University of Auckland
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PROJECT REPORT

DIGITAL & DATA LEADERS SURVEY ANALYSIS

Team 6
Team members:
1. Lam Quang Thinh
2. Nguyen Tan Loc
3. Jingyu Zhang
4. Haoyuan Li
5. Aastha
6. Rohit Singh
7. Anidya Bhandari

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1. Introduction

1.1 Project background summary

As the world economy in general has appeared increasingly market-driven, data and analytics has gained a growing attention from the business' point of view. In our project, Team 6 aims to identify the situation of data and digital capabilities of organisations in New Zealand in 2020 and 2022.

1.2 Project outline

In our project, we aim to analyse and make 4 comparisons of the key differences in the digital state in New Zealand between 2020 and 2022. In addition, we will emphasise important information in 2022. Based on the analysis, there are discussions on the key factors for the digital state of New Zealand data leaders. Combining the result with further research, possible recommendations for the improvement of the market are explained. Last but not least, there are suggestions to improve the performance of the project by adjusting the questionnaires or expanding the survey in several years.

2. Data Analysis

2.1 Combined dataset for 2020 and 2022

2.1.1 Logic
-Identify questions that are in common between 2020 and 2022.
-Process the names and values in the columns so that they are matched.
-Merge the two datasets by rows.

2.1.2 Methods
-List out all the questions for the two years.
-Group the questions into categories
-Standardise the data so that the values in for the two years have the same format
-Combine the datasets after all the columns has identical format using append function to generate the combined new dataset

2.1.3 Result
The combined dataset has 15 columns and 166 observations, resulting from 72 and 94 respondents from 2020 and 2022, respectively. The dataset and the python code have been attached on the appendices for reference.

2.2 Comparisons for 2020 and 2022

Four insights have been chosen to be analysed to conclude the importance of data scientists of organisations.

The first insight General talks about is the application of data in corporate strategy. It demonstrates how organisations trust in data and form them into business strategy.

Secondly, the Benefits part will compare using data of having automated decisions and returns on investment by automated decisions in 2022 to explain why automated data-driven ways can be used.

Thirdly, the Human Resources part will illustrate how many data specialists are needed for an organisation and how they work cooperatively. In addition, the different types of data specialists will be mentioned.

Finally, Technologies will provide the usage of data tools, and compare them to determine efficient applications for organisations.
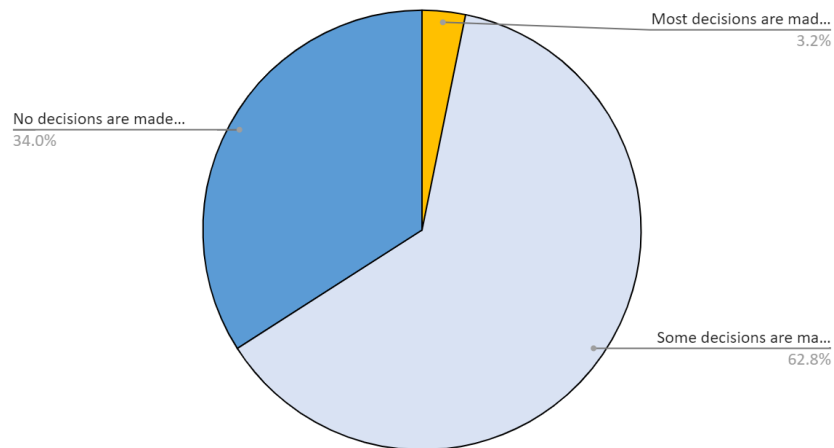
❖ **General**

Data background:

The following question in the datasets of 2020 and 2022 would be used:
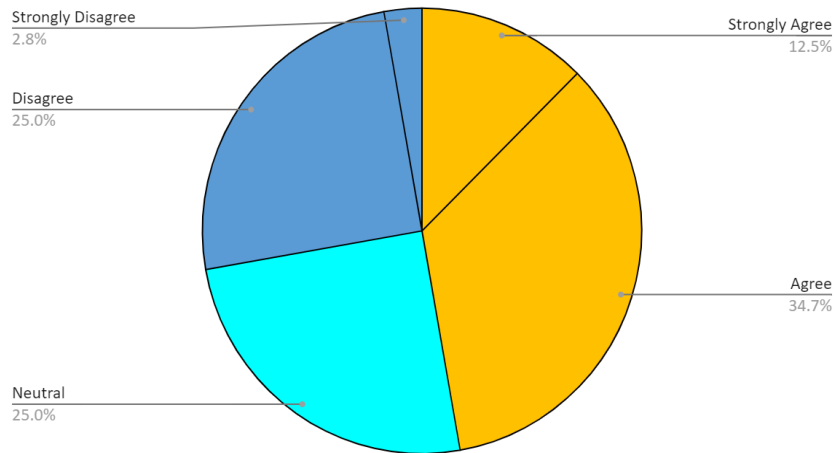
-My organisation makes automated data-driven decisions.

Visualisation

My organisation makes automated data-driven decisions in 2020

Most decisions are mad...
3.2%

No decisions are made...
34.0%

Some decisions are ma...
62.8%

My organisation makes automated data-driven decisions

Strongly Disagree 2.8%
Disagree 25.0%
Neutral 25.0%
Strongly Agree 12.5%
Agree 34.7%

Analysis

In 2020, 34.04% of companies reject making automated data-driven decisions.Then, in 2022, the rate of disagreement to automated data-driven decisions reduces to 28%.

