USE OF DATA IN THE PRIVATE SECTOR OF NEPAL

THE CURRENT STATE AND OPPORTUNITIES IN FINANCE, EDUCATION, AND THE MEDIA

JULY 2020

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ACKNOWLEDGMENTS

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ABBREVIATIONS

AI	Artificial Intelligence
API	Application Program Interface
CASI	Computer Assisted Self Interviewing
CBS	Central Bureau of Statistics
CDI	Country Development Indicators
CSV	Comma Separated Values
EMIS	Education Management Information System
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
GNP	Gross National Product
HDI	Human Development Index
IFC	International Financial Corporation
IMF	International Monetary Fund
INGO	International Non-Government Organization
IP	Internet Protocol
IRD	Inland Revenue Department
IT	Information Technology
MFI	Micro Finance Institutions
MIS	Management Information System
MOF	Ministry of Finance
NBA	Nepal Bankers' Association
NGO	Non-Government Organization
NIRT	National Institute for Research and Training
NRB	Nepal Rastra Bank
OD4B	Open Data for Business
ODRA	Open Data Readiness Assessment
PARIS21	The Partnership in Statistics for Development in the 21st Century
PDF	Portable Document Format
PSI	Public Sector Information
RSS	Rich Site Summary
RTI	Right to Information
SEJON	Society of Economic Journalists-Nepal
UNESCO	United Nations Educational, Scientific and Cultural Organization
WDI	World Development Indicators

EXECUTIVE SUMMARY

Nepal's historic transition to federalism has brought political stability and paved a path for economic prosperity after more than two decades of turbulence. In order to steer the country toward economic growth and meet the country's goal of becoming a middle-income country by 2030, it needs a more productive private sector.

The availability and capacity to use good-quality and timely data could help Nepal's private sector make better decisions, raise its productivity, and contribute to the country's development. There are enormous opportunities for the private sector to use data to innovate, increase their customer base, and scale up. For example, commercial banks could leverage data and financial technology (fintech) to increase financial inclusion; higher education institutions could use data to better understand the needs of students and prepare them for job markets; journalists could use data to discover stories, increase accountability, and engage more readers.

However, across Nepal's financial, education, and media sectors, the awareness of value of data and capacity to analyze it remains low, preventing executives from using data, even their own internal data, effectively. Very few executives express familiarity with the importance of data analytics teams or how data scientists or data analysts could help them improve their operations by using the data they currently have. Most of them do not yet see themselves as producers of data.

Even with the low awareness of data, government data is in high demand by leaders in the finance, education, and media sectors. However, its use is limited, because they say government data is not available, timely, or reliable. Also, the arbitrary publication of government data makes acquiring and cleaning data a time-consuming process for users. According to the executives, lack of data and the capacity to use it are affecting firms' ability to grow.

Businesses leaders report wanting disaggregated, relevant, and timely government data. Publishing data in a machine-readable format and crafting and communicating a clear dissemination policy would create an enabling environment for increasing the use of data.

There is a need to increase awareness of the value of producing, sharing, and using data among diverse stakeholders, including officials of public agencies, the private sector, and citizens. A holistic capacity-building program needs to be implemented to make everyone—from frontline staff to executives of

An enabling environment must be created in which the private sector sees itself as an active producer and user of data while following privacy regulations of the government.

companies—data literate and encourage investment in data analytics and management.

A robust open government data program that is aligned with international best practices and supports the needs of diverse users, including the private sector, would be of enormous help to businesses in Nepal. Open data provides many benefits for businesses, including the potential to raise productivity and improve products and services.

With data use comes risks, such as concerns about data protection and fair use. To ensure that there is a conducive environment for sharing and using data, policies must be in place to protect data privacy and they must be implemented effectively. In 2018 the Federal Parliament of Nepal enacted the Privacy Act to manage the safe use of personal data of citizens within public bodies and prevent the misuse of personal data.[1] However, the lack of clarity about the effects of the Act have discouraged executives from making plans for using existing internal data or launching new initiatives for data collection. Increasing awareness of the Privacy Act and regulatory policies would be instrumental in facilitating the use of data.

Private companies and institutions have the opportunity to help fill the data gap in Nepal by sharing their data. When private sector entities share their data to serve the public, they engage in "data philanthropy."[2] Sharing data not only benefits the public and the wider data ecosystem, it also helps businesses build trust with their stakeholders and grow their social capital and standing in society. An enabling environment must be created in which the private sector sees itself as an active producer and user of data while following privacy regulations of the government. Table ES.1 summarizes the report's main recommendations.

Table ES.1. Main recommendations to increase the use of data in the private sector of Nepal

Area	Key recommendations
Government data	• Develop and implement strategy to improve the production, availability, and usability of government data. • Develop and implement a robust open government data program that is aligned with international best practices. • Build a data-use culture by investing in data skills and literacy among data produces and users.
Internal data	• Increase awareness of the value of data for businesses. • Develop and implement a data strategy to improve the production, availability, and usability of the company's internal data. • Build a data-use culture by investing in data literacy and enhancing data skills within the private sector.
Investment in data analytics/ management	• Increase investment in infrastructure for data management (gathering, storing, and retrieving data); data analysis; and data synthesis (data visualization). • Invest in acquiring or building data analytical skillsets for the institution.
Data privacy	• Increase awareness of data privacy policies and implement these policies. • Develop standard data disclosure policies on publishing data in a user-friendly format and improve interoperability. • Proactively manage risks that arise from using and making data open.

1 Nepal Law Commission (2018) 2 Mckeever and others (2018)

INTRODUCTION

1

INTRODUCTION

Nepal's historic transition to federalism has brought political stability after more than two decades of turbulence. From policy formulation and implementation to tracking the progress of projects, data can play an instrumental role in steering Nepal onto the path of economic growth and development.[3] As the Rt. Hon. President of Nepal Bidhya Devi Bhandari stated during her address to the joint session of both houses of the federal parliament in 2018, "Nepal's development, in the days to come, will be based on intensive analysis of information and data, research and evidence."[4]

Globally, the data economy has led to the development of new business models and enabled private sector to innovate product development, customer relations, and other key business functions by using data.[5] For many businesses, data has become an asset as valuable as people, technology, and capital.[6] Indeed, according to one study, firms that adopt data-driven decision making increase their output and productivity by 5–6 percent.[7]

Nepal's private sector accounts for 22 percent of the country's GDP and employs 1.75 million people.[8] However, its productivity levels are low.[9] For Nepal to achieve its development goals, it needs a more productive private sector.[10] The data revolution that has been propelled by the production, sharing, and use of data[11] has the potential to support the private sector and play a significant role in helping Nepal achieve its goal of becoming a middle-income country by 2030.[12] Nepal's private sector can use

data to make data-driven decisions that help it grow, create jobs, and contribute to the country's development.

The special focus of the Nepal Development Update published in December, 2019 finds that Nepal is not data-poor but that data is not being used to its full potential.[13] It recommends increasing the use of data by all stakeholders in Nepal, including the private sector, to accelerate development. A recent report by FACTS Research and Analytics uses the Open Data for Business Toolkit to look at the need, use, and sharing of open data by the private sector in Nepal.[14] It notes that the value of data increases when it is open, is combined with other sources of data, and used to derive insights and drive actions.

This report adapts the World Bank's Open Data for Business (OD4B) Toolkit[15] to examine the use of data; identify gaps in data analytic capabilities; and provide recommendations on increasing the use of data in the finance, education, and media sectors. It uses both quantitative and qualitative methods. The authors also "scraped" (extracted) data from the web to analyze 4,100 articles using text-mining techniques to assess the use of data in the media.[16]

This report is intended for stakeholders interested in understanding the role of data in accelerating the growth of private sector. The audience includes representatives of the government, trade associations, academia, finance, the media, and other groups.

3 World Bank (2019b)
4 Government of Nepal (2018)
5 World Bank (2018b)
6 Porte and Heppelmann (2015)
7 Brynjolfsson, Hitt, and Kim (2011)

8 IFC (2016)
9 World Bank (2018a)
10 World Bank (2018a)
11 World Bank (2019b)
12 World Bank (2019c)

13 World Bank (2019b)
14 Jha, Dabadi, and Khadka (2019)
15 World Bank (2015)
16 See Paris21 (2016)

The report looks at three sectors: finance, education, and media. The financial sector is one of the most significant contributors to Nepal's economy.[17] The education sector is a pillar of human development. The media's use of data in reporting can serve as a proxy for country's demand for statistics and data.[18] Analysis of data use by the three sectors is good starting point for understanding the use of data in the private sector. The report's findings and recommendations are based on interviews, questionnaire responses, roundtable discussions, insights from data gathered through web scraping, and discussions with local partners during in-country engagements conducted between November 2019 and January 2020.

To prepare this report, the authors engaged with more than 150 professionals. In collaboration with local partners, they identified executives who are responsible for or involved in making decisions about the data needs and uses within their organizations and sectors. These stakeholders were assured anonymity so they could share their insights candidly. The information collected was aggregated and analyzed to present overall trends; needs specific to sectors; and needs common to firms in the finance, education, and the media sectors.

For each sector, the findings are presented in four interconnected themes:

Internal data: Internal data is data created by businesses as part of their operations, such as data on purchase orders, sales, marketing, and human resources. For the private sector to get the most value out of the data revolution, it must tap into its own data in addition to leveraging other sources of data. Many factors determine a firm's ability to use its internal data. The report assesses the level of awareness of the value of internal data and the capacity to analyze it.

Government data: Data produced by the government is an important resource for the private sector. The report assesses the level of awareness about the availability of government data and the capacity to analyze it. The report also gathers insights on which types of government data are most valuable for businesses. Value is determined by characteristics such as data quality, timeliness, and format.

Investment in data analytics/management: The availability of data does not automatically lead to its use. Infrastructure, capacity, and culture must be in place to collect, store, manage, and analyze data. The report gathers information on the expected level of investment in data analytics/management, which can indicate how data will be used.

Data privacy: With data use comes risks, such as concerns about privacy and fair use. To ensure that there is a conducive environment to share and use data, policies have to be in place to protect data privacy, and those policies must be implemented effectively. All stakeholders, including the government, the private sector, and customers, must be aware of these policies and scrupulously follow the guidelines. The report assesses how Nepal's privacy law affects the use of data and what kind of privacy policy executives would like to see put in place.

The rest of the report is organized as follows. **Section 2** presents the findings on the three sectors. **Section 3** summarizes the report's conclusions, presents recommendations, and identifies opportunities for increasing the use of data.

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17 Government of Nepal (2018)   18 Klein, Galdin, and Mohamedou (2016)

FINDINGS ON THE FINANCIAL, EDUCATION, AND THE MEDIA SECTORS
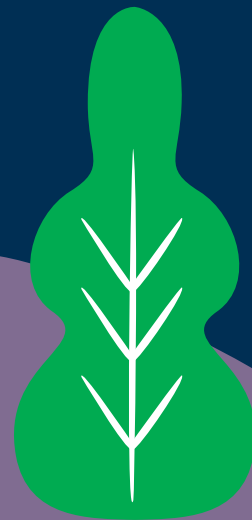
FINDINGS ON THE FINANCIAL, EDUCATION, AND THE MEDIA SECTORS

Findings on the Financial Sector

Nepal has four classes of banks: commercial, development, finance, and microfinance. Sixteen executives from all four classes of banks and a financial technology (fintech) firm were interviewed, using the computer-assisted personal-interviewing (CAPI) method. They included chief executive officers, chief financial officers, chief technology officers, and data managers. A roundtable discussion, in partnership with the Nepal Bankers' Association (NBA) was held in December 2019, with executives from 25 commercial banks (heads of operations, technology, marketing, and other departments). The group included 23 men and 2 women.

