

# Exploring ESG Strategies with AI



## **Group 18**

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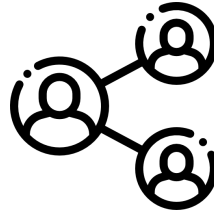
# 01 Project Overview

# WHAT IS ESG?



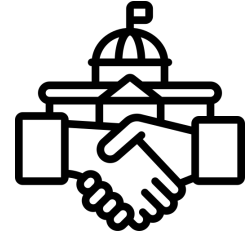
## ENVIRONMENTAL

- Air and water consumption
- Energy efficiency
- Renewable energy



## SOCIAL

- Community relations
- Employee engagement
- Customer relationships

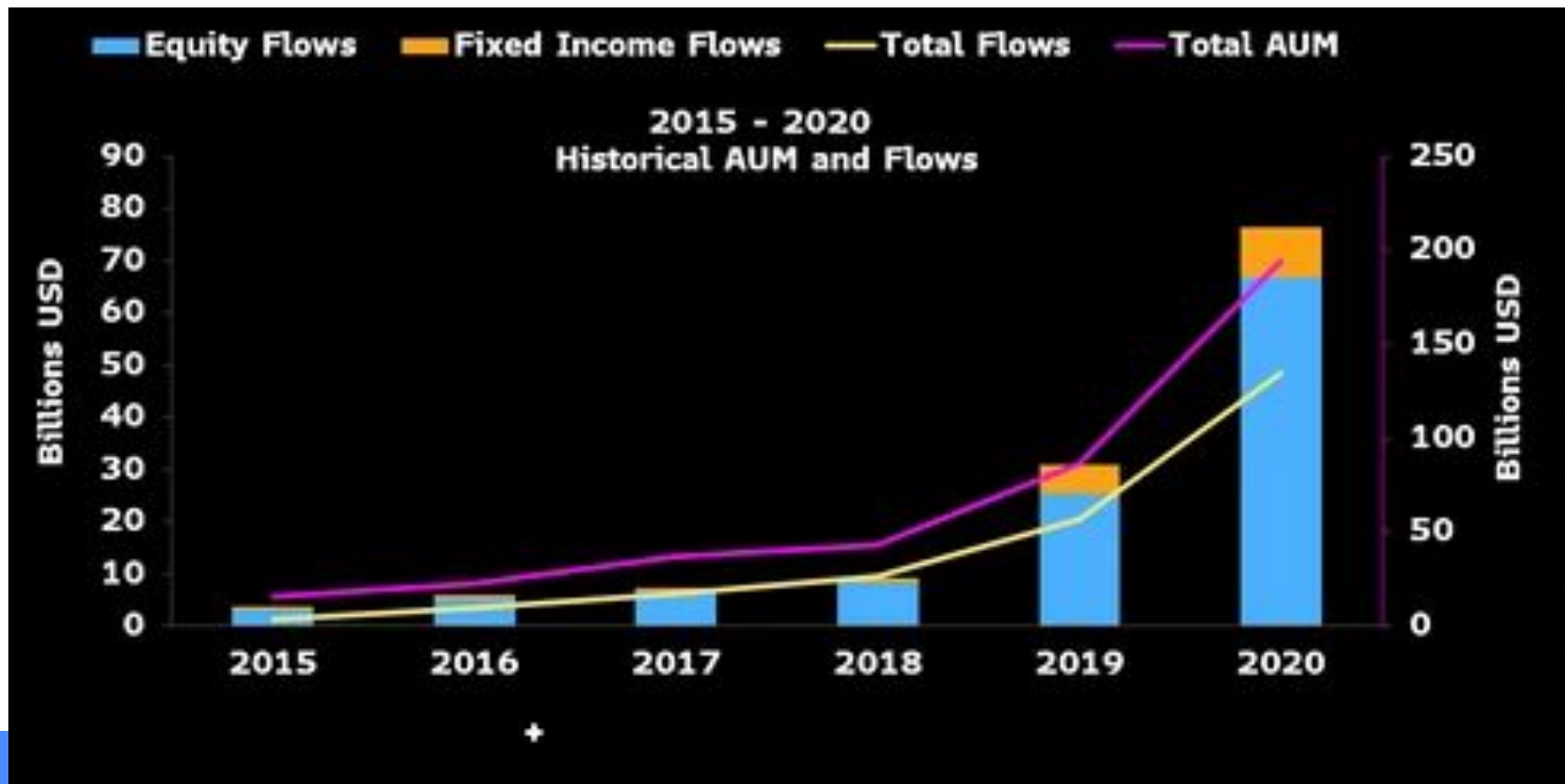


