Using Large Language Models as a Road map for Establishing Core Values in a Legal Vacuum

Abstract

Purpose: This approach offers a structured method for organizations to develop and articulate their ethical frameworks, particularly in areas where legal guidance is limited or nonexistent. Problem: This study investigates establishing core values in a legal vacuum, where research, design, or implementation of an innovation is feasible but lacks regulations.
Methods: We leverage Large Language Models (LLMs) to analyze codes of conduct from 1000 organizations (profit and not-for-profit) to identify core values. Metrics such as accuracy, bias, completeness, consistency, and relevance are used to validate the performance of LLMs in this context.
Results: From 493 non-profit organizations and companies on the Fortune 500 list, a total of 8646 core values including variations across 89 sectors were found. Using accuracy, bias, completeness, consistency and relevance as metrics for evaluating result from the LMMs, the number of core values is reduced to 362.
Conclusion: The research employs a ten-step decision-making process to guide ethical decision-making when clear rules, laws, or regulations are absent. The framework presents how objectivity can be maintained without losing personal values. This research contributes to understanding how core values are established and applied in the absence of formal regulations.

Keywords: Core Values, Ethics, Legal Vacuum, LLM, Moral Compass

1 Introduction

This study explores the intricate decision-making dynamics in a 'legal gap'—a scenario where no explicit rules, laws, or regulations govern feasible technology research, design, or implementation [1, 2]. Numerous laws exist, such as those prohibiting harm or loss of life during healthcare medication development, and provisional regulations addressing liability for autonomous vehicles in experimental stages. When ChatGPT launched in November 2022[1], laws governing intellectual property rights and privacy were in place, but transparency was not adequately regulated. The AI Act [3] had a delay to govern technologies such as generative AI including ChatGPT. However, laws, rules, and regulations often fail to fully address specific situations, creating a legal gap or vacuum. Moor uses the term 'policy vacuum' to describe situations where new technologies

[1] https://openai.com/index/chatgpt/

introduce activities that existing ethical policies cannot adequately address, resulting in a lack of clear guidelines for managing their implications [4]. We consider the legal vacuum as a subset of a policy vacuum. This inquiry into the legal gap is particularly pertinent given the rapid pace of technological advancements, which often outstrip the development of corresponding regulatory frameworks [5, 6]. By examining core values across different business sectors, the research aims to uncover the underlying principles guiding organizational behavior in the absence of legal constraints [7, 8]. Furthermore, the study seeks to balance objectivity with personal values in creating a code of conduct [9], utilizing Large Language Model (LLM)s to assist in the analysis [10, 11]. The study builds on frameworks such as Value Sensitive Design (VSD) [12] and Guidance Ethics [13, 14] that state that values are prominent. However, it is left to the users to establish defined values, which is a challenging decision-making process [15, 16].

To this end, several critical research questions are posed: How do organizations navigate decision-making without explicit legal mandates or prohibitions? How do core values vary across different business sectors, and what metrics can effectively measure the validity of LLMs in extracting these values? Moreover, the research delves into maintaining objectivity while acknowledging the inherent subjectivity in all knowledge and discourse.

In the data collection phase, publicly available information from commercial and non-profit organizations is scrutinized. A comprehensive dataset of core values is curated using sources such as the Fortune 500 list and various compilations of Non Profit Organization (NPO)s. The methodology involves manual identification and LLM-assisted extraction of core values, ensuring a broad and representative sample of organizational cultures.

Subsequently, the study evaluates the validity of these core values using a set of defined metrics. These include accuracy, bias, completeness, consistency, and relevance—each providing a different lens to assess the extracted values' reliability and objectivity. The process also involves reducing the initial list of values to a more manageable and coherent set, ensuring that the essence of each original term is preserved while avoiding redundancy.

By incorporating multiple LLMs and human judgment, the study aims to mitigate bias and enhance the validity of the extracted core values. This rigorous approach allows for a nuanced understanding of how organizations articulate their core values in a legal vacuum, providing valuable insights for academic inquiry and practical application. We make a clear distinction between core values, ethical framework, code of conduct, and the decision-making process. In this paper, core values are beliefs stated in code of conducts that shape behavior, based on and related with culture, tradition, and religion [17–19]. An ethical framework, model, method, or toolbox is a structured approach that facilitates the assessment of context, stakeholders, and key issues by applying values, standards, and moral principles to ethical reasoning [20–22]. In this paper, 'context' refers to anything that influences a decision but is not part of mission, vision, strategy, or operational objectives. 'Stakeholders' refer to anyone or anything that affects a decision or is affected by a decision. A code of conduct is a set of core

values materialized in a set of rules how to behave in on organization. The decision-making process concerns the assumptions, processes, and stakes that influence an outcome.