→ **The importance of data in decision making process is enhanced**

❖ Benefits

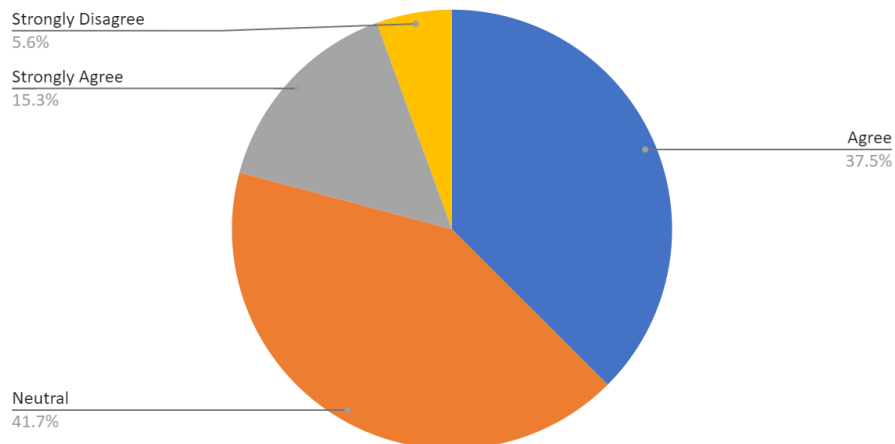### Data background

The following question in the dataset of 2022 would be used:

-My organisation has seen a higher return on investments as a result of data driven decision making.

Visualisation

My organisation has seen a higher return on investments as a result of data driven decision making in 2022

Strongly Disagree 5.6%
Strongly Agree 15.3%
Agree 37.5%
Neutral 41.7%

Analysis

52.78% organisations have higher return on investment due to data-driven decision making.

→ **Applying data to make decision might have positive impacts on the return**
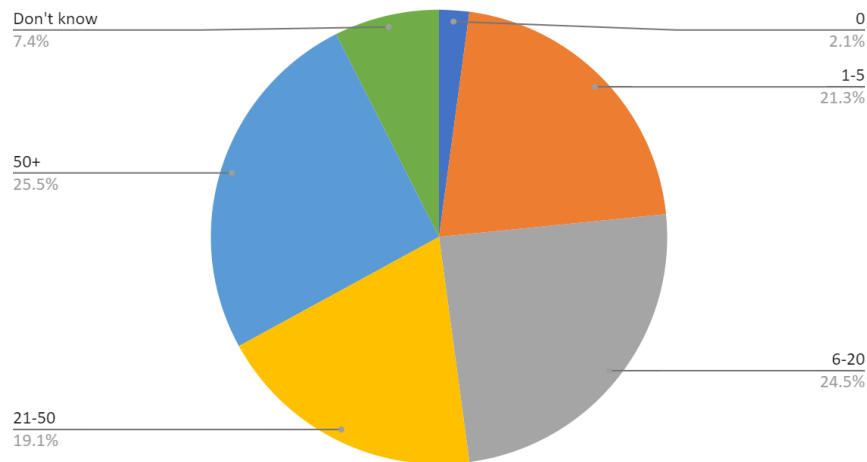
❖ Human resources

Data Background

Bill Gates states that "Analytical software enables you to shift human resources from rote data collection to value-added customer service and support where the human touch makes a profound difference". In this section, there is the discussion of how data contributes to the HR systems of business in 2022.

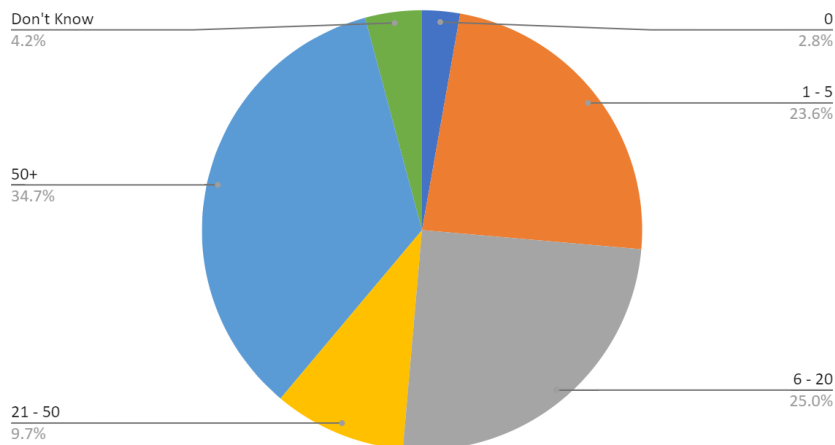The following question in the datasets of 2020 and 2022 would be used:

-How many data specialists does your organisation have?

Visualisation

Number of data specialists in organisation in 2020

Don't know
7.4%

0
2.1%

1-5
21.3%

50+
25.5%

6-20
24.5%

21-50
19.1%

Number of data specialists in organisation in 2022

Don't Know
4.2%

0
2.8%

1 - 5
23.6%

50+
34.7%

6 - 20
25.0%

21 - 50
9.7%

Analysis

A Significant increase has been made about occupations of data specialists in two years. In more detail. organisations with 50+ positions from 25.53% in 2020 to 34.72% in 2022. In addition, organisations tend to employ 50+ data specialists rather than less.

