The University of Chicago Booth School of Business

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AI and Financial Information
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"I pledge my honor that I have not violated the Honor Code during this homework."

Press Release

Motivation

"Blackrock's "woke" Era is Over" and "ESG is America's Next Dirty Word," Daniel was discouraged as he browsed the WSJ headlines. With the latest shift in political tides, reporters were climbing over themselves to toll the death knell of ESG investing. A type of investing and asset allocation that focused on environmental, social and governance issues.

Despite the challenging headlines, Daniel was determined to help ESG evolve. Preferenced based investing, he knew, had been around for millenia and no short term political trend was going to change that. Whether it was muslim investors avoiding alcohol companies, christian investors refusing to fund casinos and other "sin stocks", or pacifists avoiding defense companies, people have been values-aligning their investments with their conscience since before Wall Street was even a dirt path. Daniel was committed to giving people, who are passionate about the environment, social justice, and good governance, the opportunity to invest according to those beliefs.

To accomplish that, his team needed two things: An internationally recognized framework that defines the goals, targets and measurable indicators of sustainable activity, and he needed a way to connect that framework to people's own preferences so they could align their investing with their conscience.

The UN Sustainable Development Goals (SDGs), clearly checked the first box. Adopted by all 191 member states, the 17 SDGs with their 169 targets and 248 indicators provided a robust analytical framework for measuring sustainable work. Connecting company activities to this framework was a real challenge, however. The team decided to leverage the new breakthroughs in the AI space to accomplish this task. GPT o3-mini was excellent at chewing through large volumes of data. It took SEC reports, company sustainability reports, news clippings and public data and then used similarity scoring to find chunks of reputable text that most related to the SDG being measured. The algorithm then was able to measure the sentiment of those relevant chunks, providing an individual positive, neutral or negative score for each indicator that could be rolled up as targets and ultimately to a final score for each SDG.

Once SDG scores were established, the next step was to allow people to personalize how those scores were used. The team built an intuitive survey that lets people explore the 17SDGs and rank their alignment and excitement for each one developing a personalized weighting for each score that feeds into a final rolled up personalised SDG score for almost every publicly traded company. Investors could use those scores to compare a choice between two investments, or to identify companies to invest in or avoid. Daniel was excited that his team was transforming ESG from some nebulous opaque religion (see figure 1) to a simple set of transparent goals that personally motivates each investor.

Market Opportunity

Despite recent slowdowns, total AUM invested towards ESG is anticipated to grow to $50T in the coming years (Bloomberg Intelligence). This presents a tremendous opportunity to provide best in class analytics that feed solutions for asset owners to build customized portfolio constructions with nuanced SDG-alignment screens. This also presents an opportunity to build targeted SDG-alignment direct indices that are a better alternative to current one-size-fits-all funds that are based on faulty and non-rigorous methodologies.

Further, Daniel saw an opportunity for corporate issuers to use the framework to better communicate with all stakeholders on how their operational or product impacts may or may not align with unique values.

The Solution

AlignAlytics' analysis tool helps solve both *transparency* and *personalization* issues associated with the current ESG movement. On the *transparency* front, it aligns with a clear and recognized international framework (the UN SDGs), and on the *personalization* front it leverages survey scores to give each investor their own score.

Workflow

To do this, the team built a two-stage workflow that first aggregates company scores across each SDG goal/target for both its operational and product alignment. They then deploy an o3-mini API on chunks collected from RAG and Tavily queries to enhance accuracy. These scores are aggregated to allow users to assess how companies align with the SDGs that they value most. Figure 2 is visual representation of the workflow.

Benchmarking & Results

To benchmark the analyzer, the team leverages publicly available data from other ESG raters on the company's alignment with SDGs. AlignAlyics was able to replicate the Robeco ESG alignment scores fairly robustly by deploying RAG and o3-mini on company-level SEC and ESG data ($r > .7$). However, we believe our customized Tavily query that prioritizes credible academic and financial sources (Bloomberg, FT, WSJ) provides additional signal. While our correlation drops ($r \sim .5$), we see this divergence as a competitive advantage. See figure 3 for the benchmarking results.