This research addresses a critical gap in understanding how organizations navigate the complex interplay of technology, ethics, and regulation. It offers a systematic framework for analyzing core values, contributing to the broader discourse on governance and ethical decision-making in the modern technological landscape.

The contribution of practitioners lies in providing a structured decision-making process for collecting, validating, evaluating, and assessing values to establish a code of conduct. Additionally, the discussion on the use and caution of LLMs enhances practitioners' ability to explore and work efficiently. For researchers, the contribution is an in-depth exploration of ethical methods related to core values. The usage of LLMs has already been deployed by others [23–26].

The structure of this paper is organized as follows: In Section 2, we discuss the research questions, research design, and data collection methods, including the rationale for the chosen metrics. Section 3 delves into the decision-making process, presenting a framework for establishing core values in the absence of legal guidelines. Finally, Section 4 offers concluding remarks and outlines directions for future work.

2 Research Design

Research Questions:

1. **How to make decisions when there is a 'legal vacuum' that does *not* mandate or prohibit the research, design or implementation of feasible technology?**
   A legal gap exists when technology is feasible, but no rules, laws, or regulations exist that mandate or prohibit its research, design, or implementation. There are numerous laws in place. For example, it is forbidden to cause harm or let people die during the development of medication in healthcare. Similarly, provisional regulations govern liability for autonomous vehicles in experimental stages. When ChatGPT was launched in November '22, there were laws for intellectual property rights and privacy, but not for transparency. However, laws, rules, and regulations often fail to address specific situations adequate. This is where the legal gap or legal vacuum is situated.
2. **How do core values differ across various sectors?**
   We define a 'sector' as a distinct category or segment of the economy or society, profit or non-profit, that is characterized by a specific type of activity, organization, or purpose. It defines groups or divisions that share common objectives, operational methods, or governance structures. For example, a core value in the Information Technology (IT), it might be the 'privacy' of data and 'transparency' of algorithms; for health, it might be the 'autonomy of the body; and for laws it might be 'justice'.
3. **How to obtain objectivity without losing personal values when establishing a code of conduct?**
   Objectivity and value-neutral statements are ideals that cannot be fully achieved in practice. With 'objectivity', we refer to a common set of codes of conduct from

cross-cultural, cross-sector, international, profit and non-profit organizations. The personal values of individual employees are both relevant and evident. This holds true for the few employees involved in creating a code of conduct, as well as for all employees who align their personal values with the core values outlined in the code of conduct. All knowledge is inherently relative, built upon prior experiences and information. Even seemingly factual statements reflect choices about what to include or emphasize. Recognizing this inherent subjectivity can foster a more critical analysis of data and greater awareness of how values shape discourse across all domains.

4. **How can LLMs assist in analyzing codes of conduct?**
   With this research question, we like to investigate the usage of LLMs for analyzing, summarizing and retrieving core values from codes of conduct. Reading a large collection of texts can be a tedious and time-intensive task. Summarizing texts and extracting core values are also challenging because of the potential for bias. Summaries of the same text often yield variations in wording and sentence structure while preserving the essential message.
5. **What are metrics to measure the validity of Question and Anwer (QnA) in LLMs?**
   Evaluating an LLMs extraction of core values from a code of conduct requires appropriate metrics to assess answer validity. Validity applies to the metrics the LLMs analyze and summarize the texts and retrieve the proper core values in the codes of conduct. Validity does not apply to the validity of a core value as moral value, standard or ethics. Candidate key metrics include bias, accuracy, completeness, relevance, and consistency with the original text.

2.1 Data Collection

We collected publicly available data from commercial organizations and NPOs. For commercial entities, we utilized the Fortune 500 list[2], which compiles the most prominent global companies according to revenue. This list represents a diverse range of corporate cultures and industries. Table 1 presents the data sources. Alternatives such as the Standard & Poor's 500[3] have limited geographical coverage. For non-profit entities, we created a comprehensive compilation of Non Governmental Organization (NGO)s, NPOs, charities, and foundations. To gather data on 500 non-profits, we employed a forward snowballing technique [27], starting from various existing lists and expanding our data set. The Fortune 500 list is expanded with 25 Artificial Intelligence (AI) companies.[4]

Our data collection focused on publicly available information from these organizations. The complete data collection and analysis process is illustrated in Figure 1. In Step 1, the sources are collected. Table 1 presents the sources. The sources for the NPOs contain overlapping organizations, which were deduplicated. The total number of NPOs is 496. Step 2 is a trivial, straightforward, and technical task converting PDFs using `pdftotext`[5] and HTML-web pages to plain text. NPOs, especially smaller ones,

[2] https://fortune.com/ranking/global500/
[3] https://www.spglobal.com/spdji/en/indices/equity/sp-500/#data
[4] Based on companies from https://builtin.com/artificial-intelligence/ai-companies-roundup
[5] https://pypi.org/project/pdftotext/