Internal data

More than a third of the finance executives interviewed reported that internal data were used only minorly.[19] Only one institution provided bank-wide reports to managers daily, and just a few did

so on a weekly or biweekly basis. "I believe banks are only using 25 percent of what is possible with the data we have. We could be doing a better job of creating data products to drive business," one bank chief technology officer noted.

During the roundtable discussion, finance executives said that business intelligence tools are critical to informing them about financial trends and customer behavior and helping them stay ahead of competition. Business intelligence tools are yet to be used widely in the sector, however. Lack of management information systems (MIS) within the banks makes it difficult for management to find the data needed to make decisions. Factors limiting the implementation of MIS include the cost and the lack of in-house technical skills. Similarly, almost half of the executives who completed the questionnaire found the most significant barrier to financial institutions' use of internal data to be the lack of technical skills (figure 1).

Figure 1. Barriers preventing financial institutions from using internal data
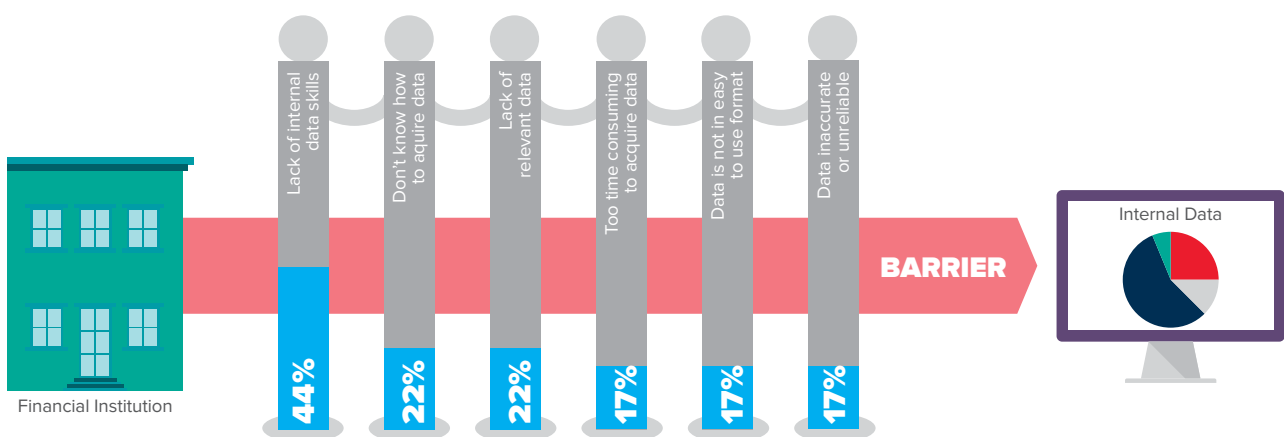
Source: Based on responses to questionnaire. Data at https://github.com/datafornepal/Data-Use-in-Nepal
Note: Multiple responses allowed. The top three barriers include a tie for second and third places.

19 Seven response options were offered: (a) Extensively (used on a weekly or daily basis); (b) Moderately (used on a monthly or regular basis); (c) Minorly (used annually or very sparsely); (d) Thought about it; (e) Not at all; (f) Don't know; (g) Not available. See appendix A for details.

Government data

Two-thirds of respondents reported that financial institutions use government data minorly[20] in day-to-day operations. All 16 executives reported having used a government website to access data. The most popular data sources are the Nepal Rastra Bank (89 percent), the Central Bureau of Statistics (69 percent), and the Ministry of Finance (28 percent).

A common complaint was that government data is not updated regularly. If the website's data is not readily available or is out of date, they collect data by physically visiting government offices. "If you have a personal relationship, then only informally will the government (agency) give you information," said the chief technology officer of a major commercial bank. The sector is required to submit data on a weekly or agreed-upon basis to the Nepal Rastra Bank (NRB), the central bank. They struggle to retrieve aggregated data from the NRB, however. Executives greatly appreciate the NRB's recent initiative to securely share tax data of businesses, to enable banks to more conveniently assess borrower creditworthiness (box 1).

Box 1. Facilitating information verification through data sharing

For the first time, in 2019, Nepal required businesses to present the same financial report to the Inland Revenue Department (IRD) and to banks when applying for a loan.[a] Previously, businesses could submit different documents, making verification of submitted information difficult and time consuming.

The IRD has created an online system and provided bank login to all lending financial institutions.[b] Lending institutions are required to upload projected as well as audited financial statements submitted by borrowers. IRD officers are required to upload income tax returns and financial statements to the system.

This change in policy gives financial institutions immediate access to information submitted to the IRD by businesses and gives the IRD access to information submitted to the lending institution. This new information-sharing regime between the government and the private sector is expected to help reduce tax evasion as well.

Source:
a Share Sansar (2019).
b NRB (2019).

The top three reasons preventing financial institutions from using government data in their day-to-day operations are difficulty finding data, lack of specificity, and lack of accuracy and reliability of the data (figure 2).

Figure 2. Barriers preventing financial institutions from using government data
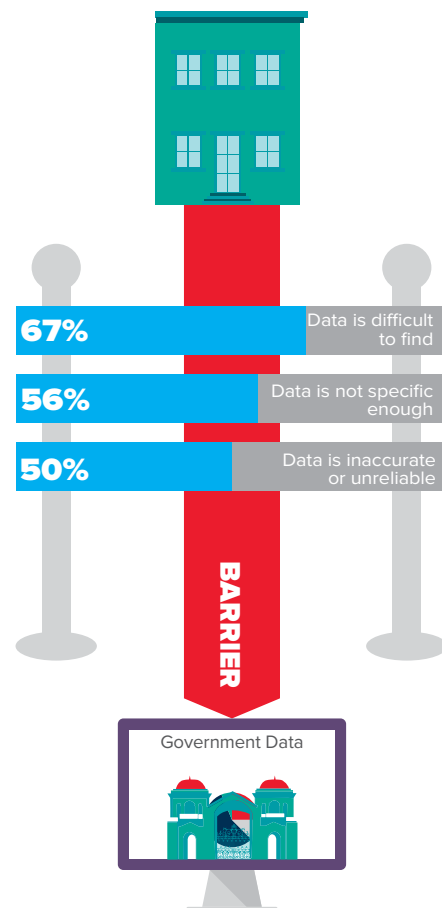
Source: Based on responses of questionnaire. Data at https://github.com/datafornepal/Data-Use-in-Nepal
Note: Multiple responses allowed.

Executives would like government agencies to release their disaggregated data in a standard format and publish as Excel or CSV files so that data of one agency or sector can be combined or compared, with data from other agencies or sectors. State, municipal, and local-level data on age, gender, volume of transactions, per capita income, savings, tax revenue, industries, remittance flows, the balance of payments, and loan category usage would help financial institutions make decisions about targeting clients, opening new branches, among others, according to executives.

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20 Six response options were offered: (a) Extensively (used on a weekly or daily basis); (b) Moderately (used on a monthly or regular basis); (c) Minorly (used annually or very sparsely); (d) Would like to; (e) Never; (f) Don't know. See appendix A for questions and appendix B for results.

Investment in data analytics/management

Investment in data analytics and management is low in the finance sector, with only handful of institutions having in-house data analytics teams. Investment is low for two main reasons. First, most executives have very limited knowledge of how data analysts can help their teams take advantage of data. Second, executives report a lack of technical talent in the job market when they have tried to set up data analytics teams.

Most executives in the financial sector believe that investment in data analytics and management will increase moderately[21] in the next two to three years. They expect the top three areas of investment to be buying software packages or developing their own software tailored for the financial sector, hiring and training technical staff to use technology to collect, analyze and use internal data better.

Data privacy

More than a year after the Privacy Act 2018 (box 2) was adopted, most executives did not know how it would affect their ability to store or use data. "We refer to the General Data Protection Regulation (GDPR)[22] to create our internal data storage policy rather than the Privacy Act 2018, because the government hasn't been able to effectively implement or explain this act," said one chief technology officer.

Box 2. What is Nepal's Privacy Act?

Nepal's Privacy Act defines classified personal information as "caste, ethnicity, birth, origin, religion, color, marital status, education, address, telephone, ID details, biometrics, and criminal record."[a] Chapter 6 Subsection 12.1 of the act requires public bodies and corporations to obtain consent before collecting personal data. The act also limits the use of such data to the purposes established when an individual consents to providing personal data; data cannot be transferred to another party without the consent of the individual. Subsection 28.1 states that citizens can get a public body to correct their information; it does not require companies to do so. The act does not require notification by public bodies or companies if a data breach occurs. Maximum liabilities for violating the act are set at NPR 30,000 (approx. USD 300) and three years in prison.

Box table 2.1. Comparison of features of Nepal's Privacy Act 2018 and the European Union's General Data Protection Regulation

Feature	Privacy Act 2018	General Data Protection Regulation
Personal data definition	Yes	Yes[b]
Data security definition	No	Yes[c]
Data localization definition	No	Yes[d]
Categories of personal data	Yes	Yes[e]
Personal data used as online identifier (IP address, cookies, MAC addresses, etc.)	No	Yes[e]
Notification of breach	No	Yes[e]

Source:
a Nepal Law Commission (2018)   c Deloitte (n.d.)   e Information Commissioner's Office (2018)
b Information Commissioner's Office (2018)   d Reinsch (2018)

Based on the comparison above and discussions with executives, information on how businesses can use data from online identifiers and what kind of requirements they should follow to protect consumer's data or report when it is breached would help facilitate data usage.

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21 Five response options were offered: (a) Massively; (b) Significantly; (c) Moderately; (d) Minimally; (e) Not at all; See appendix A for details.
22 The GDPR requires businesses to protect the privacy and personal data of EU citizens for transactions that occur within the European Union.

Findings on the Education Sector

To assess how the sector is using data, the authors conducted computer-assisted personal interviews (CAPI) with seven leaders of high schools and colleges and a director from an online job portal in Kathmandu. They also held a roundtable discussion in partnership with UNESCO Nepal. Twenty-four people (18 men and 6 women) from 20 high schools and colleges (both public and private) participated in the roundtable, held in Kathmandu in January 2020. They included heads or deputy heads of the institutions, heads of information technology (IT) departments, and professionals in other leadership roles. Fourteen of them also completed the CAPI questionnaire.[23]

Internal data

Seventy percent of education professionals responding to the questionnaire ranked educational institutions' use of internal data as moderate or higher.[24] Respondents indicated that their organizations collect different types of data (information on students, teacher performance, exam results, grades, attendance) but lack the technical capacity and infrastructure to fully use the data they collect. "We want to better understand the demographics, the student body, where they come from, the type of students interested in a type of course. We need technical skills to help us make use of all the data we have collected," said a director of a private college.

