GDI

**Global
Disinformation
Index**

Designing
the Index:
A Review of
Good Practices

The Global Disinformation Index is a UK-based not-for-profit that operates on the three principles of neutrality, independence and transparency. Our vision is a world in which we can trust what we see in the media. Our mission is to restore trust in the media by providing real-time automated risk ratings of the world's media sites through a Global Disinformation Index (GDI). For more information, visit www.disinformationindex.org

GDI Global Disinformation Index

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Introduction

Disinformation is the shadowy side to the open internet. It undermines faith in institutions, economies, companies, governments, and even democracy itself.

Disinformation actors can be found around the world, ranging from state-led agencies running propaganda campaigns to private individuals in it for the "lulz". What they have in common is that they have found ways to exploit the fast-paced nature of the modern information ecosystem to spread their messages and fund their work.

The Global Disinformation Index (GDI) will amplify the work of complementary initiatives currently fighting the use and spread of disinformation by bringing much needed metrics to this field. The GDI aims to develop risk ratings for all news domains around the world with an objective to stop efforts to disinform both upstream (where disinformation starts) and downstream (where and how it spreads).

The GDI is developing "indicators" that can identify, measure and validate the risk of a news-related domain to disinform. The methodology is composed of two parts:

- **an automated, machine-learning assessment** that can classify large volumes of low production quality 'junk' sites in real time;[1] and

- **a manual assessment** of higher-quality disinformation outlets that may not be easily discernible by automated technical means.

This paper provides a critical input into the process. It provides a thoughtful analysis of why the GDI should create an index and the features it should address. This is based on good practices identified by similar assessments and risk ratings. An annex at the conclusion of the paper provides a summary overview that has been used in compiling this scoping paper.

Understanding indices

What is an index?

An index is a way of measuring something that cannot be measured as one single fact. It is a composite measure that brings together multiple factors contributing to the topic of study. Instead of a snapshot, indices deliver clarity on topics that can be complex by nature. Slavery,[2] corruption,[3] and freedom[4] were long in the shadows from a data perspective, but they are now topics that can be mapped and tracked over time, compared across countries and in full view of the media. Indices are based on composite indicators which help to initiate discussion and stimulate interest about an area of concern – in this case, disinformation.

An index takes large data-sets and distils them into a single estimate to solve a single problem: to answer one question and create a summary of otherwise hard-to-measure information. By definition, an index is constructed using multiple indicators or data points that may be categorised into different buckets or pillars. The overall index score is most often a weighted composite score that aggregates the individual scores for each pillar.

The Global Disinformation Index will do exactly this: distil myriad indicators into a score for each domain, a score that assesses the risk or probability of the entity hosting or distributing disinformation. The index will focus on the domain level to understand what signals exist that help to flag domains as a disinformation risk – based on their metadata and other observable factors. By measuring these different elements, we are able to scope, rate and track a problem that is not easily understood in terms of one fact or data point alone. The GDI will also be one of the first initiatives to adopt such a framework-based approach to measure disinformation using an index.

There are a variety of motivations, ranging from the political to the ideological, that are feeding efforts to disinform the public. One of these motivations is financial. Disinformation actors with financial motivations are abusing the online advertising network to attract ad placements, drive domain revenues and disseminate their content.

Domains are the fundamental atomic unit of internet publishing, and of ad money flow. As such, domains are a good measurement unit for the GDI and its first iteration of an index. Trying to measure disinformation at a higher level – such as for an entire country– would require the GDI to assess a representative sample of domains at the country level. Such a task may not be currently feasible for the first iteration of the index. Equally, trying to assess disinformation at a lower level, such as an author, would not be an effective unit in terms of trying to stop the financial incentives for domains that disinform.

The GDI rating uses an "ecosystem" view to determine the content and context flags to assess any news domain's risk of disinforming. For the GDI, neutrally assessing a domain's disinformation risk can help to clean up the ad-tech system. A neutral, transparent, and independent risk rating can help advertisers and ad exchanges make more informed decisions about which domains receive their ads. For example, brands can use these trusted ratings as part of ad spend criteria, such as a commitment not to buy ads on any domain that does not meet a given score on the GDI.

Comparable assessments

To assist with the index development, the GDI produced an overview of comparable initiatives that look at a similar level of analysis to score or assign a rating against a set of indicators (see Figure 1).

Based on the selected universe of the 18 indices assessed, the following general characteristics emerge:

- Seventeen of the indices provide some form of scoring.

- Two out of every five indices weight their scores.

- Almost two-thirds of the indices make their data-sets publicly accessible.

- Thirteen issue ratings every year; three others update the data continuously.

- The majority of the assessments use secondary data to compile their ratings.

- The median number of pillars used is four.

- There is a broad range in terms of the number of indicators collected and number of entities assessed.

These indices and ratings-style assessments were selected because they represent a good distribution of approaches taken to develop an index and its accompanying methodology. In total, this sample covers five different thematic sectors:

- finance,

- aid transparency,

- business environment,

- corporate responsibility and sustainability, and

- governance.

Most of the indices selected focus on a similar sub-unit of analysis. For example, the indices in the areas of finance and corporate social responsibility (CSR) rate companies or firms, which is similar to the domain-level

approach of the GDI. These indices rely predominantly upon assessments by analysts and use weighting methods that can inform the GDI as it determines a plan for data aggregation.

The other topical indices we have reviewed, especially the governance-related indices, rely upon expert surveys and/ or third-party data to construct their assessments. These methods are also relevant to the GDI as it determines how to use indicators (assessed by experts or others) in order to construct the index (see Annex 1).

Upon review, these comparable assessments provide the GDI with some of the following takeaways:

- There is no standardised approach to constructing an index – it depends primarily on the topic being addressed and the amount of data available to explain it.

- Indices or assessment ratings that rate a large number of companies or entities rely upon a larger set of indicators and themes. These indices also combine primary assessments along with other data points to arrive at the final score.

