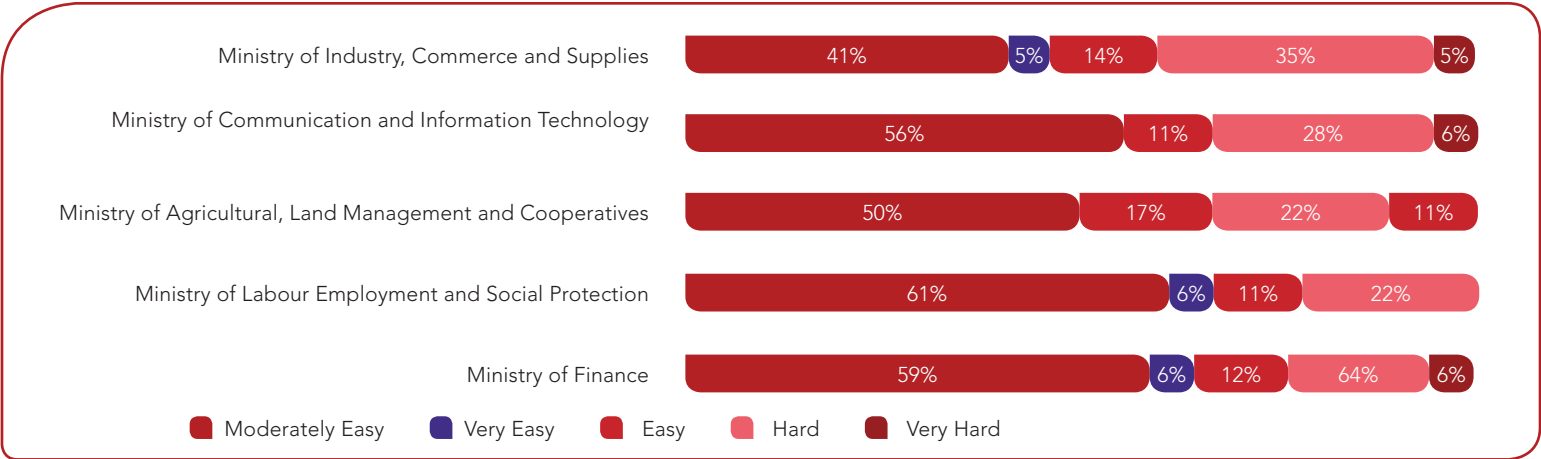


Figure 28: Ease of Access of Data Among the Top 5 Ministries Via Which Private Sector Businesses Use Data from (CT)

Among the top five ministries via which private sector businesses used data from, less than 20% of the businesses found easy access to data from the five ministries. Although 59% of the business using government data used data from MoISC and 72% of the them cited the

data from it to be important, only 19% of the businesses found it easy to access such data, while 40% of them found it difficult. In almost all the ministries mentioned, the proportion of businesses finding it easy to access data is less in comparison to those who found it difficult.

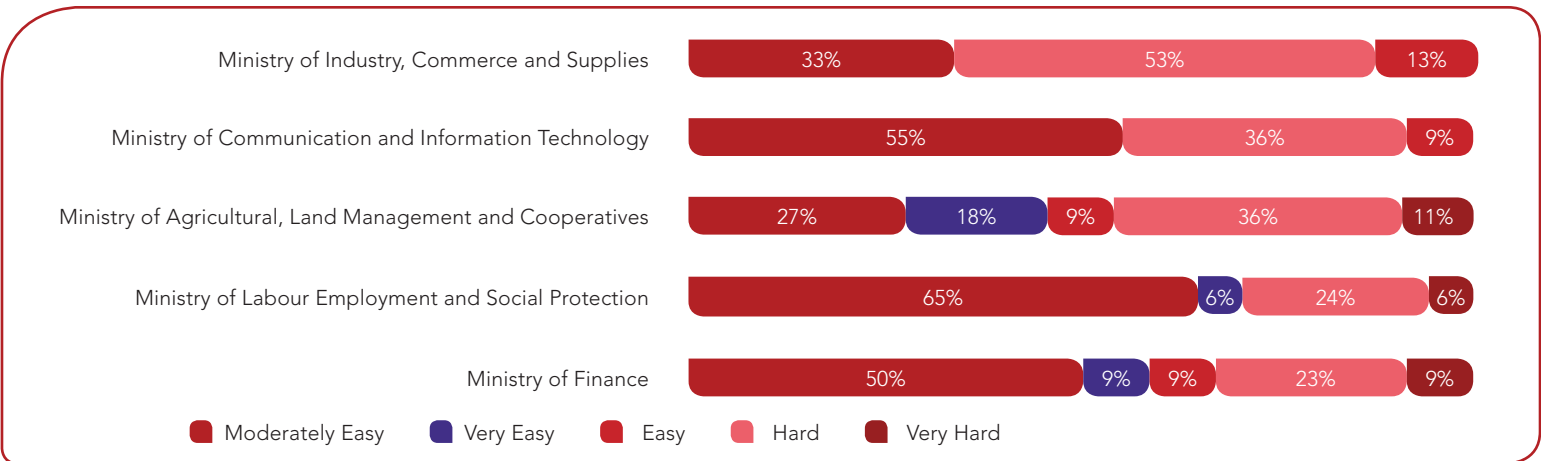


Figure 29: Ease of Access of Data Among the Top 5 Constituent Agencies/Bodies Via Which Private Sector Uses Data from (CT)

Similarly, among the top five constituent agencies and bodies via which private sector businesses used data from, less than 20% of the businesses found easy access to data from the constituent agencies, except for AICC where 27% of the business found it easy to access data.

Meanwhile, among all the other constitutional bodies mentioned, the proportion of businesses finding it easy to access data is less compared to those who found it difficult.



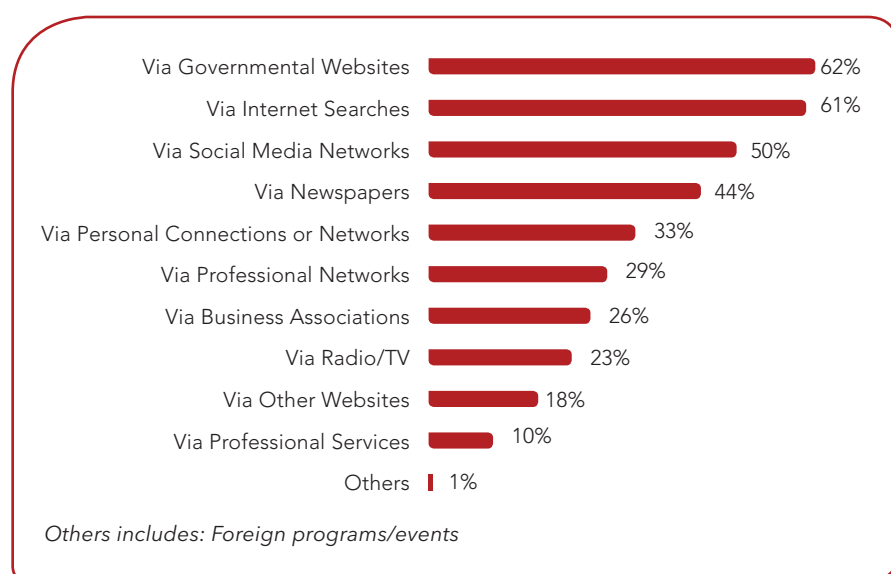


Figure 30: Ways Through Which Businesses Currently Obtain Detailed Data/Information from the Government

When asked about the ways businesses currently access government data, businesspeople were found to be using 'data' and 'information' synonymously i.e., they could not differentiate between 'data' and 'information' and used the two terms interchangeably. For example, it was deduced from an interview that businesspeople also referred the information shared in websites and newspapers as data.

Meanwhile, as seen in figure-30 around two-thirds of the respondents said that they had been accessing data through governmental websites (62%) and via internet searches (61%). Likewise, half of the respondents obtained government data via social media networks (50%). On the other hand, the other mediums through which to obtain government data were referred as newspapers (44%), while about one-third (33%) used personal connections or networks to get access to data from the government. Meanwhile, more than one-fourth of the businesses referred to professional networks and business associations for accessing government data. Beside these, businesses referred to radio/TV (23%), other websites (18%), professional services (10%) and foreign programs/events (1%) for obtaining detailed data from the government.

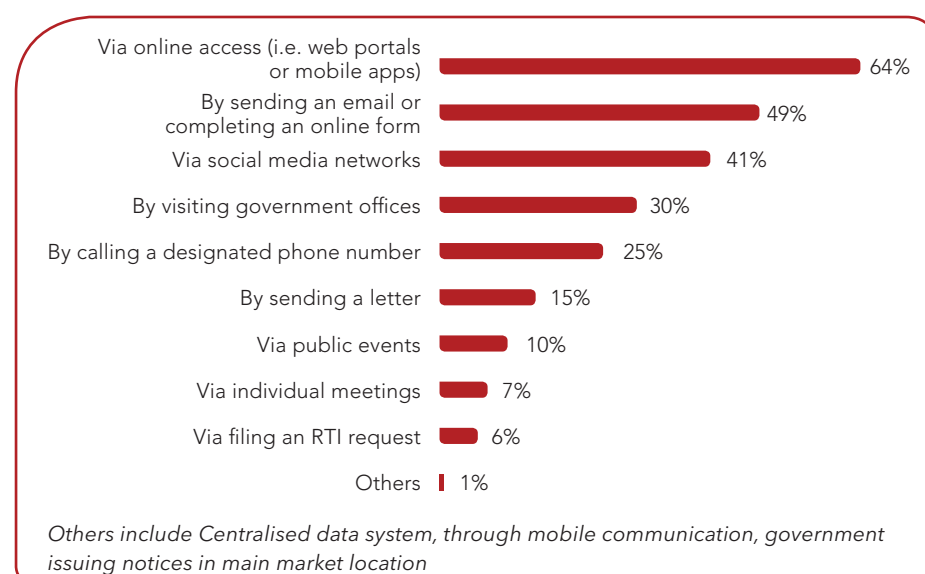


Figure 31: Ways Through Which Businesses Would Like to Access Government Data/Information (MA)

The majority of the private sector decision makers sought to access government data through online and digital platforms. About two-thirds of the respondents (64%) said that they would like to access data from the government through online access (i.e. web portals or mobile apps). Nearly half of the respondents (49%) said they would prefer to get access of the data through email or by completing an online form, and 41% were also open to receive data from social media networks. Meanwhile, more than a quarter (30%) of the respondents preferred to receive data by visiting government offices, while one-quarter would also like to receive the data through contact via a designated phone number. On the contrary, other mediums like filing an RTI request, individual meetings and public events, among others were less preferred. One of the respondents owning an agribusiness specified a central-database for accessing government data. Similarly, another owner of a manufacturing business provided that dissemination of data through mobile communications would be a better way.

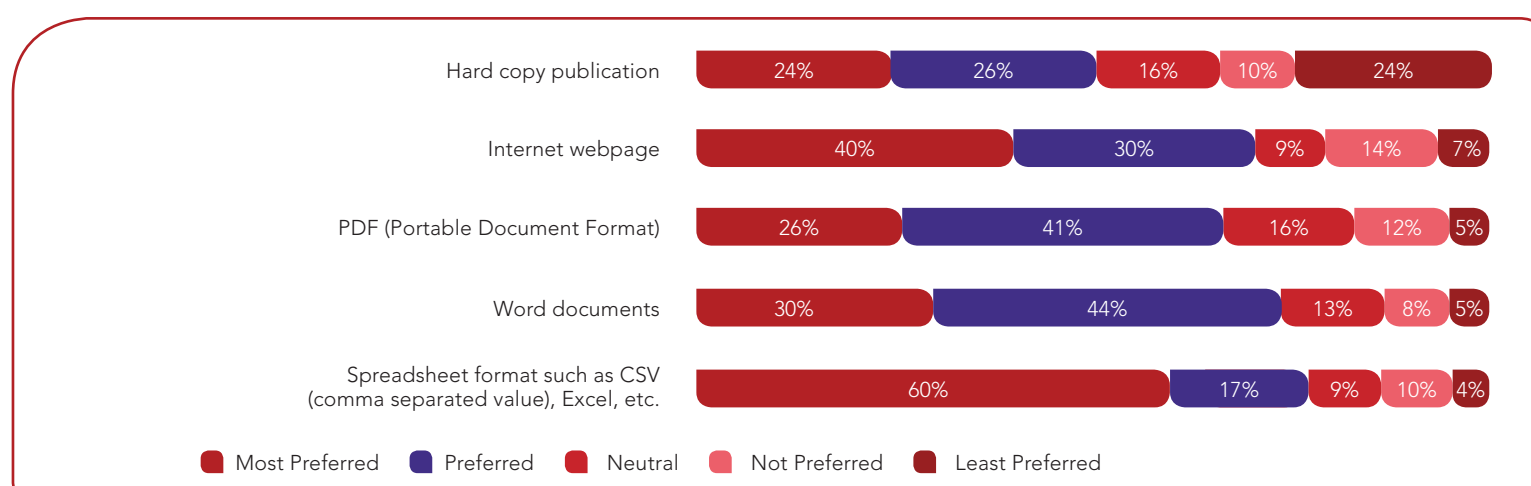
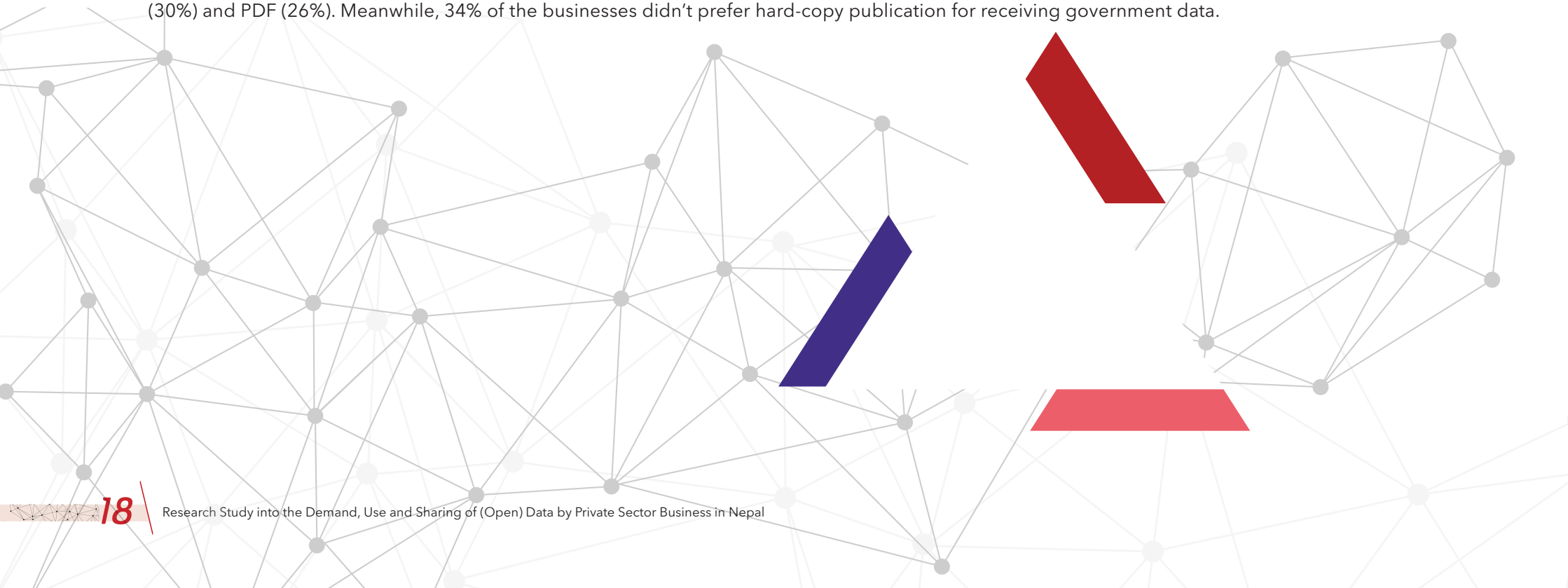


Figure 32: Preferred Format for Receiving Government Data

Among the different formats for receiving government data, majority (60%) of the private sector businesses highly preferred spreadsheet format such as CSV, which is an open data format. Subsequently, other preferred formats included internet webpages (40%) followed by Word documents (30%) and PDF (26%). Meanwhile, 34% of the businesses didn't prefer hard-copy publication for receiving government data.