## GOVERNANCE

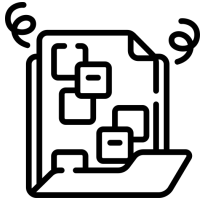
- Board composition
- Shareholder rights
- Company leadership

# ESG Investing Interest over time

The overall trend is increasing

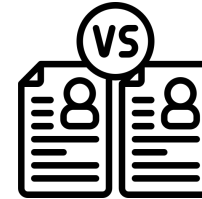


# PROBLEM



## UNSTRUCTURED DATA

- Different report formats
- Long reports



## DIFFICULT TO GATHER COMPARISON

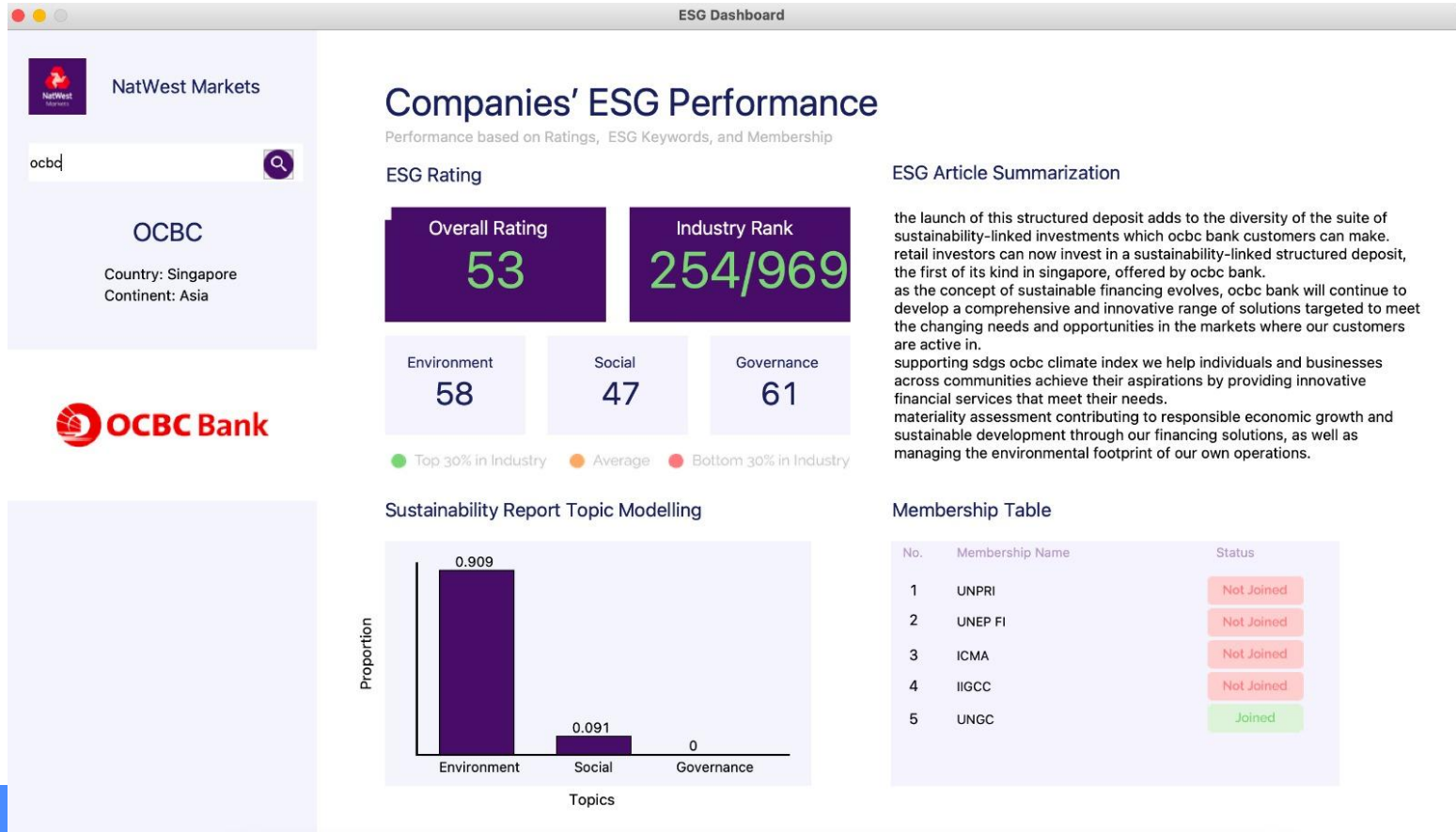
- Limited platform that contains all relevant information