→ **The interesting cause of this shift might be predicted that part of the organisations having 21-50 specialists is converted to the organisations with 50+.**
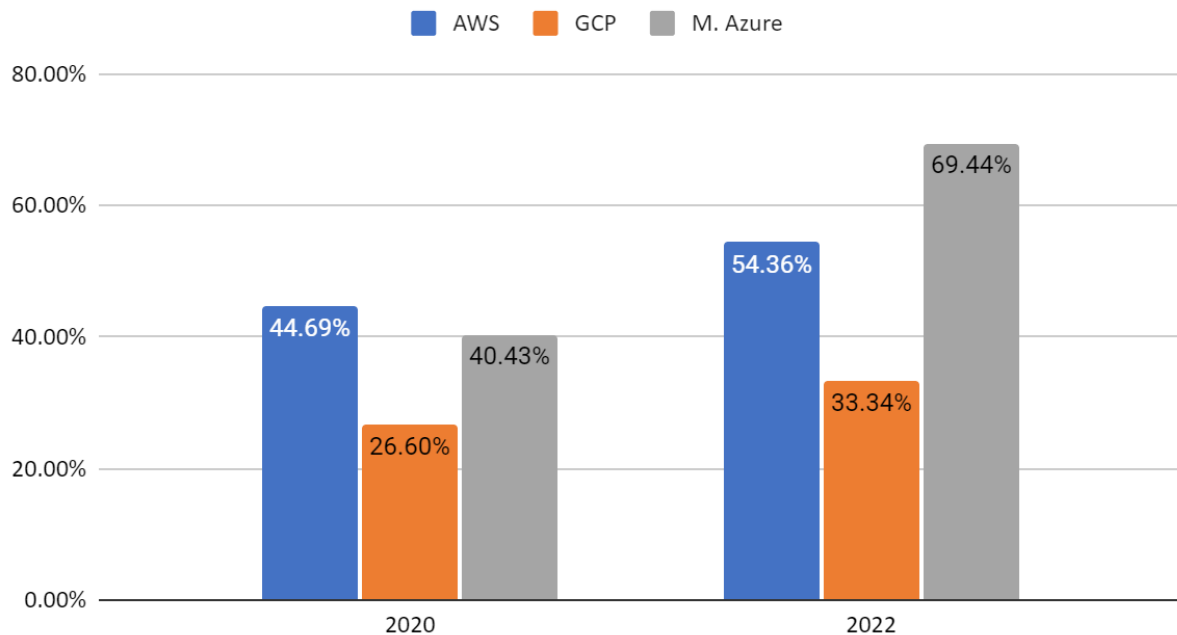
❖ **Technologies**
  Data background
The following question in the datasets of 2022 would be used:
-Which technologies does your organisation use?
  Visualisation

Cloud for data and analytics in 2020 and 2022

■ AWS   ■ GCP   ■ M. Azure

  Analysis

From 2020 to 2022, organisations appear to use Cloud more. In 2020, AWS was the most popular Cloud technology, followed by Microsoft Azure and Google Cloud Platform, respectively. However, in 2022, Microsoft Azure surpassed AWS to become the most common Cloud platform.

→ **Cloud usage takes a higher role in organisations from 2020 to 2022. For the shift of ranking, there are two hypotheses: The market is more competitive or there is a change in the demand of organisations.**

2.3 Insights for 2022

❖ Respondents

Data background

The following questions in the datasets of 2022 would be used:

-Which industry do you primarily operate in?

-Which field is the best fit for your current position?

Visualisation

Percentage of Respondents based on Industry

- Financial Services
- Government (Central)
- Technology
- Information Media and Telecommunications
- Insurance Services
- Retail Trade
- Transport, Postal and Warehousing
- Health Care and Social Assistance
- Professional, Scientific and Technical Services
- Others
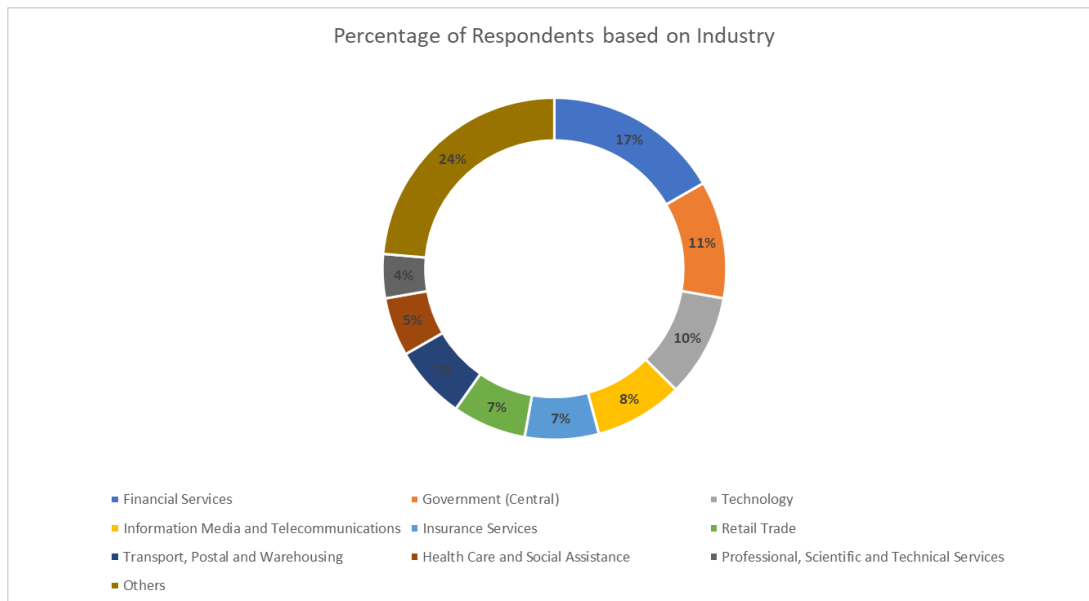
Background and industry of the Respondents
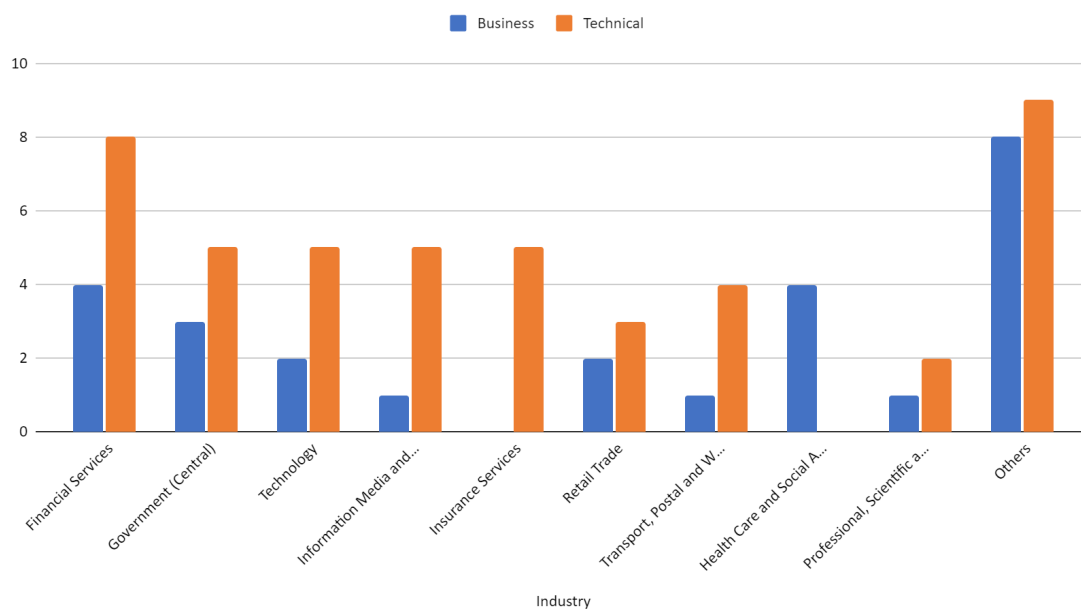
Analysis

