

PROJECT HOOKED

KWA KAH BOON, LOH JIAHUI, NEO YIXIN

GOALS AND MOTIVATION

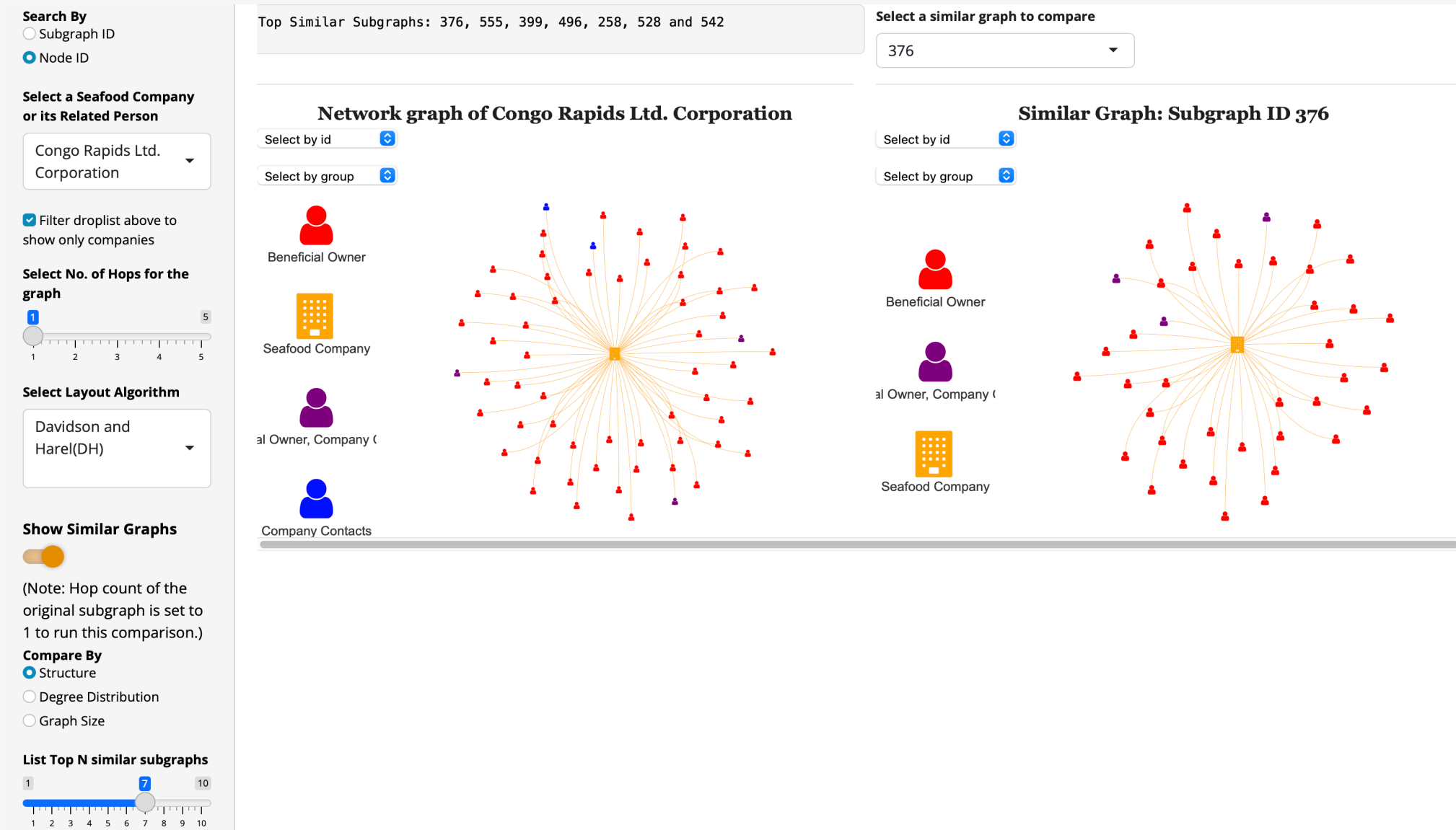
Estimating the size of the illegal fishing industry is challenging due to its clandestine nature. Illegal, unreported, and unregulated (IUU) fishing often involves concealed activities, misreported catches, and illicit trade, making it difficult to obtain precise figures. However, according to the Global Initiative Against Transnational Organized Crime, the value of global illegal fishing activities is estimated to be between \$10 billion and \$23.5 billion annually.