More than 80 percent of education professionals who completed the questionnaire believe that data analytics would help the administration evaluate student progress and performance and enable teachers evaluate their own performance. "We would like to use predictive analytics to determine a model to intervene in a timely manner to help them go in the right direction," said the head of a college. Figure 3 shows the top three barriers to using internal data.

Figure 3. Barriers preventing educational institutions from using internal data
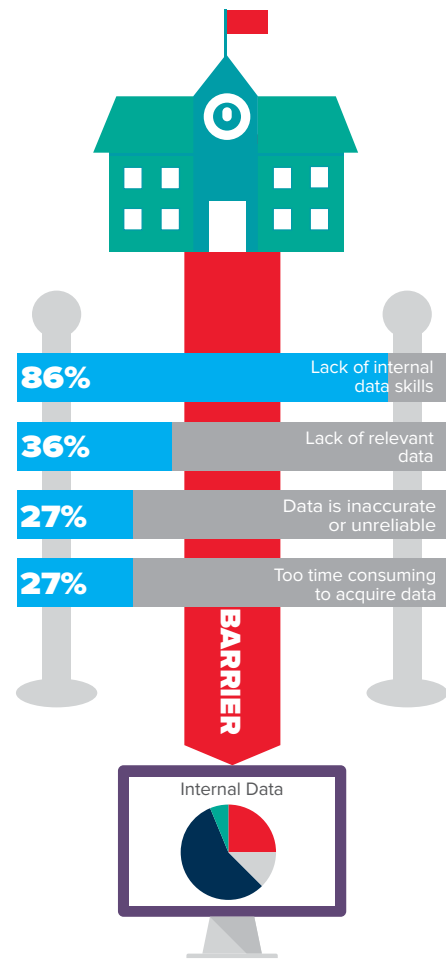
Source: Based on responses of questionnaire.
Data at https://github.com/datafornepal/Data-Use-in-Nepal

Note: Multiple responses allowed. Two barriers tied for third place.

"We want to better understand the demographics, the student body, where they come from, the type of students interested in a type of course. We need technical skills to help us make use of all the data we have collected," said a director of a private college.
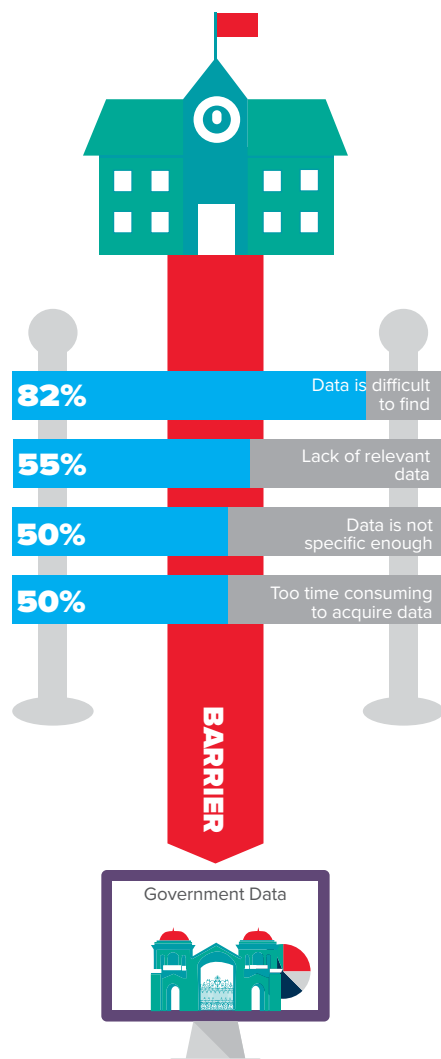
23 See appendix A for questions and appendix B for results.

24 Six response options were offered: (a) Extensively (used on a weekly or daily basis); (b) Moderately (used on a monthly or regular basis); (c) Minorly (used annually or very sparsely); (d) Would like to; (e) Never; (f) Don't know. See appendix A for details.

Government data

As places of research and learning, educational institutions would like to use government data widely. They are not able to do so, because relevant government data is hard to find. Educational institutions can help improve the quality of data by providing feedback to data producers, participants in the roundtable noted. Figure 4 shows the top three barriers to using government data.

Figure 4. Barriers preventing educational institutions from using government data

82% Data is difficult to find

55% Lack of relevant data

50% Data is not specific enough

50% Too time consuming to acquire data

BARRIER

Government Data

Source: Based on responses of questionnaire.
Data at https://github.com/datafornepal/Data-Use-in-Nepal
Note: Multiple responses allowed. Two barriers tied for a third place.

With relevant data and capacity to use it, educational organizations believe they could reach and attract the right students for admission and scholarships. Many higher education professionals noted that the government should collect and publish data on jobs and skills in a timelier manner and include as many attributes as possible, in order to help educators design more relevant courses.

Investment in data analytics/management

The top three areas where education professionals see investment in data increasing are data management (gathering, storing, and retrieving data); data analysis; and staff training. Respondents were divided over whether investment in data analytics was likely to increase significantly[25] in the next two to three years. Management reportedly does not give high priority to data management and analytics. "Most of the focus is on preparing students to score well in the term and board exams. Therefore, the staff do not feel the need for analytics because it is not management's priority," noted one college director.

Data privacy

Roundtable participants said they would feel comfortable sharing anonymized and aggregate data to add to the public data ecosystem, signaling their openness to serve as data philanthropists.[26] They also revealed that were unaware of recent data privacy regulations: more than half did not know how the Privacy Act 2018 affects their ability to store and use data. This lack of awareness has left professionals confused about best practices to use data and share data.

"Most of the focus is on preparing students to score well in the term and board exams. Therefore, the staff do not feel the need for analytics because it is not management's priority," noted one college director.

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25 Five response options were offered: (a) Massively; (b) Significantly; (c) Moderately; (d) Minimally; (e) Not at all; See appendix A for details.
26 The sharing of private data for the public good is known as "data philanthropy." See Mckeever and others (2018).

Findings on the Media Sector

In partnership with the Society of Economic Journalists-Nepal (SEJON), the authors organized a roundtable with 38 economic journalists, editors, and bureau chiefs in Nepal (31 men and 7 women) to discuss data use in news organizations. The authors also administered an online questionnaire[27] to 28 media professionals.

Internal data

Most media outlets generate internal data—on reach, popular posts, sources of traffic, and reader profiles, for example—from their digital platforms. Online media monitoring teams use tools such as Google and YouTube analytics to track engagement by social media followers. However, insights from these sources are shared only with the editorial team and management, and the use of such data is limited. As one reporter noted, "Although analytics reveals that 80–85 percent of the reader traffic comes from mobile platforms, media houses haven't invested in improving the mobile experience for readers." Management's inaction reflects the lack of a data-driven decision-making culture, according to one person in the sector.

Government data

Ninety percent of questionnaire respondents reported using government data in their day-to-day work. "Government data is the primary source of information for media," noted one roundtable participant. Media professionals indicated that it is very difficult to get disaggregated data from the government. Among questionnaire respondents, 62 percent noted that data was not available in an easy-to-use format (box 3) and 48 percent noted lack of access to timely government data as barriers (figure 5). Some respondents shared cases in which data had been hidden, manipulated, or misrepresented by the public agency producing the data.

Figure 5. Barriers preventing media institutions from using data
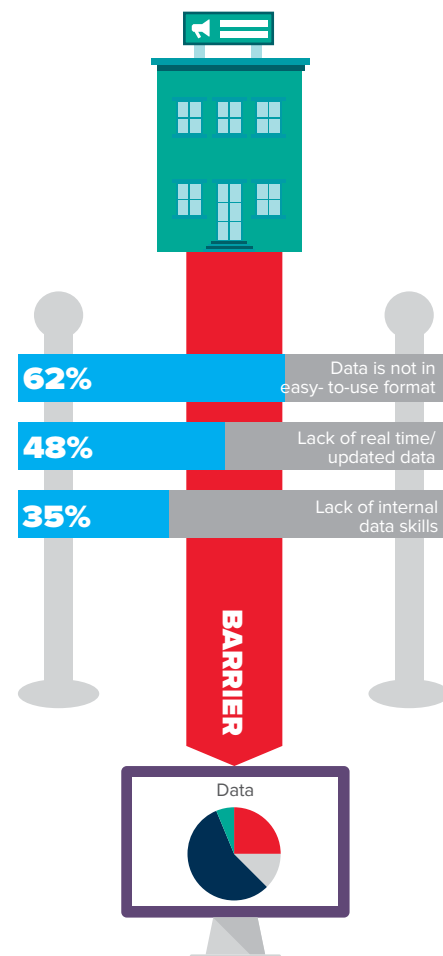
Source: Based on responses of questionnaire.
Data at https://github.com/datafornepal/Data-Use-in-Nepal
Note: Multiple responses allowed.

"Although analytics reveals that 80–85 percent of the reader traffic comes from mobile platforms, media houses haven't invested in improving the mobile experience for readers."

27 See appendix A for the questionnaire and appendix B for the results.

To assess how the government publishes data, the authors evaluated the websites of 82 government bodies (the Office of the Prime Minister and the Council of Ministers, 21 ministries, 22 departments, and 38 government agencies. They "scraped" websites to collect the name, type of government body, and file format published (PDF, DOC, XLS, CSV), and checked if the spreadsheets followed tabular data standards. They then rated each website using the Tim Berners-Lee Five Star Scheme.

No website received a 4- or 5-star rating (meaning the websites use Uniform Resource Identifiers to identify resources on the web, or data is linked with other data to provide context). Only 1 percent got 3-star ratings (meaning data is available for use in non-proprietary formats [CSV instead of Excel]); 12 percent got 2-star ratings (meaning that data is available in a structured format [Excel instead of PDF or an image scan]); 81% received 1-star ratings (meaning that data is available to download freely under an open license); 6% received no stars (meaning they have no data/information to download).

PDF is the most common file format, with 91 percent of websites publishing downloadable PDFs. Word documents are another widely used file formats (65 percent), while only a few websites publish data as excel files or csv files. (box figure 3.1).

Box figure 3.1. Formats of data available on government websites in Nepal

91% PDF
65% DOC
13% XLS
1% CSV
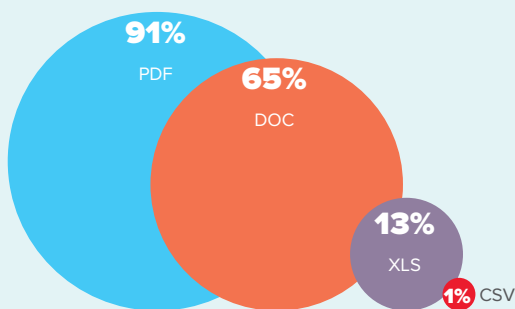
Source: Analysis of 82 government of Nepal websites. Data at https://github.com/datafornepal/Data-Use-in-Nepal
Note: Updated as of Jan 30, 2020.

Investment in data analytics/management

Participants of the roundtable noted a lack of investment in data infrastructure. "The media industry is financially unstable," commented a reporter. "They struggle to pay journalists on time sometimes. Investment in advanced analytics seems like a far-fetched goal." Most teams have an illustrator to design visuals and improve simple charts, but media outlets do not employ data specialists.

Participants highlighted the weak capacity of media personnel and media houses to question, analyze, and use data effectively. Thirty-five percent of respondents said that journalists lacked the skills needed to harness the full potential of data. Media houses have not invested in building journalists' data capacity. "Mostly the NGOs and international NGOs are providing data literacy trainings for journalists, which is an extremely important initiative," noted one participant.