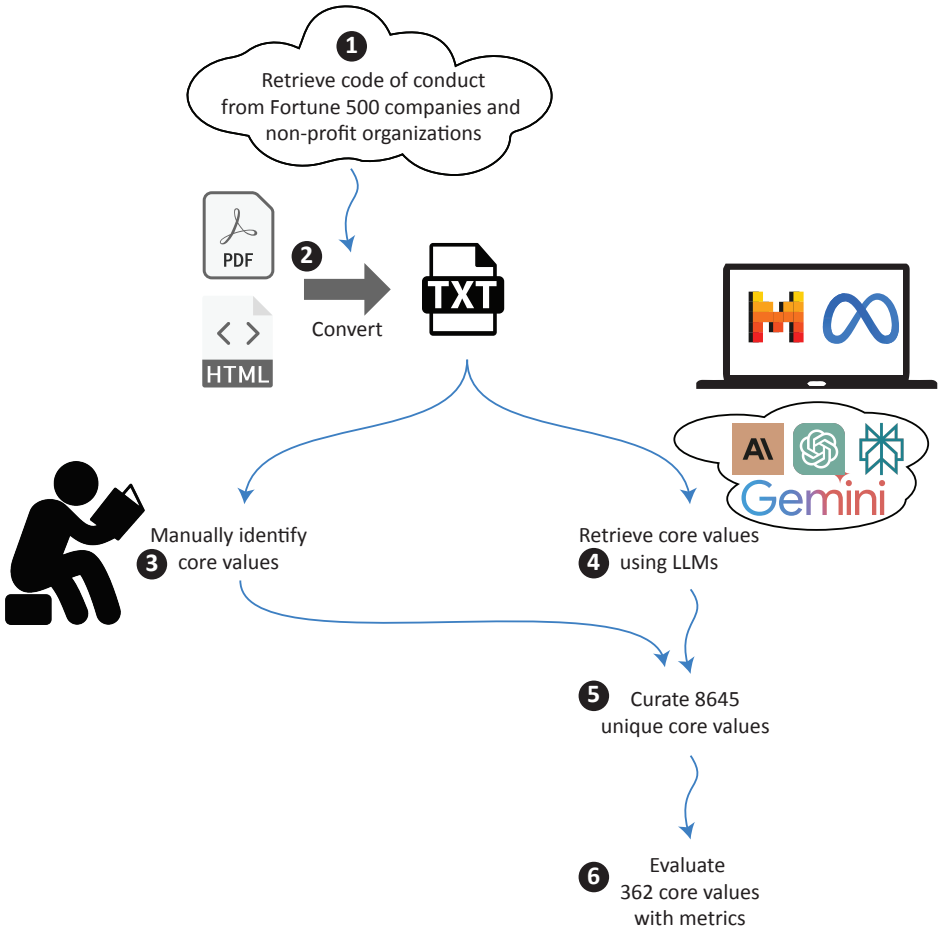

Fig. 1 Retrieval process and analysis.

do not all have a code of conduct but do have core values. Steps 3 and 4 are conducted in parallel. In Step 3, the researchers identify core values from the codes of conduct, and mission and vision statements.

Step 4 is executed by employing multiple LLMs. The selection of LLMs is based upon a leader-board[6] comparing over 30 models on open source versus proprietary code, quality, price, and number of tokens. The motivation for selecting multiple models is to mitigate bias and check the validity of extracting the core values by comparing the results on similar outputs. Table 2 shows the models and versions in place. L4 and L5 can run on a local laptop. The other LLMs run in the cloud. Step 5 reduces the total number of core values, including variations from 8646 to 362. This reduction is achieved through human decision-making, supported by LLMs to identify synonyms

[6] https://artificialanalysis.ai/leaderboards/models

ID	Source	Description	# Organizations
P1	Fortune 500	The companies featured in the Fortune 500 yearly ranking of the globe's biggest corporations.	500
N2	Elevation	The 200 Best Nonprofit Websites: Inspiring Positive Change	200
N3	200 World Ranking SGOs	thedotgood's Top 200 world listing presents the 'Ivy League' of the Social Good Sphere in terms of their people-centered governance and holistic innovation and impact. These 200 SGOs embody and carry out the very enriching and diverse criteria for what results in 'social profit'.	200
N4	UN Department of Economic and Social Affairs Social Inclusion	Organizations were chosen from those accredited to the Conference of States Parties. However, not all accredited organizations maintain an active website.	432
N5	100 Largest Philanthropic Foundations	World's 100 largest philanthropic foundations list	100

Table 1 Data source overview: The ID column uses 'P' to denote commercial organizations and 'N' for NPOs. The data set comprises 1000 Codes of Conduct, evenly split between 500 commercial organizations and 500 NPOs. Altogether, it resulted in a total of 8646 core values, including variations. See Appendix B.1 for detailed data.