There are 72 respondents in 2022, which experienced a slight decrease of 23.4% from 2020. The respondents are mainly from Technical background with their majors in Financial Services (17%), Government (11%), Technology (10%) and others.

❖ **Collecting and storing data**
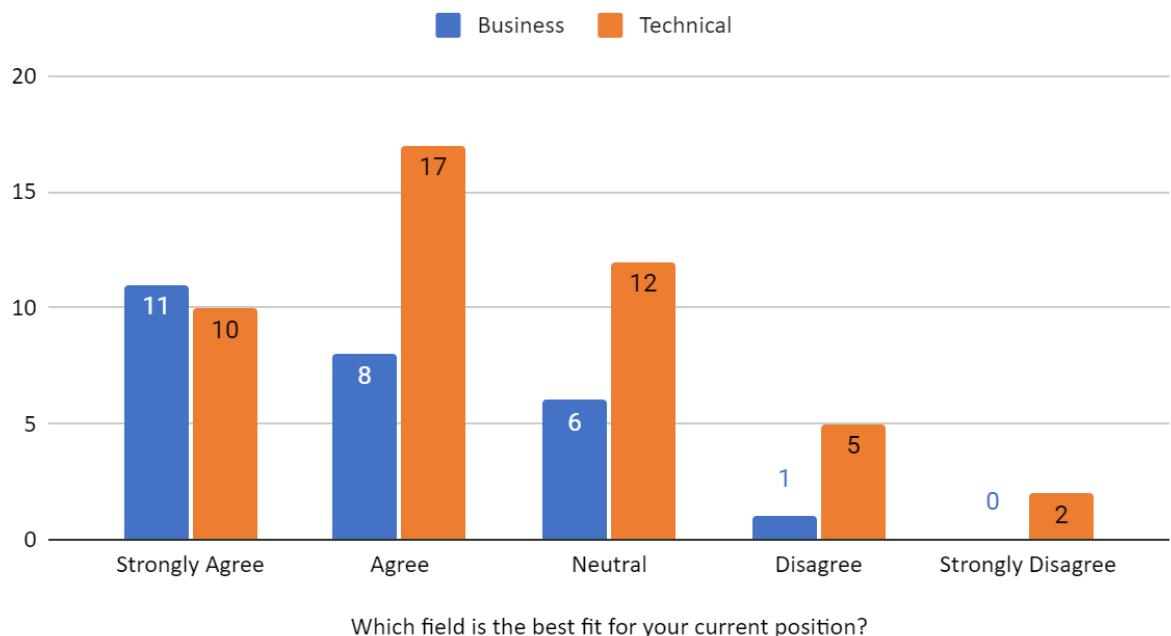
Data background

The following question in the datasets of 2022 would be used:

-My organisation has a need to collect or manage internal or external ESG data.

Visualisation

Collect and manage ESG data separated by background

Which field is the best fit for your current position?

Analysis

The majority, regardless of business and technical background, has the intention to Agree and Strongly Agree that the organisation should collect and manage ESG data.

→ **Data leaders are paying attention to the Environment and Society. As a result, businesses are able to grow sustainably and contribute to society.**
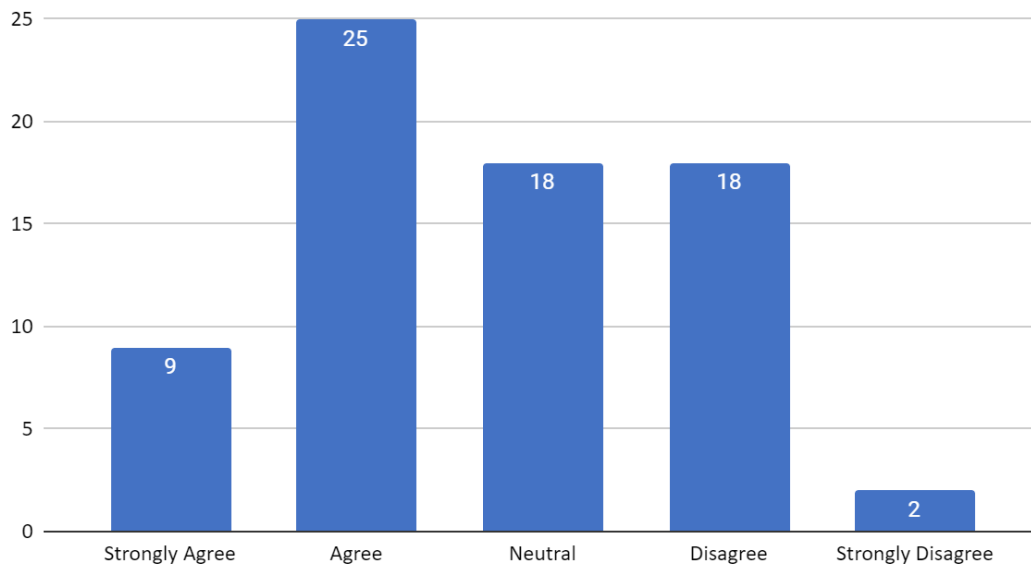
❖ **Data culture**

Data background

The following questions in the datasets of 2022 would be used:

-My organisation makes automated data-driven decisions.