Data privacy

Participants were aware of the articles in Nepal's constitution on data privacy and the right to information. Roundtable participants emphasized that data with confidential information must be kept private. They believe that the government should increase awareness of the Nepal Privacy Act 2018 and implement it strictly to foster a culture of data sharing in the country.

Analysis of data use in media

To complement the findings from the questionnaire and roundtable discussions, the authors developed an indicator model to assess the use of data by Nepali news portals based on the methodology proposed by Klein, Galdin, and Mohamedou (2016). They analyzed more than 4,100 articles, to assess the use of data in media between December 9, 2019 and February 9, 2020. The data source for the model was Nepali news portals that support RSS feeds and are published in English.[28] The news portals that met these criteria were The Himalayan Times, Onlinekhabar, Nepali Times, Telegraph Nepal, Kathmandu Tribune, and Lokaantar.

28 RSS is a web feed that enables access to websites in a standardized, computer-readable format.

The analysis revealed the following results (figure 6):

Level 1: The authors analyzed whether articles indicated the presence of a data source, a statistical/ development indicator, or keywords from papers on statistical capacity-building projects. Examples of keywords included household survey, population census, geospatial data, GDP, GNP, pay gap, trade balance, and unemployment rate. The keywords for data sources are at most two words long and scraped from https://klein.uk/literacy.html. The share of news articles that included at least one keyword that indicated "consistent noncritical"[29] use of data averaged 7.6 percent (scores ranged from 2 percent to 12 percent).
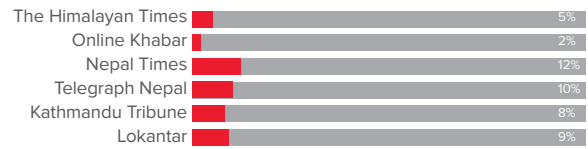
Level 2: The authors assessed whether an article critically engaged[30] with topics of data or statistics or made arguments using mathematical concepts. Examples of keywords included ambiguous, error, bias, fake, impartial, precise, scientific, and unreliable. Of the more than 4,100 articles collected, only those articles that referenced keywords like data, records, research, statistics, or studies were used for level 2 analysis. Of those 17 percent filtered articles, only two-thirds met the level 2 criterion.

Level 3: "Critical mathematical"[31] use of data occurs when an article indicates questioning or interpreting of data and statistics. Examples of keywords included data manipulation, lead question, report bias, sample select, and sample size. No article met this criterion.

In 2016, when Klein, Galdin, and Mohamedou conducted their analysis, using articles from 77 countries, Nepal ranked second to last among the South Asian countries (Bangladesh, Nepal, India, Sri Lanka, and Pakistan) in terms of the statistical literacy found in newspapers and online publications. Nepal's average score was 18 out of 100 for consistent use of statistics (Level 1) and critical nonmathematical use of statistics (Level 2). There was negligible or no critical mathematical use of statistics (Level 3). Data literacy remains in its infancy in Nepal. Ongoing data collection and the indicator model developed will help assess the progress in use of data and statistics in the country.

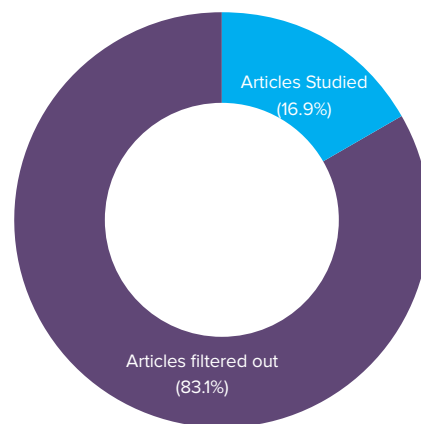## Figure 6. Use of data by six media portals in Nepal

Results of Level 1 Analysis

The Himalayan Times	5%
Online Khabar	2%
Nepal Times	12%
Telegraph Nepal	10%
Kathmandu Tribune	8%
Lokantar	9%

Results of Level 2 Analysis

The Himalayan Times	62%
Online Khabar	62%
Nepal Times	86%
Telegraph Nepal	78%
Kathmandu Tribune	89%
Lokantar	80%

Results of Level 3 Analysis

The Himalayan Times	0%
Online Khabar	0%
Nepal Times	0%
Telegraph Nepal	0%
Kathmandu Tribune	0%
Lokantar	0%

Articles Filtered for Level 2 and 3



Articles Studied (16.9%)

Articles filtered out (83.1%)

Note: Only the articles with keywords "data", "statistics", "report", "study", and "research" were used for level 2 and 3 analyses.
Source: Based on analysis of data collected between December 9, 2019 and February 9, 2020 using the Indicator model adapted from Klein, Galdin, and Mohamedou (2016). All data and analysis available at: https://github.com/datafornepal/newspaper_analysis

29 Consistent noncritical is characterized by appropriate use of terminology, but without critical engagement with context or other aspects of terminology usage, according to Klein, Galdin, and Mohamedou (2016).
30 Critical engagement is characterized by appropriate use of terminology along with "critical, questioning engagement in contexts that do not involve proportional reasoning" (See Klein, Galdin, and Mohamedou 2016)
31 Critical mathematical use of data is defined as "critical, questioning engagement with context, using proportional reasoning particularly in chance contexts, showing appreciation of the need for uncertainty in making predictions, and interpreting subtle aspects of language" (See Klein, Galdin, and Mohamedou 2016)
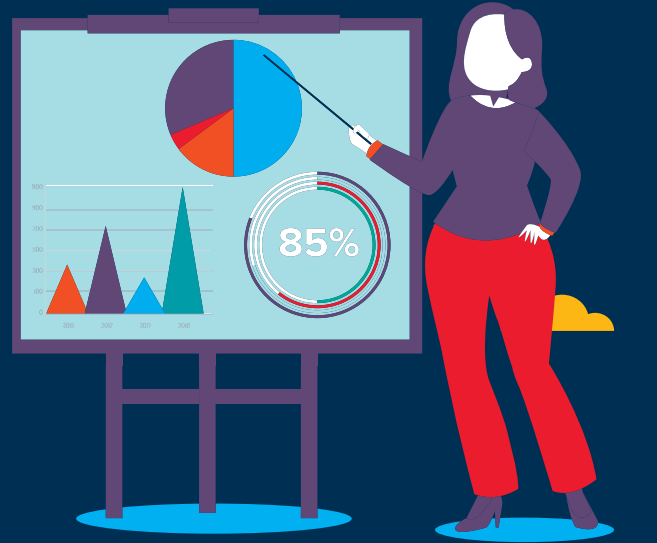
SUMMARY OF FINDINGS, RECOMMENDATIONS, AND OPPORTUNITIES

SUMMARY OF FINDINGS, RECOMMENDATIONS, AND OPPORTUNITIES

3

Summary of Findings

Whether it is to assess the creditworthiness of a loan seeker or to evaluate the effectiveness of a teacher or report a story or identify new opportunity, executives report that data is crucial. While this basic awareness of the value of data was expressed by stakeholders consulted for this report, very few executives across the three sectors (finance, education and the media) expressed familiarity with the importance of data analytics teams or how data scientists or data analysts could help them improve their operations by using the data they currently have.

The leaders engaged for this report consider government as a key producer of data, but they do not yet see themselves as producers of data. Companies gather and generate data as part of their regular operations, which can be used to benefit companies, and could help fill data gap in Nepal by sharing data publicly as appropriate. However, the leaders showed little awareness about the value of data and how they could generate value from using them. Consequently, investment in data and analytics (both in terms of skills and infrastructures) across the financial, education, and media sectors was low preventing executives from fully using existing data—government and their own internal data—more effectively.

Executives acknowledge that the availability and capacity to use quality and timely data could help Nepal's private sector make better decisions, raise its productivity, and contribute to the country's development; however, the sector lags far behind in both of those fronts. Table 2 summarizes the report's main findings.

Table 2. Main findings on the use of data in Nepal

Area	Key findings
Government data	• Government data is the primary source of data for the media sector and is in high demand in the finance and education sectors as well. • The government has no standard practice on how data should be organized and published. The arbitrary publishing of data makes acquiring and cleaning government data a time-consuming process which limits their usability. • Disaggregated and timely data are the most important characteristics of government data as noted by the stakeholders.
Internal data	• Executives across the sectors do not yet understand the potential of internal data for improving their operations and driving growth. • In the finance and education sectors, mechanisms are in place to gather data as part of their daily operations. In the media sector, besides social media data, awareness of how to gather internal data appears limited. • Consequently, use of internal data is limited across the sectors, but they are used more in the finance and education sectors compared to the media sector.

Investment in data analytics/management	• There is a lack of data analysis and management capacity (infrastructures and human resources) in all sectors • Leaders acknowledge the lack of capacity to analyze and manage data within their organizations. • The top three areas in which leaders across the finance, education, and media sectors see investment in data increasing are in management (gathering, storage, and retrieval); analysis; and synthesis (visualization) of data.
Data privacy	• Leaders are confused about data privacy rules and laws. • Most professionals in the finance and education sectors have no or limited awareness of the Privacy Act 2018. • Professionals in the media sector are aware of the act and believe it is the government's role to classify information to foster a culture of data sharing.

Recommendations and Opportunities

Recommendations

The availability of data does not automatically lead to its use; data use depends on the norms, behaviors, and capacity of decision makers.[32] The recommendations presented below can enable the government to respond to data needs of the private sector and allow professionals in the finance, education, and media sectors to use data more effectively.

1. **Increase awareness of the data opportunities for businesses.** Most stakeholders are not fully aware of the transformational power of data or how it can benefit their institutions/businesses. There is a need to build awareness about the value of data and the roles of data professionals with examples of data-driven decision making while addressing the issues of data privacy, protection, and responsible use of data.[33] The government could play a key role in communicating the importance of data in increasing private sector productivity.

2. **Develop and implement a data strategy to increase the availability and usability of government data.** Across sectors there is demand for government data, but data is either unavailable, not timely, or in a format that is not machine-readable. To bridge this gap, the government could develop a data-first strategy that focuses on increasing investments in data infrastructures and developing the capacity of data producers and citizens. One oft-cited example of a strategy is UK Data Capability, which supports investment in infrastructure to "store and analyze data" and investment in "data-confident citizens" who can access, use, and share data.[34]

3. **Develop and implement a robust open government data program.** Executives in Nepal note that it is difficult to find government data or data is not available in a usable format. Globally, governments have made their data freely available to citizens and businesses by launching open data initiatives (box 4).[35] Implementing such open data programs in Nepal would allow users to find and use government data easily and freely, potentially raising productivity and improving products and services.[36]

Globally, governments have made their data freely available to citizens and businesses by launching open data initiatives.

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32 Custer and others (2018).

33 The Demand, Use, and Sharing of Open Data by the Private Business Sector in Nepal report (Jha, Dabadi, and Khadka 2019) also finds that leaders are unaware of the utility of data and recommends increasing awareness.