ID	Model	Version
L1	Anthropic	claude-3-opus-20240229
L2	ChatGPT	gpt-4o
L3	Gemini	gemini-1.5-pro
L4	Llama	llama3:8b
L5	Mistral	mistral 7b version
L6	Perplexity	llama-3.1-sonar-small-128k-online

Table 2 LLM models including versions. Additionally, human judgment is used to identify core values and validate the results from the LLMs.

and map-related terms. Some examples of this process are straightforward, such as standardizing spelling variations. For instance, 'wellbeing', 'well being', and 'well-being' are all consolidated under the term 'well-being'. However, more complex cases require context-dependent mapping. An example of this concerns' racism', 'racist', or 'racial', which is mapped to 'non-discrimination' or 'justice' depending on the specific context. See Appendix B for the mappings. Note that the LLMs understanding of what can be considered a 'value' does not always correspond to human judgment. Examples are 'military' and 'policies'. This is a topic for further investigation. With this step, the objective is to ensure a more concise and coherent set of core values while maintaining the essence of the original terms. However, this mapping is less straightforward than spelling variations. There is a threat to validity involving the *internal validity* because a consistent evaluation of codes of conduct and reducing from 8646 to 362 requires cognitive attention that is hard to maintain. The final step, Step 6, involves metrics [28] for evaluating the validity of the QnA.

This approach allowed us to examine a broad spectrum of organizational cultures, spanning commercial and non-profit by sector. By including diverse entities, we aimed to comprehensively understand managerial practices and values across different types of institutions. Several sources were used to compile a list of charities, foundations, NGO, NPO, or philanthropic organizations.

2.2 Metrics for Evaluating Question Answering in LLM

ID	Human?	Metric	Description
M1	No	Accuracy	The extent to which a core value retrieved by an LLM matches the text, such as the code of conduct.
M2	No	Bias	The extent to which LLMs identify core values not evenly.
M3	Yes	Completeness	The extent to which the number of core values mentioned in the code of conduct is found by the LLMs.
M4	Partly	Consistency	The extent to which all of the LLMs and humans identify the same core values.
M5	Partly	Relevance	The extent to which a core value is aligned with a comprehensive summary of abstract core values.

Table 3 Metrics for measuring the validity of retrieving, comparing and processing core values using humans and LLMs based on the rubrics from Chang et al. (2023). The Human-column indicates whether human judgment is involved. The 'Partly'-value indicates both LLM and human judgment.

In Table 3, the metrics used for validating the retrieving, comparing, and processing of the core values from the codes of conduct are presented.

2.2.1 Accuracy

The 'accuracy' in M1 concerns identical words for the core value as found in the code of conduct. Sometimes, the core values are identified by a single word, often followed by a description, including examples, countermeasures, and contact information. In other cases, the core value is only a description without a single identifying core value. Secondly, initially, there are 8646 core values, including variations that are reduced to just 362. When an original core value from the long list is identical to a mapped core

value from the shortlist, the accuracy is 100%.

$$\begin{aligned} \text{Accuracy} &= \frac{TP + FN}{TP + TN + FP + FN} \\ TP &= \text{True Positive} \\ TN &= \text{True Negative} \\ FP &= \text{False Positive} \\ FN &= \text{False Negative} \\ 86.76\% &= \frac{1569 + 18114}{1569 + 0 + 3004 + 18114} \end{aligned} \tag{1}$$

'accuracy' is typically measured by Equation 1. The calculation is based on full-word matches; for instance, 'well-being' does not match 'wellbeing' (without dash) or 'happiness'. Matches on substrings or contextual mapping are not applied. When deploying this approach, human judgment is required to identify the truthiness of retrieved core values. Human judgment scores are lower when the truth is assigned to manual classification. Swapping the truthiness results in the score for accuracy of 20.16%. Bias, inconsistency, and loss of focus in the tedious classification task contribute to lower reliability for a human than for the LLMs. It is, therefore, disputable if a human being should be the 'Golden Standard' when considering the criteria from Table 3. Based on the data, the LLMs outperform human judgment. The LLMs classification is exhaustive and maps all possible core values from the reduced set. In contrast, the manual classification of only a few mappings is carried out. For example, Abbot Industries has only three manually assigned core values. In comparison, the LLMs identified 77 core values, which skews the results significantly, particularly affecting the false negatives.[7]

2.2.2 Bias

'Bias' (M2) is a preference or aversion for considering values that significantly influence decisions and actions, typically unconsciously. Examples in AI are selection bias, including gender bias or confirmation bias [29]. It is measured by comparing each LLM and humans' preference about other LLMs. These preferences might be positive or negative, resulting in an over-representation or under-representation of core values. We divided the total score into six bandwidths, matching the number of LLMs. The intersection of all scores is the total score for a core value. The score for an individual core value is related to the amount that matches the total from the intersection. Figure 2 shows a diagram as an example. The intensity of the shade of yellow to green indicates the matches for the LLMs. A top-25 is displayed in Figure B1. The least bias exists when all LLMs and humans score a value identical, resulting in equal values for all LLM and humans and including the total number. This can be processed automatically and does not require human involvement. 'Bias' is strongly related to 'Consistency' (M4).