-My organisation has seen a higher return on investments as a result of data driven decision making.

Visualisation

Automated data-driven decision

Higher return based on data analytics strategy
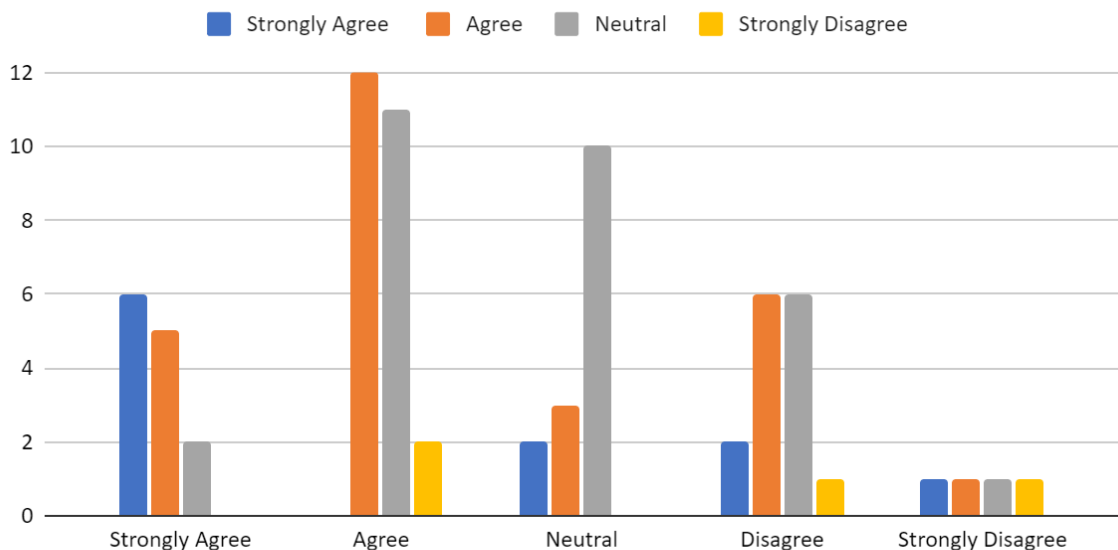
My organisation has an enterprise-wide data and analytics strategy being used.

Analysis

Around 47% of the respondents agree and strongly agree to make automated decisions based on data, 25% are neutral and the rest disagree with this decision making approach. More importantly, the data shows that most of the organisations with higher return in 2022 Agree and Strongly Agree that their business has applied a data and analytics strategy.

→ **Business that applied to their strategy have higher return on investment.**

❖ **Human resource**

Data Background

The following questions in the datasets of 2022 would be used:

-My organisation has sponsorship or a champion at the executive level for data and analytics.
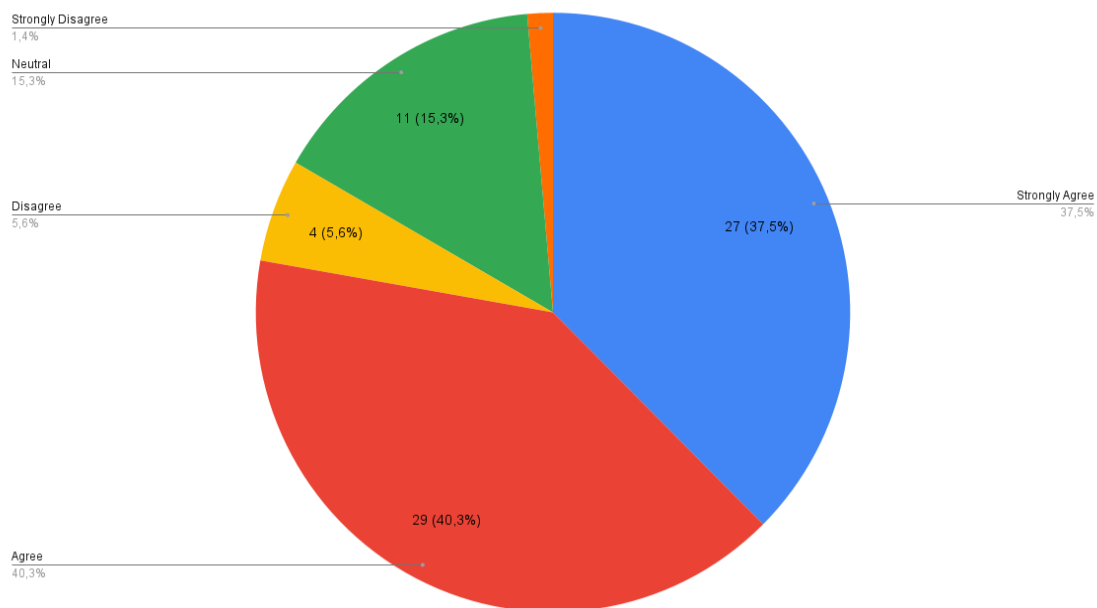
-My organisation has people responsible and empowered to improve data quality.