Some common motivations for illegal fishing include high profit margins, strong global demand, poverty and lack of alternative in areas where economic opportunities are limited, and this is usually further exacerbated by weak governance and enforcement. In order to avoid detection and mask their activities, these companies tend to adopt certain approaches such as the creation of shell companies, choosing to operate under the flag of a country that has lenient regulations or misreport and falsify documentations such as catch reports. As such, this project aims to help users explore data from the fishing industry through 3 different lenses; Network, Finance and Country, with the goal of potentially identifying clusters of businesses that show higher risks of illegal activities.

DIFFERENT TYPES OF RISKS

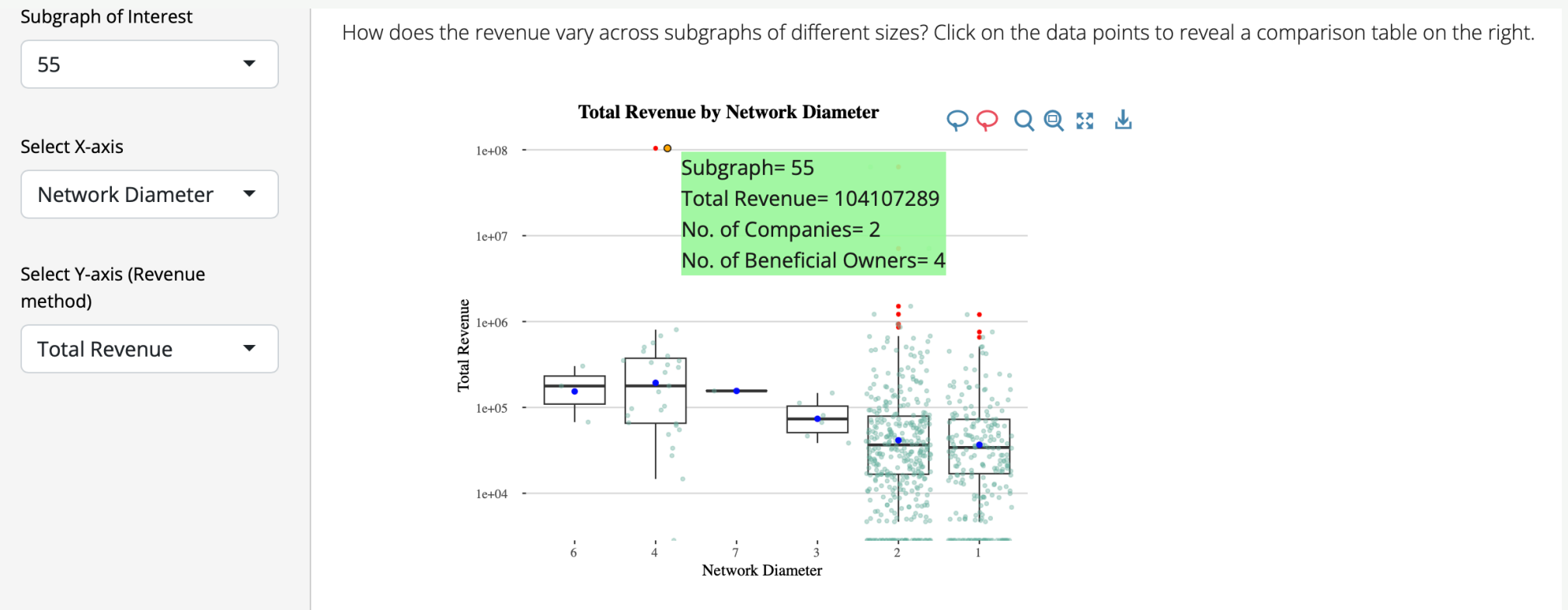
NETWORK ANOMALIES

The network plots allow us to analyse the relationships between entities, as well as the size and complexity of their subgraphs. Users can also compare similar subgraphs to see if the current ones have a typical or unusual structure in the seafood community.