[7] Full data set and calculations are in the online appendix at http://domainname.com/paper-legal-vacuum > Equations.

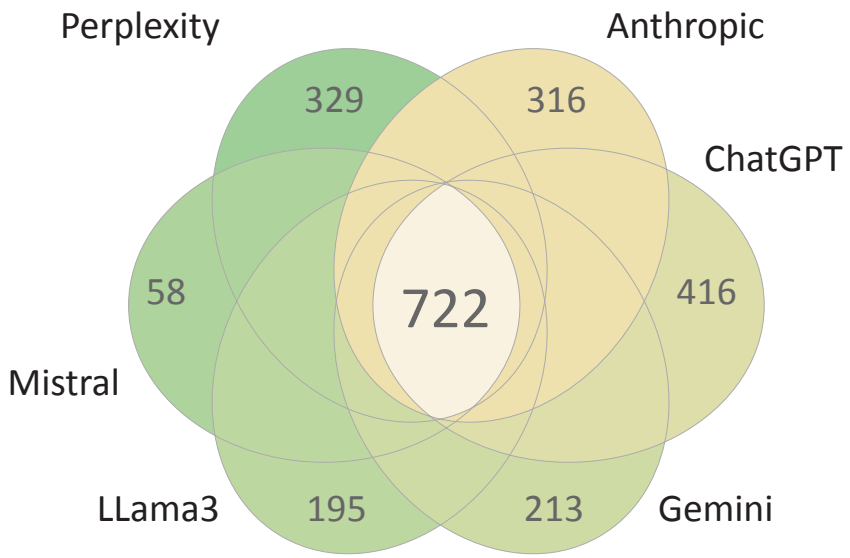

Fig. 2 The intersected search results for a specific core value, in this case, 'Integrity'. The number 356 indicates the subset of all other sets.

2.2.3 Completeness

'Completeness' (M3) measures the extent to which LLMs identify all core values in codes of conduct compared to those identified by humans. The identified core values are mapped to a lower number of only 362. The result is expressed as a percentage, with 100% being ideal. A lower percentage indicates that not all values were found, while a higher percentage suggests more values were identified. However, this metric may be misleading in cases of over-classification, where a single concept (e.g., 'racism') might be mapped to multiple core values (such as 'non-discrimination' and 'justice').

2.2.4 Consistency

'Consistency' concerns the match between core values identified by humans and each LLM. There are 6 LLMs and one human factor, in total 7, so each judge can be related to a maximum of 6 other judges. The matched core values are from the reduced map of 362 core values. The extent to which all of the LLMs and humans identify the same core values. Human involvement is partially available as only a limited set of the Fortune 500 list, and NPOs are manually evaluated.

2.2.5 Relevance

'Relevance' relies heavily on human judgment. The total number of initially 8646 core values, including variations, are mapped to a significantly lower number of 362 core values. This mapping involves human judgment. This includes mapping a single core value in the long list to multiple core values in the shortlist, such as in the example for 'racism'. For transparency, track and trace, the mapping is online available[8].

2.3 Similarity Metrics for Comparing Texts

Figure 2 displays hits for individual core values with intersections. The number in green represents the intersection for all LLMs that matches a specific term. A top-25 is displayed in Figure B1. This list consists of 8646 core values, including variations.