- Credit or CSR ratings that are conceptually similar to the GDI rely more on in-house analysts or researchers to conduct their assessments. The majority of the ratings in these fields are proprietary and accessible only to their customers/members. This can be understood as a result of the cost and overheads of keeping these analysts on staff.

- External researchers or experts are used more by indices that cover governance or public policy issues. A majority of these indices also make all or most of their data public.

These findings will be used to help the GDI build its index and to accurately assess the cost and organisational implications of the different approaches for data collection.

At a glance:

| **18** assessments | **5** topics | **7** use weights | **10** make data public |

Number of assessments

Pillars

Pillar	Count
1	1
2	3
3	5
4	2
5	2
8	1
9	1
10	1
12	1
20	1

Periodicity of publication

Periodic **5.5%**

Continuous **17%**

Bi-annual **5.5%**

Annual **72%**

Data collection types

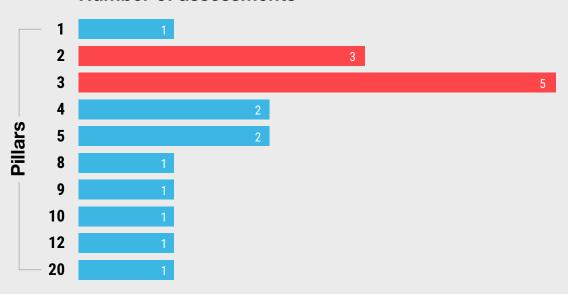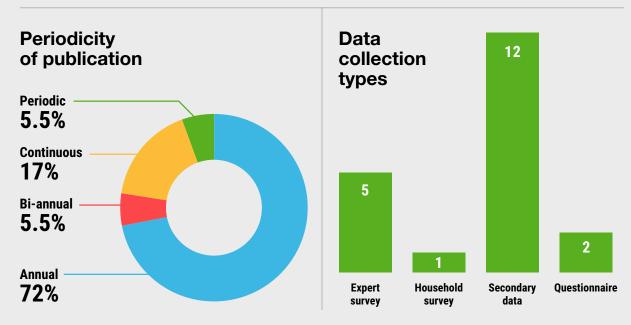| Expert survey	Household survey	Secondary data	Questionnaire
5	1	12	2

Figure 1: Overview of Selected Global Assessments

NAME OF ASSESSMENT	ORGANISATION	TOPIC/ SUBJECT	UNIT OF ANALYSIS	PILLARS	PERIODICITY	DATA COLLECTION TYPES	SCORING	WEIGHTED	PUBLICLY AVAILABLE
Aid Transparency Index	Publish What You Fund	Ratings of aid agencies	Organisation	5	Bi-annual	Expert survey	Y	Y	Y
Charity Navigator ratings	Charity Navigator	Charity effectiveness	Organisation	2	Continuous	Secondary data assessments	Y	N	Y
Global Competitiveness Report*	World Economic Forum	Economic prosperity	Country	12	Annual	Expert survey	Y	Y	N
Ease of Doing Business Index	World Bank	Business competitiveness	Country	10	Annual	Expert survey	Y	N	Y
SAM Corporate Sustainability Assessment	RobecoSAM AG	Sustainability ratings	Company	3	Annual	Questionnaire	Y	Y	N
MSCI ESG Index*	MSCI	Sustainability ratings	Company	3	Annual	Secondary data assessments	Y	Y	N
CDP annual survey	CDP	Sustainability ratings	Company	20	Annual	Questionnaire	Y	Y	N
Transparency in Reporting on Anti-Corruption	Transparency International	Disclosure and sustainability	Company	3	Periodic	Secondary data assessments	Y	N	Y
Resource Governance Index*	Natural Resource Governance Institute	Governance	Country	3	Annual	Expert survey and secondary assessments	Y	N	Y
Corruption Perceptions Index	Transparency International	Governance	Country	1	Annual	Secondary data assessments	Y	N	Y
Ibrahim Index of African Governance*	Mo Ibrahim Foundation	Governance	Country	4	Annual	Secondary data assessments	Y	N	Y
Rule of Law Index*	World Justice Project	Governance	Country	8	Annual	Expert survey and household survey	Y	N	Y
Freedom in the World	Freedom House	Governance	Country	2	Annual	Secondary data assessments	Y	N	Y
Democracy Index	Economist Intelligence Unit	Governance	Country	5	Annual	Secondary data assessments	Y	N	N
Morningstar Credit Ratings	Morningstar	Finance	Financial Institution	4	Continuous	Secondary data assessments	Y	Y	N
Moody's Bank Ratings	Moody's	Finance	Financial Institution	2	Continuous	Secondary data assessments	Y	Y	N
Human Development Index	UNDP	Economic Development	Country	3	Annual	Secondary data assessments	Y	N	Y
Legatum Prosperity Index*	Legatum Institute	Economic Development	Country	9	Annual	Secondary data assessments	Y	N	Y

* Please see Annex 1 for a summary of these indices.

Assessing disinformation

There are currently a few initiatives and efforts to assess journalism, misinformation and/ or disinformation.

For our analysis, we have selected the initiatives which attempt to measure in a structured manner some aspect that is relevant for the GDI: the quality of journalism, or the risk of false or deliberately misleading content across news domains.