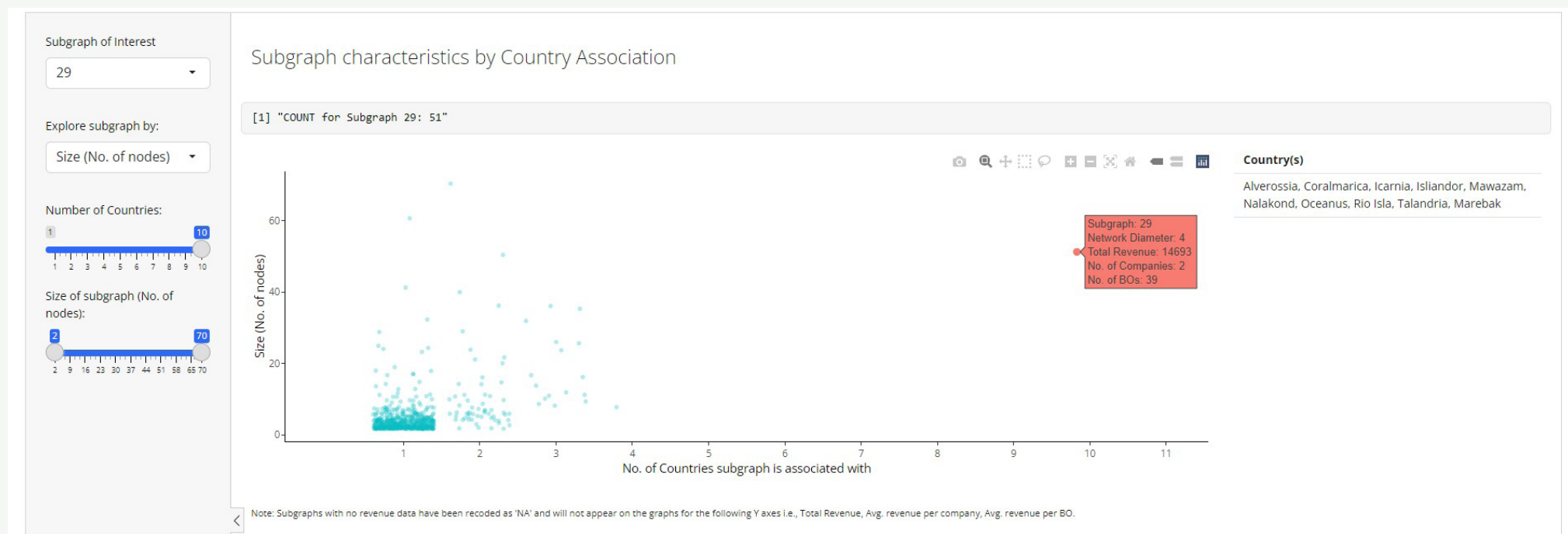
REVENUE ANOMALIES

Using a boxplot to visualise and explore revenue related attributes, we are able to identify subgraphs with exceptionally high revenue. An example is illustrated in the graph below, where subgraph 55 is highlighted due to its high total revenue of 104,107,289 OMU compared to the average value of 348,500 OMU. This in tandem with the low number of companies and beneficial owners associated with the subgraph, makes it a potential candidate for suspicious activities.



COUNTRY ASSOCIATION ANOMALIES

Through a scatterplot, subgraphs with traits that are out of the norm can be easily identified. For example, subgraph 29 having companies that are associated across 10 countries. This was significantly more compared to the industry norm. A closer look at this graph by revenue by entities, we observe that they tended to earn slightly below average, despite it's global network. This comes across as counter-intuitive, and there is value for FishEye to dig deeper and find out more.