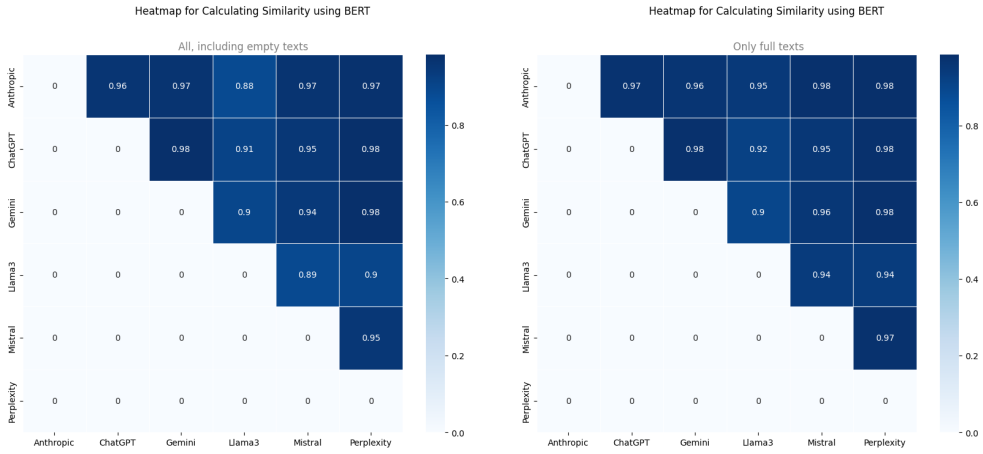

Fig. 3 Text similarity index using Bidirectional Encoder Representations from Transformers (BERT) [30]. The left includes empty texts, and the right includes complete texts. Complete texts in the right figure have a slightly higher score. The x- and y- dimensions show the consecutive LLMs: Anthropic, ChatGPT, Gemini, Llama3, Mistral, and Perplexity.

See Figure 3 for similarity calculation for the summaries for the LLMs.[9]

3 Decision-making Process for Establishing Core Values in a Legal Vacuum

Ethical frameworks such as VSD[12] and Guidance Ethics[13, 14] place values, standards, and ethics at their core, but they leave it up to the users to decide which values to consider and how to reason about them ethically. This study primarily focuses on the establishment of these values. Our focus is on professional practitioners, primarily in the field of IT, but this approach could very well apply to other sectors.

[8] https://domainname.com/legal-vacuum/
[9] Colab

The process assists in resolving the Collingridge dilemma [31][p.19]. The Collingridge dilemma states that new technology is not widely accepted yet and is easy to control. When technology is ubiquitously accepted, control is not possible anymore. The proposed decision-making process identifies ethical dilemmas in an early phase when no legislation is available or appropriate. In this early phase of a legal vacuum, when decisions are based on a moral compass, control by legislation is still possible.

The process presented in Figure 4 presents a single flow. However, from a societal perspective, legislators and lawmakers should strive to formalize ethical decisions to embed into national and international regulations, laws, and rulings. Bridging the legal vacuum is a continuous process with new legislation.

The flow is presented in an order where one step leads to a consecutive step. However, multiple orders are valid when applying this framework.

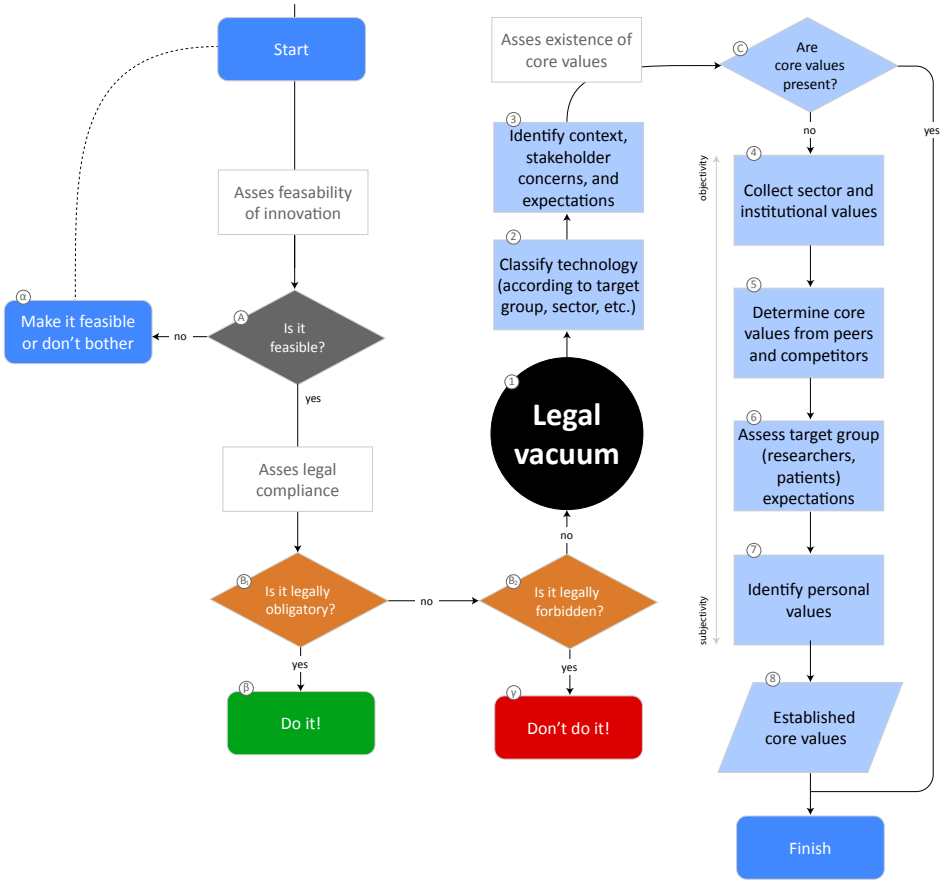

Fig. 4 Flowchart for decision making in a legal vacuum.