From a methodological standpoint, mapping some of the main disinformation/ misinformation initiatives does not reveal many explicit examples aimed at assessing the credibility of a news site or domain (see Figure 2). There are several initiatives that attempt to measure components of disinformation or the reach of disinformation. However, relatively few work with explicit indicators. And in cases where there are indicators – such as with NewsGuard or Eye/O – the full data-sets are often not open source.
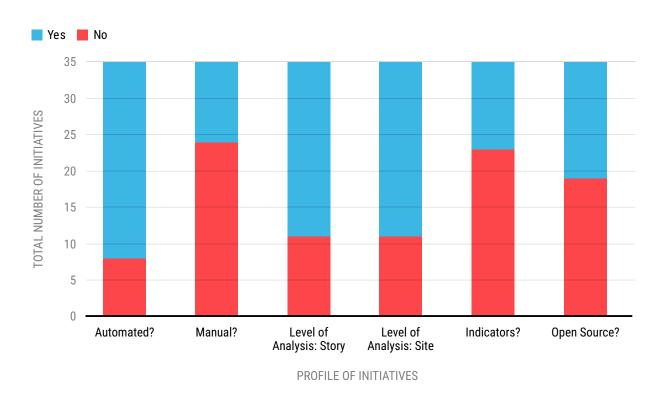
Overall, current initiatives can be broadly categorised as:

- understanding the reach and impact of disinformation,[5]

- fact-checking various domains,[6]

- defining and measuring the quality of journalism,[7] and

- developing indicators to measure disinformation.[8]

Figure 2 provides an overview of some prominent and promising initiatives in the disinformation space and sketches the profiles of these efforts across a few key markers. Out of the 35 initiatives reviewed for this scoping paper:

- approximately 75 per cent use automated methods to assess disinformation risk, and under a third of these efforts use a manual component to their assessments;

- a majority of efforts (~ 70 per cent) conduct their assessments at the site level and are focused on content and the story;

- a minority of these initiatives are structured around indicators and a framework; and

- under half of the initiatives are open source.

Figure 2: Characteristics of disinformation assessments

TOTAL NUMBER OF INITIATIVES

Legend: ■ Yes ■ No

X-axis: Automated? | Manual? | Level of Analysis: Story | Level of Analysis: Site | Indicators? | Open Source?

PROFILE OF INITIATIVES

Source: Based on an internal assessment of selected initiatives working on disinformation. Please see Annex 3 for a list of the initiatives.

In addition, we reviewed a selection of these initiatives to further assess the approaches currently used to measure disinformation (see Annex 2). Most efforts are focused on assessing the quality of journalism or the measures in place that contribute to high-quality journalism. None of them conduct metadata assessments of news domains, and those that use automated methods are more focused on analysing the news content. The GDI therefore will be a valuable addition to this list of initiatives. The metadata assessment will be a completely new approach for measuring disinformation. This, combined with a manual review of certain domains, will be the first of its kind, and allows the GDI to offer a more comprehensive and structured format to measure the risk of disinformation.

Good methodology design

The design and methodology of the GDI will be key to its uptake and acceptance.

An index, by definition, takes a topic that is hard to quantify and attempts to measure it in order to determine the performance of the entities being assessed. A simplified measurement can then help in classifying or grouping the entities into different categories based on their scores. Since the GDI will attempt to rate the disinformation risk using proxy measures, it is important that the methodology be transparent and easy to communicate.

The key components of a good index are:

- The index is easily broken down into its sub-dimensions or pillars. In other words, the GDI should be able to clearly demonstrate how the pillars used for computing the GDI are connected with disinformation.

- Indicators that are used to measure the index clearly fall under one of its pillars, and any change in the index value can be traced back to changes in the underlying indicators.

- The index sets clear thresholds for rating or classifying the units being studied into different groupings. For example, if the GDI uses a letter rating scale, then it has to establish clear principles that demonstrate and communicate the differences across the rating scales.

- The data points used for the index come from reliable and trustworthy sources. For example, the GDI will determine whether there is data that is already being collected by other organisations, and whether these sources have strong mechanisms in place to validate and publish reliable data. In the absence of such sources, the GDI will have to collect the data itself using the correct mechanisms.

- The data collection and scoring methodology is transparent and easily communicable.

- The methodology and/or the data collected is/are unique, and the index adds value or brings new information that is not readily available.

- The way in which the index scores are presented fits its key objectives. In other words, if one of the core objectives of the GDI is to position the GDI as a reliable source for spotting disinformation domains especially for brands buying ad space, then the way the GDI is set up and presented must fit well into what ad buyers see as important in their decision-making process.

INDICATOR SELECTION

Indicators are the building blocks of any index. The quality of an index is based on its underlying data. Therefore, when selecting indicators, we have to rely upon existing literature and evidence that proves a high degree of correlation of the indicators to the index measure. For an index to have high credibility, the indicators that compose the index ought to have sound backing from subject matter experts, academics, practitioners, and research institutes in order to establish the relevance of those indicators for the index. Strong indices ensure that their indicators are reviewed and accepted by an advisory panel that includes experts with subject matter expertise. They may also conduct an independent statistical review of the indicators to further their credibility and accuracy.

DATA SOURCES

Where we get the data for our index is the next important point. Several globally reputable indices rely upon third-party data. Using data that are already available is often a sustainable option, as data collection costs are often very high, especially when the scope of coverage of the index is global. If the GDI is to rely upon external data sources, we must ensure that the sources chosen are credible and follow a clear, structured method for collecting and scoring their indicators. Additionally, the sources used must be global, i.e. data for a specific indicator must be available for multiple countries over time. Given that the GDI will be in the public domain, it is important that the data sources are also in the public domain or that the data and related documentation used by the GDI are made public.

DATA COLLECTION

In cases where no reliable third-party data sources exist, we must collect the data required for compilation of the GDI firsthand. In such a case, we need to decide on the appropriate method to use for collecting these data. The options available are doing surveys or in-house assessments.

For surveys, it is necessary to identify the right group to answer the survey questions. Often indices measure specialised topics that require domain-specific knowledge. Therefore, several indices rely upon experts who have specialised knowledge about the subject being measured. For the GDI, this would mean relying upon experts who are journalists or researchers, and upon others who have strong knowledge of disinformation risks.

Some indices also rely upon public perceptions, which are used as evidence to support their calculation. Thus, surveys may be included in the scoring process, made a component of the index scoring methodology, or used as both.