## 4.4 Need and Demand of Data/Information

### 4.4.1 Data/Information of Greatest Interest for Private Sector Businesses

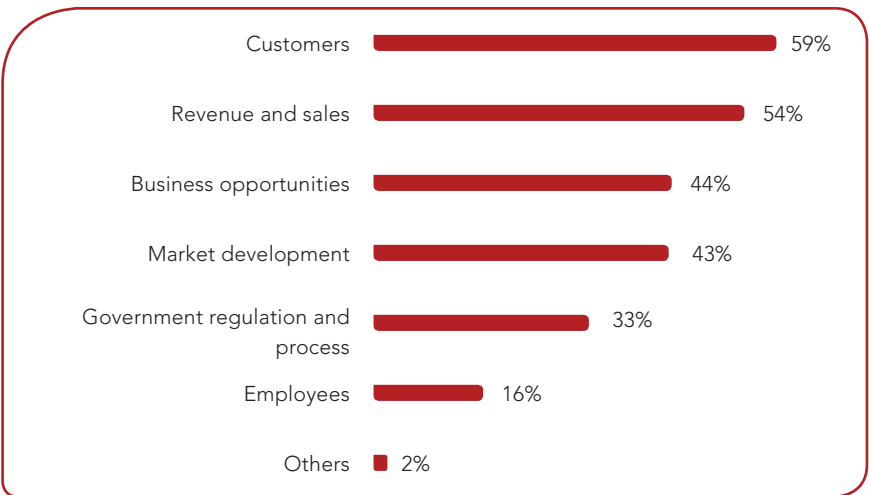


Figure 33: Data/Information of Greatest Interest for Businesses

More than half of the private businesses specified that data/information related to customers (59%) and that related to revenue and sales (54%) is of greatest interest for their businesses. Likewise, nearly half of the businesses claimed the data related to business opportunities (44%) and market development (43%) were of high interest to them. Similarly, more than one-third (35%) of the businesses said that the data related to government regulation and process was of interest for them followed by that related to employees (16%).

### 4.4.2 Government Data of Greatest Interest for Private Sector Businesses

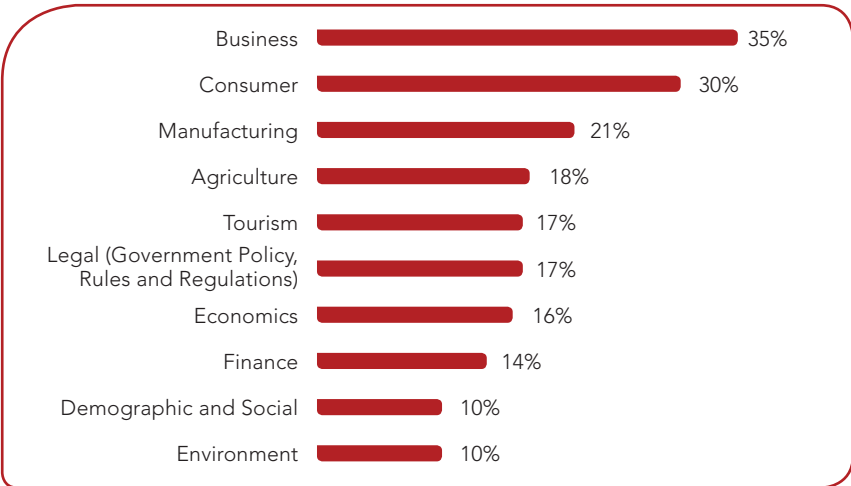


Figure 34: Top 10 Government Data of Greatest Interest for Private Sector Businesses

Among the various government data, the top ten data in which private sector businesses were more interested in was business (35%) and consumer (30%) related data followed by those related to manufacturing (21%), agriculture (18%), tourism (17%), law (17%), economics (16%), finance (14%), demographic, social (10%) and the environment (10%).

During the survey, it was found that most respondents were highly interested in the business sector of government data, which received more than one-third of the responses (35%). Among others, data related to consumers, agriculture, manufacturing, law, economics, tourism, finance, environment, demographics and social were the top 10 sectors of government data in which respondents were mostly interested in.

When it came to specific government data, businesses in general were interested in data/information related to business taxes, governmental plans and policies related to their sector, allowances and perks provided by the government to their sectors, the data on production, demand and supply in different specific sectors and so on. The table below provides details on the specific government data that are of interest for businesses, classified in different economic sectors.

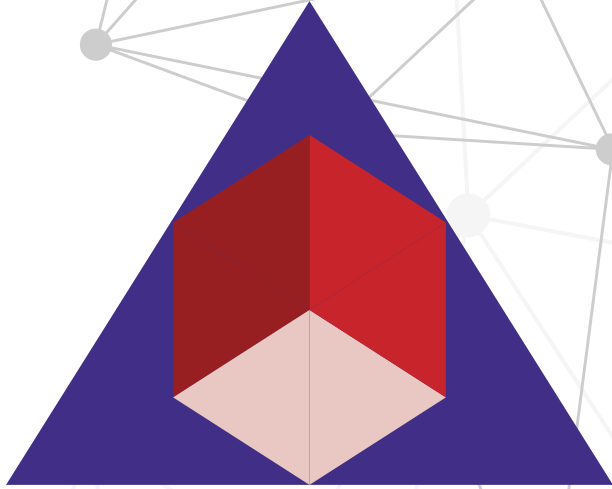


Table 8: Sectoral Classification of the Data that are of Highest Interest for Private Sector Businesses

Sectors	Data of Interest
Agriculture	<p>In the agriculture sector, respondents mentioned about demand and supply of poultries, meat production, quality and processing techniques used in Nepal. Another one mentioned about agro-veterinary related data in Nepal's context.</p> <p>In financial services for agribusinesses, respondents also wanted to know about the taxation in agricultural sector, followed by banking services for agro-business and government allowances for agriculture, among others.</p> <p>More specifically, respondents also showed interest in data related to pesticide use and organic crops in Parsa district; soil data analysis of individual farmers or specific land holdings. Only one respondent showed an interest in machineries, tools and equipment related data and technical information/data in the agriculture sector.</p> <p>Likewise, other data included those related to population of poultry and cattle, production of vegetable products, diseases prevalent in cattle and vegetable products, data related to import of agroveter medicines from different countries and the profitability from the imports from different countries.</p> <p>Specific data related to import and export of food products (including both vegetables as well as rice, wheat, and maize, among others) and trade balance related data were very important for analysing supply and demand of agriculture and agricultural commercialisation. For example, data related to pests in plants, the actual stage of harvesting in tomato farming, price-trends of products in the market, demand and supply of products and how it is affecting the price.</p> <p>Other data regarding the import of pesticides and fertilizers, province-wise quantity usage of pesticides and fertilizers, province-wise output, crops suitable for plantation, differences in varieties of crops and the types of cultivation and irrigation methods used.</p>
Construction	<p>Data such as the number of skilled and unskilled labourers, number of equipment and other details about materials like pebble stones and sand and where one can procure such materials.</p>
Manufacturing	<p>Among manufacturing respondents, the most common data respondents were looking for was demographic data. This included population size, their average earnings and spending capacity. Along the same lines, manufacturers also wanted to know about import and customs related data, particularly annual import figures and taxation rates. One respondent also mentioned about wanting to know enterprise employment generation in villages.</p> <p>Other manufacturers also wanted to get data from the SME level. These included data on plastic wastage produced in local level, use of handicrafts by the Nepali population and ceramics related data. The respondents also wanted to be notified of international training programs in their related fields.</p> <p>Other such data interests included chemical and energy consumption related data, as well as data related to rice production and processing. One respondent also mentioned about data involving regulatory affairs from the Department of Drug Administration and from the Department of Industry.</p> <p>Few of the respondents were specifically looking to know consumer related data, their product usage, and their competitors' details retrievable from the Office of the Company Registrar (OCR).</p>
Service	<p>From the respondents from the service sector, the study received the most diverse responses about what sort of data they were looking for. Most commonly, respondents wanted data related to taxation, import/export, legal or government regulations and the business industry in general. In financial services, respondents wanted data on GDP growth, banking sector statistics, cooperative laws and financial indicators' related data.</p> <p>Respondents also wanted education related data, particularly about HSEB and university results. Respondents also mentioned an interest in human resource and employment related data.</p> <p>Others respondents mentioned about wanting to know information technology related data; processing industries and investment related data; list of newly registered companies from OCR, data on hotels from members' list of Hotel Association of Nepal (HAAN) and number of IPOs. Other service providers wanted to know about agricultural subsidies related data and number of tourists entering Birgunj on a daily basis.</p> <p>A business providing financial services provided that they needed specific data such as those related to the cost of doing business, area, opportunity of revenue, selling price, sales trend in the market along with number of households and others.</p>
Tourism	<p>The respondents from the tourism sector showed an interest towards immigration related data to be made publicly available. Other data they wanted to know included data related to hotels and hospitalities, tourism in 22 districts of the Terai region, taxation and legal policies surrounding the sector.</p> <p>Data related to wellness spas, number of tourists who come for trekking, tourist arrival figures, nationality, ratio of tourists in different months and seasons in different places. Other data included duration of stay, purpose of visit, and so on.</p>

Note: The respondents from mineral and energy sector business didn't mention any such specific data/information needs.



Table 9: Specific Datasets that are of Great Interest for Private Sector Business in Different Economic Sectors

Sectors	Specific Datasets
Agriculture	<ul style="list-style-type: none"><li>• Data on poultry sector related to demand and supply of meat products, quality and processing techniques for poultry, population of poultry and cattle.</li><li>• Data related to agro-veterinary such as diseases prevalent in cattle and vegetable products, data related to import of agroveter medicines from different countries and the profitability from the imports from different countries.</li><li>• Data on financial services for agribusiness such as banking services and government allowances.</li><li>• Data related to taxation in agricultural sector.</li><li>• Data on land holdings, soil, and use of pesticides and fertilizers in different agricultural areas.</li><li>• Data and information on machineries, tools and equipment related data and technical information/data in the agriculture sector.</li><li>• Data on production of vegetable products and crops, areas of production and productivity.</li><li>• Specific data related to import and export of food, and trade balance related data.</li><li>• Data on prices and price variations for agricultural products.</li><li>• Provincial-level data related to the import of pesticides and fertilizers, usage of pesticides and fertilizers; province-wise output; province-wise crops suitable for plantation, differences in varieties of crops, and the types of cultivating methods and irrigation used.</li></ul>
Construction	<ul style="list-style-type: none"><li>• Data on the number of skilled and unskilled labourers relevant to the sector.</li><li>• Data on the number of construction equipment and machinery in use.</li><li>• Data on details about construction materials like pebble stones and sand, and where one can procure such materials from.</li></ul>
Manufacturing	<ul style="list-style-type: none"><li>• Data on legal regulatory frameworks.</li><li>• Data related to demography, socio-economy such as population size, average earning and spending capacity.</li><li>• Data on imports and customs, particularly annual import figures and taxation rates.</li><li>• Data related to chemical and energy consumption in the sector.</li><li>• Consumer related data, their product usage, and market competition.</li></ul>
Service	<ul style="list-style-type: none"><li>• Data related to taxation, and legal rules and regulations set by the government.</li><li>• Sub-sectoral data related to imports and exports used in service sector.</li><li>• Data on GDP growth, banking sector statistics, cooperative laws and financial indicators related data.</li><li>• Education related data particularly related to HSEB and University education.</li><li>• Human resource and employment related data.</li><li>• Data related to the cost of doing business, area, opportunity of revenue, selling price, sales trend in the market along with number of households and other socio-economic and demographic data.</li></ul>
Tourism	<ul style="list-style-type: none"><li>• Data related to taxation and legal policies relevant to the tourism sector.</li><li>• Data related to immigration.</li><li>• Monthly and seasonal data related to tourist arrivals from different nations.</li><li>• Data related to hotels and the hospitality industry.</li><li>• Data related to duration of stay, purpose of visit and other data related to tourists.</li></ul>

Through the qualitative interviews and discussions, it was found that businesses in general required data related to demography, geography, information related to their industry and their sector, as well as legal information. When it comes to the sectoral need of the data by businesses, it included data such as business registration, production, employment, human resources, business transaction, trade, and so on. Similarly, businesses mentioned their need for data on employment, equipment, average salary, number of colleges and graduates, the quality of graduates, and so on.

One specific need of data from the government, shared by many respondents in the interviews and discussion was that businesses essentially required segregated and classified data along with the consolidated data.

Meanwhile, developmental agencies needed data and information in the areas of socio-demographic, developmental, and economic state in different geographies, demographics and so on.



“One particular need we have is data to help our hiring. Up-to-date data on how many engineering colleges and graduates there are, and the quality of their courses would definitely help our decisions on whom we are going to approach”.

- CIO, Data-driven Business, Kathmandu



During KIs with data-driven businesses, respondents shared that they needed data on the market/industry situation, the social and demographic structure in different locations, geographic data and data related to environment and weather conditions, so that it can help them or any business in assessing the likeliness of opening new businesses of any type in any area.

## 4.5 Production and Supply of Private Sector Data

### 4.5.1 Production of Data by Private Sector Businesses

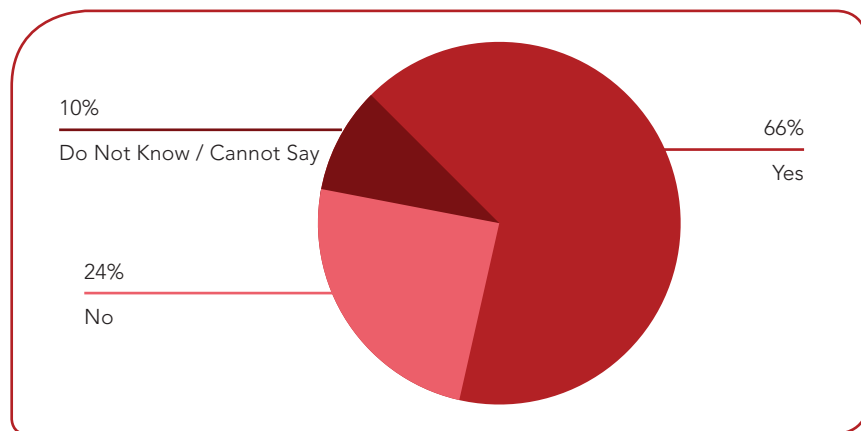


Figure 35: Production of Data by Private Sector Businesses

Almost two-thirds of the respondents (66%) indicated that their business produced some form of data. In contrast, about one-fourth (24%) of the total respondents said they produced no data at all.