34 Government of the United Kingdom (2013)

35 World Bank (2014)

36 Manyika and others (2013)

Box 4. Open data programs in Europe, Australia, India, the Philippines, and Rwanda

Realizing the potential of data, governments around the world have launched open data programs. Member States of the European Union have developed strong national open data policies and strategies.[a] As of August 2019, the European Data Portal had more than 890,000 datasets in 11 categories.[b] The European Union also encourages business-to-government sharing, in order to gain insights from additional data, reap potential revenue from exchanging data, and increase efficiency in public services.[c]

The Australian government has committed to a new data sharing and release act that seeks to develop safeguards for the authorized release of public sector data for more efficient government services, greater transparency around public spending, and economic growth via the innovative use of data.[d]

In 2012 the government of India approved the National Data Sharing and Accessibility Policy, which supports proactive disclosure, machine-readable data, and timeliness.[e] The Reserve Bank of India's Database on the Indian Economy includes macroeconomic aggregate data, financial market analysis, financial sector information, and more. It is viewed by about 20,000 users a month.[f]

The government of the Philippines launched its open data portal in 2014 after the release of the Open Data Joint Memorandum Circular. The open data policy, led by the Department of Information and Communications Technology, seeks to provide institutions, businesses, and citizens with the freedom to make informed decisions by democratizing government data.[g]

In 2017 the government of Rwanda released a National Data Revolution Policy that promotes the importance of releasing government data in order to spur economic development, increase government transparency, and innovate data-enabled products.[h] Rwanda has been especially successful in digitizing land registration, through a web portal that allows citizens to make online sales and subdivide land. The portal reduced the time it takes to process a land title from one month to three days.[i]

Source:
a PSI Directive (Directive 2013/37/EU) guided Member States on the reuse of public sector information (see European Commission 2020).
b European Data Portal (2020).
c European Data Portal (2019).
d Government of Australia (n.d.)
e Government of India (n.d.)
f Wright and others (n.d.)
g Government of the Philippines (2018).
h Van Belle (2018).
i Schaefer (2017).

4. Build a data-use culture by investing in data skills and literacy within the private sector and government. As executives noted, people in Nepal rely on instincts rather than data for decision making and government officials are hesitant to share data. Changing this culture will require substantial reorientation and a new focus on data. Lack of technical capacity is one of the most common barriers to bringing about this change. A holistic capacity-building program needs to be implemented to make everyone from the frontline staff to the company executives data literate, which can improve production, dissemination and use of data.

5. Enact policies that facilitate data sharing and privacy protection. If the private sector shares and uses more data, privacy risks will likely increase, which could unleash a backlash by consumers. Steps have been initiated in Nepal to manage privacy concerns. The government passed the Nepal Data Privacy Act in 2018. But awareness of the Act is low among the executives. For effective implementation of the Act, it is important to make rules and regulation easily accessible to all stakeholders. In addition, crafting a policy on data disclosure and disclosure format would increase data use, and potentially encourage private companies to engage in "data philanthropy" and help fill data gaps (box 5). The government could also publish its vision, as the Netherlands did in 2019,[37] to increase data sharing between businesses to propel innovation.

37 Government of the Netherlands (2019)

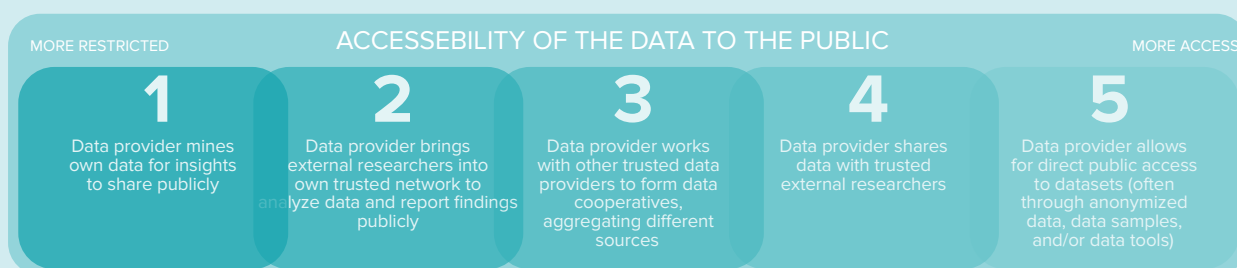**Box 5. Encouraging "data philanthropy" in Nepal**

Companies in Nepal gather data as part of their regular operations. They have the opportunity to help fill data gaps by sharing their data (after ensuring that they follow security and privacy protocols and comply with the rules and regulations of the government of Nepal). The sharing of private data for the public good is known as "data philanthropy."[a]

By sharing data to tackle public policy challenges, companies not only inspire innovation and support community partnerships, they also improve their public standing and strengthen social capital.[a] Sharing data enables businesses to develop trust and acceptance and increase engagement with local communities, which can unlock new social and economic opportunities and partnerships with new stakeholders.[b]

In the aftermath of the April 2015 earthquake, Ncell, one of Nepal's largest telecommunication companies, shared its aggregate and anonymized call records with Flowminder, a Swedish non-profit, to create a map of population movements. This information about displaced populations helped the government understand who was vulnerable and in need of support.[c]

The extent to which a company agrees to make its data public depends on the context, potential risks, and ability to share data (box figure 5.1).

Box figure 5.1 The spectrum of data philanthropy[a]

ACCESSEBILITY OF THE DATA TO THE PUBLIC

MORE RESTRICTED — MORE ACCESS

1	2	3	4	5
Data provider mines own data for insights to share publicly	Data provider brings external researchers into own trusted network to analyze data and report findings publicly	Data provider works with other trusted data providers to form data cooperatives, aggregating different sources	Data provider shares data with trusted external researchers	Data provider allows for direct public access to datasets (often through anonymized data, data samples, and/or data tools)

Source: Urban Institute

a Mckeever and others (2018).   b IFC (2020).   c Sorichetta and others (n.d.)

Table ES.1. Main recommendations to increase the use of data in the private sector of Nepal

Area	Key recommendations
Government data	• Develop and implement a strategy to improve the production, availability, and usability of government data. • Develop and implement a robust open government data program that is aligned with international best practices. • Build a data-use culture by investing in data skills and data literacy among data producers and users.
Internal data	• Increase awareness of the value of data for businesses. • Develop and implement a data strategy to improve the production, availability, and usability of the company's internal data. • Build a data-use culture by investing in data literacy and enhancing data skills within the private sector.
Investment in data analytics/ management	• Increase investment in modern infrastructure for data management (gathering, storing, and retrieving data); data analysis; and data synthesis (data visualization). • Invest in acquiring or building data analytical skillsets for the institution.
Data privacy	• Increase awareness of data privacy policies and implement these policies. • Develop standard data disclosure policies on publishing data in a user-friendly format and improve interoperability. • Proactively manage risks that arise from using and making data open.

Opportunities for the finance sector

Globally, financial institutions are using data to assess the risks associated with new customers, segment customers, customize services based on creditworthiness and needs, and unlock other business opportunities.[38] Finance executives in Nepal have the opportunity to enhance their understanding of data and data analytics to produce and use their internal data effectively. They can use data to forecast sales, market services, analyze behavioral patterns, and manage risks.[39]

In many parts of the world, banks are being encouraged to share and at times open up data to drive competition and innovation. For example, the European Union requires banks to let payment service providers access and process personal data while maintaining the privacy of the data[40] Similar open data policies for banks and financial sector are in place in Mexico[41] and the United Kingdom.[42] Adopting similar policies in Nepal would broaden and diversify the pool of available data that can accelerate innovation and increase financial inclusion.

Opportunities for the education sector

For Nepal to become a middle-income country by 2030, it must leverage its demographic dividend by investing in the productivity of its youth. One way to do so is by providing high-quality education.[43] Data and data-driven decisions can play an instrumental role in making the education sector more effective. For example, data can be used to identify low-performing schools and develop school-specific plans to improve learning outcomes.[44] For that, the educational institutions should consider investing in data infrastructures (connectivity, education management information system [EMIS]) and creating an enabling environment with data use policy and data literacy workshops.

Educators can use data to track student performance and design interventions to improve learning outcomes.[45] Administrators can use data to manage resources and personnel, improve their services, and tailor programs to align with students' interests and market demands for specific jobs and skillsets.[46] Given the growing demand for data literate and data proficient professionals in the labor market, there is also an opportunity for educational institutions to develop robust data literacy and data analytics programs for students, and for faculty and administrators alike.

Opportunities for the media sector

Given the media's reach, the sector can play a critical role in increasing data literacy, acting as mass mobilizer in the society. Journalists can use data to report credibly, explain complex topics, and help citizens make informed decisions.[47] By writing data-driven stories, they can also help increase accountability and transparency in government and improve public service delivery.[48]

Journalists can increase consumption of and demand for data by demystifying data and presenting it in a way that is understandable by the general public (through graphics, interactive maps, and visual comparisons, for example). Additionally, when appropriate, by curating and making data available in a machine-readable format, the media can contribute to the data ecosystem and help improve the utility of data. For example, the New York Times analyzed anonymous data from cellphones of 15 million users to assess travel patters during the outbreak of COVID-19 to show how mobility can potentially expose more people to the coronavirus in the US. The Times also published a searchable database of known cases of COVID-19 in every county of the US to fill the gap in data when there was no such database of coronavirus cases.[49]

38 Manyika and others (2013)
39 Farooqi and Iqbal (2017)
40 European Union (2015)
41 Government of Mexico (2018)
42 Government of the United Kingdom (2016)

43 NIRT (2017)
44 World Bank (2018d)
45 Custer and others (2018)
46 Manyika and others (2013)
47 Gray, Bounegru, and Chambers (2012)

48 Hammer (2013)
49 See the New York Times's Interactive and COVID-19 database.

REFERENCES

REFERENCES

Brynjolfsson, Erik, Lorin Hitt, and Heekyung Kim. 2011. "Strength in Numbers: How Does Data-Driven Decision-Making Affect Firm Performance?" *International Conference on Information Systems 2011,* vol. 1, 541–58.

Custer, Samantha, Elizabeth M. King, Tamar Manuelyan Atinc, Lindsay Read, and Tanya Sethi. 2018. *Toward Data-Driven Education Systems: Insights into Using Information to Measure Results and Manage Change*. Brookings Institution, Washington, DC.

Deloitte. n.d. "GDPR Top Ten #9: Security and Breach Notification."

European Commission. 2020. "Building a European Data Economy."

European Data Portal. 2019. "Business-to-Government (B2G) Data Sharing in Europe."

———. 2020. "The Benefits and Value of Open Data."

European Union. 2015. "Directive (EU) 2015/2366 of the European Parliament and of the Council." *Official Journal of the European Union*.

Farooqi, Md Rashid, and Naiyar Iqbal. 2017. "Effectiveness of Data Mining in Finance Industry: An Empirical Study." International Journal of Advanced Computer Research 8 (5) : 827–30.

Government of Australia. n.d. "Data Sharing and Release Reforms."

Government of India. n.d. "What Is the Aim and Objective of National Data Sharing and Accessibility Policy (NDSAP)?" New Delhi

Government of Mexico. 2018. "Law to Regulate Institutions of Financial Technology." *Diario oficial de La federación*.

———. 2016. *School Sector Development Plan (2016–2023)*. Kathmandu.

———. 2018. *2018 Digital Nepal Framework: Unlocking Nepal's Growth Potential*. Kathmandu.

Government of the Netherlands. 2019. *Dutch Digitalisation Strategy: Dutch Vision on Data Sharing between Businesses*. The Hague.