A key component for survey-based data collection (especially when relying on experts) is to achieve triangulation or validation with the other indicators and/or pillars of the index. This is achieved either by using multiple sources to assess each indicator, or by conducting a well-defined peer review or internal review of the underlying data.

SCOPE/COVERAGE

Often, the selection of third-party sources to use is based on the number of countries covered by those sources. Many indices rely upon multiple data sources to enhance coverage. However, not all data sources necessarily include all countries. Each country may be covered by a subset of sources. In such a scenario, a methodological decision has to be made about the minimum number of sources that would be required to publish an aggregate score for each country. For example, the Corruption Perceptions Index[9] takes such an approach, with each country covered only by a subset of sources; a score is published for a country only if it is covered by at least three of the 13 data sources.

SCORING PRINCIPLES

Once data are collected for all relevant indicators, the next step is to determine the optimum scoring system. For example, we may use multiple questions in a survey to ascertain the value of a single indicator. In such instances, it is important to establish a standardised scoring methodology that translates survey response scores into indicator values. Achieving variation or dispersion in the scores is a key principle to follow in establishing the right scoring system. In other words, for each indicator, the audience or reader should be able to clearly differentiate and understand what a score of 3 out of 10 means and what a score of 7 out of 10 means. The scale used should also be sufficiently large to establish clear differences. If third-party data sources are used to compile the index, then we must determine the scale conversion factors to convert scoring scales used by various data sources into a standardised GDI scale. For example, if a data source scores an indicator on a scale from 0 to 10, but the GDI scores from 0 to 100, then we will need to convert the scores from the source scale to the GDI scale. A common approach in

index construction is to standardise scores from the source data to a standard normal distribution scale[10] and then rescale the values to the index scale.

AGGREGATION OF VARIABLES

Most indices use multiple indicators to arrive at a composite index value. This requires a system of aggregating individual indicator scores in order to compile the final score per domain or per country. The first step to resolve during the variable aggregation process is to account for any missing values across variables. Often, data are not available consistently across all sources. In such cases, we may need to use data manipulation methods such as regression-based imputation techniques to assess missing data points, and agree upon a method to incorporate these imputed data points into our score calculations. Once missing data points are accounted for, a standard practice is to create dimensions or pillars to categorise the indicators. This makes it possible to have an individual pillar score for each domain. Often, such scores are simply the average scores of all the indicators under each pillar. However, no matter how simple and easy to understand this approach is, it may not work if the number of indicators under the different pillars is highly varied or inconsistent. Once the pillar scores have been determined, the final step is to aggregate these scores into a final domain-level score. At this stage, it is important to decide whether to weight each pillar differently. Pillar weights can be determined using a regression analysis of each underlying indicator's influence on the outcome variable.

TRANSPARENCY AND SIMPLICITY

Finally, a general principle of good index methodology is to keep it transparent and simple. It is a good practice to make the index methodology publicly available so that users clearly understand how it is constructed. This must include detailed information regarding data sources, lists of indicators used, data collection and scoring principles, data aggregation methods to arrive at the index score, and any ranking or classification principles associated with the index. Making this information available in the public domain establishes trust and credibility. Additionally, a simple index methodology is key to communicating what is being measured to a non-technical audience. Hence, the index methodology should carefully balance the value added through complicated methodological design against the ability to communicate it to a diverse audience.

ADVISORY COMMITTEE

Most well-known indices engage a technical advisory committee that includes both subject matter and index development experts to advise them on the design and construction of the index. The role of such committees is to both advise and provide continual oversight to the index. For example, indices should conduct periodic methodological reviews to ensure that the original methodology is still applicable, and make necessary adjustments to keep up with current needs or requirements.

A technical advisory committee needs to have people with hands-on technical expertise, while ensuring a balance between experts from different regions, backgrounds and experience. Most advisory committees include between five and 15 members selected from other organisations or research bodies. They should include people with the time and knowledge to engage in a process that is voluntary but critical to ensure a credible and methodologically sound index.

Next steps

The GDI is looking at a range of factors in defining its methodological framework for the index.

The next step in the development process is to align the automated assessment of domains with the subsequent human review.

The component of human review and the procedures for establishing it are highly dependent on the output of the automated review. The GDI is in the process of establishing a technical advisory group (TAG) to review the potential options for constructing the index. This committee will be tasked with considering issues related to subject matter (what indicators to use, where to find them, etc.), methodological matters (pillars, scoring, aggregation, etc.), and data collection (survey expertise). The group will then work to advise the GDI on selecting the best option for constructing the index. We expect to define this by the summer of 2019 and then pilot the index in a limited number of countries by early 2020.

Annex 1: Summary of selected assessment examples

Finance

MORNINGSTAR CREDIT RATING

Summary: Morningstar Credit Ratings, LLC combines qualitative judgments determined by their analysts with observable financial and market data to arrive at a credit score. The credit score is then combined with three other components (bank solvency score, stress test score and distance to default score) to arrive at a final weighted average for a bank's credit rating score.

The GDI can draw important methodological inferences from Morningstar ratings, as the latter are produced continuously based on the available data (assessments seem to be made on a monthly basis) and include both analyst assessments and other data points. Additionally, the Morningstar ratings take into account a complex universe of banks of varying sizes, and attempt to account for the risk factors each of them faces. These aspects are useful for the GDI because they are similar to the challenges involved in rating domains on their likelihood of carrying disinformation.

Link to methodology:
https://ratingagency.morningstar.com/PublicDocDisplay

MOODY'S BANK RATINGS

Summary: Moody's Bank Ratings are similar in their assessment style to the Morningstar ratings. They assess risk across two dimensions that include seven themes. The risk ratings are provided by analysts based on third-party data. While detailed information on Moody's methodology is not available publicly, the ratings methodology followed by Moody's is interesting for the GDI, mainly for the type of guidance and standardisation principles Moody's analysts use to rate the banks. If the GDI were to use analysts to rate domains, it would need to produce clear guidance for domain assessments and how to convert these into scores. In addition, such an approach must have procedures to validate and verify analyst-determined ratings to minimise bias.