# OBJECTIVE

Create a platform that will provide insights on a company's ESG strategies

# SOLUTION

## ESG Dashboard







02

# ESG Rating



NatWest Markets

ocbc



OCBC

Country: Singapore  
Continent: Asia



ESG Ratings

## Companies' ESG Performance

Performance based on Ratings, ESG Keywords, and Membership

### ESG Rating

Overall Rating

53

Industry Rank

254/969

Environment

58

Social

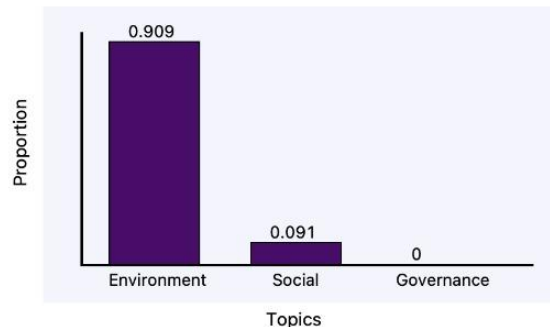
47

Governance

61

● Top 30% in Industry ● Average ● Bottom 30% in Industry

### Sustainability Report Topic Modelling



### ESG Article Summarization

the launch of this structured deposit adds to the diversity of the suite of sustainability-linked investments which ocbc bank customers can make. retail investors can now invest in a sustainability-linked structured deposit, the first of its kind in singapore, offered by ocbc bank. as the concept of sustainable financing evolves, ocbc bank will continue to develop a comprehensive and innovative range of solutions targeted to meet the changing needs and opportunities in the markets where our customers are active in. supporting sdgs ocbc climate index we help individuals and businesses across communities achieve their aspirations by providing innovative financial services that meet their needs. materiality assessment contributing to responsible economic growth and sustainable development through our financing solutions, as well as managing the environmental footprint of our own operations.

### Membership Table

No.	Membership Name	Status
1	UNPRI	Not Joined
2	UNEP FI	Not Joined
3	ICMA	Not Joined
4	IIGCC	Not Joined
5	UNGC	Joined

# ESG Rating

## Overall ESG Rating

Shows the overall ESG rating of the company (out of 100)

## Environmental, Social, and Governance Rating

Shows Environmental, Social, and Governance rating respectively (out of 100)

## Rank in Industry

Shows the rank of the company in its industry based on ESG overall rating

# Refinitiv

## Environment

- Resources use
- Emissions
- Innovation

## Social

- Workforce
- Human rights
- Community
- Product responsibility

## Governance

- Management
- Stakeholders
- Corporate Social Responsibility (CSR) Strategy

# Why ESG Rating?

## ESG Performance

Industry rank shows companies' ESG performance relative to its industry competitors

## Good Comparison

Overall ESG, Environment, Social, and Governance score can be used for comparison between companies

# ESG Rating Comparison

## OCBC vs DBS





# 03 Alliance Membership



NatWest Markets

ocbc



OCBC

Country: Singapore  
Continent: Asia



**ESG Alliance  
Memberships**

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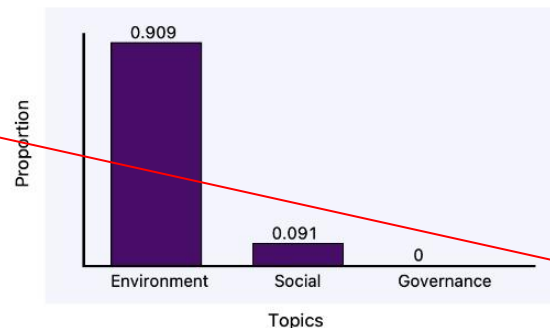
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# Alliance Membership