3.1 Feasibility. Step 1, Box *A*

The decision-making starts when 'feasibility' is ensured. This is box A in Figure 4. The initial phase involves assessing the viability and practicality of a novel concept or technological development. The feasibility analysis expands on the technological potential to determine the viability of transforming an innovation into a marketable product or service. This process is predominantly applied in technical, medical, and engineering fields, evaluating the technical possibility and the commercial practicality of an idea or invention. Furthermore, feasibility, or at least technological possibility, is a necessary condition. Discussing legality, and ethics is hypothetical if this condition is not met. The sequence in which feasibility, legality, and ethics are presented in this decision-making framework is purely for expository purposes. It is important to note that there is no prescribed hierarchical order or sequential approach to considering these three critical aspects of decision-making. Each component—feasibility, legality, and ethics—holds equal importance and may be evaluated concurrently or in any order deemed appropriate for the specific context or situation. An example that starts with ethics is the value of the 'healthiness' of people, which entails research for medication, treatments, and legislation. An example that begins with legislation is the liability for innovations such as autonomous vehicles that are not allowed on public roads. However, for VSD, the order starts with the ethical values [12].

3.2 Rules, Laws, and Legislation. Step 2, Boxes B_1 and B_2

The second step, identified as boxes B_1 and B_2 in Figure 4, involves addressing laws, rules, and legislation. Many technical, medical, or engineering innovations emerge in a regulatory vacuum. Examples include the advent of ChatGPT in November 2022 before the AI Act [3], privacy and transparency concerns preceding the General Data Protection Regulation (GDPR) long [32], and autonomous vehicles appearing before the General Safety Regulation [33]. Although IT is a relatively recent field, originating in the 1960s, medical practices have a history spanning over 2500 years, dating back to Hippocrates (c. 460–c. 370 BC). This long-standing tradition has resulted in a professional code of conduct with established rules, regulations, and laws, particularly for clinical trials involving medication or water restriction [34]. In contrast, emerging technologies such as quantum computing, where privacy and transparency are technically challenging to define, remain largely unregulated [35]. Two distinct legal systems can be identified in modern jurisprudence: 1) The Anglo-Saxon legal system: This approach operates on the principle that any action not explicitly mandated or prohibited by law is permissible. It is often characterized by the maxim "everything which is not forbidden is allowed" [36]. 2) The Rhineland legal system: In contrast, this system adheres to the notion that any action not explicitly mandated or permitted by law is prohibited. This approach is sometimes called the 'continental' or 'civil law' system [37]. The Anglo-Saxon system, also known as common law, is prevalent in countries with historical ties to the United Kingdom, such as the United States, Canada, and Australia. It allows greater flexibility and adaptation to changing societal norms [38]. The Rhineland system, commonly found in continental European countries and their

former colonies, provides a more structured and codified legal approach. This system aims to create comprehensive legal codes that cover all possible scenarios [39]. Each system has advantages and challenges, reflecting different historical, cultural, and philosophical approaches to governance and individual rights.

3.3 The Legal Gap. Step 3, Box 1

When innovation is technologically feasible (box A) and not mandated or prohibited by existing legislation (boxes B_1 and B_2), decision-makers often face a legal vacuum (box 1 in Figure 4). Ethical principles and core values, typically outlined in codes of conduct, guide decision-making processes.

Values are beliefs or principles that shape behavior, are influenced by, and interrelated with culture. They guide decisions and actions and may evolve as cultural norms shift. Common examples include integrity, transparency, and accountability. A comprehensive list of core values found in various organizations is provided in the Appendix B.1. A contemporary example is the emphasis on Diversity, Equity, and Inclusion (DEI) in many organizations and societies [40].

Standards represent the degree to which a particular value is upheld or achieved. On the other hand, ethics involve systematic reasoning about values, standards, and morality. Ethical perspectives do not prescribe specific values as inherently good or bad but provide perspectives for reasoning about core values.

There are multiple ways to organize ethical perspectives, such as historical or taxonomies [41]. This discussion focuses on a systematic approach, including utilitarianism, deontology, teleology, and virtue ethics. In addition, hedonism and nihilism are considered ethical.