Link to methodology:
https://bankratings.moodys.io/#ssa

Aid transparency

THE AID TRANSPARENCY INDEX

Summary: The aim of the Aid Transparency Index is to push donors to publish aid and development information in an open data format. The Aid Transparency Index is published once every two years (until 2016, the index was published annually). It covers all aid agencies or donors that have an annual budget of at least USD 250 million. The Aid Transparency Index relies mainly on self-published or self-reported data for determining the indicator scores, and then aggregates these to calculate index values. For the GDI, the index is interesting because self-reported information could be a useful component for some of the GDI indicators (such as whether a news domain has issued corrections or has been externally fact-checked).

Link to methodology:
https://www.publishwhatyoufund.org/the-index/methodology/

Business environment

GLOBAL COMPETITIVENESS REPORT

Summary: The Global Competitiveness Report is an annual report published by the World Economic Forum (WEF) that ranks countries' ability to provide prosperity to its citizens. The Global Competitiveness Index measures the set of institutions, policies, and factors that establish current and medium-term levels of sustainable economic prosperity. The index is computed from approximately 110 variables. Of these variables, two-thirds are sourced using an executive opinion survey: a representative survey of business executives in each country conducted by Ipsos or other local research partners. The remaining one-third of the variables is sourced using publicly available data. WEF uses a survey-based approach to obtain data for a majority of its indicators. On average, between 80 and 100 executives are interviewed in each country, and the survey contains approximately 150 questions, most of which carry a rating scale from one to seven. While weights are used to aggregate pillar scores into a final score, survey data are treated as equal to other data and treated in the same way. The GCR is one of the indices in the area of economic development or competitiveness that uses an expert survey-based approach to calculate an index – an aspect that could help to inform the design of the GDI.

Link to methodology:
http://reports.weforum.org/global-competitiveness-report-2018/chapter-3-benchmarking-competitiveness-in-the-fourth-industrial-revolution-introducing-the-global-competitiveness-index-4-0/

Link to EOS survey information:
http://reports.weforum.org/global-competitiveness-report-2018/appendix-b-the-executive-opinion-survey-the-voice-of-the-business-community/

THE EASE OF DOING BUSINESS REPORT

Summary: The Doing Business project provides objective measures of business regulations and their enforcement across 190 economies and selected cities on the subnational and regional levels. The report surveys over 12,500 expert contributors (lawyers, accountants, etc.) in 190 countries who deal with business regulations in their day-to-day work. Respondents fill out written surveys and provide references to the relevant laws, regulations and fees, based on standardised case scenarios with specific assumptions, such as the business being located in the largest business city of the economy. Data from the survey is subjected to several rounds of verification by the DB team, who compare survey results from different experts, and also review supporting documents provided by the experts as evidence for their assessments. In this regard, the Doing Business Index is similar to the WEF report in that it relies mainly on an expert assessments to determine the index scores.

The Ease of Doing Business Report is a good resource for the GDI, primarily for the survey component of its methodology. This survey can inform the GDI about the logistics of using a survey approach, such as relying on local partners or survey firms to run the survey, as well as in the design of the survey instrument itself (i.e. as a tool to acquire data on the indicators of interest).

Link to methodology:
http://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB19-Chapters/DB19-Score-and-DBRankings.pdf

Corporate responsibility and sustainability

SAM CORPORATE SUSTAINABILITY ASSESSMENT (SAM)[11]

Summary: The SAM is produced annually and evaluates companies' sustainability practices across more than 600 data points covering environmental, social and economic indicators. Each year, more than 4,500 companies are assessed in 60 industries around the world. In 2018, over 2,600 companies were assessed and more than 2.4 million data points collected. Data is collected via a self-assessment questionnaire, with only the largest companies invited to participate. The SAM uses industry-specific and financially relevant metrics as a benchmarking exercise. The assessment has been performed since 1999. Companies are grouped by scores into different quartiles. Awards (gold, silver and bronze class, and "industry mover") are given based on a company's score and its variance from the top-scoring companies (1 per cent, 1 to 5 percent, 5 to 10 percent, and within the top 15 percent).

CSR ratings are interesting for the GDI mainly because they consider different types of data points. For example, because the SAM uses industry-specific metrics for its assessment, not all companies can be classified based on a standardised set of indicators. The GDI may also utilise some of these techniques, for instance, in reviewing those domains that cannot be definitively classified as junk by performing a second assessment on an additional set of indicators.

Link to methodology:
https://yearbook.robecosam.com/methodology/

MSCI ESG INDEX

Summary: The MSCI Environment, Social, and Governance (ESG) Ratings are designed to help investors to understand ESG risks and opportunities and integrate these factors into their portfolio construction and management process. One hundred and eighty-five experienced in-house research analysts assess thousands of data points across 37 ESG Issues. The ratings calculate each company's exposure to key ESG risks based on a granular breakdown of its business: its core product or business segments, the locations of its operations, and other relevant measures such as outsourced production or reliance on government contracts. Companies are rated on a scale from AAA

to CCC relative to the standards and performance of their industry peers. To arrive at a final letter rating, the weighted averages of the key issue scores are aggregated and companies' scores are normalised by their industries. The MSCI ratings are relevant for the GDI for their letter ratings scale and the use of in-house analysts to rate companies. This is one possible approach the GDI might consider: assessing domains using research analysts and providing a lettered rating for each domain. Moreover, this example is relevant because it looks at various dimensions of the issue (sustainability), similar to what the GDI is proposing (for disinformation).