UNPRI



UNEP FI



ICMA



UNGC



United Nations  
Global Compact

IIGCC



The Institutional Investors  
Group on Climate Change

# Why Membership?

## Credibility

Companies that join these organizations indicate that they are more credible towards Environmental, Social, and Governance Issues

# Membership Model Accuracy

**UNPRI**

**90%**

**UNEP FI**

**91%**

**ICMA**

**95%**

**UNGC**

**92%**

**IIGCC**

**90%**

\* Based on 100 observations for each organization



04

# Topic Modelling

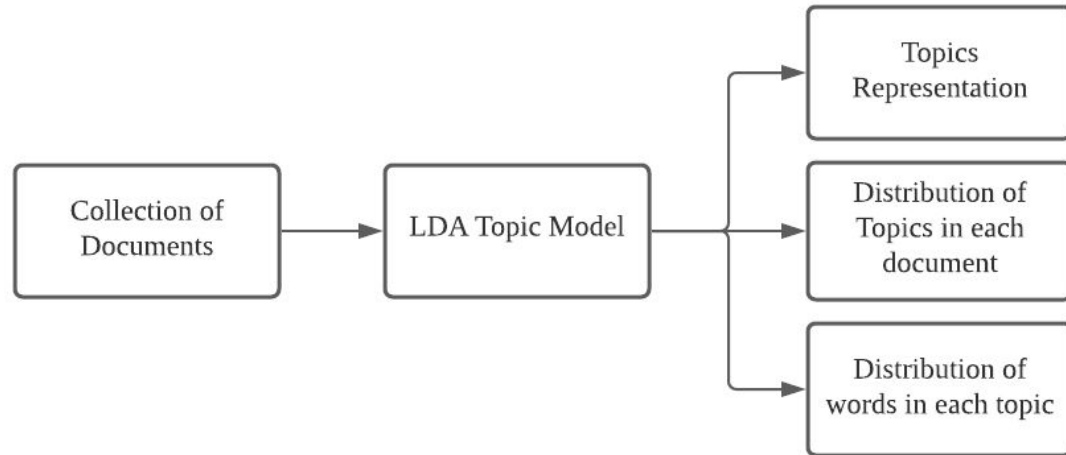
Exploring ESG through Qualitative Assessment