Limitations & Future Directions

Key limitations the team encountered during their initial tool set-up were lack of publicly available benchmarking data. Longer term, they expect to leverage paid accounts with other ESG providers to gather benchmarking data for future iterations of their tool. Additionally, they were limited both by OpenAI tokens and Tavily queries, and thus could only benchmark a limited number of companies thus far. Increased funding and compute power will alleviate these limitations.

Frequently Asked Questions

1. *Many ESG scores and frameworks exist. Are those bad? Why is another needed?*

There are many providers focused on ranking a company's ESG contributions, our approach differs in two key ways. First we utilize an internationally recognized framework – the UN SDGs– that standardizes our approach and makes it repeatable and well-documented. Second, and most importantly, we incorporate an individual's own beliefs to prioritize into the final SDG scores for each company so that a user can get a customized scoring tailored exactly to them.

2. *How do you connect a company's activities to an SDG score?*

Our approach defines the impact of a company's operations and its products, testing them against each individual SDG target and compiling them into overall scores.

3. *What are the key sources of information used in that scoring?*

The tool leverages an extensive amount of publicly available information to measure a company's performance including SEC filings, ESG reports, articles from scientific journals, and news reports from major media outlets.

4. *How do you test if AI is doing a good job scoring a company?*

While we believe our approach is unique, we benchmark against a few other ESG companies to ensure we understand our results and that they remain consistent and in-line with the frameworks described earlier. To do this, we monitor accuracy vs. other SDG scoring providers, such as Robeco, and we investigate if there are major shifts in correlations.

5. *What does the preference survey look like? What makes it unique?*

Our preference survey is a user-driven investigation into values, priorities, and beliefs. The user answers a series of questions that relate the UN SDGs and their affinity with different goals. Based on these responses, our application creates an individualized matrix score with the user's preferences stored and weighted.

6. *Why did you use GPT o3-mini, vs. other available models?*

GPT o3-mini is a leading reasoning model available for public access. A reasoning model is a stronger tool for this application, because the bespoke analysis associated with relating actions to SDG scores involves higher level reasoning. For comparison, we also benchmarked R1 and Claude Sonnet against Robeco data and achieved correlations in the 0.4 range below our o3 mini results of up to 0.7.

7. *What companies can be scored? Are there any limitations?*

Any domestic public company that publishes a sustainability report can currently be scored using our models. In the future, we plan to expand the universe to international companies, companies without sustainability reports, and even private companies by using other methods.

Figure 1. ESG scoring variance[1]

The graph below clearly highlights how variable the normalized ESG scoring is across differing rating agencies. This is a major issue for investors who are trying to decide what allocations are optimal for their portfolios.