Link to methodology:
https://www.msci.com/eqb/methodology/meth_docs/MSCI_ESG_Focus_Index_Methodology_Apr18.pdf

CDP

Summary: CDP is a not-for-profit charity that runs a global disclosure system for investors, companies, cities, states, and regions to manage their environmental impacts. By scoring businesses from A to D-, CDP takes organisations on a journey through disclosure to awareness, management, and finally to leadership. CDP assesses companies based on self-disclosed data in three areas (climate change, water and forests), using a standardised questionnaire. The responses provided are then reviewed and rated by CDP and its accredited scoring partners.

Similar to the other ESG ratings, CDP also uses letter ratings to classify companies. The parameters for how these ratings are derived from underlying scores could be useful for the GDI. The CDP model is also interesting for the fact that CDP operates under the principle of a charity that offers paid members additional benefits (including access to data and research) as a means to gain income streams that are reinvested in the organisation.

Link to report containing methodology:
https://6fefcbb86e61af1b2fc4-c70d8ead6ced550b4d987d7c03fcdd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/004/069/original/CDP_Europe_report_2018.pdf?1551180881

Governance

RESOURCE GOVERNANCE INDEX

Summary: The 2017 Resource Governance Index (RGI) measures and compares how well countries govern their extractive resources – in terms of both law and practice. There are three components in the RGI: value realisation, revenue management, and enabling environment. The RGI assesses two types of data: 1) primary research that informs the value realisation and revenue management components of the index, and 2) secondary data to calculate the enabling environment component. Expert researchers selected in each country are sent a questionnaire. Researchers are selected using an open recruitment process, in which the institute posts an advertisement to attract applicants, and chooses researchers that best meet three standards: 1) good working knowledge of the country they are to assess, 2) good knowledge of resource governance, and 3) no direct employment by the government under assessment.

For each question, researchers are asked to choose among the multiple-choice answers, write a justification for their choice and provide documents to support their answer. The data collected are then peer-reviewed as well as reviewed by NRGI staff members. The peer reviewers are also chosen using an open selection process. For each assessment, a peer reviewer checks and validates the answers given by the researcher. Each reviewer marks answers they agree with, and in cases where they do not agree, choose their preferred survey answer, justify it and provide any supporting documents to make their case. Each RGI score or "composite score" is the average of the scores of the three components of the index. The index is issued annually, with the 2017 RGI covering 81 countries.

The RGI's system of researchers and peer reviewers is potentially useful for the GDI. Plus, the RGI questionnaire asks researchers to answer both "legal framework" and "practice" indicators. The "practice" indicators are an assessment the researcher has to make regarding how well a specific law or regulation is being followed. This can be a bit subjective. It is an aspect that may be relevant to GDI if it uses indicators that could be subjective, such as journalistic quality. The use of a peer review by RGI to validate responses could be another interesting feature for the GDI to ensure that the opinions provided by experts are cross-validated.

Link to methodology:
https://resourcegovernanceindex.org/about/methodology

IBRAHIM INDEX

The Ibrahim Index of African Governance (IIAG) is an annually published index that provides a statistical measure of governance performance in 54 African countries. The index measures countries on four pillars consisting of 102 indicators. The index is calculated based on 35 other data sources, and refined on an annual basis. When new historical data are made available, or the structure of the index is strengthened, the entire data-set is updated back to the first year of the time series. The Ibrahim Index does not use any primary data or in-house experts or researchers to score indicators. Instead, it relies on a vast set of third-party data sources. Using a very strong underlying methodology for grouping and clustering several variables from these third-party data sources, the index scores each of its 102 indicators. It then applies linear, additive aggregation and weights each sub-component equally within its dimension. The linear aggregation method has advantages in its simplicity, transparency and accessibility. The Ibrahim Index would be a good resource for the GDI if it were to rely upon data collected by third parties.

The main takeaway for the GDI from the Ibrahim index is its approach to index development. The Ibrahim Index provides a reliable and sound evidence base for the use of each indicator and how each – alone, and in combination – contributes to or influences the dimension under which they have been categorised. Once this evidence is established, the index itself is a simple aggregation of the individual indicators. Unlike the other indices, this index takes a different approach and places a greater emphasis on establishing a strong link between the indicators used and the constructs measured (i.e. their interactions).

Link to methodology:
http://mo.ibrahim.foundation/iiag/methodology/

Link to technical methodology note:
http://s.mo.ibrahim.foundation/u/2018/11/21165416/2018-IIAG-Methodology.pdf?_ga=2.63699435.573768794.1554708662-27375864.1553449439
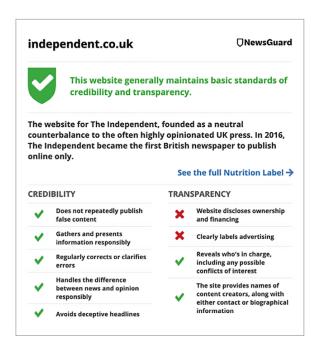
Annex 2: Summary of selected disinformation assessments

JOURNALISM TRUST INITIATIVE

Summary: The Journalism Trust Initiative (JTI) is an initiative launched by Reporters Without Borders (RSF) with the objective of promoting trustworthy journalism. In order to do this, JTI has developed guidelines to address three themes: Identity and Transparency, Accountability and Professionalism, and Independence and Ethics. The JTI has put forward a set of standards, along with the indicators relevant for measuring or tracking news organisations and media sources for adherence to these standards. The JTI offers a comprehensive set of indicators for the GDI to choose from, and the JTI could be a key source to feed into the GDI. Currently, the JTI is only a list of indicators; no data on these indicators have been collected. The GDI could incorporate a subset of the JTI indicators to be included in the human review component – specifically, those that fall under the accountability and professionalism theme of the JTI. The decision about which indicators to incorporate would depend on the propensity of the selected JTI indicators to accurately inform disinformation risk. This is because the JTI indicators are intended to promote trustworthy journalism and are not directly connected to disinformation.