# 270.6

Average Number of Pages of Sustainability Report

# Latent Dirichlet Allocation



# Why Topic Modelling?

## Organize

Collection of unstructured texts  
into relevant topics

## Summarize

Know the topic distribution  
across a document quickly

# Development Step



## Data Preparation

- ESG Information from PDFs and Articles



# Development Step

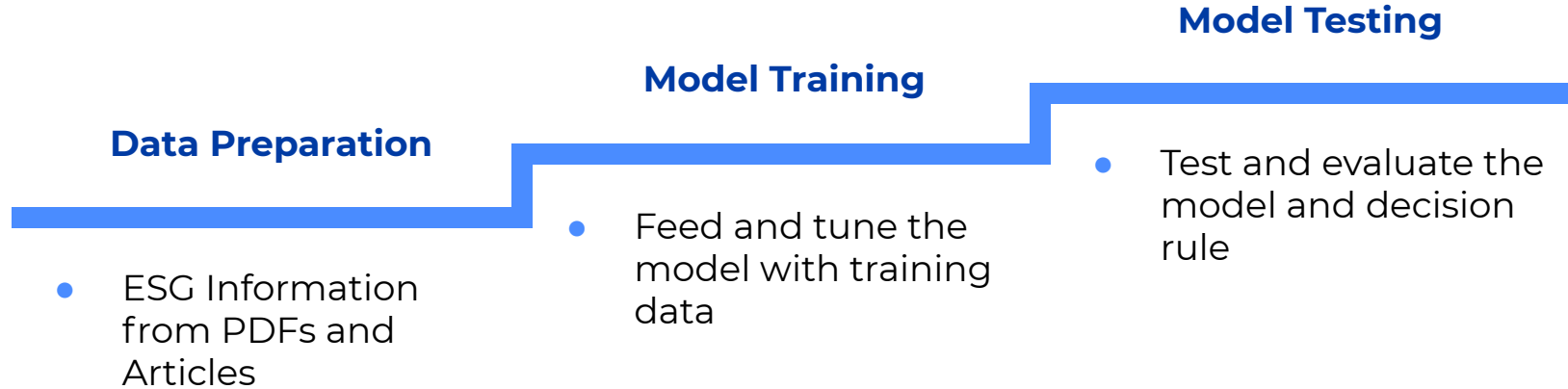
## Data Preparation

- ESG Information from PDFs and Articles

## Model Training

- Feed and tune the model with training data

# Development Step



# Topic Keywords

## Environmental

Carbon

Decarbonisation

Climate

## Governance

Stewardship  
activities

Exercising votes

Effort policy

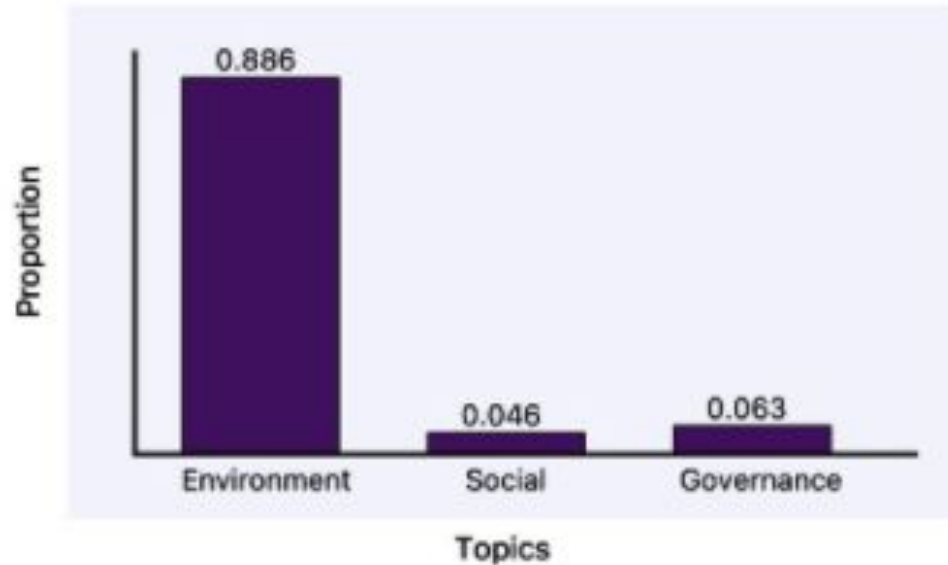
## Social

Inequality

Humanity

# Applying the Topic Model

Sustainability Report Topic Modelling





05

**Text  
Summarization**



NatWest Markets

ocbd



OCBC

Country: Singapore  
Continent: Asia



Summary of  
sustainability articles

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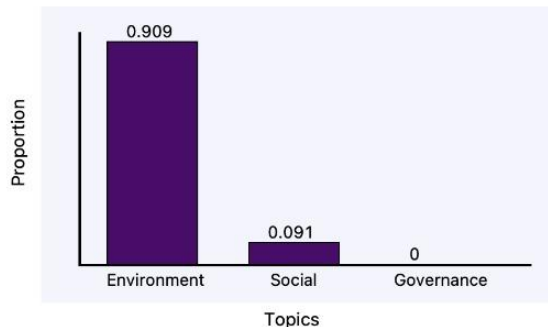
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# Why text summarization?

A lot of time needed to read and filters the  
ESG-related articles for a particular  
company.