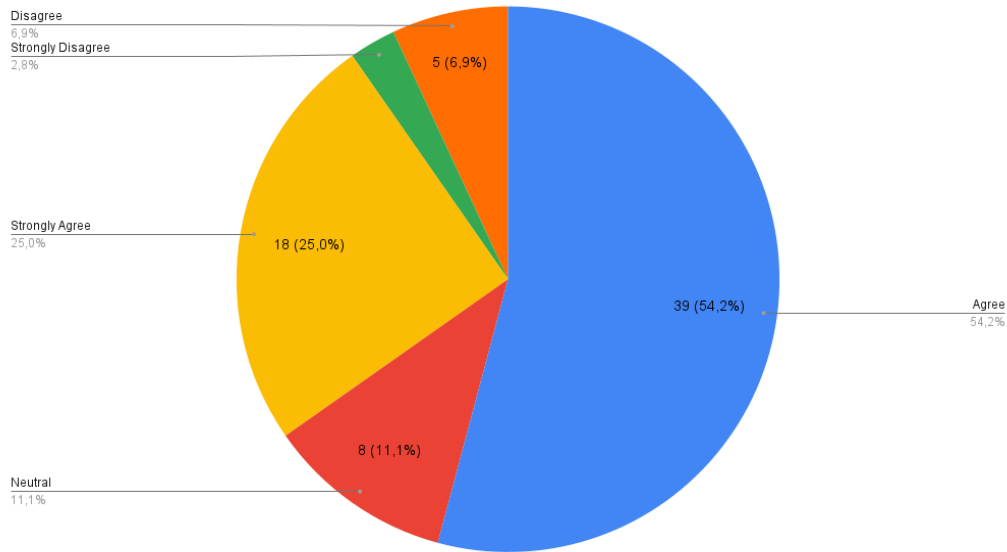-How many data specialists does your organisation have?

Visualisation

My organisation has sponsorship or a champion at the executive level for data and analytics.

My organisation has people responsible and empowered to improve data quality.

Disagree
6,9%
Strongly Disagree
2,8%

5 (6,9%)

Strongly Agree
25,0%

18 (25,0%)

39 (54,2%)

Agree
54,2%

8 (11,1%)

Neutral
11,1%

How many data specialists does your organisation have?

21 - 50
9,7%

Not used
4,2%

7 (9,7%)

0
2,8%

11 - 20
13,9%

10 (13,9%)

3 (4,2%)

1 - 5
23,6%

17 (23,6%)

8 (11,1%)

6 - 10
11,1%

25 (34,7%)

50+
34,7%

Analysis

Recognizing the importance of digital transformation, human resources in the data field are in high demand more than any profession. The organisation which has sponsorship or a champion at the executive level for data and analytics occupies the major shares (about 77.8%). Also the percentages of organisations having people responsible and empowered to improve data quality are 79.2%. Furthermore, just 2.8% of organisations nowadays do not have data specialists.

→ **Data positions are necessary in almost every organisation**

❖ **Cloud computing service usage**
Data Background

The following question in the datasets of 2022 would be used:

-Cloud computing service usage

Visualisation

Cloud computing service usage in 2022
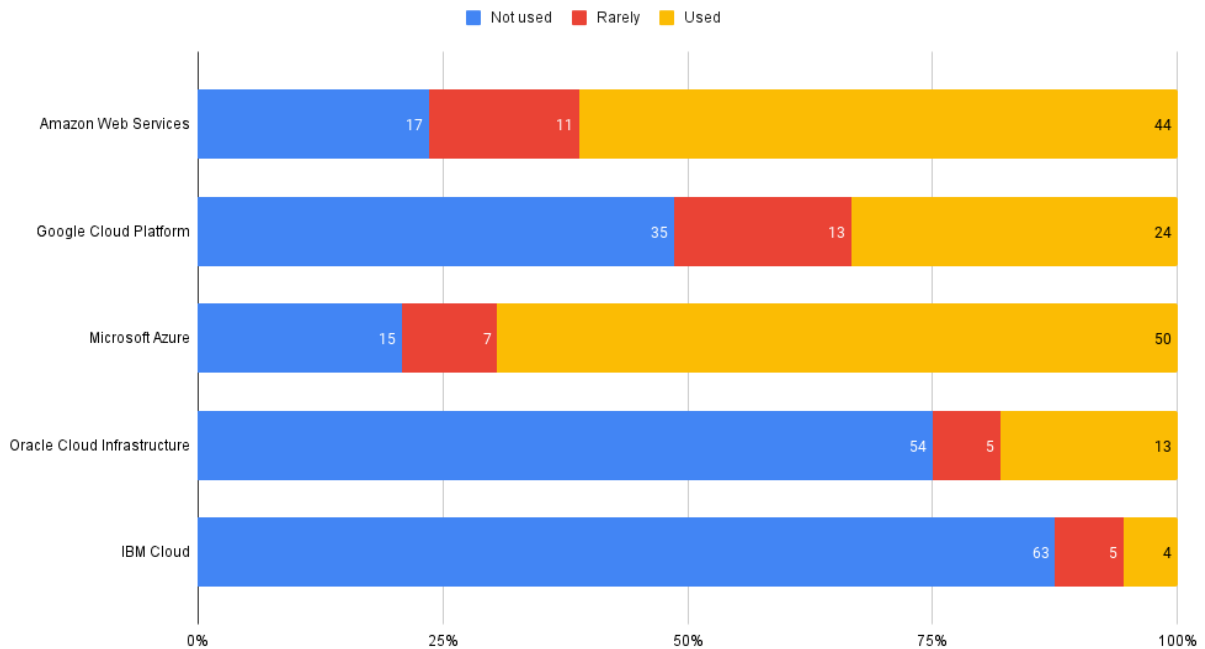
Analysis

Cloud computing is a general term for anything that involves delivering hosted services over the internet. These services are divided into three main categories or types of cloud computing: infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS).