NEWSGUARD

Summary: The NewsGuard team of trained journalists and experienced editors rates and reviews thousands of news and information websites based on nine journalistic criteria, such as whether the site regularly publishes false content, reveals conflicts of interest, discloses financing, or publicly corrects reporting errors. Depending on how a site performs on the nine criteria categorised under two dimensions, it is assigned a colour rating. Sites with green ratings follow basic standards of accuracy and accountability. Sites with red ratings do not. The review of sites is performed manually by journalists and does not use algorithms. A snapshot of how NewsGuard rates sites is presented above.

Note: Based on rating as of 20 May

Link to methodology:
https://www.newsguardtech.com/ratings/rating-process-criteria/

THE TRUST PROJECT

Summary: The Trust Project is an international consortium of news organisations building standards of transparency and working with technology platforms to affirm and amplify journalism's commitment to transparency, accuracy, inclusion, and fairness, so that the public can make informed news choices. Search engines and social media platforms, which have become important news distributors, are participating as external partners. Based on dozens of in-depth interviews with a diverse spectrum of public voices, executives from 80 news outlets identified and designed a system of "Trust Indicators". These "indicators" are standardised disclosures about the news

outlet, the journalist, and the commitments behind their work. The aim is to make it easy for the public to identify trustworthy news. Digital platforms, including Google, Facebook and Bing, use the Trust Indicators and the machine-readable signals associated with them to more easily access, display, and label trustworthy news for their users. The Trust Mark is a logo that indicates that the page was produced by a participant in the Trust Project consortium. Many participating publishers use the Trust Mark on the page where they describe their standards and practices, or on their article pages. The Trust Project uses an opt-in approach, wherein a news organisation or platform that participates in the project agrees to abide by a set of eight trust indicators. The indicators are focused mainly on transparency, integrity and accountability in their journalistic practice. Those organisations participating in the project make information available on their sites explaining how they abide by the trust indicators.

The GDI could potentially adopt a subset of indicators from the Trust Project as well as use them as a source for benchmarking.

Link to methodology:
https://thetrustproject.org/faq/#indicator

RSF MEDIA OWNERSHIP MONITOR

Summary: The Media Ownership Monitor is a global research and advocacy initiative that creates transparency on "who owns the media?" – and ultimately answers the question "who controls the media?" – through contextualisation and analysis. It provides the public an easily accessible, continuously updated and searchable source that allows people to find out whose interests are behind the news they watch, read or listen to.

Based on a generic methodology, the Media Ownership Monitor has been developed as a mapping exercise in order to create a publicly available, continuously updated database that lists the owners of all relevant mass media outlets. It creates transparency on who owns the media, which interests and affiliation owners have, to which extent dependencies exist – and thus, who really has a potential influence on public opinion. Fieldwork is aimed not only at finding out who holds the stakes, but at investigating who actually controls the media. In addition, the MOM provides for contextualisation and qualitative analysis by also assessing the market specifics and legal environment in the respective country. Data collection is done by local research teams from partner organisations in collaboration with Reporters Without Borders.

There are two aspects of interest for the GDI:

- The MOM uses local partners to collect data on media ownership in each country. This would be a useful aspect to explore further in order to find out whether we could rely on such experts for our own data collection (if the GDI were to take the expert survey approach).

- The information on media ownership could be a potentially useful indicator for the GDI, depending on the scope and reach of the data available from the MOM.

Link to methodology:
https://www.mom-rsf.org/en/about/methodology/

REUTERS INSTITUTE DIGITAL NEWS REPORT

Summary: The Digital News Report is a major project from the Reuters Institute for the Study of Journalism at Oxford University. Launched in 2012, it aims to track digital news consumption across countries and provide timely data and analysis for industry, regulators and academia. This year's report reveals new insights about digital news consumption based on a YouGov survey of over 74,000 online news consumers in 37 countries including the US and UK. The report focuses on the issues of trust and misinformation, new online business models, the impact of changing Facebook algorithms, and the rise of new platforms and messaging apps.

The Digital News Report is a public perception survey. The GDI could potentially add a similar survey to our mix and add perceived media credibility as a criterion for assessing domains.

Link to methodology:
http://www.digitalnewsreport.org/survey/2018/survey-methodology-2018/

NEWS COVERAGE INDEX

Summary: The Project for Excellence in Journalism (PEJ) News Coverage Index analyses a wide swath of American news media to identify what is being covered – and not covered – by the media's broad news agenda. Each week, the index issues a report on the top stories across the mainstream news media, as well as a breakdown of how the news agenda that week differed among the media sectors (such as network TV as compared to cable or newspapers). The index focuses on a primary variable – the topic of the story – and measures what percentage of the news media as a whole has analysed that topic.

Similar to the GDI, the News Coverage Index also has to deal with an extremely large universe of domains to choose from. The sample for this index is designed to include a broad range of outlets. These are to be illustrative, but may not be strictly representative of the media universe. The sample is also purposive, selected to meet the criterion of diversity rather than to be strictly random. It is a multistage sampling process that is not entirely formulaic or numeric, and involves the balancing of several factors such as the number of media sectors that offer news, the number of news outlets in any given sector, the amount of news programming in each outlet, and the audience reach. The GDI could draw tips from the Pew Research Center's methodology, specifically in regards to how the sampling is done, as the GDI may have to make similar decisions regarding which domains to study per country.

Link to methodology:
https://www.journalism.org/news_index_methodology/

PEW RESEARCH CENTER STATE OF THE NEWS MEDIA REPORT

Summary: The State of the News Media fact sheets use a range of different methodologies to study the health of the US news industry, including custom analysis of news audience behaviour, secondary analysis of industry data, and direct reporting to solicit information unavailable elsewhere.

The State of the News Media fact sheets consist of data originally generated by other individuals or organisations, and then collected and aggregated by Pew Research Center. The data points are based not on surveys, but rather on metrics such as newsroom staff, online digital advertising, and circulation, among others. For the data aggregated from other researchers, Pew Research Center's team takes several steps. First, Center researchers try to determine what data was collected and by whom for the media sectors studied. In many cases, this includes securing rights to data through license fees or other means, and often entails paying for the use of the data.