Government of the Philippines. 2018. *Transparency and Accountability: Data-Driven Governance and Public Access to Government*.

Government of the United Kingdom. 2013. *Seizing the Data Opportunity: A Strategy for UK Data Capability*. London.

———. 2016. *Retail Finance Market Investigation Final Report*. London.

Gray, Jonathan, Liliana Bounegru, and Lucy Chambers. 2012. *The Data Journalism Handbook*. Sebastopol, CA: O'Reilly Media.

Hammer, Craig. 2013. "Open Data Has Little Value If People Can't Use It." *Harvard Business Review*., March 29.

IFC (International Finance Corporation). 2016. "Nepal." Washington, DC.

———. 2020. *Unlocking Data Innovation for Social License in Natural Resource*. Washington DC.

Information Commissioner's Office. 2018. *The General Data Protection Regulation*. Wilmslow

Jha, Manish, Pramit Dabadi, and Ramesh Khadka. 2019. *The Demand, Use, and Sharing of Open Data by the Private Business Sector in Nepal*. FACTS Research and Analytics, Kathmandu.

Klein, Thilo, Anaïs Galdin, and El Iza Mohamedou. 2016. "An Indicator for Statistical Literacy Based on National Newspaper Archives." IASE Roundtable Paper, International Association for Statistical Education.

Manyika, James, Michael Chui, Michael Groves, Diana Farrell, Steve Van Kuiken, and Elizabeth Almasi Doshi. 2013. *Open Data: Unlocking Innovation and Performance with Liquid Information*. McKinsey Digital.

Mckeever, Brice, Solomon Greene, Graham Macdonald, and Peter Tatian. 2018. *Data Philanthropy: Unlocking the Power of Private Data for Public Good*. Urban Institute, Washington, DC.

Nepal Law Commission. 2018. "The Privacy Act, 2075 (2018)." Kathmandu.

NIRT (National Institute for Research and Training). 2017. *Nepal Education Sector Analysis*. Kathmandu.

NRB (Nepal Rastra Bank). 2019. *Notice for Authorized Category A, B, C Banks and Finance Institutions.* [In Nepali] Kathmandu.

Paris21 (Partnership in Statistics for Development in the 21st Century). 2019. *An Indicator for Statistics Literacy Based on National Newspaper Archives*.

Porte, Michael E., and James E. Heppelmann. 2015. "How Smart, Connected Products Are Transforming Companies." *Harvard Business Review*, October: 96–112.

Reinsch, William Alan. 2018. "A Data Localization Free-for-All?" *Center for Strategic and International Studies*. Retrieved February 10, 2020

Schaefer, Lisa. 2017. "Land Reform in Rwanda." *Centre for Public Impact*. Centre for Public Impact, London.

Share Sansar. 2019. "Corporate Loan Clients Escaping Tax by Submitting Two Different Financial Reports Might Be in Trouble! NRB and IRD Bringing a New Policy for Corporate Loan Clients!" July 23.

Sorichetta, Alessandro, Tatem Andy, Pezzulo Carla, Buckee Caroline, Hughes Chris, Power Daniel, Elisabeth zu Erbach-Schoenberg, Wetter Erik, Chamberlain Heather, Hilton Jason, Bengtsson Linus, Albert Maximilian, Canudas Miguel Gonzalez, Wilson Robin, Tudge Simon, and Lu Xin. n.d. "Flowminder: Nepal Earthquake 2015."

Van Belle, Jean-Paul. 2018. *Africa Data Revolution Report 2018: The Status and Emerging Impact of Open Data In Africa*. World Bank. 2014. *Open Data for Economic Growth*. Transport & ICT Global Practice, Washington, DC.

———. 2015. *Open Data for Business (OD4B) Tool*. Working draft. Washington, DC.

———. 2018a. *Creating Markets in Nepal.* Country Private Sector Diagnostic. Washington DC.

———. 2018b. *Information and Communications for Development*. Washington, DC.

———. 2018c. *Nepal Systematic Country Diagnostic*. Washington, DC.

———. 2018d. *World Development Report 2018: Learning to Realize Education's Promise*. Washington DC.

———. 2019a. *Digital Pulse: An Exploration of Non-Traditional Data for Entrepreneurship Ecosystem Diagnostics*. Washington, DC.

———. 2019b. *Nepal Development Update: Envisioning a Future Data Ecosystem in Federal Nepal*. Washington, DC.

Wright, Glover, Pranesh Prakash, Sunil Abraham, and Nishant Shah. n.d. *Report on Open Government Data in India*. Bangalore.

5-star Open Data. n.d. "5-Star Open Data."

APPENDIX A.
DATA USAGE
QUESTIONNAIRE

A

A.1 FINANCE DATA USAGE QUESTIONNAIRE

The finance data usage questionnaire was conducted using the computer-assisted personal interview (CAPI) and computer-assisted self-interview (CASI) methodologies. It included 6 sections and 28 questions.

Instructions
The Open Data for Business (OD4B) Questionnaire is designed to collect information on the private sector's current and potential use of government and nongovernment data. It contains 28 questions. Please answer all questions as completely as possible.

Questions

Personal Information

Q1: Name:

Q2: Title:

Q3: Organization:

General Information

Q4: How many people are working in your organization? (Select one.)

☐ < 20 ☐ 21–100 ☐ 101–250
☐ 251–500 ☐ 501+

Data Usage

Q5: What type of data formats do you believe financial institutions should primarily use? (Select as many as relevant.)

☐ Unstructured texts ☐ Images ☐ PDF ☐ Spreadsheets
☐ JSON ☐ Don't know ☐ Other _____

Q6: To what extent do you believe financial institutions use data in everyday operations? (Select one.)

☐ Extensively ☐ Moderately ☐ Minorly
☐ Would like to ☐ Never ☐ Don't know

Q7. To what extent do you believe financial institutions use data analytics in everyday operations? (Select one.)

☐ Extensively ☐ Moderately ☐ Minorly
☐ Would like to ☐ Never ☐ Don't know

Q8. To what extent do you believe financial institutions use government data in everyday operations? (Select one.)

☐ Extensively ☐ Moderately ☐ Minorly
☐ Would like to ☐ Never ☐ Don't know

Q9. Select the barriers for financial institutions to use government data (Select as many as relevant.)

☐ Data is difficult to find ☐ Data is not specific enough
☐ Too time consuming to acquire data ☐ High cost of data
☐ Data is inaccurate or unreliable ☐ Lack of relevant data
☐ Don't know how to acquire data ☐ Data is not in easy to use format
☐ Legal restrictions on commercial reuse ☐ Lack of internal data skills
☐ Other _____

Q10. How well does the government respond to your requests for data? (Select one.)

☐ Excellent ☐ Good ☐ Fair
☐ Not very well ☐ Poor ☐ Don't know

Q11. To what extent do financial institutions use internal data in everyday operations? (Select one.)

☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Would like to   ☐ Never   ☐ Don't know

Q12. Select the barriers for financial institutions to use internal data (Select as many as relevant.)

☐ Data is difficult to find   ☐ Data is not specific enough
☐ Too time consuming to acquire data   ☐ High cost of data
☐ Data is inaccurate or unreliable   ☐ Lack of relevant data
☐ Don't know how to acquire data   ☐ Data is not in easy to use format
☐ Lack of internal data skills   ☐ Other _____

Q13. Who are the primary users of data in financial institutions? (Select as many as relevant.)

☐ Board members   ☐ Management   ☐ Staff
☐ Customers   ☐ Other _____

Q14. Which government agency's data do financial institutions primarily use? (Open-ended response)

Q15. What government data would financial institutions like to access? (Open-ended response)

Data Analytics

Q16. How effective is financial institutions' current data analytics environment? (Select one.)

☐ Extremely effective   ☐ Very effective   ☐ Slightly effective   ☐ Not at all effective

Q17. Are financial institutions currently using descriptive analytics to make decisions? (Select one.)

☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Would like to   ☐ Never   ☐ Don't know

Q18. Are financial institutions currently using predictive analytics to make decisions? (Select one.)

☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Would like to   ☐ Never   ☐ Don't know

Q19. How much do you expect financial institutions investment in data analytics to increase over the next two to three years? (Select one.)

☐ Massively   ☐ Significantly   ☐ Moderately
☐ Minimally   ☐ Not at all

Q20. What areas of investment do you see in data analytics/management within the financial sector over the next two to three years? (Select as many as relevant.)

☐ Visualizing data   ☐ Analysis of data
☐ Software   ☐ Integrating internal and third-party data
☐ Gathering, storing, retrieving data   ☐ Hiring technical staff
☐ Integrating internal data across systems   ☐ Artificial intelligence/machine learning
☐ Training current staff   ☐ Other _____

Data Privacy

Q21. How do you feel the Privacy Act 2018 will affect financial institutions and their ability to store data? (Select one.)

☐ Easier   ☐ No changes   ☐ More difficult   ☐ Don't know

Q22. How do you feel the Privacy Act 2018 will affect financial institutions and their ability to use data? (Select one.)

☐ Easier   ☐ No changes   ☐ More difficult   ☐ Don't know

Financial Institution Specific

Q23. What type of financial institution are you associated with? (Select one.)

☐ Commercial bank   ☐ Microfinance bank   ☐ Development bank
☐ Finance company   ☐ Other _____

Q24. What are the data analytic skills across business functions in the financial sector? (Select one.)

i) Finance
☐ Excellent   ☐ Good   ☐ Fair
☐ Poor   ☐ Don't know

ii) Human resources
☐ Excellent   ☐ Good   ☐ Fair
☐ Poor   ☐ Don't know

iii) Corporate strategy
☐ Excellent   ☐ Good   ☐ Fair
☐ Poor   ☐ Don't know

iv) Risk management
☐ Excellent   ☐ Good   ☐ Fair
☐ Poor   ☐ Don't know

v) Information technology (IT)
☐ Excellent   ☐ Good   ☐ Fair
☐ Poor   ☐ Don't know

vi) Customer service
☐ Excellent   ☐ Good   ☐ Fair
☐ Poor   ☐ Don't know

vii) Marketing
☐ Excellent   ☐ Good   ☐ Fair
☐ Poor   ☐ Don't know

viii) Sales
☐ Excellent   ☐ Good   ☐ Fair
☐ Poor   ☐ Don't know

ix) Loans
☐ Excellent   ☐ Good   ☐ Fair
☐ Poor   ☐ Don't know

x) Management
☐ Excellent   ☐ Good   ☐ Fair
☐ Poor   ☐ Don't know

Q25. To what extent are financial institutions using predictive and/or descriptive analytics for the following purposes? (Select one in each category.)

i) Customer experience
☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Thinking about it   ☐ Not at all   ☐ Don't know

ii) Product development
☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Thinking about it   ☐ Not at all   ☐ Don't know

iii) Credit risk
☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Thinking about it   ☐ Not at all   ☐ Don't know

iv) Risk management
☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Thinking about it   ☐ Not at all   ☐ Don't know

v) Security and fraud
☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Thinking about it   ☐ Not at all   ☐ Don't know

Q26. What e-banking services does your financial institution offer? (Select one for each service.)

i) ATM
☐ Yes ☐ No ☐ Future plans ☐ Not applicable

ii) Debit card
☐ Yes ☐ No ☐ Future plans ☐ Not applicable

iii) Credit card
☐ Yes ☐ No ☐ Future plans ☐ Not applicable

iv) E-check
☐ Yes ☐ No ☐ Future plans ☐ Not applicable

v) Direct deposit
☐ Yes ☐ No ☐ Future plans ☐ Not applicable

vi) Balance check
☐ Yes ☐ No ☐ Future plans ☐ Not applicable

vii) Electronic bill payment
☐ Yes ☐ No ☐ Future plans ☐ Not applicable

viii) Digital wallet
☐ Yes ☐ No ☐ Future plans ☐ Not applicable

Q27. Does your financial institutions provide application programming interface (API) services? (Select one.)