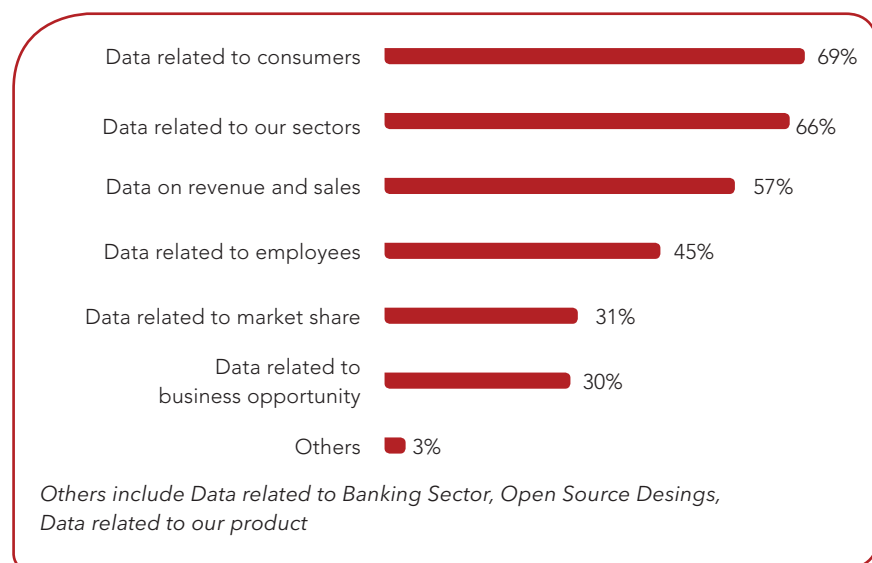


Figure 36: Types of Data Produced by Private Sector Businesses (MA)

Out of those private businesses who produced some form of data, majority of them pointed out producing data related to consumers (69%) and data related to their respective sectors (66%). Furthermore, more than half of the respondents (57%) said they produced data on revenue and sales. Likewise, more than one-third (45%) were producing data related to employees and more than a quarter produced data related to market share (31%) and business opportunity (30%).

Interestingly, through the KIIs/IDIs and FGDs, it was deduced that the private sector businesses have less realisation that they too produce data. This was shared to be highly relevant to small businesses.

Likewise, through interviews and discussions, it was found that businesses in general produced a lot of data related to their operations and sales, such as customers, sales, billing, payment, expenses, human resources, employment related and those related to demand and supply of goods and services.

Meanwhile, as shared by a data-driven business, they produced different data like GIS, attribute data, statistical data, and project related data on different sectors.

### 4.5.2 Sharing of Data by Private Sector Businesses

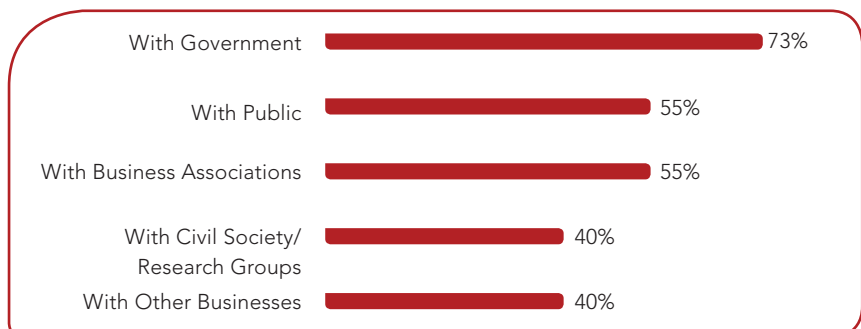


Figure 37: Sharing of Data by Private Sector Businesses to External Actors



"Businesses might say that we don't produce data, but we forget to realise that the daily billing that happens is data. If we look back at historical billing, we would be able to determine what our consumers spending behaviours are".  
- Program Officer, Kathmandu

"Private businesses produce huge amount of data; from using card (ATM) and swipe machines to times going to a restaurant, every place is a data point. But there are certain data like consumer's consumption related data".

- Program Officer, Kathmandu

"I have a group of friends who work in the hospitality sector. We tend to meet and share data related to our organisations on topics related to the hospitality business".

- Owner, Private Sector Business, Pokhara



It was found that the private sector stakeholders do share data that they produce to the external stakeholders. Majority (73%) of the private businesses commonly shared data with the government, making the government, unsurprisingly, the leader among the external actors receiving private sector data. Secondly, more than half of the businesses (55%) agreed sharing data with business associations and the public. Meanwhile, 40% businesses shared their data with both civil society/research groups and with other businesses. Besides these external stakeholders, 7% of the businesses shared their data with other stakeholders including clients, customers, student researchers, banks, universities and friends.



Figure 38: Sharing of Private Sector Data to the Government (CT)

It can easily be deduced that 73% of the businesses shared considerable amount of data related to their business. Among those, a majority of the businesses shared data related to their sector (69%), data related to customers (69%), data related to revenue and sales (64%) with the government. Meanwhile, almost half of the businesses that were sharing data with the government (47%) shared their data related to employees to the government. Meanwhile, 31% of the businesses also shared data related to both market-share and business opportunities. Here, it is interesting that the businesses share relatively less data related to revenue and sales to the government, compared with the data related to their customers, and specific data related to their sector. This might be the case because of the tendency of respondents referring to data as information synonymously.

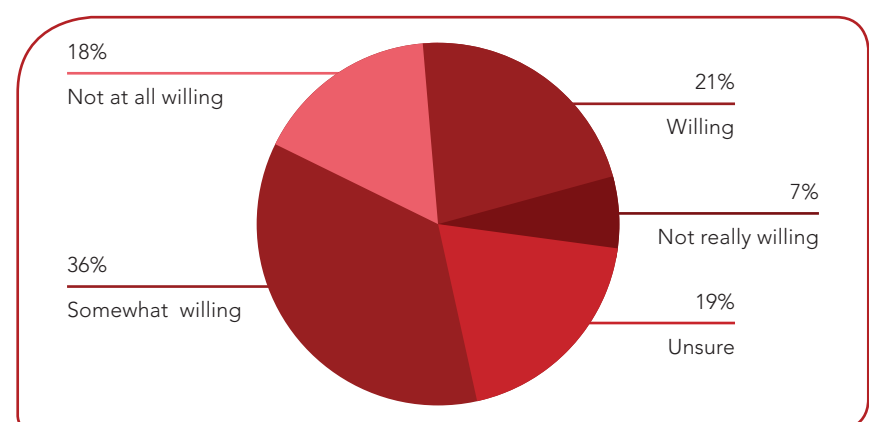


Figure 39: Willingness of Private Sector to Share Data with the Public



"One of the major problems for us to share data is that there are no clear laws that guide data sharing, so there will be a high chance of data manipulation".

- CEO, Private Sector Business, Kathmandu



More than one-third of the respondents (36%) said that they were only somewhat willing to share data publicly. About one-fifth (21%) of the respondents were not willing to share any data at all. While only 18% of the respondents were willing to share data with the public. The major reasons identified (as shown in figure-50) behind less willingness to share data publicly includes concerns about business privacy, impact on competitive advantage and unclear legal framework.

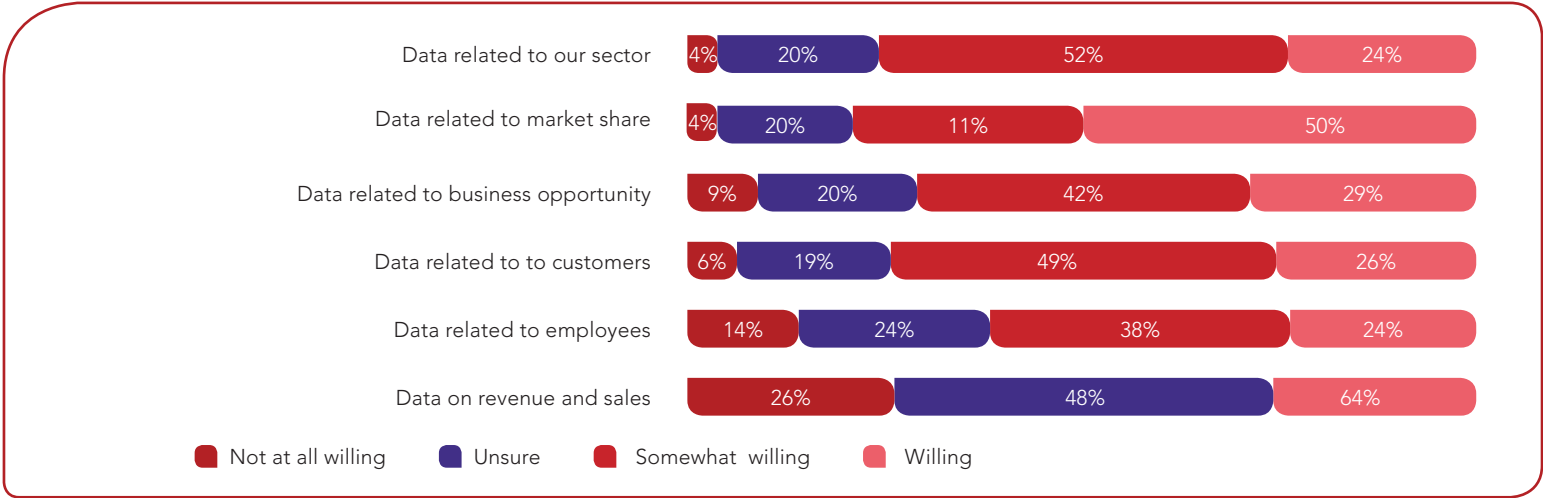


Figure 40: Data Most Willing to Share with the Public

Half of private sector businesses were willing to share data related to their market-share to the public. They were also willing to share data related to business opportunity (29%), related to consumers, revenue and sales (26%). Subsequently, 24% of the businesses were willing to share data related to their sector and their employees as well.

When it comes to sharing of open data, respondents in the qualitative study provided a mixed response on sharing the data that they produced. Some of the businesses strictly mentioned of not sharing any private data in the public arena, besides that with the government, intended users/clients, friends’ circle and internally. On the other hand, some of the businesses mentioned sharing simpler data such as that related to number of employees, business offerings, and such.

Through a KII, a private sector development expert shared that the private sector can share general data/information such as those related to the number of employees, their products, market share, their collaborations and investments among others. However, the private sector will not share their information related to finance, sales and others.

More interestingly, one of the businesspersons shared that they have never been approached by anyone to obtain data, and hence, believed that sharing data is not an obstacle, rather it is to validate those data.

In an interview with a representative from a developmental agency, they were open to sharing their project related data publicly.

“Just because we produce the data, we don’t necessarily publish them publicly. We don’t make them open”.  
- Founder, a private sector company, Kathmandu

“Businesses working for profit are less likely to share data as they would be helping their competitors”.  
- Advocacy and Communication Officer, Developmental Agency

4.6 Usage and Sharing of Open Data

4.6.1 Usage of Open Data File Format by Private Businesses

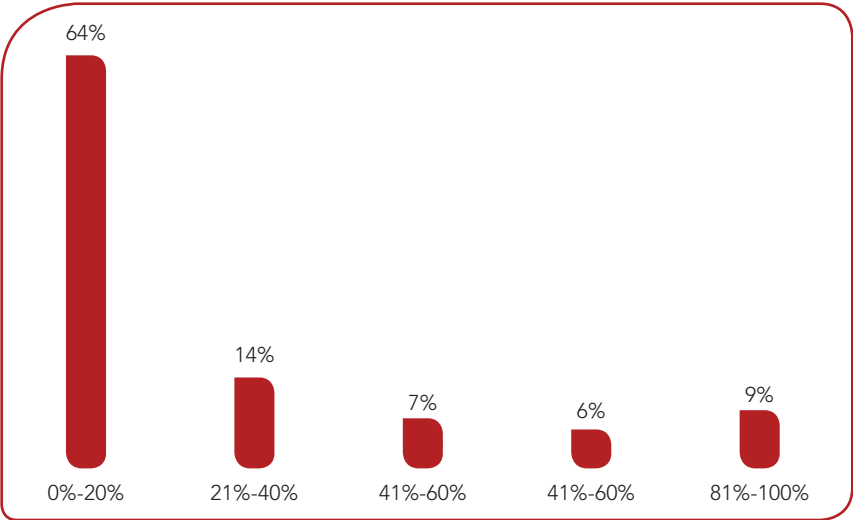


Figure 41: Data Used by Private Sector Businesses in Open Data Format

It was found that the private sector businesses used less data in an open format. For 64% of the businesses that stated that the data they used is from external sources, just 0-20% is open data. While only 22% of the businesses stated to be using open data in the range above 40% from publicly available sources. This clearly hints less usage of publicly available data in open format.

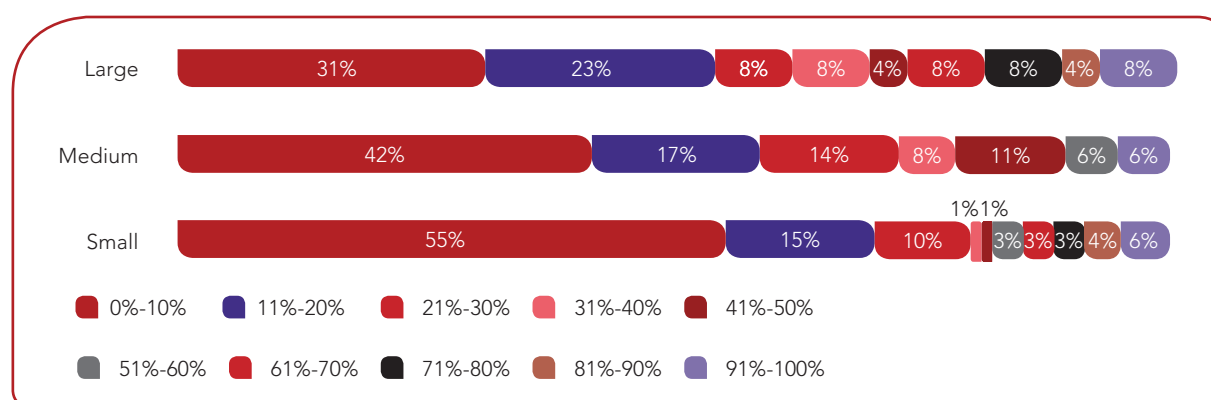


Figure 42: Usage of Open Data by Businesses with Different Scale-of-Operation (CT)

It can be clearly seen that a majority of the businesses, irrespective of their scale of operation, currently have minimal or no usage of open data. Comparatively, the proportion of this non-usage was higher in small and medium-scale businesses compared to that among

large-scale businesses. Further, when it came to the usage of open data among the large-scale businesses, 28% have used open data above the range of 50%, while that in small and medium-scale business was 18% and 12% respectively.