And these Cloud computing services are inevitable when we mention digital and data, the data above will show you some of the most advanced cloud platforms and the popularities of them. On the ground, Amazon Web Services (AWS), Google Cloud Platform (GCP), and Microsoft Azure are being utilised by most organisations, recognized by 44%, 24%, and 50%, respectively. Also, Oracle Infrastructure Cloud and IBM Cloud are two other renowned cloud platforms.

❖ Data and analytics roles in organisations
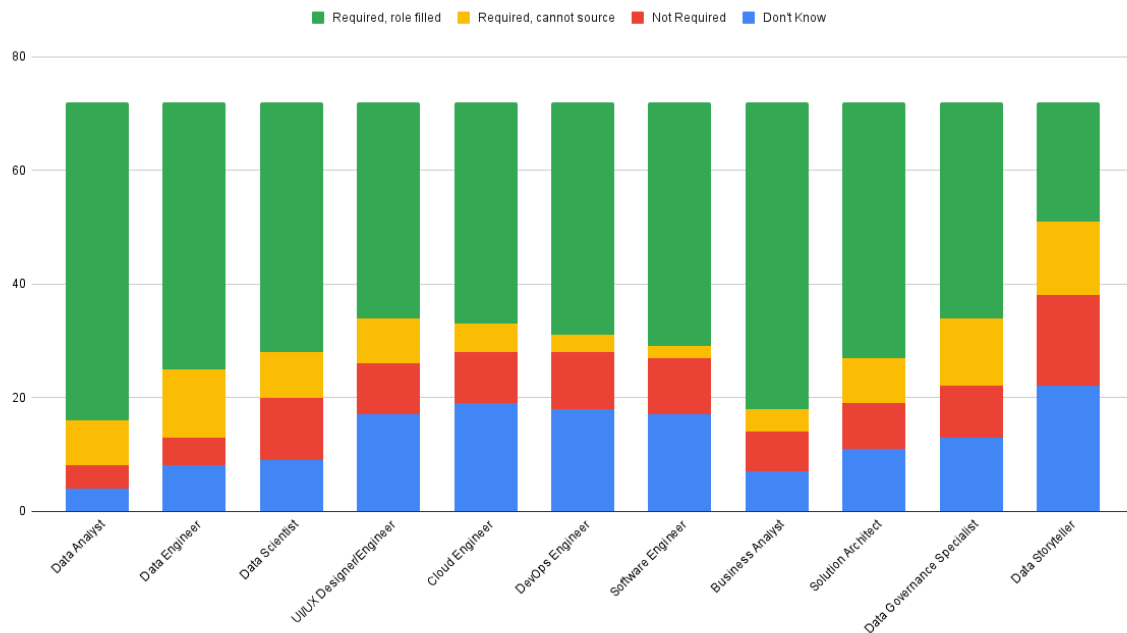### Data Background

The following question in the datasets of 2022 would be used:

- The combination of responses about data and analytics roles does the organisation have

Visualisation

Roles and roles' necessity in organisation

■ Required, role filled ■ Required, cannot source ■ Not Required ■ Don't Know

Analysis

Around 10% of organisations that are in need of Data Engineer, Data Governance Specialist, and Data Storyteller but cannot source

A digital firm cannot exist without data and analytics at its foundation, as has often been stated. If not used properly, technology can be a point of failure, although it is frequently not the most significant barrier to advancement. In Gartner's annual Chief Data Officer survey, the top roadblocks to success were human factors – culture, resources, data literacy, and skills. A similar pattern emerges from another study, Gartner's CEO and Senior Business Executive Survey, where "Talent Management" was listed as the "number one organisational competency to be developed or improved."

→ **Beside Data Analyst, there are still many opportunities for other roles of data specialists that are in high demand in organisations**

❖ **Benefits of data analysis**

Data Background

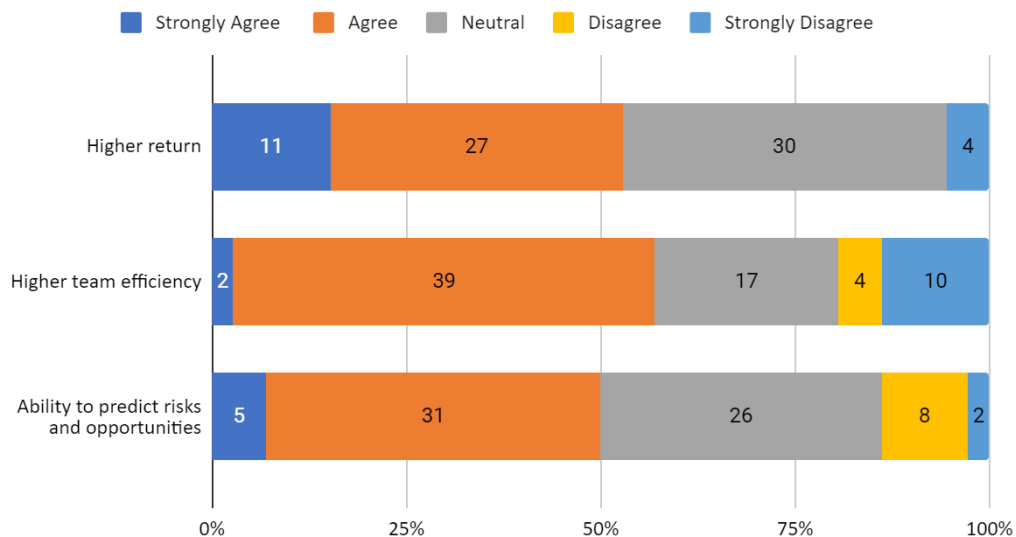The following questions in the datasets of 2022 would be used:

-My organisation has seen a higher return on investments as a result of data driven decision making.

-My organisation has seen increased efficiency across teams as a result of process automation.

-My organisation can more quickly spot risks and opportunities thanks to automated data and analytics processes.