☐ Yes ☐ No ☐ Future plans ☐ Not applicable

Q28. If yes or future plans, is your API open? (Select one.)

☐ Yes ☐ No ☐ Future plans ☐ Not applicable

A.2 EDUCATION DATA USAGE QUESTIONNAIRE

The education data usage questionnaire was conducted using the computer-assisted personal interview (CAPI) and computer-assisted self-interview (CASI) methodologies. It included 6 sections and 27 questions.

Instructions
The Open Data for Business (OD4B) Questionnaire is designed to collect information on the private sector's current and potential use of government and nongovernment data. The questionnaire contains 27 questions. Please answer all questions as completely as possible.

Questions

Personal Information

Q1: Name: ....

Q2: Title: ....

Q3: Organization: ....

General Information

Q4. How many people are working in your organization? (Select one.)

☐ < 20   ☐ 21–100   ☐ 101–250
☐ 251–500   ☐ 501+

Data Usage
Q5. What type of data formats do you believe education organizations should primarily use? (Select as many as relevant.)

☐ Unstructured texts   ☐ Images   ☐ PDF   ☐ Spreadsheets
☐ JSON   ☐ Don't know   ☐ Other _____

Q6. To what extent do you believe education organizations use data in everyday operations? (Select one.)

☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Would like to   ☐ Never   ☐ Don't know

Q7. To what extent do you believe education organizations use data analytics in everyday operations? (Select one.)

☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Would like to   ☐ Never   ☐ Don't know

Q8. To what extent do you believe education organizations use government data in everyday operations? (Select one.)

☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Would like to   ☐ Never   ☐ Don't know

Q9. Select the barriers for education organizations to use government data. (Select as many as relevant.)

☐ Data is difficult to find   ☐ Data is not specific enough
☐ Too time consuming to acquire data   ☐ High cost of data
☐ Data is inaccurate or unreliable   ☐ Lack of relevant data
☐ Don't know how to acquire data   ☐ Data is not in easy to use format
☐ Legal restrictions on commercial reuse   ☐ Lack of internal data skills
☐ Other _____

Q10. How well does the government respond to your requests for data? (Select one.)

☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Would like to   ☐ Never   ☐ Don't know

Q11. To what extent do education organizations use internal data in everyday operations? (Select one.)

☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Would like to   ☐ Never   ☐ Don't know

Q12. Select the barriers for education organizations to use internal data. (Select as many as relevant.)

☐ Data is difficult to find   ☐ Data is not specific enough
☐ Too time consuming to acquire data   ☐ High cost of data
☐ Data is inaccurate or unreliable   ☐ Lack of relevant data
☐ Don't know how to acquire data   ☐ Data is not in easy to use format
☐ Legal restrictions on commercial reuse   ☐ Lack of internal data skills
☐ Other _____

Q13. Who are the primary users of data in education organizations? (Select as many as relevant.)

☐ Board members   ☐ Management   ☐ Staff
☐ Customers   ☐ Other _____

Q14. Which government agencies' data do education organizations primarily use? (Open-ended response)

Q15. What government data would education organizations like to access? (Open-ended response)

Data Analytics

Q16. How effective are education organizations' current data analytics environment? (Select one.)

☐ Extremely effective ☐ Very effective ☐ Slightly effective ☐ Not at all effective

Q17. Are education organizations currently using descriptive analytics to make decisions? (Select one.)

☐ Extensively ☐ Moderately ☐ Minorly
☐ Would like to ☐ Never ☐ Don't know

Q18. Are education organizations currently using predictive analytics to make decisions? (Select one.)

☐ Extensively ☐ Moderately ☐ Minorly
☐ Would like to ☐ Never ☐ Don't know

Q19. How much do you expect education organizations investment in data analytics to increase over the next two to three years? (Select one.)

☐ Massively ☐ Significantly ☐ Moderately
☐ Minimally ☐ Not at all

Q20. What areas of investment do you see in data analytics/management within education organizations over the next two to three years? (Select as many as relevant.)

☐ Visualizing data ☐ Analysis of data
☐ Software ☐ Integrating internal and third-party data
☐ Gathering, storing, retrieving data ☐ Hiring technical staff
☐ Integrating internal data across systems ☐ Artificial intelligence/machine learning
☐ Training current staff ☐ Other _____

Data Privacy

Q21. How do you feel the Privacy Act 2018 will affect education organizations and their ability to store data? (Select one.)

☐ Easier ☐ No changes ☐ More difficult ☐ Don't know

Q22. How do you feel the Privacy Act 2018 will affect education organizations and their ability to use data? (Select one.)

☐ Easier ☐ No changes ☐ More difficult ☐ Don't know

Education Specific

Q23. How much of a positive, if at all, do you think data analytics will make for students? (Select one in each category.)

i) Allow students to work at their own pace
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

ii) Create customized learning experience
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

iii) Help students who are behind catch up
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

iv) Allow students to get feedback on their performance
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

Q24. How much of a positive, if at all, do you think data analytics will make for teachers? (Select one in each category.)

i) Help teachers evaluate their performance
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

ii) Create customized learning experience
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

iii) Measure, monitor, and respond to a student's understanding of material
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

iv) Course design
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

Q25. How much of a positive, if at all, do you think data analytics will make for administrators? (Select one in each category.)

i) Evaluate student progress and performance
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

ii) Evaluate teacher performance
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

iii) Create customized learning experience
☐ Extensively ☐ Moderately ☐ Minorly ☐ None

iv) Course design
☐ Extensively   ☐ Moderately   ☐ Minorly   ☐ None

v) Student enrollment
☐ Extensively   ☐ Moderately   ☐ Minorly   ☐ None

vi) Benchmarking (within and across schools)
☐ Extensively   ☐ Moderately   ☐ Minorly   ☐ None

Q26. What digital learning materials does your education organization use in a typical week? (Select one in each category.)

i) Online educational videos
☐ Yes   ☐ No   ☐ Future plans   ☐ Don't know

ii) Educational apps or software
☐ Yes   ☐ No   ☐ Future plans   ☐ Don't know

iii) General websites
☐ Yes   ☐ No   ☐ Future plans   ☐ Don't know

iv) Search engine
☐ Yes   ☐ No   ☐ Future plans   ☐ Don't know

v) Games
☐ Yes   ☐ No   ☐ Future plans   ☐ Don't know

vi) Research websites
☐ Yes   ☐ No   ☐ Future plans   ☐ Don't know

Q27. Which devices are used in the classroom in a typical week? (Select as many as relevant.)

☐ Laptop   ☐ Desktop   ☐ Tablet
☐ Interactive whiteboard   ☐ Smartphone   ☐ Other _____

A.3 MEDIA DATA USAGE QUESTIONNAIRE

The media data usage questionnaire was conducted using the computer-assisted self-interview (CASI) methodology. It included eight questions.

The Open Data for Business (OD4B) Questionnaire is designed to collect information on the private sector's current and potential use of government and nongovernment data. The questionnaire below seeks to assess how media use data in Nepal.

Questions

Q1. Which sector do you cover or report on? (Select as many as relevant.)

☐ Technology   ☐ Finance   ☐ Politics   ☐ Migration
☐ Health   ☐ Agriculture   ☐ Education   ☐ Other _____

Q2. To what extent do you believe the media/journalists in Nepal use data in everyday operations? (Select one.)

☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Would like to   ☐ Never

Q3. To what extent do you believe the media/journalists in Nepal should use data in everyday operations? (Select one.)

☐ Extensively   ☐ Moderately   ☐ Minorly
☐ Would like to   ☐ Never

Q4. Do you use the government of Nepal's data? (Select one.)

☐ Yes   ☐ No   ☐ Sometimes

Q5. Would you like to use more of the government of Nepal's data in your reporting? (Select one.)

☐ Yes, if it is available   ☐ No

Q6. What kind of government data would be helpful if it was available (literacy rate by wards, migration trends, sectoral growth rate etc.)? (Open-ended response)

Q7. Select the barriers for media and journalists to use data? (Select as many as relevant.)

☐ High cost of data

☐ Data is not in easy to use format

☐ Lack of government data

☐ Lack of real time/update data

☐ Do not know where to acquire data

☐ Lack of internal data skills

☐ Lack of internal data

☐ Other _____

Q8. Company name (not required):

APPENDIX B.
DATA USAGE
QUESTIONNAIRE
RESPONSES

Overview
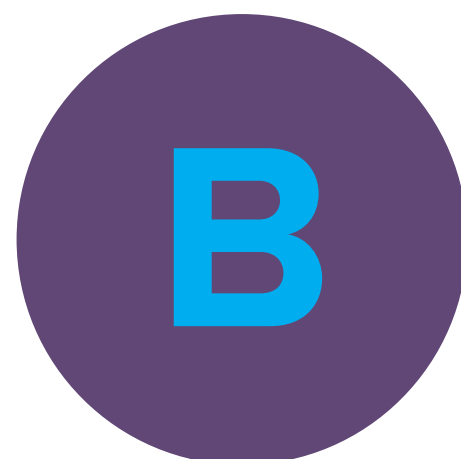
Table B.1 Sources of information, by sector

Item	Finance	Education	Media
Number of in-person interviews	16	8	7
Number of online questionnaire respondents	2	14	28
Number of roundtable participants	25	24	38
Number of organizations contacted	36	35	14[a]

a. Does not include media organizations represented by 17 participants who answered the questionnaire anonymously.

Results of Finance Questionnaire

Table B.2 Type of financial institution participating in the study

Response	Number of banks	Percent of total
Commercial bank	9	50
Microfinance bank	4	22
Development bank	3	17
Finance company	1	6
Wallet company	1	6

Table B.3 Extent to which financial institutions use data in day-to-day operations

Response	Number of responses	Percent of total
Extensively (5)	12	67
Moderately (4)	3	17
Minorly (3)	3	17
Would like to (2)	0	0
Never (1)	0	0
Don't know (0)	0	0

Note: Average score = 4.5 out of 5.

Table B.4 Extent to which financial institutions use data analytics in day-to-day operations

Response	Number of responses	Percent of total
Extensively (5)	5	28

Moderately (4)	5	28
Minorly (3)	7	39
Would like to (2)	1	6
Never (1)	0	0
Don't know (0)	0	0

Note: Average score = 3.8 out of 5.

Table B.5 Extent to which financial institutions use government data in day-to-day operations

Response	Number of responses	Percent of total
Extensively (5)	1	6
Moderately (4)	2	11
Minorly (3)	12	67
Would like to (2)	2	11
Never (1)	0	0
Don't know (0)	0	0

Note: Average score = 2.5 out of 5.