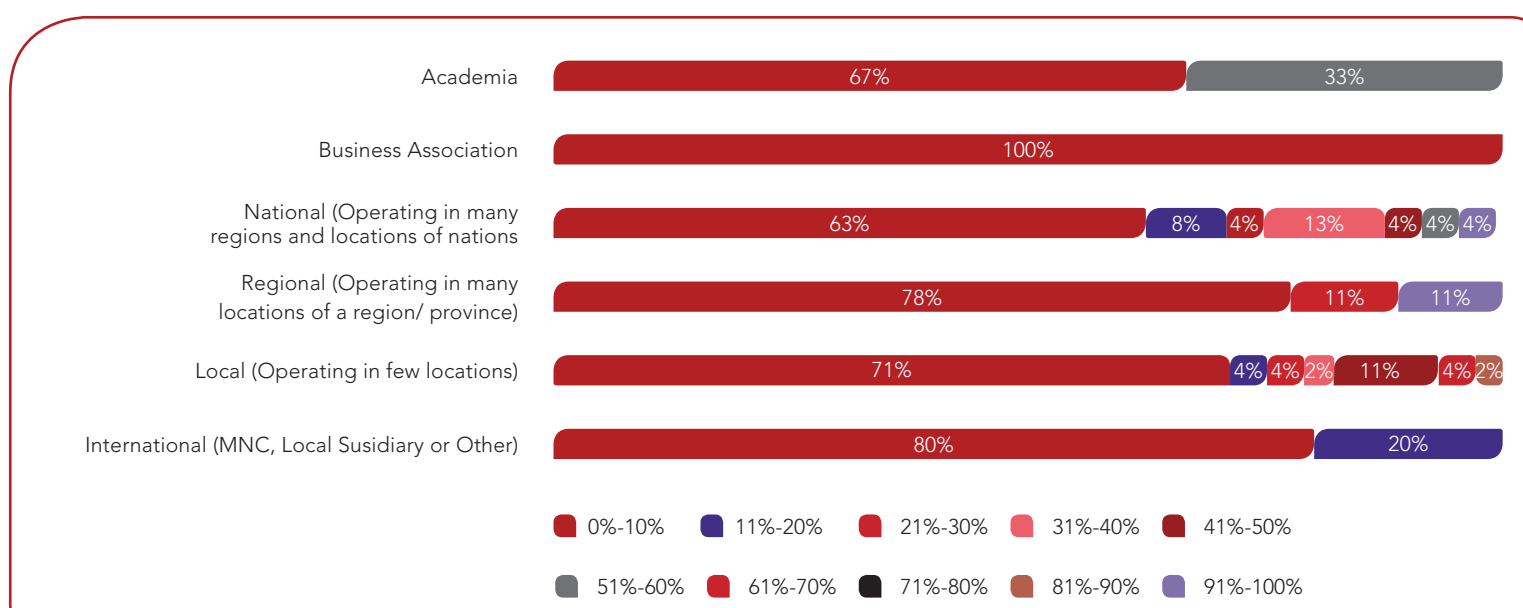


Figure 43: Major Usage of Open Data by Private Sector Businesses

When it came to the usage of open data, those businesses using more than 50% of open data used it for all of their business functions mentioned above, but the proportion of the usage of open data is higher for identifying new customers (23%), developing new products (23%) and for organisation optimisation (23%). From the interviews and discussions, it was deduced that similar to the clash of definition of data, there was clash of definition of open data among the respondents. People generally considered data shared and accessible publicly as open data irrespective of the format of the shared data.

It was shared that the businesses used open data for gaining market overview, such as the number of customers using certain products or services, for gaining insights on disaster situations, for knowing the flow of developmental-funds and so on. These data were accessed by the private sector businesses through governmental web portals, information/data platforms of developmental agencies like that of the World Bank, the United Nations and so on.



"One thing is that the Government of Nepal has not properly defined what is open data. The technical definition of open data is based on technology and is a bit different as well. The standards of open data have been more programmer friendly. It hasn't been much researcher friendly or friendly for people in general".

- CEO, Data-driven Business Kathmandu



#### 4.6.2 Sharing of Open Data File Format by Private Businesses

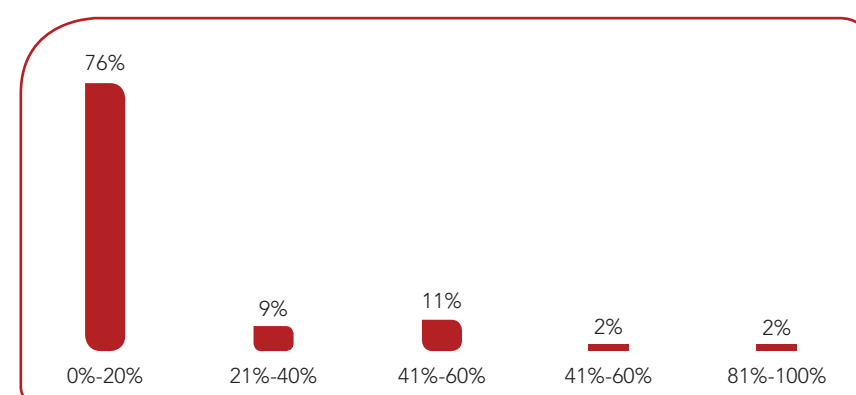


Figure 44: Data Shared by Private Sector Businesses in an Open Data Format

Majority (76%) of the private sector businesses reported that among the data they shared publicly, only about 0-20% are in an open data format. As such, less than 20% of private sector businesses shared their data in

open format in the range above 30%. This clearly indicates the insufficient practice and participation of open data sharing by private sector businesses in Nepal.

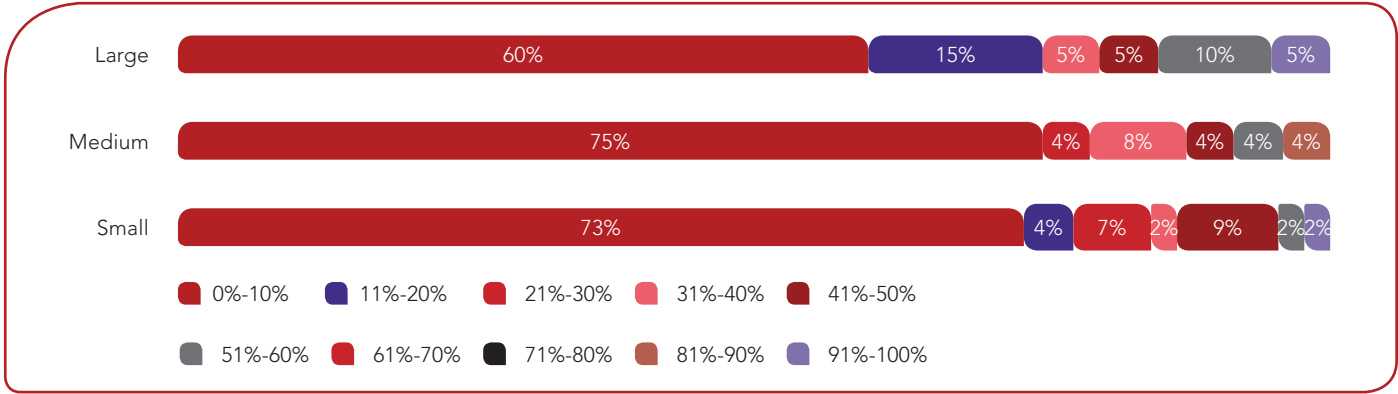


Figure 45: Sharing of Open Data by Businesses With Different Scale-of-Operation (CT)

Of those businesses that were sharing data in an open format above the range of 50%, large scale businesses have relatively higher proportion compared to medium and small-scale businesses. It can clearly be deduced from figure-45 that among those businesses sharing

data in an open format, only 15% of large-scale business followed by 8% of medium and 4% of small-scale businesses shared more than 50% of their data in open format.

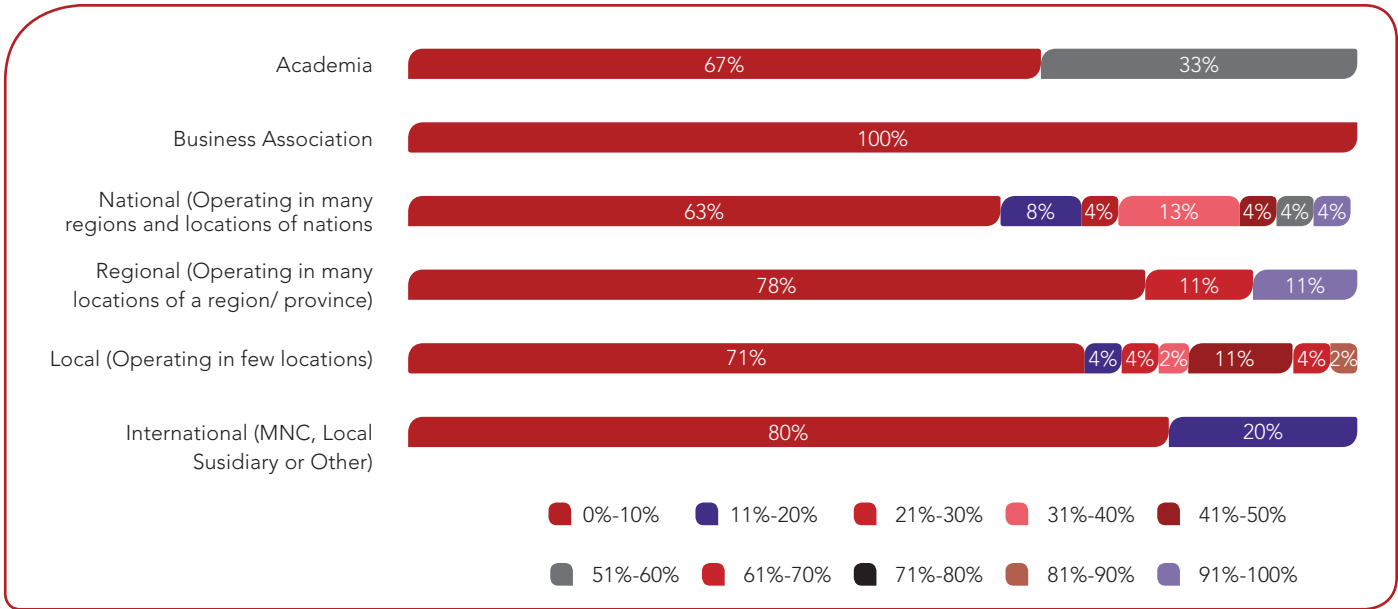


Figure 46: Sharing of Open Data by Different Types of Organisation (CT)

Looking at the types of organisations that share data in open format and above the range of 50%, academic organisations like colleges and universities were the ones that mostly shared data in an open format. It was found that 33% of academic organisations shared data

above the range of 50% in open file format, followed by regional businesses (11%), national businesses (8%), and local businesses (6%).

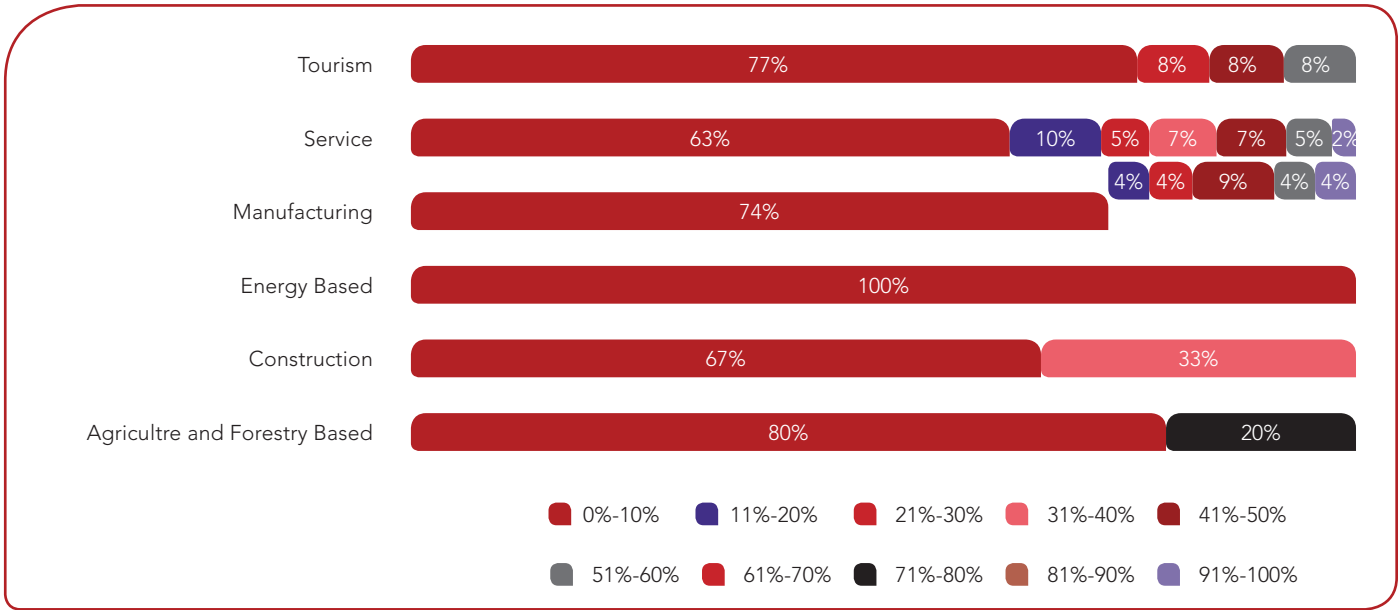


Figure 47: Sharing of Open Data by Businesses in Different Sectors (CT)



When it came to the sharing of data in open format and in the range above 50%, businesses in the agriculture sector share comparatively higher proportion of their data in an open format. It was found that 20%

of agribusinesses followed by tourism (8%), manufacturing (8%) and service (7%) businesses share more than 50% of their shared data in an open format.

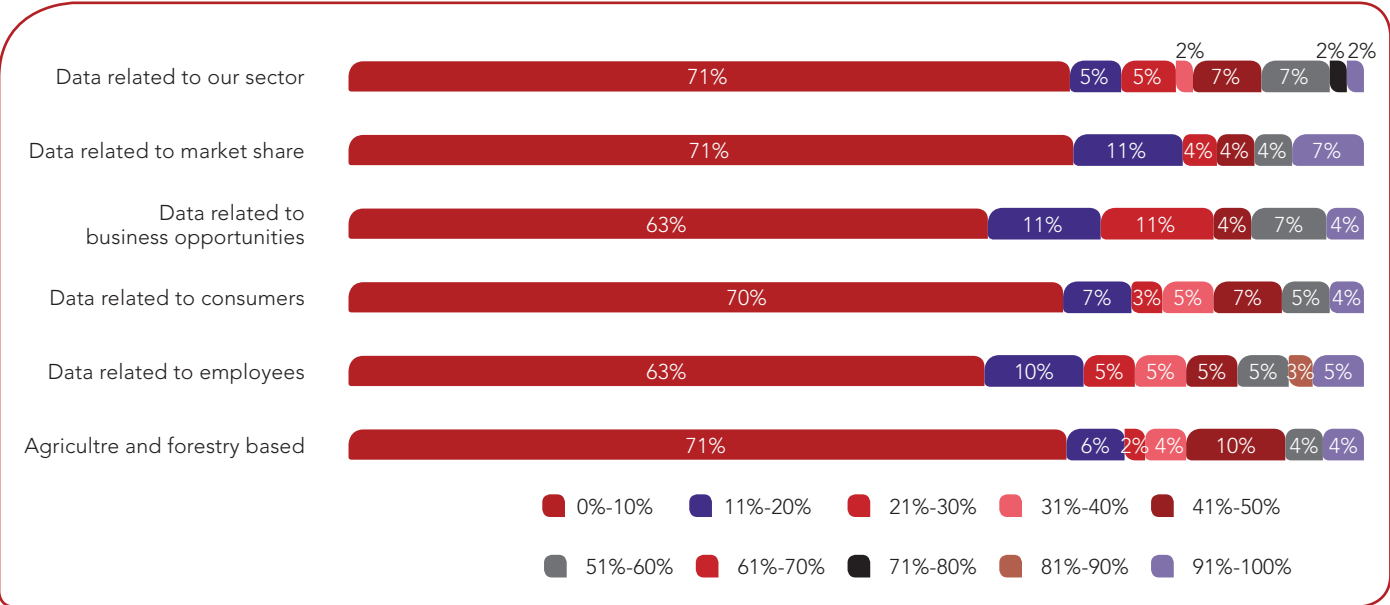


Figure 48: Sharing of Business Data in Open Format (CT)

Of the open data that are shared in above the range of 50% by businesses, 13% of employee-related data were shared openly, followed by 11% each for data related to market share, business opportunity and those related to their specific sector. While 8% each of data related to revenue and sales, and consumers was shared openly above the range of 50% by the businesses.

Through the KIIs/IDIs and FGDs, it was deduced that the private sector businesses had mixed opinions on sharing their data in an open format. Some were highly willing to provide most of their data openly, while others discussed the concerns related to privacy and competitive advantage. In general, businesses were willing to share general and consolidated data related to their demographics, employment and others, but were not interested in sharing core strategy and business-related data.