# Benefits



## **Summarize the ESG strategies**

Get the main points of the company's ESG strategies

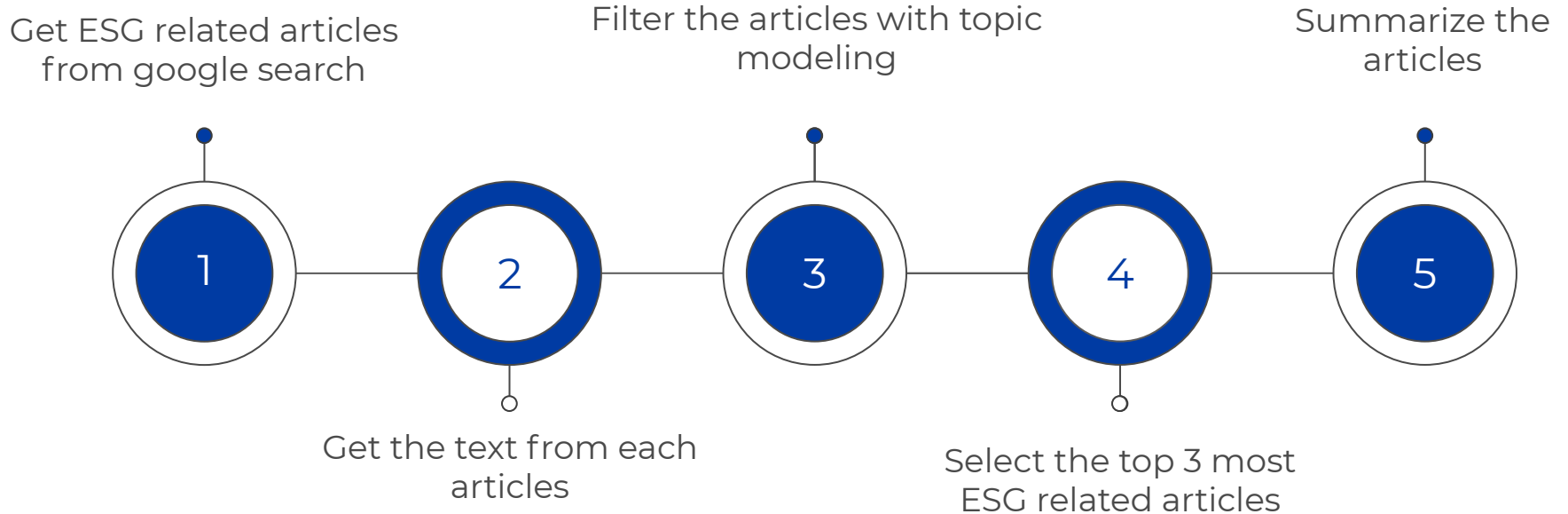


## **Time efficient**

Saves time instead of filtering and reading the articles one by one



# How it works



# Result

Company: OCBC

## ESG Article Summarization

1st article, OCBC's  
sustainability-linked  
structured deposit



the launch of this structured deposit adds to the diversity of the suite of sustainability-linked investments which ocbc bank customers can make. retail investors can now invest in a sustainability-linked structured deposit, the first of its kind in singapore, offered by ocbc bank.