Next, they study the data closely to determine where elements reinforce each other and where there are apparent contradictions or gaps. In so doing, Pew Research Center endeavours to determine the value and validity of each data-set. In many cases, this involves going back to the sources that collected the research in the first place. Where data conflicts are identified, the Center includes all relevant sources and tries to explain their differences, either in footnotes or in the narratives. All sources are cited in footnotes or within the narrative, and in all graphics in the report.

This is more of a report than an index aimed at measuring something over time. Yet, there are a couple of key aspects of interest for the GDI: the types of information used in compiling this report, and the data validity steps used by Pew to ascertain the quality of data they acquire from third-party sources. The GDI is expected to face similar issues while assessing domains and therefore could draw upon the Pew report for some good practice approaches.

Link to methodology:
https://www.journalism.org/2018/07/25/state-of-the-news-media-methodology/

DISINFORMATION RESILIENCE INDEX

Summary: The aim of this research is to assess the level of resilience to foreign (foremost Kremlin-led) disinformation. The index covers 14 countries in Eastern and Central Europe, including the Visegrad states (Czech Republic, Hungary, Poland, Slovakia), Eastern Partnership countries (Azerbaijan, Armenia, Belarus, Georgia, Moldova, Ukraine), the Baltic states, and Romania. The research design is based on desk research, in-depth expert interviews, and online expert surveys. Such triangulation confirms and helps overcome potential problems with validity and bias in the obtained data. Online expert surveys are conducted with the aim to construct a quantitative Disinformation Resilience Index (DRI) across the CEE countries.

The DRI is presented in the form of the three composite indicators, each combining several variables:

- population exposure to Kremlin-backed media,
- quality of systemic responses, and
- vulnerability to digital warfare.

Each composite indicator is calculated as a simple average of all its aggregated variables. The DRI relies on response options provided by at least 20 respondents in each of the 14 CEE countries in an online survey to obtain values for the variables. All variables within a given composite indicator are weighted equally, with the composite score a simple average of the ratings provided by experts.

Link to methodology:
http://prismua.org/wp-content/uploads/2018/06/DRI_CEE_2018.pdf

Annex 3: Sample list of initiatives against disinformation

Below are a list of some initiatives currently working to counter disinformation. These have been assessed using various metrics, which are summarised in Figure 2.

INITIATIVE NAME	LINK
Atlantic Council - Digital Forensics Lab	https://www.digitalsherlocks.org/about
Claimbuster	https://idir-server2.uta.edu/claimbuster/
Content Blockchain	https://content-blockchain.org/about/
Credibility Coalition	https://credibilitycoalition.org/about/
Credible Web Community Group	https://credweb.org/
DeepNews.ai	https://www.deepnews.ai/
Duke Reporters Lab	https://reporterslab.org/
Eye/o	https://eyeo.com/
Factmata	https://factmata.com/
FactsMission	https://factsmission.com/
FakerFact	https://www.fakerfact.org/about
First Draft News	https://factsmission.com/projects
Full Fact	https://fullfact.org/about/our-team/
Global Council to Build Trust in Media and Fight Misinformation	https://www.globalmis.info/repository
Harmony Labs - Project Ratio	https://harmonylabs.org/ratio
Hypothesis	https://web.hypothes.is/about/
International Fact Checking Network	https://www.poynter.org/ifcn/
Journalism Trust Initiative	https://rsf.org/en/news/more-100-media-outlets-and-organizations-are-backing-journalism-trust-initiative

INITIATIVE NAME	LINK
Knowhere News	https://knowherenews.com/about/contact
Meedan	https://meedan.com/en/about/
MyWOT	https://www.mywot.com/
News Co/LAB	https://newscollab.org/
Newsguard	https://www.newsguardtech.com/
News Integrity Initiative	https://www.journalism.cuny.edu/centers/tow-knight-center-entrepreneurial-journalism/news-integrity-initiative/
New Knowledge	https://www.newknowledge.com/our-solution/
NewsTracker	https://www.pbs.org/newshour/nation/what-is-the-newstracker
Newstrition	https://www.freedomforuminstitute.org/first-amendment-center/newstrition/
Snopes.com	https://www.snopes.com/
Storyful	https://storyful.com/about/
Storyzy	https://storyzy.com/?lang=en
Trendolizer	http://www.trendolizer.com/
Trust Metrics	https://www.trustmetrics.com/
Trust Project	https://thetrustproject.org/
TrustedOut	https://trusted-news.com/
Trusted News	https://www.trustedout.com

Endnotes

1   An overview of the metadata classifier is forthcoming.

2   See the Global Slavery Index: https://www.globalslaveryindex.org/

3   See the Corruption Perceptions Index: https://www.transparency.org/cpi2018

4   See the Freedom in the World Report:
    https://freedomhouse.org/report-types/freedom-world

5   For example: http://www.digitalnewsreport.org/publications/2018/measur-
    ing-reach-fake-news-online-disinformation-europe

6   For example: https://reporterslab.org/category/fact-checking/

7   For example: http://mpii.rutgers.edu/wp-content/uploads/sites/129/2015/04/Defin-
    ing-and-Measuring-Quality-Journalism.pdf

8   For example: https://assets.ctfassets.net/tlowcqj4pb76/4lmUdUz36gQuOK-
    O0UOwEU2/819497f46f25a9cfcbaa7d4b5db8e354/CredCoWebConf2018.pdf

9   http://files.transparency.org/content/download/2055/13232/file/CPI_2016_Techni-
    calMethodologyNote_EN.pdf

10 https://en.wikipedia.org/wiki/Standard_score

11 https://bcsdportugal.org/wp-content/uploads/2013/10/JVAN-GAFFURI.pdf

GDI | Global Disinformation Index

www.disinformationindex.org