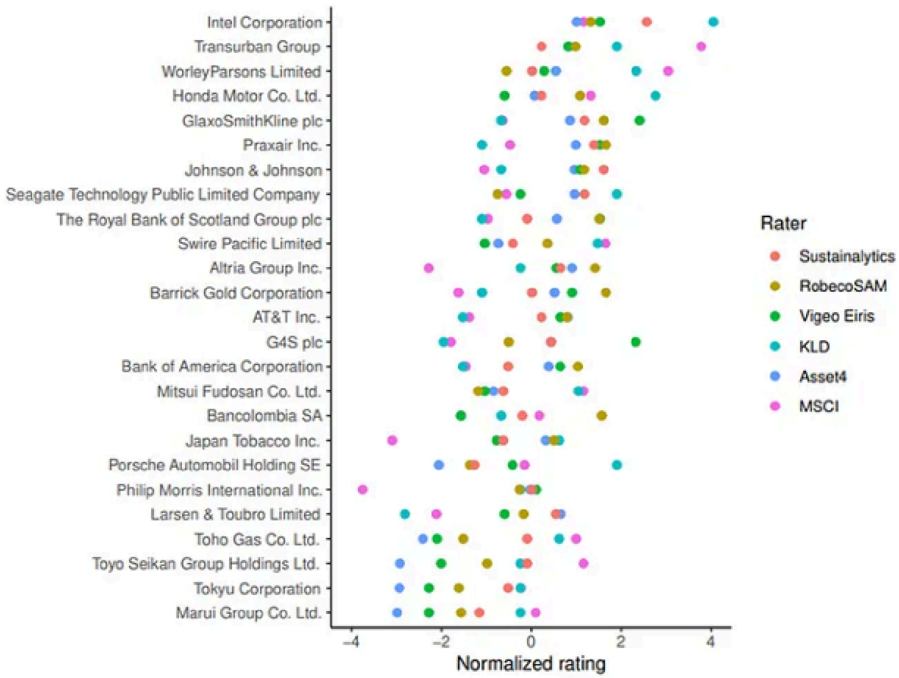
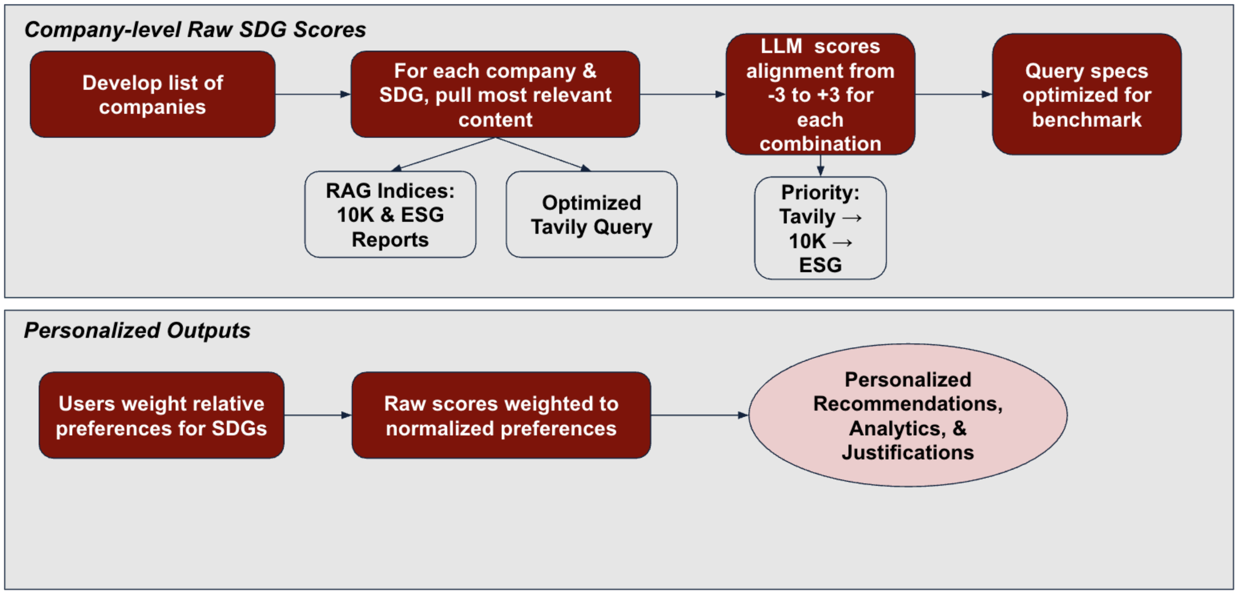


Figure 2. Analytics Tool Workflow

AlignAlytics analyzer's 2 stage workflow defines SDG scores for each company and then combines them with user input to create personalized recommendations.



1. Berg, Florian. "Aggregate Confusion: The Divergence of ESG Ratings." MIT Sloan School of Management, 2022. .

Figure 3. AlignAlytics Benchmarking Results by Analysis Data source

Using only ESG and SEC data, Robeco results can be strongly replicated. Adding in high grade media sources for the full AlignAlytics workflow lowers correlation, but moves toward overall more differentiated results.