Similarly, one of the important things that was discussed during the interviews and discussions was regarding the need of guidelines, policies and standardization of the data to be shared openly. Provided the guidelines and policies were to be in place, many businesses were willing to share their data openly. Alongside, there were discussions related to the credit giving culture for data feeders. It was provided that if the proper credit were to be given to the private sector then they would be willing to provide the data.

On the same lines, there was discussion on the importance of open data. In the discussion, it was found that open data could drive business and industrial growth, and essentially foster new developments. Likewise, it was provided that open data would save both time and capital for private sector businesses.

## 4.7 Challenges and Barriers for Accessing, Using and Sharing of Data

### 4.7.1 Challenges/Barriers for Private Sector Business to Publicly Share Data

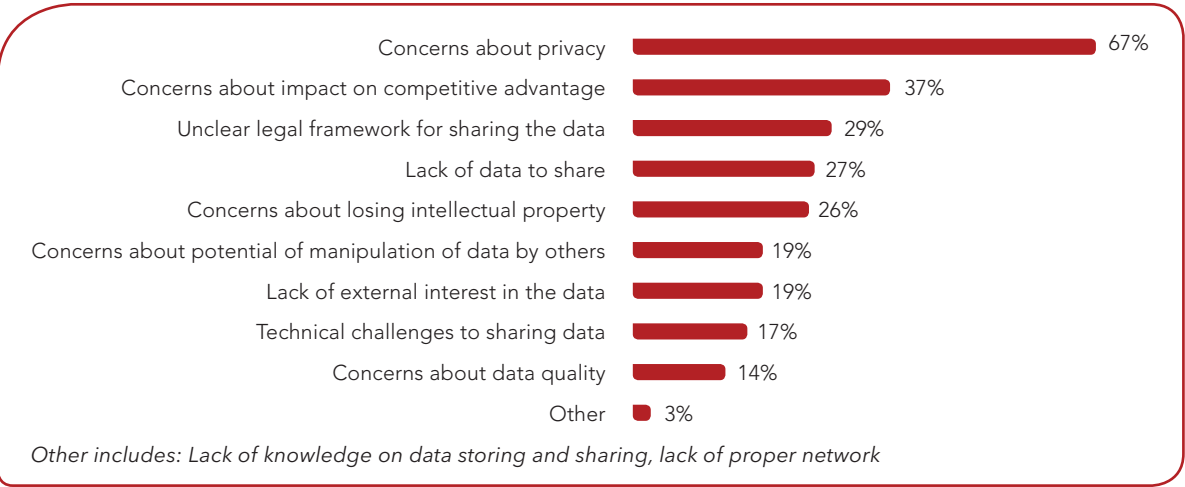


Figure 49: Challenges/Barriers for Private Sector Businesses to Publicly Share Data

Majority (67%) of the respondents stated concerns about privacy as the major barrier preventing the private sector businesses in sharing data. Moreover, more than one-third of the respondents (37%) cited concerns about impact on competitive advantage as a barrier in sharing their business data. Similarly, more than a quarter of the businesses stated unclear legal framework (29%), lack of data to share (27%) and concerns about losing intellectual property (26%) among other barriers. Meanwhile, comparatively less businesses (14%) cited concerns about quality of data to be a barrier for sharing data publicly.

In case of data sharing and data use, respondents found security and privacy issues as a major challenge. Respondents were concerned that data would be leaked and misused and entice intense business competitiveness. Secondly, businesses provided that the lack of technology and expertise in the related field was creating a challenge to working with data. Others further added that people/customers still lacked the knowledge to understand and share data.

“Because of the unhealthy competition that exists between businesses, if private businesses were to share data among themselves, they fear that it would affect their privacy and competitiveness”.

- DM&E Manager, Developmental Agency, Kathmandu

“One bad aspect in Nepal is that when it is for marketing purposes, data is often exaggerated. But, if it is for governmental purpose, they provide data with decreased performance.

- FGD Participant, Pokhara

Other notable comments included the lack of clear policies or guidelines in data sharing. One respondent pointed out that it was unclear about where the data was supposed to be provided or

received from. Meanwhile, concerns of data manipulation and duplication while sharing data was also brought forward.

#### 4.7.2 Challenges/Barriers for Private Sector Business Preventing Use of Government Data

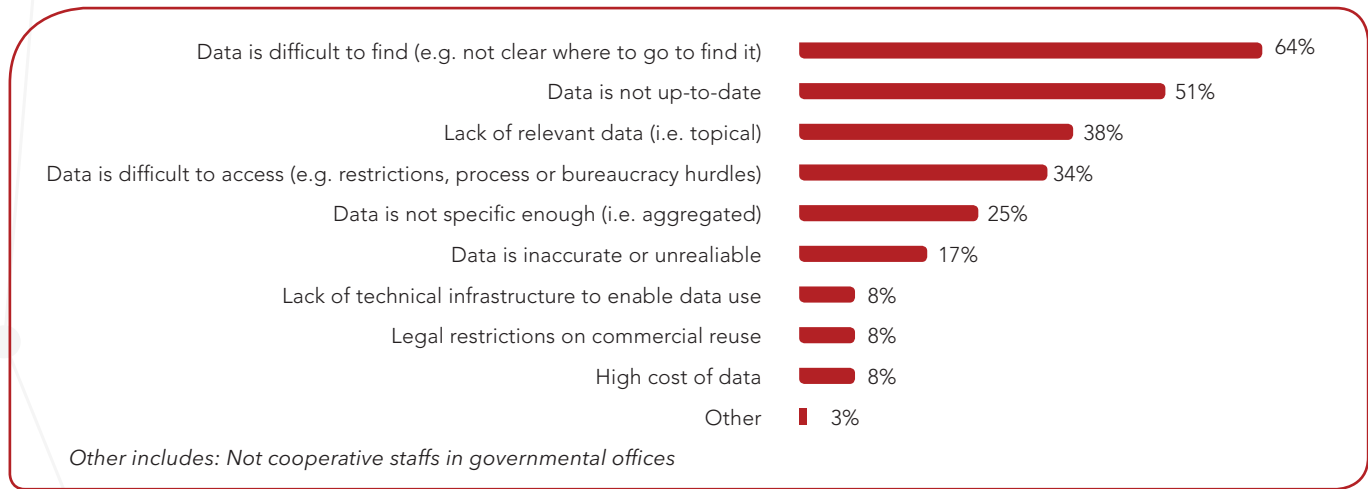


Figure 50: Challenges/Barriers for Private Sector Preventing Use of Government Data

Among the challenges/barriers for using government data, majority (64%) of the private sector businesses stated that data is difficult to find i.e. they were not clear on where to go to find the government data they required. Similarly, more than half of the respondents indicated outdated data as another major barrier. Further, over one-third of the respondents cited lack of relevant data (38%) and difficulty in accessing data (34%) as other significant barriers preventing private sector businesses from using government data.

In general, private sector businesses largely shared the view that the major issue in sharing and using business data was that the lack of reliable and authentic data. Data is often outdated, vague or lacking of specific details. Even data shared by the government were reported to be inaccurate or seemingly manipulated. Similarly, respondents talked about the lack of relevant data. More

specifically, they explained that the data from government lacks clarity and data related to their specific fields and useful data are seldom available.

In the qualitative interviews and discussions, a lot of challenges or barriers for using government data were discussed. In common, businesses pointed out the bureaucratic hurdles, lengthy procedures, lack of regular updates and uniformity of data, data standardisation and validation, lack of detailing and classification of data and the authenticity/reliability of government data to be the major challenges.

Similarly, it was discussed that government data has a mismatch between the claim and reality. Among others, infrequent publication of data/information, the lack of a specified format for the government data and other such issues were also brought forward.

“It’s very difficult to use government data. I think it would be much easier very simply if they could present them nicely and update their data. Government websites are never updated. They will have four years’ old data but which they will highlight as new.”

- Director, Agri-tech Business, Kathmandu

“Even for simple data, we have to write a letter and register our name to get the data from the concerned authority. There are a lot of processes involving getting signatures from officials to enable us to get the data.”

- Researcher, Kathmandu

“One of the major challenges in government data is that to get good governmental data, there is no governmental agency working in data standardization and validation. For instance, data from the Ministry of Finance should meet the national statistical standards and should have correct classification and there is question on validation as well”.

- CEO, Data-driven Business, Kathmandu

“The government should provide data in machine readable format rather than PDF. If the data were to be made available in Excel or Word format, we could use software to understand them”.

- CEO, Data-driven Business, Kathmandu

## 4.8 Promoting Open Data Culture in Nepal

### 4.8.1 Supporting the Idea of Data Sharing in Open Format

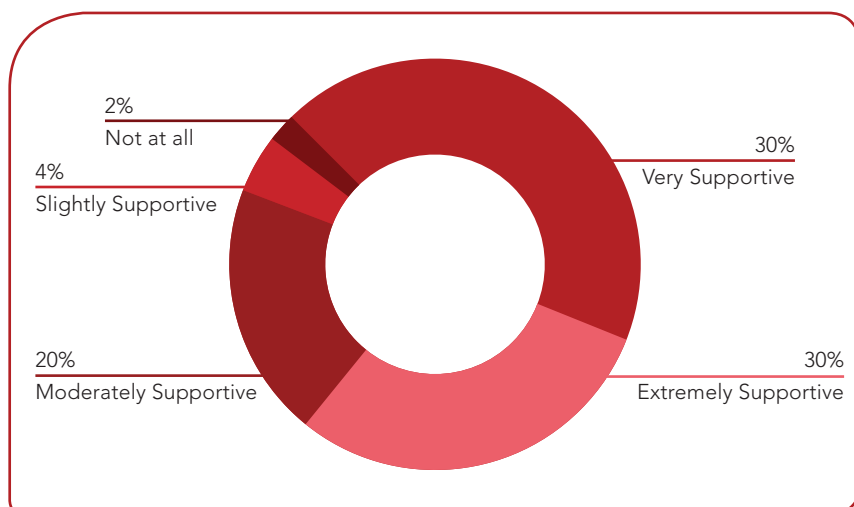


Figure 51: Likeliness of Private Sector Businesses in the Idea of Sharing Data in Open Format

Overall, 74% of the total respondents were extremely or very supportive of data sharing in an open format. Further, 20% of the respondents were moderately supportive of sharing data in an open format. Whereas, only 3% were against the idea of data sharing in an open format. This implies that the majority of private sector businesses are very supportive to promote sharing of data in an open format.

### 4.8.2 Supporting the Idea of Basing Business Decisions on Data

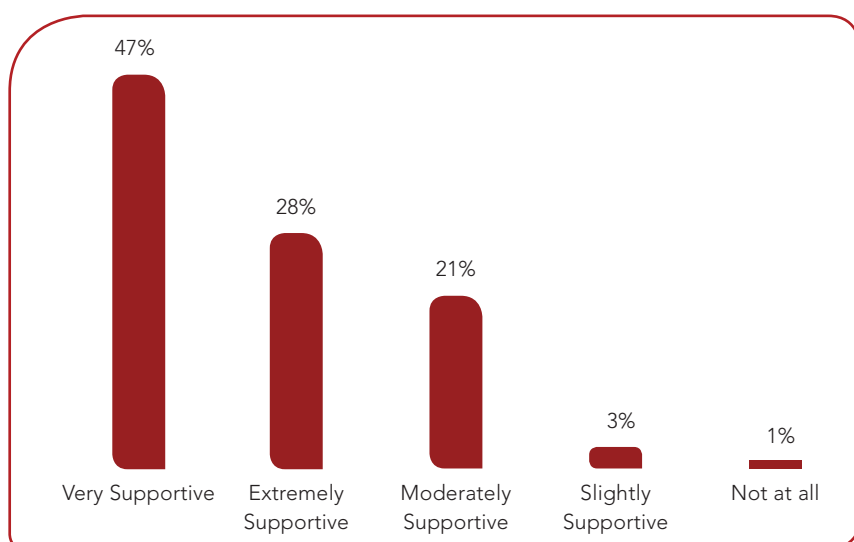


Figure 52: Extent of Support of Businesses on Basing Business Decisions on Data

The private sector businesses were seen to be highly supportive of basing business decisions on data. It was found that three-quarters (75%) of the businesses were very supportive towards the notion. Contrary, only 1% of the businesses didn't agree with basing business decisions on data.

### 4.8.3 Interest in Collaboration with Different Stakeholders

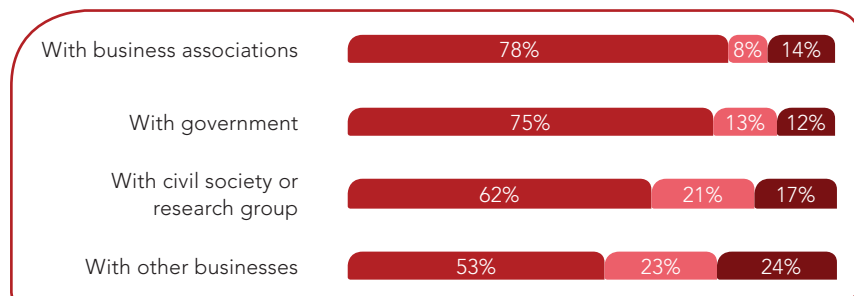


Figure 53: Interest of Private Sector Businesses in Collaborating with Different Stakeholders Promoting the Sharing and Use of Data

If it is to collaborate in promoting the sharing and use of data, the private businesses were highly interested in collaborating first with business associations (78%), the government (75%) and Civil Society or Research Groups (62%), in that respective order. Comparatively, a larger proportion of businesses were unsure and/or not interested in collaborating with other businesses for promoting the use and sharing of data.

In the group discussions and interviews, it was discussed that before everything, there is a need to create awareness among the businesses regarding the importance of data and build a data culture. This, in turn, will drive demand for data and will eventually lead to the promotion and development of open data culture in Nepal.

It was also discussed that the private sector businesses were willing to promote a data culture in Nepal and thus, willing to collaborate for the same. It was found that most of the businesses were willing to collaborate with the government. Others provided that be it any third party, the collaborating partner must be trustworthy and there must be clear guidelines and policies in place for sharing open data and promoting open data culture.



"The demand for data must be boosted. This will create awareness and a situation where people can ask for data. This will further promote a data culture in Nepal".

- CEO, Data-driven Business, Kathmandu

"Open data platform is the future and businesses will take part in it. First, it is necessary to bind this with proper policies and regulations. The private sector, especially, can be the target of such security issues. To keep this in check, government needs to work to create encryption frameworks which help keep those malicious activities in check".

- Project Officer, Kathmandu



## 4.9 Data-driven Business Case-Studies

### 4.9.1 Digital Data System For Development (DB2Map)

#### Value Proposition:

DDS4Dev or Digital Data System For Development is a non-profit organisation started by like-minded data scientists from Nepal living abroad in different countries. The organisation provides digital and data driven solutions in the fields of demography, agriculture, energy, cultural heritage and for overall development. Many of these fields are interlinked and hence, it is important to study them together in a systems approach. In order to understand these interlinkages and a complex system, the company is developing computer models where all the above can be brought together. Using digital technologies, their goal is to translate data into insightful information and illustrate the result in understandable language that the policy maker and general public can easily understand it. As a result, they have initiated few notable innovative data-driven models. Firstly, population based system model until 2031 at municipal level. The output of this projection is used to setting up 20 health targets by department of health, future energy demand calculation, etc. Similarly, documenting cultural heritage and data-driven agricultural based services like farmers among others.

As Rajan Man Bajracharya, founder at DDS4Dev puts it, "We are believers of science and evidence-based analysis which are essential to address developmental challenges that is dependent on interdisciplinary approach & reuse of data". Consequently, they have been working in different sectors contributing to ICT tools development and data dissemination.