Table B.6 Barriers preventing financial institutions from using government data

Response	Number of responses	Percent of total
Data is difficult to find	12	67
Data is not specific enough	10	56
Data is inaccurate or unreliable	9	50
Too time consuming to acquire data	7	39
Lack of relevant data	6	33
Data is not in easy to use format	6	33
Don't know how to acquire data	3	17
Legal restrictions on commercial reuse	2	11
High cost of data	2	11
Lack of internal data skills	0	0

Note: Multiple responses allowed.

Table B.7 Type of data formats financial institutions would like government to use

Data format	Number of responses	Percent of total
Spreadsheet	17	94
PDF	9	50
Image	4	22
Unstructured text	2	13
JSON	1	6
Other	5	28

Note: Multiple responses allowed.

Table B.8 Extent to which financial institutions use internal data in day-to-day operations

Response	Number of responses	Percent of total
Extensively (5)	13	72
Moderately (4)	2	11
Minorly (3)	1	6
Thought about it (2)	0	0
Not at all (1)	0	0
Don't know (0)	0	0
Not available	2	11

Note: Average score = 4.8 out of 5.

Table B.9 Barriers preventing financial institutions from using internal data

Response	Number of responses	Percent of total
Lack of internal data skills	8	44
Don't know how to acquire data	4	22
Lack of relevant data	4	22
Too time consuming to acquire data	3	17
Data is inaccurate or unreliable	3	17
Data is not in an easy to use format	3	17
Data is not specific enough	2	11

Data is difficult to find	2	11
High cost of data	2	11

Note: Multiple responses allowed.

Table B.10 Extent to which financial institutions believe their company's investment in data analytics will increase over next two to three years

Response	Number of responses	Percent of total
Massively (4)	1	6
Significantly (3)	6	33
Moderately (2)	8	44
Minimally (1)	3	17
Not at all (0)	0	0

Note: Average score = 2.3 out of 5.

Table B.11 Areas of investment respondents in data analytics/management financial institutions expect to see within the education sector in next two to three years

Response	Number of responses	Percent of total
Software	15	83
Training current staff	15	83
Hiring technical staff	13	72
Analysis of data	13	72
Visualizing data	8	44
Integrating internal data across systems	7	39
Integrating internal and third-party data	5	29
Gathering, storing, retrieving data	5	29
Artificial intelligence/machine learning	5	29

Note: Multiple responses allowed.

Table B.12 Extent to which financial institutions believe Privacy Act 2018 will affect their ability to store and use data

Response	Number of responses	Percent of total
Store data		
It will make it easier	0	0
Don't know	12	67
It will make it more difficult	3	17
It will have no effect	3	17

Use data		
It will make it easier	1	6
Don't know	11	61
It will make it more difficult	2	11
It will have no effect	4	22

Results of Education Questionnaire

Table B.13 Extent to which educational organizations use data in day-to-day operations

Response	Number of responses	Percent of total
Extensively (5)	10	46
Moderately (4)	9	41
Minorly (3)	2	9
Would like to (2)	1	5
Never (1)	0	0
Don't know (0)	0	0

Note: Average score = 4.3 out of 5.

Table B.14 Type of data format education organizations believe they should use

Format	Number of responses	Percent of total
Spreadsheet	19	83

PDF	12	52
Image	7	30
Unstructured text	5	22
JSON	4	17
Other	5	22

Note: Multiple responses allowed.

Table B.15 Extent to which educational organizations use government data in day-to-day operations

Response	Number of responses	Percent of total
Extensively (5)	7	9
Moderately (4)	7	32
Minorly (3)	7	32
Would like to (2)	2	9
Never (1)	4	18
Don't know (0)	0	0

Note: Average score = 3.0 out of 5.

Table B.16 Barriers preventing education organizations from using government data

Response	Number of responses	Percent of total
Data is difficult to find	18	78
Lack of relevant data	12	52
Data is not specific enough	11	48
Too time consuming to acquire data	11	48
Data is inaccurate or unreliable	9	39
Data is not in easy to use format	9	39
Don't know how to acquire data	8	45
Lack of Internal data skills	7	30
Legal restrictions on commercial reuse	5	22
High cost of data	3	13

Note: Multiple responses allowed.

Table B.17 Extent to which of education organizations use internal data in day-to-day operations

Response	Number of responses	Percent of total
Extensively (5)	8	36
Moderately (4)	8	36
Minorly (3)	5	23
Thought about it (2)	0	0
Not at all (1)	1	5
Don't know (0)	0	0

Note: Average score = 4.0 out of 5.

Table B.18 Barriers preventing education organizations from using internal data

Response	Number of responses	Percent of total
Lack of internal data skills	19	83
Lack of relevant data	8	35
Data is not specific enough	6	26
Too time consuming to acquire data	6	26
Don't know how to acquire data	5	22
Data is difficult to find	3	13
Data is inaccurate or unreliable	3	13
Data is not in an easy- to-use format	2	9
High cost of data	2	9

Note: Multiple responses allowed.

Table B.19 Extent to which educational organizations believe data analytics will help teachers evaluate student performance

Area/response	Number of responses	Percent of total
Extensively (3)	18	82
Moderately (2)	4	18
Minorly (1)	0	0
None (0)	0	0

Note: Average = 2.8 out of 3.

Table B.20 Extent to which to which educational organizations believe data analytics will help administrators evaluate student progress and performance

Area/response	Number of responses	Percent of total
Extensively (3)	19	86
Moderately (2)	2	9
Minorly (1)	1	5
None (0)	0	0

Note: Average = 2.8 out of 3.

Table B.21 Extent to which education organizations expect to see investment in data analytics increase in the education sector over next two to three years

Response	Number of responses	Percent of total
Massively (4)	1	5
Significantly (3)	8	36
Moderately (2)	5	23
Minimally (1)	7	32
Not at all (0)	1	5

Note: Average score = 2.2 out of 5.

Table B.22 Areas of investment in data analytics/management educational institutions expect to see within the sector in next two to three years

Response	Number of responses	Percent of total
Analysis of data	22	96
Gathering, storing, retrieving data	20	87
Training current staff	17	74
Visualizing data	16	70
Software	15	65
Hiring technical staff	15	65
Integrating internal data across systems	11	48
Artificial intelligence/machine learning	7	30
Integrating internal and third-party data	5	22

Note: Multiple responses allowed.

Table B.23 Ways in which education institution believe Privacy Act 2018 will affect ability of education organizations to store and use data

Response	Number of responses	Percent of total
i) Store data		
It will make it easier	1	5
Don't know	12	55
It will make it more difficult	5	23
It will have no effect	4	18
ii) Use data		
It will make it easier	1	5
Don't know	11	50
It will make it more difficult	4	18
It will have no effect	6	27

Results of Media Questionnaire

Table B.24 Media's use of data from government of Nepal

Response	Number of responses	Percent of total
Yes	26	90
Sometimes	2	10
No	0	0

Table B.25 Barriers preventing the media/journalists from using use data

Response	Number of responses	Percent of total
Data is not in easy- to-use format	18	62
Lack of real time/updated data	14	48
Lack of internal data skills	10	35
Lack of government data	9	31
Lack of internal data	4	14
Do not know where to acquire data	3	10
High cost of data	2	7

Note: Multiple responses permitted.
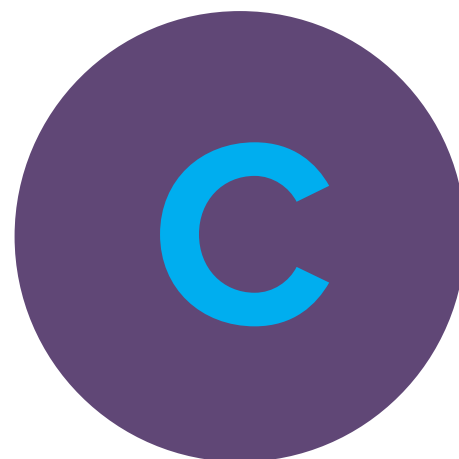
APPENDIX C.
RESULTS OF MEDIA SCRAPING AND ASSESSMENT

C

Table C.1 Results of Level 1 analysis of newspapers in Nepal

Newspaper	Number of articles collected	Number of articles with consistent use of statistics[a]	Percentage of articles with consistent use of statistics
Himalayan Times	2,195	100	5
Kathmandu Tribune	85	7	8
Lokaantar	88	7	8
Nepali Times	165	20	12
Online Khabar	144	4	3
Telegraph Nepal	56	6	11

Note: a. "Consistent use of statistics" refers to news articles that included at least one keyword that indicated the presence of a data source, statistical/ development indicator, or keyword from papers on statistical capacity-building projects (examples of keywords included household survey, population census, geospatial data, GDP, GNP, pay gap, trade balance, and unemployment rate).

Table C.2 Results of Level 2 analysis of newspapers in Nepal

Newspaper	Number of articles collected	Number of filtered articles[a]	Number of articles that displayed critical nonmathematical engagement of statistics	Percentage of articles that displayed critical nonmathematical engagement of statistics
Himalayan Times	2,195	377	242	64
Kathmandu Tribune	85	18	16	89
Lokaantar	88	24	19	79

Nepali Times	165	39	33	85
Online Khabar	144	22	14	64
Telegraph Nepal	56	9	7	78

Note: a. All articles were filtered using the keywords data, statistics, report, study, and research. Only articles containing these keywords were used for Level 2 analysis.

Table C.3 Results of Level 3 analysis of newspapers in Nepal

Newspaper	Number of articles collected	Number of filtered articles[a]	Number of articles that displayed critical mathematical engagement of statistics	Percentage of articles that displayed critical mathematical engagement of statistics
Himalayan Times	2,195	377	0	0
Kathmandu Tribune	85	18	0	0
Lokaantar	88	24	0	0
Nepali Times	165	39	0	0
Online Khabar	144	22	0	0
Telegraph Nepal	56	9	0	0

Note: a. All articles were filtered using the keywords data, statistics, report, study, and research. Only articles containing these keywords were used for Level 3 analysis.

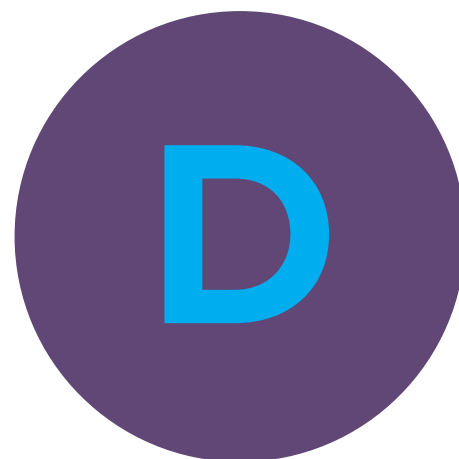# APPENDIX D. DATA PUBLISHING PRACTICES OF THE GOVERNMENT OF NEPAL

Table D.1   Distribution of government bodies included in the scraping exercise

Type	Number	Percent of total
Ministry	21	26
Department	22	27
Government agency	38	46
Other	1	1
Total	82	100

Table D.2 Data-publishing formats used by ministries, departments, and agencies in Nepal

Formats used to publish data	Number of websites	Percent of total[a]
PDF	75	91
DOC	26	32
Excel	11	13
CSV	1	1

Note: a. Calculated as a percent of total websites scraped (n=82)