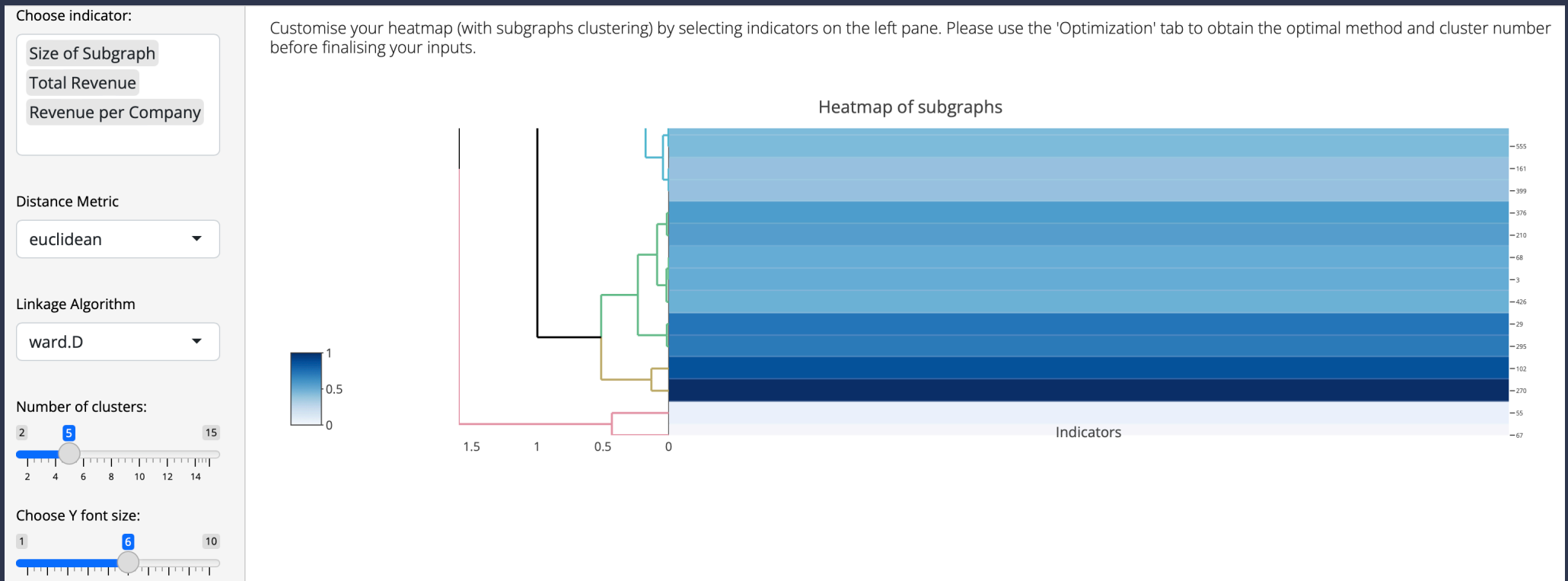
WHAT MAKES A FISHING BUSINESS SUSPICIOUS?



- 1 Multiple Beneficial Owners (BOs) surrounding a Seafood Company**
(Hint: Checkout Subgraph 102)
A company having too many owners could be a red-flag for IUU as this would allow vessel owners to shop and select the vessel flag state of a BO that would facilitate their illicit activities, such as gaining access to fisheries resources which are reserved for vessels owned by a resident BO.
- 2 A BO of a seafood company having a number of other unrelated businesses**
(Hint: Checkout Michael Johnson from Baker and Sons)
While having a BO with numerous businesses unrelated to fishing does not directly imply involvement in illegal fishing, there's a possibility that such unrelated business could be a front to launder illicit gains from IUU or act as a false front for other illegal activities.
- 3 Companies with Low Revenue Per BO**
(Hint: Checkout Rufiji Delta GmbH Express from Subgraph 376)
One possible source of concern is the financial viability of some companies that declared low revenue but did not provide any other information on how their BOs made a living. This could indicate that they had hidden income from illegal activities or that they were involved in tax evasion or money laundering schemes.
- 4 Business Groups with presence in multiple countries**
(Hint: Checkout Subgraph 29)
Business groups that operated in multiple countries and involving numerous individuals could create a complex and opaque structure, making it challenging to track and regulate the group's fishing activities effectively. This structural complexity could be exploited to engage in illegal practices, such as evading regulations, concealing illegal fishing operations, or engaging in illicit activities along the seafood supply chain.

IDENTIFYING SIMILAR SUBGRAPHS

Based on variables deemed important, users can identify similar clusters of subgraph through a customisable heatmap. Users can then go back to the earlier 3 tabs e.g., Network Risks, to compare subgraphs that are clustered together, encouraging an iterative data exploration process.



New areas to explore moving forward

- Explore networks present in the data through other visualisation tools and styles such as hive plots. Doing so may present the data in the fresh perspective leading to new insights.
- Extend the customised heatmap to include an output of how subgraphs are clustered in a summarised table, for easy viewing and analyses.
- Deep dive into the products and services categories offered by the entities through more sophisticated text analytics approaches such as topic modelling to include an additional lens when studying the issue.