#### Adding Value to Open and Shared Data:

DB2Map, the company's first initiative is an open data map making platform helping users to create interactive maps from complicated data. The project was the company's enterprise to solve age old problems in map making. In the past, map making was a complicated job and limited to cartographers. And as Bajracharya adds he himself also worked in map making and used to get lot of requests to make maps. He further adds, "During the time of the earthquake, we had to make maps quickly. As I used to get a lot of requests to make maps, I decided to make this, so that it would be easier for me as well. I created this in about 3 to 4 days-time so that I could just drag and drop excel data and produce maps".



A project that started as a voluntary work has since caught on to help several others including journalists, big media houses, I/NGO, researchers and academicians.

Geokrishi is their newer project focused on agriculture, created in order to primarily help farmers get customized information on “what to plant, when, where and how”. Bajracharya adds that Geokrishi has been providing services to agriculture related organizations, government entities, provincial level planning commission, municipalities and even the central level. Therefore, it has helped farmers in overall agriculture stages-planning, preparation, growing and post-harvesting and has supported agricultural commercialisation at large.

In the energy sector, the company has developed something called Life Cycle Cost Calculation, which helps to make decision for the private sector, development sector or government officials to estimate the feasibility of micro-hydropower projects, solar energy or extending gridlines to suitable locations considering its growth and demand of electricity. Aside from this, the company has also worked in water shed management and mapping of temples & cultural heritage destroyed in the earthquake.

#### **Sector and Market Segment:**

DDS4Dev is a non-profit organisation in the development sector more specifically in technology and innovation front of data dissemination. As such, they have been involved in several sectors till date including agriculture, energy, cultural heritage, demography & health, and watershed. Each of their different initiatives has their intended diverse user groups.

Journalists, media companies, researchers, development organizations and academicians are the target audience for DB2Map while Geokrishi is intended for farmers, farmer representatives, extension workers, I/NGOs, scientific users, and researchers in agriculture. While other data such as cultural heritage mapping and population dynamics modelling is relevant for development agencies and the general public alike.

#### **Products and Revenue Model:**

The main product offering from DDS4Dev is providing customized research, geospatial services and developing decision support tools. They also freely disseminate demographic and population dynamics data through their open data platform. And most importantly, they provide climate smart agricultural input to farmers.

As for revenue generation, Rajan Bajracharya, founder at DDS4Dev adds that they are making their services free only in selected or aggregated level while levying charges for detail analysis. Alongside, the organization also conducts trainings and seminars charging participants the least amount of money to streamline the revenue.

Besides this, the company has also generated large portion of funding by applying in innovation calls. In 2017, the organisation’s work on Geokrishi won them \$100,000 USD as Data Driven Farming Prize, a global competition organized by the US government as part of its Feed The Future initiative. Similarly, the organisation also won agricultural fund provided by the government for ICT development in the agricultural sector.

#### **Measuring Impact:**

As a non-profit organisation, DDS4Dev produces data in various sectors collected from their innovative services provisions. As a result they have been able to make data and services free in certain locations, helping general public in each sector.

The organisation has helped farmers to get competitive advantage by providing information to increase productivity. They are distributing various devices like PH meter, or other kind of sensors which are used by farmers to evaluate their crops and calculate fertilizer’s quantity. This has created an ecosystem, where the farmers provide data to the organization, while the organization provides input on fertilizers and crops plantation.

### **4.9.2 Bikash Udhyami**

#### **Value Proposition:**

Bikas Udhyami is a data analytics, information & digital communications company working for the social good by empowering people in Nepal through data, information and technology. Established in 2016, Bikas Udhyami provides various data and information management related services including data collection, analysis, design, visualisation, capacity building, social media management & ICT development through which it sustains its open data and public information platforms and initiatives. Its clients include government agencies, CSOs, media houses, companies and development agencies.

The company seeks to bridge the data, information and digital divide that exists in Nepal by making data and information easily accessible to enable people to make informed decisions regarding their lives and for the development of the country. The company’s focus areas and initiatives relate to data and statistics (Nepal in Data), entrepreneurship (Udhyami Nepal) and skills development (Catalyst).

#### **Open and Shared Data:**

The company’s open data initiative, Nepal in Data, aims to increase the availability, accessibility and use of development data on Nepal and enhance data literacy among government, civil society, media, private sector and students. The company, through its initiative’s open data portal, [www.nepalindata.com](http://www.nepalindata.com), provides access to over 4,000 datasets divided over 13 sections. The portal contains data from official government data sources, which are updated regularly. They are made easily accessible by allowing users to visualise them and download them in open format. In addition, the initiative also makes the data from the portal accessible through infographics and videos that are shared on a daily basis via the initiative’s social media channels. The portal also contains laws, policies, reports, publications and other resources.

The company also helps others to open and share data through the development of open data portals and management information systems as a service. It has developed open portals and systems for the National Planning Commission, Ministry of Health and National Youth Council. In addition, it provides data visualisation services for a wide range of clients from government, CSOs, media and private sector that need support to make their data and information more easily understandable.

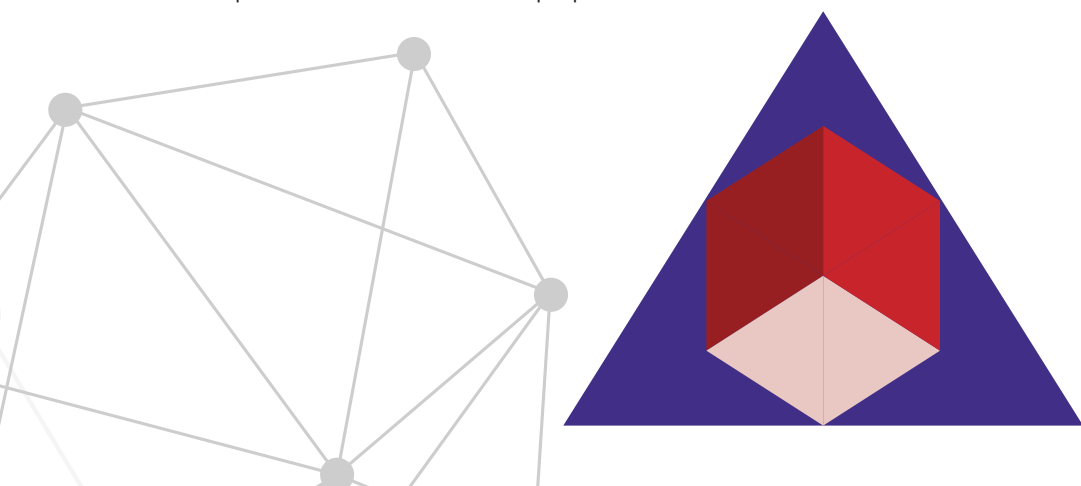
#### **Adding Value to Open and Shared Data:**

Government data are often not easily accessible to the general public. Some data are only available if one buys these from the government directly. And even in those cases, the data made available are not in machine readable format. Nepal in Data adds value by compiling all the government sources of data in one place, and visualising them in maps, charts, table, line and bar graphs. The portal further allows user to download and use statistical data in CSV or Excel format. Infographics and videos on the basis of the open data on the portal add additional value in making data and statistics more understandable and accessible.

The company provides services along the entire data value chain from compilation of existing (open) data and statistics, data collection, processing and analysis of new data to developing dissemination portals, visualisation and capacity building to use data.

#### **Sector and Market Segment:**

Bikas Udhyami’s services are geared towards the public sector with its main clients being government and development agencies. Its market segment is in data & statistical analysis and information communication. Its Nepal in Data portal is used by people with digital literacy and access to computers including civil society organisations, government, private sector, academics, students in Nepal and abroad. Its data visualisations disseminated via social media make data accessible to a wide range of people and contribute to enhancing data literacy in Nepal.





### Product and Revenue Model:

The company's core product is its Nepal in Data portal, which offers datasets in open format, data visualisations, knowledge products and other resources for free. The company's services such as data collection, analysis, design, visualisation, ICT infrastructure development, capacity building and social media management incur monetary charges. Through the revenue generated by its services, Bikas Udhyami sustains its Nepal in Data initiative.

### Measuring Impact:

Since its inception, Bikas Udhyami has made quite a few measurable impacts. In just the two years of its operation, its Nepal in Data initiative has had 140 thousand website visits and more than 5,000 downloads. Through email and social media, citizens, students, CSOs, development partners and government employees have increasingly started to ask for specific data according to Santosh Gartaula, CEO of Bikas Udhyami.

While being a relatively new start-up company, it has already established a huge following of over 100,000 followers on Facebook. According to the CEO, various well-known academics from universities and Nepali students from foreign universities in particular have been closely following and using the portal. Every week the portal sees 800 – 1000 worldwide traffic. And this number is growing every day.

The organisation has also created a positive impact in enhancing digital literacy and building capacity among students as it has been conducting trainings and skill development sessions on statistical tools such as SPSS and STATA in college and university level.

Since its start, the Nepal in Data initiative has gone on to earn huge goodwill in the market. As the CEO puts it, "People are no longer scared of data". Infographics shared across social media have played a great role in promoting data culture and awareness in Nepal. By providing its service to a wide audience group, creating awareness on data, the company has contributed significantly towards fostering a data culture in Nepal.

### 4.9.3 Young Innovation Pvt. Ltd.

#### Value Proposition

Young Innovations Pvt. Ltd. is a pioneer in institutionalising Open Data solutions in the development sector of Nepal. The company was founded in mid-2007 by a team of young entrepreneurs determined to lead initiatives in Nepal for social and corporate change through the strategic use of IT. The company offers services in key areas which include graphics and web design, software and mobile solutions with expertise in IT infrastructure development, and open data solutions. They believe in building partnerships, providing tailored and innovative solutions in data, technology, product and community and create an impact to social and developmental change. The company powers this form of organisational structure through data-driven policy and decision-making, both at the large scale and on an everyday basis.

#### Open and Shared Data

Young Innovations has worked in several developmental initiatives creating digital solutions. They have created open data platforms such as AidStream, DevelopmentCheck, Moldova OCDS and Earthquake Response Transparency Portal and OpenNepal focused on using open data to facilitate transparency and accountability. Each of the projects has been tailored to specific audience groups for specific purpose. For instance, AidStream and earthquake response transparency portal has helped share data to help streamline aids and funds and track their effective use in the international as well as national level respectively.

#### Adding Value to Open and Shared Data

The company has been involved in fostering a strong tech and open data community nationally and on the international level. AidStream in particular has helped organisations throughout to publish aid data on its platform and share the status of the activities performed. The project has helped streamline the aid provisions and ensure effective dissemination among international organisations.

The company has also worked with the World Bank for the Moldovan government to create an open contracting platform called Moldovan OCDS for analysing contracts related data and functionalities in public procurement process. It has helped its users to download, analyse and monitor and re-use public procurement related data in Moldova.

Following the 2015 earthquake in Nepal, Earthquake Response Transparency Portal has added value to international organisations and the public to track national as well as international financial flows and the use of these funds for relief and reconstruction activities.

Finally, to improve the data culture in Nepal, the company has also been organising regular tech events such as Open Data Day, NASA's Space Apps Challenge and Ncell App Camp. In collaboration with national and international organisations, such events have provided a common platform where individuals and groups to come together and grow, creating innovative and creative solutions for real world problems.

### Sector and Market Segment

Young Innovation works in the IT sector with their mission and goals focused on development changes in the national as well as international level. The organisation has expertise in Web based application development, mobile app development, Open Data solutions, SMS/IVR application development. They have provided digital and data-driven solutions to their clients in Nepal, USA, Canada, UK, Germany, Australia, Tanzania, Moldova, etc.

### Product and Revenue Model

Using their expertise, the organisation has been providing solutions to members of the development as well as private sector with specific focus on Open Data, Aid Transparency, Public Procurement, Citizen Engagement, Grievance Management, Knowledge Management, etc. The company generates revenue from their B2B service model and has worked for commercial banks, World Bank (Washington) and UNDG (New York) and other national & international non-governmental organisations.

### Measuring Impact

Young Innovations as an IT company has made a major impact helping increase effectiveness of national and international organisations in their initiatives. For example, their brainchild project - AidStream - is the platform currently being used by more than 350 development organisations including WWF, World Economic Forum, and The Asia Foundation among many others helping them publish their data to the International Aid Transparency Initiative (IATI). Currently, used by organisations in over 20 countries, AidStream is the dominant player in IATI ecosystem.

Similarly, the Earthquake Response Transparency Portal has helped in tracking national and international financial flows and the use of funds for relief and reconstruction activities. The project was developed following the 2015 earthquake, in order to help the funds and aids received in the national and international community. Currently, the project has more than 1,000 organisations using it. The platform has supported 78 projects offering more than 2,200 transactions' transparency.

Their open contracting platform, Moldova OCDS, was created in collaboration with the open contracting team of the World Bank and the country to publish analyse and reuse public procurement related data and contracts. Currently, the users are able to search through 17,120,087,623 MDL worth of contracts.

Development Check, an open platform currently operating in Nepal, selected African countries and in the mid-west region has helped in monitoring and evaluating the various development projects through real-time citizen feedback from those project locations. The platform has had a total USD \$1,001,404,696 worth of projects being monitored since 2013.

The company has been recognised among both national and international partners for providing impactful solutions. Their products have also received Google Innovation Awards. Similarly, Development Check has previously received Global Impact Awards.



# Chapter-V: Conclusion and Recommendation

## Conclusion

It is clear that data is of high importance for private sector businesses irrespective of the scale, sector or type of organisation. Businesses mainly use data for developing and strategizing their businesses. The major sources of data include internal data, followed by those shared by the government and civil society/research groups.

Although majority of the businesses indicated government data to be of high importance for their business and cited its accessibility to be important, only a little more than half of the businesses reported of actually using the government data. Meanwhile, majority of the businesses found it hard to access government data. When using government data, the major challenges cited by businesses included difficulty in finding government data i.e. businesses not being clear where to find the data they required from the government. Likewise, other challenges that were mostly cited included data not being up-to-date, lack of relevant data, data not in segregated form, infrequent publication of data and data not being standardised. When it comes to the production and sharing of the data by private-sector actors, it was found that there is less realisation among private sector businesses, especially small-scale businesses, that they produce data as well. Nonetheless, a majority reported producing some sort of data related to their business, especially related to their operations, sales and human resources. However, businesses were not willing to share their data publicly, because of the issues related to business privacy, fear of losing business competitiveness and unclear legal framework for sharing data.

Fewer businesses were found to be both using and sharing data in an open format. Despite of the present context of less usage and sharing of data in open format, most of the businesses were quite interested in promoting an open data culture in Nepal, and were willing to collaborate to share and use open data. However, they clearly mentioned the need for clear policies and legal-framework for use and sharing of data in an open format and the need of a trustworthy third-party for collecting and sharing open data.

## Recommendations

In order to release the value of open data for Nepal's business, a series of interlinked efforts are required by business, government and the development community.

### Growing demand for data amongst Nepal's businesses

- More detailed research is required to understand the detailed open data needs of businesses operating in specific sectors.
- To help businesses understand their needs, efforts are required to demonstrate the value of data from government, academia, civil society and other private sector groups.
- Further efforts are then required to support Nepal's businesses, potentially via business associations, to articulate their data needs and advocate for open data.

### Improving the accessibility and usability of government data

- Governments can use the findings from this work to identify which of their data is of high value, how businesses want access to their data, and help them understand the barriers faced by businesses in using government data. However, further efforts are required to help the federal, provincial and local governments understand the potential value of opening their data for business and as a driver for economic development - and understand their role in sharing this.