2nd article, OCBC  
strategy for sustainable  
financing



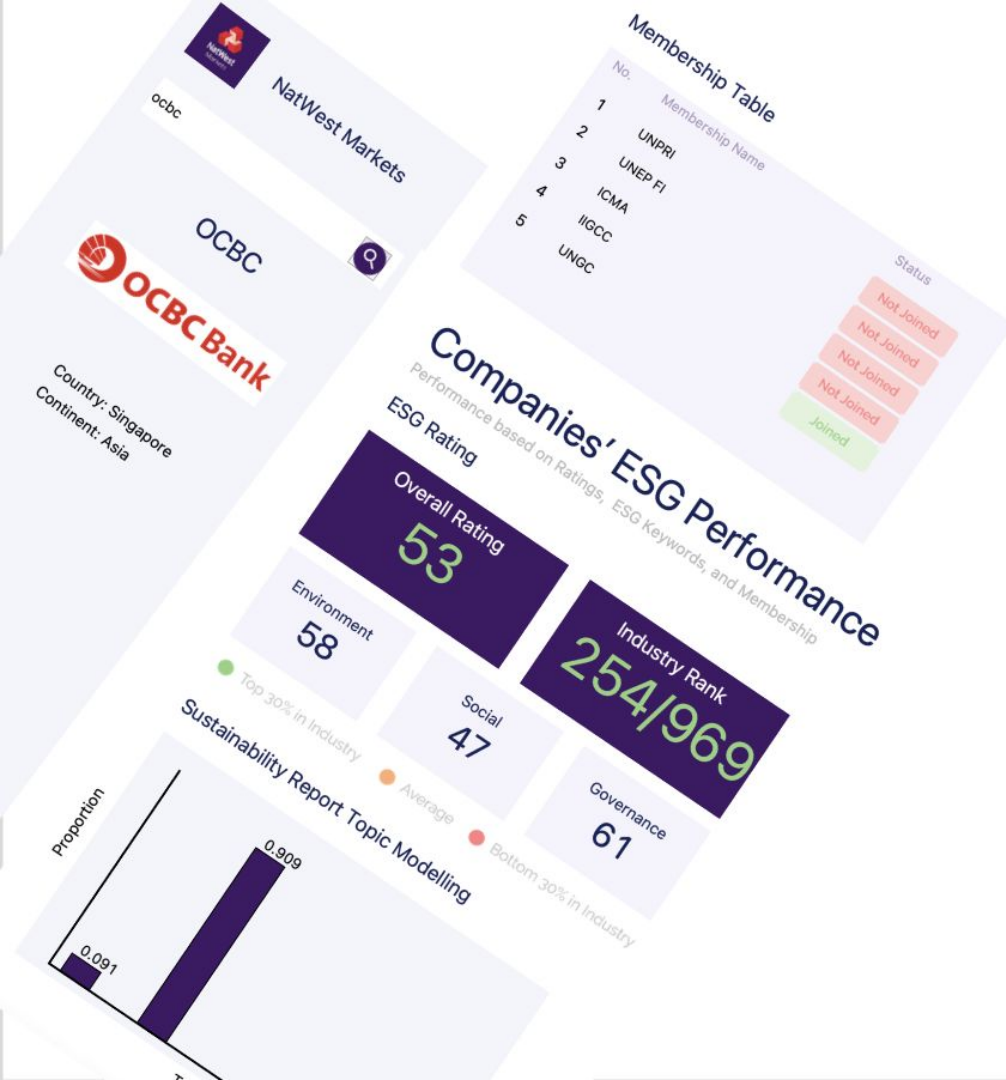
as the concept of sustainable financing evolves, ocbc bank will continue to develop a comprehensive and innovative range of solutions targeted to meet the changing needs and opportunities in the markets where our customers are active in.

3rd article, OCBC strategy  
to support SDG



supporting sdgs ocbc climate index we help individuals and businesses across communities achieve their aspirations by providing innovative financial services that meet their needs. materiality assessment contributing to responsible economic growth and sustainable development through our financing solutions, as well as managing the environmental footprint of our own operations.

# 06 Dashboard Demo Time





NatWest Markets

ocbc



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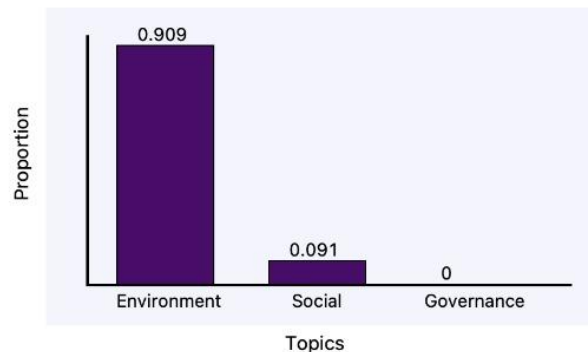
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## Further Improvement

1. Dashboard Deployment
2. Numerical Extraction
3. Improve Processing Speed

# Dashboard Deployment

## Current: **Run locally**

- Must install Python and dependencies

## Future: **Deploy**

- Connect with web hosting
- Use web browser to access
- No need to install anything

# Numerical Extraction

## Current:

### Didn't perform numerical extraction

- Current extraction didn't perform well enough

## Future:

### Perform numerical extraction

- Gain valuable insight with numerical values from Sustainability Reports.
- Explore other libraries

# Improve Processing Speed

**Current: Average time = ~3 mins**

- Summarization and Topic Modelling takes a lengthy time

**Future: Average time < 3 mins**

- Use database with regular updating
- Trade-off: Give option to users (pre-computed or real time data)





# Thank you very much

To **Dr. Shalinda Adikari**, **Mr. Puneet Gupta**, and **Dennis Teo**