Visualisation

Benefits of data application on organisations

■ Strongly Agree　■ Agree　■ Neutral　■ Disagree　■ Strongly Disagree

Category	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Higher return	11	27	30		4
Higher team efficiency	2	39	17	4	10
Ability to predict risks and opportunities	5	31	26	8	2

Analysis

"Big data is already being used to improve operational efficiency," said Randy Bean, CEO and managing partner of consultancy firm NewVantage Partners, when announcing the results of the survey. "And the ability to make informed decisions based on the very latest up-to-the-moment information is rapidly becoming the mainstream norm."

Approximately 97% of organisations have seen a higher return on investments by making decisions based on data.

→ **Data-driven decisions maximise business's revenue.**

More than 90% of organisations have increased sufficiently across teams as a result of process automation.

→ **Process automation optimises the performance of human resources.**

Not just stopping there, thanks to the automated data and analytics processes, about 90% of organisations confirm that they can more quickly find out the risks and opportunities.

→ **Data application assists in preventing risks and utilising opportunities.**

3. Conclusions

3.1 Discussions and Conclusions

Deducting from the analysis, there are conclusions about the insights for the project.

Comparison

1. Less organisations disagree with making decisions automatedly by using data. The importance of a data-driven mindset in the decision making process is enhanced.

2. More than half organisations have seen higher return on investment by using automated data-driven decisions. Therefore, more and more organisations tend to apply data to form their business strategy.

3. The number of data specialists in an organisation have increased significantly, which means the demand of applying data into business operations is rising.

4. Technologies:

+More organisations will use Cloud in two years.

Amazon Web Services, Google Cloud Platform, Microsoft Azure are the most frequently used cloud services.

+All organisations use data Visualisation tools during work in 2022.

Most frequently used Excel, Microsoft PowerBI, Tableau.

+However, there are still 30% of organisations not using Data Science and Machine learning tools, this might be due to their small scale of business or the volume of data is not in need of implementing sophisticated algorithms.

Insights

1. The majority of respondents in 2022 came from Financial Services, Government, and Technology industries, which could contribute a general view of data leaders in these fields.

2. The analysis proved that automated data-driven decisions are accepted by more than half of the data leaders

3. The organisations that have data and analytics based strategy would have higher return on their business.

4. The data also inform that regardless of background, data leaders tend to pay more attention to the ESG data. As Karinne Chapel (2021) stated that From the standpoint of entrepreneurs, there has been an increase in attention to sustainable issues in recent years, particularly since the younger generations, who are "sustainable natives," are putting this issue at the centre of the economy and their spending patterns. Investors are now compelled to adopt a more sustainable mindset, invest directly or indirectly in businesses that have shown to meet ESG criteria, or contribute to this shift.

5. Recognizing the importance of digital transformation, human resources in the data field are in high demand more than any profession, the need for data specialists and also for the digital transformation are really at a premium.

6. Amazon Web Services (AWS), Google Cloud Platform (GCP), and Microsoft Azure are the latest cloud technologies at present.

7. Almost all organisations have seen a higher return on investments by making decisions based on data

8. Data application increased efficiency across teams as a result of process automation.

9. In addition, thanks to the automated data and analytics processes, 90% of organisations confirm that they can more quickly find out the risks and opportunities. As unlimited potential for digital and data are proven, if the business aims to have competitive advantages in the market, digital solutions are indispensable.

3.2 Recommendations

Initially, from the point of view of data specialists or people who desire to be data specialists, the market for data-related jobs is enormous but diverse. They should identify their strengths, targets and then be well-prepared for the selected role. In specific, they ought to research the markets so that they choose the right technologies to learn and master, or they could learn the domain knowledge in a particular industry. As a result, they could enhance their employability.

Subsequently, from the business perspective, the automated data-driven decision making process is inevitable and the benefits on return and risks predictions are also confirmed by data leaders; therefore, organisations should prepare for the conversion to optimise their business performance. Secondly, sustainability must be one of the most pivotal criteria for business before planning or implementing any strategies so that the company is not only able to grow in the long term but also contribute to the society in general.

3.3. Limitations of the project

Deducting from the project, there are several points that restrict the project to be more specific. Firstly, the response design is not identical between two years, which means the multiple choices for an identical question in 2020 and 2022 are different, which could create bias when the data analysts standardise the dataset. Secondly, lack of information about the organisations to generate more correlations. In the datasets, there are opinions of data leaders about data and digital solutions; however, the information about the scale and detail performance of the business were not included, which may not provide enough evidence to conclude the analysis results for all businesses in general. Lastly, it is challenging to confirm if it is a trend by just analysing data in two years. Therefore, it is necessary to carry out surveys yearly, or quarterly to enhance the reliability of the data and the performance of the outcome for the project.

4. Appendices

4.1. Python code

Data coding:
KPMG_Data_Processing

Combined dataset:
🖩 Final_Clean_KPMG

4.2. References

Bean, Randy. "How Companies Say They're Using Big Data." *Harvard Business Review*, 28 April 2017, https://hbr.org/2017/04/how-companies-say-theyre-using-big-data. Accessed 6 December 2022.

"ESG data: why is it important and what is its future?" *BNP Paribas CIB*, 15 January 2021, https://cib.bnpparibas/esg-data-why-is-it-important-and-what-is-its-future/. Accessed 6 December 2022.

Gates, Bill, and Collins Hemingway. *Business @ the Speed of Thought: Using a Digital Nervous System*. Penguin, 1999. Accessed 6 December 2022.

"Home." *YouTube*, https://zeenea.com/the-must-have-roles-for-the-perfect-data-analytics-team/?fbclid=IwAR3xTH6Jv7P6tkY77KVKiDPuZqNVLep1XzkQd4KJP7W55Ya9IYhQwrGNgug. Accessed 6 December 2022.