- Federal, provincial and local governments could be supported to conduct reviews of their existing data sources to identify concrete steps to improve their accessibility and usability (for example, by adding further details into the data available from the Office of Company Registrar; by developing user-friendly interfaces to support the use of procurement data; by using open data formats for releases of economic data, trade and taxation data; by making historic records available from real-time datasets such as vegetable pricing, etc.). Business associations could play an important role in supporting this. In addition, businesses specialising as data intermediaries can be supported to work with federal, provincial and local governments to grow the value of their data.
- Governments also need to be supported in the development of appropriate policies around data sharing, protection of intellectual property and enforcement of licensing and copyrights.

### Building skills among businesses to use data in their decisions, processes and innovations

- Efforts are required to support the development of technical capabilities within Nepal's businesses to use data and their awareness of where to access data. Targeted data literacy trainings, guidance documents, mentoring and peer learning can support this, as well as government run data-challenges as seen in other countries. Learning from other countries, there is also significant scope for the development of value-added commercial data services to link businesses with specialist analysis.
- Efforts are also required to help businesses understand the value of investing in their own data production, in incorporating these costs into their operations and to build their skills in sharing this data.

### Growing the will and feasibility of businesses to share their data

- Open data is not a one-way resource. Data from businesses has significant potential to support decision-making, implementation and monitoring by governments and other actors, as well as build trust and empower consumers. Business associations could play an important role in facilitating exchange of data between members, and analysis of the data with external actors.
- To avoid concerns around privacy and competitive advantage, businesses can be encouraged to share data via data collaboratives where participants from different sectors, including business, research institutions and government agencies exchange data within trusted groups to solve public problems.

# ANNEXES

## Annex 1: Sector-wise Quantitative Survey Sampling in 10 Districts with Highest Industrial Registration

Sampling	District-wise Proportional Weightage for Industrial Registration	Sample in District	Sector	Sector-wise Proportional Weightage for Industrial Registration	Sample Size in Each District and Sectors
Kathmandu	0.57	77	Agro and Forestry Based	0.06	5
			Construction	0.01	1
			Energy Based	0.04	3
			Manufacturing	0.40	31
			Mineral	0.01	1
			Service	0.28	21
			Tourism	0.20	15
Lalitpur	0.14	19	Agro and Forestry Based	0.06	1
			Construction	0.01	0
			Energy Based	0.04	1
			Manufacturing	0.40	8
			Mineral	0.01	0
			Service	0.28	5
			Tourism	0.20	4
Kaski	0.07	9	Agro and Forestry Based	0.06	1
			Construction	0.01	0
			Energy Based	0.04	0
			Manufacturing	0.40	4
			Mineral	0.01	0
			Service	0.28	2
			Tourism	0.20	2
Bara	0.04	5	Agro and Forestry Based	0.06	0
			Construction	0.01	0
			Energy Based	0.04	0
			Manufacturing	0.40	2
			Mineral	0.01	0
			Service	0.28	2
			Tourism	0.20	1
Rupandehi	0.04	5	Agro and Forestry Based	0.06	0
			Construction	0.01	0
			Energy Based	0.04	0
			Manufacturing	0.40	2
			Mineral	0.01	0
			Service	0.28	2
			Tourism	0.20	1

Sampling	District-wise Proportional Weightage for Industrial Registration	Sample in District	Sector	Sector-wise Proportional Weightage for Industrial Registration	Sample Size in Each District and Sectors
Chitwan	0.3	5	Agro and Forestry Based	0.06	1
			Construction	0.01	0
			Energy Based	0.04	0
			Manufacturing	0.40	2
			Mineral	0.01	0
			Service	0.28	1
			Tourism	0.20	1
Bhaktapur	0.3	4	Agro and Forestry Based	0.06	0
			Construction	0.01	0
			Energy Based	0.04	0
			Manufacturing	0.40	2
			Mineral	0.01	0
			Service	0.28	1
			Tourism	0.20	1
Parsa	0.3	4	Agro and Forestry Based	0.06	0
			Construction	0.01	0
			Energy Based	0.04	0
			Manufacturing	0.40	2
			Mineral	0.01	0
			Service	0.28	1
			Tourism	0.20	1
Kavre	0.3	4	Agro and Forestry Based	0.06	0
			Construction	0.01	0
			Energy Based	0.04	0
			Manufacturing	0.40	2
			Mineral	0.01	0
			Service	0.28	1
			Tourism	0.20	1
Makwanpur	0.2	3	Agro and Forestry Based	0.06	0
			Construction	0.01	0
			Energy Based	0.04	0
			Manufacturing	0.40	1
			Mineral	0.01	0
			Service	0.28	1
			Tourism	0.20	1
Total Samples		135	-	-	135



## Annex 1: Survey Questionnaire

### Business sector research – quantitative study questionnaire

Informed by the OD4D toolkit from the Center for Open Data  
Version 6, 01 August 2018

#### INTRODUCTION

Many thanks for your time and willingness to participate in this research project. Its purpose is to understand and inform future directions and support needed by businesses in Nepal in order to effectively use data, as well as their ability to contribute data and insights to sustainable development.

The interview will take about 25 minutes, covering current data use, data needs and ability to share data. All interview responses will be anonymized and will be shared as open data.

Let's begin with some general information on your business and the sector you operate in.

#### GENERAL INFORMATION

Name : \_\_\_\_\_  
Title/Role : \_\_\_\_\_  
Organization : \_\_\_\_\_  
Contact/Email : \_\_\_\_\_

#### District (select from list):

- ☐ Bara
- ☐ Parsa
- ☐ Chitwan
- ☐ Makwanpur
- ☐ Kathmandu
- ☐ Lalitpur
- ☐ Bhaktapur
- ☐ Kavrepalanchowk
- ☐ Kaski
- ☐ Rupandehi

#### Scale of Business (Please select 1):

- ☐ Business – Small
- ☐ Business – Medium
- ☐ Business – Large

#### Organization type (Please select 1):

- ☐ International (MNC, local subsidiary or other)
- ☐ Local (Operating in a few locations)
- ☐ Regional (operating in many locations of a region/province)
- ☐ National (operating in many regions and locations of the nation)
- ☐ Business Association
- ☐ Incubator/Accelerator/Investor
- ☐ Academia
- ☐ Civil Society Organization
- ☐ Other: \_\_\_\_\_

#### Where is your business registered in?

- ☐ Department of Cottage and Small Industries
- ☐ Department of Industry
- ☐ Other: \_\_\_\_\_

#### Number of employees (Please select 1):

- ☐ Less than 20
- ☐ 21-40
- ☐ 41-60
- ☐ 61-80
- ☐ 81-100
- ☐ More than 100

#### What sector does your business primarily work in? (Please select 1)

- ☐ Agriculture
- ☐ Arts and Culture
- ☐ Business and Legal Services
- ☐ Consumer Services (such as restaurants and retailers)
- ☐ Data/Information Technology
- ☐ Education
- ☐ Energy
- ☐ Environment
- ☐ Finance and Investment
- ☐ Geospatial/Mapping
- ☐ Governance
- ☐ Healthcare
- ☐ Housing, Real Estate, Construction
- ☐ Insurance
- ☐ Media and Communications
- ☐ Mining/Manufacturing
- ☐ Research and Consulting
- ☐ Security and Public Safety
- ☐ Scientific Research
- ☐ Telecommunication /Internet Service Providers
- ☐ Tourism
- ☐ Transportation and Logistics
- ☐ Water and Sanitation
- ☐ Weather
- ☐ Other: \_

Which business model (sources of revenue) does your business follow? Please specify the primary and secondary sources.

Business Model	Primary Source of Revenue	Secondary Source of Revenue
Advertising sales		
Subscription fees		
Sales of products and/or services (B2C- business to customer)		
Sales of products and/or services (B2B- business to business)		
Public sector contracting (B2G- business to government)		
Investments (Securities, Assets, and Venture Capital)		
Other		

Please mention if you have any other sources of revenue apart from the ones mentioned above.

Let's now turn to your use of data in your business operations

CURRENT DATA USE PRACTICES

1. What does your business use data for? (Select one from each line)

	We use data for this	We do not use data for this	We do not do this
Developing new products or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifying new customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organizational optimization (e.g. benchmarking, organizational planning, organizational restructuring, HR, and others)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pricing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Market Research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. What type of the following data are of greatest interest for your business? (Select top 3)  
[Please read out the options aloud]

- Data on:

☐ Revenue and sales

☐ Employees

☐ Customers
- ☐ Business opportunities

☐ Market developments

☐ Government regulations and processes

3. What other types of data does your organization use?

4. When your business uses data, where does this data come from? (select all that apply)

- ☐ We generate our own data

☐ We use data from government

☐ We use data from other private sector actors (e.g. business, business associations etc)
- ☐ We use data from academic and research sources (e.g. academic data, research houses, civil society)

☐ We use data from the media

☐ Other\_\_\_\_\_

IF using government data move to 4.1 and following

4.1) When you use government data, do you use data from the following? (select all that apply)

- ☐ Federal government/ Central Government

☐ Provincial government
- ☐ Local government

☐ Don't know/Cannot answer

IF using data from federal government move to 4.2

4.2) When you use data from federal government, do you use data from the ministries, constitutional bodies and agencies? (select all that apply)  
[Please read the options aloud]

Ministries (<https://www.nepal.gov.np/NationalPortal/view-page?id=157>)

- |   |   |
|---|---|
| <input type="checkbox"/> Defense                                    | <input type="checkbox"/> Finance  |
| <input type="checkbox"/> Health and Population                      | <input type="checkbox"/> Youth and Sports                               |
| <input type="checkbox"/> Home Affairs                               | <input type="checkbox"/> Culture, Tourism and Civil Aviation            |
| <input type="checkbox"/> Foreign Affairs                            | <input type="checkbox"/> Law, Justice, & Parliamentary Affairs          |
| <input type="checkbox"/> Energy, Water Resource and Irrigation      | <input type="checkbox"/> Agricultural, Land Management and Cooperatives |
| <input type="checkbox"/> Education, Science and Technology          | <input type="checkbox"/> Water Supply                                   |
| <input type="checkbox"/> Industry, Commerce and Supplies            | <input type="checkbox"/> Urban Development                              |
| <input type="checkbox"/> Physical Infrastructure and Transportation | <input type="checkbox"/> Communication and Information Technology       |
| <input type="checkbox"/> Labor Employment and Social Protection     | <input type="checkbox"/> Agricultural, Land Management and Cooperatives |
| <input type="checkbox"/> Forest and Environment                     | <input type="checkbox"/> Health and Population                          |
| <input type="checkbox"/> Federal Affairs and General Administration | <input type="checkbox"/> Culture, Tourism and Civil Aviation            |
| <input type="checkbox"/> Women, Children and Senior Citizen         | <input type="checkbox"/> Agricultural, Land Management and Cooperatives |
|   | <input type="checkbox"/> Other  |

Constitutional Bodies and Agencies (<https://www.nepal.gov.np/NationalPortal/view-page?id=29>)

- |  |   |
|--|---|
| <input type="checkbox"/> Agriculture Information and Communication Center                                    | <input type="checkbox"/> Nepal Academy of Tourism and Hotel Management    |
| <input type="checkbox"/> Agriculture Inputs Company Ltd  | <input type="checkbox"/> Nepal Agricultural Research Council (NARC)       |
| <input type="checkbox"/> Alternative Energy Promotion Center (AEPC)  | <input type="checkbox"/> Nepal Airlines Corporation                       |
| <input type="checkbox"/> Armed Police Force (APF)  | <input type="checkbox"/> Nepal Health Research Council                    |
| <input type="checkbox"/> B.P. Koirala Memorial Planetarium, Observatory and Science Museum Development Board | <input type="checkbox"/> Nepal Law Commission                             |
| <input type="checkbox"/> Central Bureau of Statistics (CBS)  | <input type="checkbox"/> Nepal Medical Council                            |
| <input type="checkbox"/> Commission for the Investigation of Abuse of Authority (CIAA)                       | <input type="checkbox"/> Nepal Police                                     |
| <input type="checkbox"/> Civil Aviation Authority of Nepal   | <input type="checkbox"/> Nepal Red Cross Society                          |
| <input type="checkbox"/> Election Commission   | <input type="checkbox"/> Nepal Telecom                                    |
| <input type="checkbox"/> Federation of Nepalese Chambers of Commerce & Industry (FNCCI)                      | <input type="checkbox"/> Nepal Tourism Board                              |
| <input type="checkbox"/> Financial Comptroller General Office (FCGO)   | <input type="checkbox"/> Nepalese Army                                    |
| <input type="checkbox"/> Foreign Employment Promotion Board  | <input type="checkbox"/> Office of Attorney General                       |
| <input type="checkbox"/> Higher Secondary Education Board  | <input type="checkbox"/> Office of Auditor General                        |
| <input type="checkbox"/> Hydroelectricity Investment & Development Company Limited                           | <input type="checkbox"/> Office of Company Registrar                      |
| <input type="checkbox"/> Land Management Training Centre   | <input type="checkbox"/> Office of Controller of Certification            |
| <input type="checkbox"/> National Human Rights Commission  | <input type="checkbox"/> Office of the Controller of Examinations         |
| <input type="checkbox"/> National ID Management Center   | <input type="checkbox"/> Public Procurement Monitoring Office (PPMO)      |
| <input type="checkbox"/> National Information Commission   | <input type="checkbox"/> Public Service Commission                        |
| <input type="checkbox"/> National Information Technology Center (NITC)                                       | <input type="checkbox"/> Revenue Administration Training Center           |
| <input type="checkbox"/> National Planning Commission (NPC)  | <input type="checkbox"/> Social Welfare Council Nepal                     |
| <input type="checkbox"/> National Sports Council   | <input type="checkbox"/> University Grants Commission                     |
| <input type="checkbox"/> Nepal Academy of Science and Technology (NAST)                                      | <input type="checkbox"/> Vocational and Skill Development Training Center |
|  | <input type="checkbox"/> Water and Energy Commission Secretariat          |
|  | <input type="checkbox"/> Other  |

5. What percentage of data used by your organization is from publicly available sources, i.e. open data?

- |                                    |                                     |
|------------------------------------|-------------------------------------|
| <input type="checkbox"/> 0% - 10%  | <input type="checkbox"/> 51% - 60%  |
| <input type="checkbox"/> 11% - 20% | <input type="checkbox"/> 61% - 70%  |
| <input type="checkbox"/> 21% - 30% | <input type="checkbox"/> 71% - 80%  |
| <input type="checkbox"/> 31% - 40% | <input type="checkbox"/> 81% - 90%  |
| <input type="checkbox"/> 41% - 50% | <input type="checkbox"/> 91% - 100% |

6. Please rate how confident are you in terms of your business's skill/capabilities to effectively use data to make informed decisions? (select one)
- ☐ Not at all confident

☐ Not very confident

☐ Neither

☐ Fairly confident

☐ Very confident

☐ Don't know/Cannot answer

Moving on, we would now like to collect your views on data production and sharing.

CURRENT DATA PRODUCTION AND SHARING PRACTICES

7. A. Does your business produce any type of data?
- ☐ Yes
- ☐ No
- ☐ Don't know/ Can't Say

IF 'No' or 'Don't know/ Can't say' SKIP Q7B, Q8, Q9 (go to Q10)

B. What types of data does your business produce? (Select all that applies)

- ☐ Data related to revenue and sales

☐ Data related to employees

☐ Data related to consumers
- ☐ Data related to business opportunities

☐ Data related to market share

☐ Data related to our sector

☐ Other \_\_\_\_\_

8. Do you currently share any of this data with external actors?

	Yes	No
With government	<input type="checkbox"/>	<input type="checkbox"/>
With business associations	<input type="checkbox"/>	<input type="checkbox"/>
With other businesses	<input type="checkbox"/>	<input type="checkbox"/>
With civil society or research groups	<input type="checkbox"/>	<input type="checkbox"/>
With the public	<input type="checkbox"/>	<input type="checkbox"/>
With others	<input type="checkbox"/>	<input type="checkbox"/>

If you currently share any of the data with other external actors apart from the ones mentioned above, please specify.

\_\_\_\_\_

9. How much of the data do you make publicly available (free of cost), in a machine-readable format (excel, csv, etc) i.e. open data?
- ☐ 0% - 10%

☐ 11% - 20%

☐ 21% - 30%

☐ 31% - 40%

☐ 41% - 50%

☐ 51% - 60%

☐ 61% - 70%

☐ 71% - 80%

☐ 81% - 90%

☐ 91% - 100%

10. How willing are you to share your data with the public?

not at all willing	not really willing	unsure	somewhat willing	willing
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IF 'Not at all willing' SKIP Q11 and Q12 (go to Q13)

11. What data would you be most willing to share with the public? (please select all that apply) [Enumerators must probe]
- ☐ None

☐ Data related to revenue and sales

☐ Data related to employees

☐ Data related to consumers

☐ Data related to business opportunities

☐ Data related to market share

☐ Data related to our sector

☐ Other \_\_\_\_\_

12. Which of the following do you see as the main barriers or challenges to publicly share your business's data (select top 3) [Please read the options aloud] [Enumerators must probe]

- ☐ Lack of data to share

☐ Lack of external interest in the data

☐ Unclear legal framework for sharing the data

☐ Concerns about losing intellectual property

☐ Concerns about privacy

☐ Concerns about impact on competitive advantage

☐ Concerns about potential of manipulation of data by others

☐ Concerns about data quality

☐ Technical challenges to sharing data

Other \_\_\_\_\_



Government is the largest source of official data. We would now like to discuss your needs and use of this data.

GOVERNMENT DATA

13. Government data on which of the following sectors is of greatest interest to your business? (Select up to 3)  
[Please read the options aloud]

- ☐ Agriculture
- ☐ Arts and Culture
- ☐ Business
- ☐ Consumer
- ☐ Demographics and Social
- ☐ Economics
- ☐ Education
- ☐ Energy
- ☐ Environment
- ☐ Finance
- ☐ Geospatial/Mapping
- ☐ Health/Healthcare
- ☐ Housing & real estate
- ☐ International/Global Development
- ☐ Legal (government policy, rules & regulations)
- ☐ Manufacturing
- ☐ Science and Research
- ☐ Public Safety
- ☐ Tourism
- ☐ Transportation
- ☐ Weather
- ☐ Other:\_\_\_\_\_

Government Operations (budgets, spending, procurement, elections)

Can you please tell us what specific government data is of greatest interest to your business? [Enumerators must probe and be as specific as possible]

14. How easy do you typically find it to access the detailed data that you need from the government to support your business decisions? (Select any one)

- ☐ Very easy
- ☐ Easy
- ☐ Moderately easy
- ☐ Hard
- ☐ Very hard

15. How important is government data to your business at present? (Select any one)

- ☐ Extremely important
- ☐ Very important
- ☐ Moderately important
- ☐ Slightly important
- ☐ Not at all important

16. How do you currently obtain detailed data from the government? (Select all that apply)  
[To be decided whether to read out options or not based on pre-testing]

- ☐ Via radio/TV
- ☐ Via newspapers
- ☐ Via internet searches
- ☐ Via government websites
- ☐ Via other websites (including civil society, academia, research houses, INGOs etc)
- ☐ Via social media
- ☐ Via personal connections and networks
- ☐ Via professional networks
- ☐ Via business associations
- ☐ Via professional services (including consultants, external analysts etc)
- ☐ Other:\_\_\_\_\_

17. In what way would you like to access government data? (Select 3)

- ☐ By sending a letter
- ☐ By visiting a government office
- ☐ By calling a designated phone number
- ☐ By sending an email or completing an online form
- ☐ Via public events
- ☐ Via individual meetings
- ☐ Via filing an RTI request
- ☐ Via online access (e.g. through web portals, mobile apps)
- ☐ Via social media
- ☐ Other:\_\_\_\_\_

18. What would be your preferred format in which to receive data? (rank the following, 1 = most preferred, 6 = least preferred)

- ☐ Spreadsheet format such as CSV (Comma Separated Value), Excel, etc.
- ☐ Word document
- ☐ PDF (Portable Document Format)
- ☐ Internet Webpage
- ☐ Hard Copy Publication

Would you prefer to receive the data in any other format than the ones specified above? If yes, please specify.

19. How important is greater accessibility of government data to your business? (Select any one)

- ☐ Extremely
- ☐ Very
- ☐ Moderately
- ☐ Slightly
- ☐ Not at all

IF 'Not at all' SKIP Q20 (go to Q21)

20. What would better access to government data help your business to do better? (Select all that apply)

- |   | Yes                      | No                       | NA                       |
|---|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> Developing new products or services  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Identifying new customers  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Organizational optimization (e.g. benchmarking, organizational planning, organizational restructuring, HR, and others) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Pricing  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Market Research  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Other_____   |                          |                          |                          |
| <input type="checkbox"/> Don't know/cannot answer   |                          |                          |                          |

21. What are the greatest barriers preventing your business from using government data. (Please select top 3)  
[Not to be read out loud] [Enumerators to ask respondents top 3, if respondents give more than 3 answers]

- ☐ Data is difficult to find (e.g. not clear where to go to find it)
- ☐ Data is difficult to access (e.g. restrictions, process or bureaucracy hurdles)
- ☐ High cost of data
- ☐ Lack of relevant data (i.e. topical)
- ☐ Data is not specific enough (i.e. aggregated)
- ☐ Data is not up-to-date
- ☐ Data is inaccurate or unreliable
- ☐ Data is in difficult-to-use formats (i.e. paper, PDF, images)
- ☐ Legal restrictions on commercial reuse
- ☐ Lack of skills to enable data use
- ☐ Lack of technical infrastructure to enable data use
- ☐ Other:\_\_\_\_\_

We would now like to ask you a few final questions concerning your interest in collaborating with other stakeholders, and any final observations from you.

COLLABORATION

22. To what extent do you support the idea of data sharing in an open format in Nepal?

- ☐ Extremely supportive
- ☐ Very supportive
- ☐ Moderately supportive
- ☐ Slightly supportive
- ☐ Not at all

23. To what extent do you support the idea of basing business decisions on data?

- ☐ Extremely supportive
- ☐ Very supportive
- ☐ Moderately supportive
- ☐ Slightly supportive
- ☐ Not at all

24. How interested are you in collaborating with the following stakeholders in promoting the sharing and use of data?

- |                                       | not at all interested    | not really interested    | unsure                   | somewhat interested      | Very interested          | Don't Know/ Cannot Answer |
|---------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|
| With government                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                           |
| With business associations            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                           |
| With other businesses                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                           |
| With civil society or research groups | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                           |
| Others                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                           |

25. Are there any other specific issues, challenges or opportunities related to the sharing and use of data by business that you would like to share?

We would like to thank you very much again for your time in answering our questions.

## Annex 2: Interview Checklist

### Interview Checklist for Private Sector Business Entrepreneurs

FACTS Research and Analytics Pvt. Ltd., an independent private research organization based in Kathmandu, is conducting a study about (open) data and the private sector. The study aims to understand the awareness, need, and usage of (open) data by the private sector in Nepal and to understand what data is produced by the private sector and their willingness to share it as open data. We are here to learn from your experience and kindly request you to participate in this study. Your responses are very important and valuable for us. We assure you, whatever you share with us will be kept strictly confidential - your identity including name will not be disclosed anywhere and the information collected from you will be used solely for the purpose of this study.

We thank you in advance for giving us your valuable time.

#### 1. Private Sector Use of Data

- How important do you feel data is for businesses in Nepal? For what purposes do businesses need data and its uses?
- What do you feel are the major types of data that are currently being used by businesses?

#### 2. Government (Open) Data

- What sorts of data from government would you like to be made accessible in the upcoming days (e.g. from federal, provincial or local government ministries and departments)?
- What do you believe are the major challenges and barriers being faced by businesses in accessing and using data from government?
- What do you believe are the potential opportunities that open government data (more accessible data in easily usable format) would deliver for businesses in Nepal?
- What do you believe would help the private sector to gain access to government data?

#### 3. Private Sector (Open) Data

- What sort of data are produced by the private sector in Nepal?
- How willing is the private sector to publicly share the data that they have produced?
- What sort of data is currently externally shared by business?
- With whom is this shared with (e.g. government, business associations, other companies, media, civil society groups, consumers, public?) and in what format?
- What sort of data do you believe businesses would be willing to share publicly?
- What do you believe are the barriers preventing the public sharing of data by the private sector?
- What do you believe would help the private sector to share their data openly?

#### 4. Additional info

- How would you rate business's skills and capacity to use data effectively to inform business decisions? why?
- Would you like to add something more about open data for business in Nepal?

Thank you for your participation. This has been a very successful discussion and all the opinions shared are very valuable for this study.

### Interview Checklist for Private Sector Business People

FACTS Research and Analytics Pvt. Ltd., an independent private research organization based in Kathmandu, is conducting a study about (open) data and the private sector. The study aims to understand the awareness, need, and usage of (open) data by the private sector in Nepal and to understand what data is being produced by the private sector and their willingness to share it as open data. We are here to learn from your experience and hence, kindly request you to participate in this study. Your responses are very important and valuable for us. We assure you, whatever you share with us will be kept strictly confidential, your identity including name will not be disclosed anywhere, and the information collected from you will be used solely for the purpose of this study.

We thank you in advance for giving us your valuable time.

#### 1. Private Sector Use of Data

- Can you please briefly introduce your business, its business offerings (products/services), revenue models, and major customers?
- How important is data for your businesses? For what purposes does your business need data? (Do you use it for business decisions? For innovation? For optimizing their operations?)
- What are the major types of data that are currently being used by your businesses? Where do you get the data you need?
- What is your understanding of the concept of open data?

#### 2. Government (Open) Data

- What are the key data from government that your business would like to be using but struggles to obtain?
- What sorts of data from government would you like to be made accessible in the upcoming days to support your business operations and activities?
- Which government agencies hold the data that you need (e.g. which federal, provincial or local government ministries and departments)?
- What are the major challenges and barriers that your business faces when accessing or using the data?
- Are there any costs associated with getting the data that you need? Please elaborate.
- What do you believe are the potential opportunities that open government data (more accessible data in easily usable format) would deliver for your business?
- What do you believe would help businesses like yours to gain access to government data?

#### 3. Private Sector (Open) Data

- Does your business produce any data? If yes, what is the nature of the data produced?
- Does your business share any of this data with external actors? (e.g. government, business associations, other companies, media, civil society groups, consumers, public?) - if so, what data and with whom?
- What sort of data would your business be willing to share openly? What sort of data would your business not be willing to share openly?
- If your business does not share the data openly, then why not? What are the barriers preventing you from sharing it?
- What do you believe would help your business to share your data openly?

#### 4. Capacity and Collaboration

- Can you describe your business's skills and capacity to use data effectively to inform business decisions? Why?
- How interested are you in collaborating with other stakeholders in promoting the sharing and use of data?
- Would you like to add something more about open data for business in Nepal?

Thank you for your time. The information that you have shared with us will be very helpful in our study.

## Interview Checklist for Specialized Data Driven Business

FACTS Research and Analytics Pvt. Ltd., an independent private research organization based in Kathmandu, is conducting a study about (open) data and the private sector. The study aims to understand the awareness, need, and usage of (open) data by the private sector in Nepal and to understand what data is being produced by the private sector and their willingness to share it as open data. We are here to learn from your experience and we kindly request you to participate in this study. Your responses are very important and valuable for us. We assure you, whatever you share with us will be kept strictly confidential, your identity including name will not be disclosed anywhere and the information collected from you will be used solely for the purpose of this study.

We thank you in advance for giving us your valuable time.

### 1. Private Sector Use of Data

- Can you please briefly introduce your business, its business offerings (products/services), revenue models, and major customers?
- How important is data for your businesses? For what purposes does your business need data? (Do you use it for business decisions? For innovation? For optimizing their operations?)
- What are the major types of data that are currently being used by your businesses? Where do you get the data you need?

### 2. Government (Open) Data

- What are the key data from government that your business would like to be using but struggles to obtain?
- What sorts of data from government would you like to be made accessible in the upcoming days to support your business operations and activities?
- Which government agencies hold the data that you need (e.g. which federal, provincial or local government ministries and departments)?
- What are the major challenges and barriers that your business faces when accessing or using the data?
- Are there any costs associated with getting the data that you need? Please elaborate.
- What do you believe are the potential opportunities that open government data (more accessible data in easily usable format) would deliver for your business?
- Are there any costs associated with getting the data that you need? Please elaborate.

### 3. Private Sector (Open) Data

- Does your business produce any data? If yes, what is the nature of the data produced?
- Does your business share any of this data with external actors? (e.g. government, business associations, other companies, media, civil society groups, consumers, public?) – if so, what data, in what format and with whom?
- What sort of data would your business be willing to share openly? What sort of data would your business not be willing to share openly?
- If your business does not share the data openly, then why not? What are the barriers preventing you from sharing it?
- What do you believe would help your business to share your data openly?

### 4. Collaboration

- How would you rate your business's skills and capacity to use data effectively to inform business decisions? why?
- How interested are you in collaborating with other stakeholders in promoting the sharing and use of data?
- Would you like to add something more about open data for business in Nepal?

Thank you for your time. The information that you have shared with us will be very helpful in our study.

## Interview Checklist for Private Sector Development Expert

FACTS Research and Analytics Pvt. Ltd., an independent private research organization based in Kathmandu, is conducting a study about (open) data and the private sector. The study aims to understand the awareness, need, and usage of (open) data by the private sector in Nepal and to understand what data is being produced by the private sector and their willingness to share it as open data. We are here to learn from your experience and we kindly request you to participate in this study. Your responses are very important and valuable for us. We assure you, whatever you share with us will be kept strictly confidential, your identity including name will not be disclosed anywhere and the information collected from you will be used solely for the purpose of this study.

We thank you in advance for giving us your valuable time.

### 1. Private Sector Use of Data

- How important do you feel data is for businesses in Nepal? For what purposes do businesses need data? (Are they using it in their business decisions? For innovation? For optimizing their operations?)
- What do you feel are the major types of data that are currently being used by businesses?

### 2. Government Open Data

- What do you feel are the key data from government that business would like to be using but struggle to obtain?
- What sorts of data from government do you think should be made accessible to business in the upcoming days?
- Which government agencies hold the data considered to be of high value to the private sector (e.g. which federal, provincial or local government ministries and departments)?
- What do you believe are the potential opportunities that open government data (more accessible data in easily usable format) would deliver for businesses in Nepal?
- What do you believe are the major challenges and barriers being faced by businesses in accessing and using data?
- What do you believe would help the private sector to gain access to government data?
- Are you aware of existing businesses (data-driven and otherwise) that are generating business value through the use of open data – their business model, products, data sources and so on.

### 3. Private Sector Open Data

- What sort of data are produced by the private sector in Nepal?
- How willing is the private sector to share the data that they have produced with others?
- What sort of data is currently externally shared by business?
- With whom is this shared with (e.g. government, business associations, other companies, media, civil society groups, consumers, public?) and in what format?
- What sort of data do you believe businesses would be willing to share?
- What do you believe are the barriers preventing the public sharing of data by the private sector?
- What do you believe would help the private sector to share their data?

### 4. Collaboration

- How would you rate business's skills and capacity to use data effectively to inform business decisions? why?
- How interested are you in collaborating with other stakeholders in promoting the sharing and use of data?
- Would you like to add something more about open data for business in Nepal?

Thank you for your time. The information that you have shared with us will be very helpful in our study.