Examples of ethical perspectives include:

ID	Perspective	Proponents
E1	Hedonism	Epicures, a.o.
E2	Utilitarianism	Mill, 1806-1873
E3	Deontology	Kant, 1724–1804
E4	Teleology, Virtue ethics	Aristotle, 384-322 BC
E5	Nihilism	Nietzsche, 1844–1900

Table 4 Common ethical perspectives.

These ethical perspectives can help analyze and apply core values in various contexts, forming decision-making processes without formal rules, laws, or regulations.

3.4 Classifying Technology. Step 4, Box 2

To assess the applicable core values, it is typical to classify the new technology by purpose, sector, target audience, user interface, and deployment to optimize time and resources [45]. Key factors include the problem the technology solves, its intended sector, target users, accessibility, and deployment strategy. These considerations refine the focus for further investigation. Assuming that these factors are addressed during development, missing information should raise concerns. The problem the technology

addresses must be broadly understood as unforeseen use cases may emerge. Identifying target users is crucial, although they may extend beyond initial expectations, especially given the Collingridge dilemma [31], where more information becomes available over time, but changes become costlier. The primary sector should be determined, as ethical concerns vary between healthcare, finance, and the public sector. Once identified, ethical guidelines can help anticipate risks. It is essential to understand how technology is made available. Public, pay-walled, or restricted access each presents different considerations. Finally, given the data involved, the deployment environment must be considered, especially when deciding between public, hybrid, or private cloud.

3.5 Context and Stakeholder Concerns. Step 4, Box 3

Understanding context is paramount for sound decision-making. It injects nuance into core principles, enabling more informed choices. By considering external factors, organizations can anticipate challenges and opportunities, and, finally, mitigate risk. Internally, a grasp of context ensures that decisions align with capabilities and resources [46][p.39]. Ultimately, context fosters adaptability, allowing organizations to navigate a constantly evolving environment effectively. We define context as anything that affects decision-making without being the mission, vision, strategy, or core values. Within decision-making, our context definition encompasses everything influencing a choice beyond an organization's core guiding principles: mission, vision, strategy, and core values. These principles provide a foundational framework, but context delves into the dynamic environment that shapes decisions. Internally, context considers available resources (financial, human capital, technological), organizational culture, and capabilities. Externally, it encompasses the broader landscape: market conditions, competition, social and political movements, technological advancements, and environmental considerations. Kaplan and Haenlein (2020) elaborate on context with the PESTEL framework, which stands for politics, economics, society, technology, environment, and law. These areas can easily be extended to include arts and humanities, education, health and nutrition, etc. The forces in these areas influence decision-making without being the primary concern, mission, vision, or strategy.

We define stakeholders as:

1. Anyone or anything that affects a decision, and vice versa,
2. anyone or anything that is affected by a decision.

The concept of stakeholders has evolved beyond its traditional focus on human beings directly impacted by decisions [46][p.35]. In this study, stakeholders encompass a more comprehensive range of entities with a vested interest in or potential to be affected by an organization's actions. This includes human actors like employees, customers, communities, systems, the environment, animals, and non-human entities like systems, suppliers, and regulators. Decisions can influence stakeholders, such as employees whose livelihoods depend on company strategy or communities impacted by environmental practices. Conversely, stakeholders can also influence decisions. Investors, for example, exert influence through their investments, while regulatory

bodies shape actions through established rules. This also applies to 'things' like climate. Climate is a stakeholder as it affects human decisions, but is also affected by human decisions.

3.6 Actual Code of Conduct, Manifest, Ethics, Mission & Vision. Step 6, Box γ

Of the Fortune 500 companies, almost all have a code of conduct, including mission, vision, and core values. However, for 14 companies, we could not find a code of conduct or any statement from which core values could be identified. These companies use Asian languages and diagrams where mission, vision, and core values cannot be found or translated. Core values are present in all non-profits. However, not all organizations have a code of conduct (124 times). The core values are often mentioned on their website at the About-page (140 times). Details about data collection and analysis methods can be found in the section on research design (Section 2).

Striving for epistemological objectivity and neutral statements is merely impossible. The notion of purely objective knowledge or value-neutral statements is highly contested in epistemology and philosophy of science [48]. Many scholars argue that all knowledge and claims are inherently shaped by the perspectives, assumptions, and values of those producing them [49]. This view holds that complete objectivity is unattainable, as researchers and observers inevitably bring their own contextual biases and frameworks to their work [50].

3.7 Industry Standards. Step 7, Box 4

When there is a legal gap and decision-making is based only on values, objectivity is hard to establish. To maximize objectivity, we collected data from a wide range of organizations. There are a few ways to determine a representative collection. One way is to look for organizations in the domains of Corporate Social Responsbility (CSR)s and Environmental, Social, Governance (ESG)s. CSR was introduced by Bowen in 1950 and focuses on intentions. ESG, on the other hand, develops on the intentions of CSRs and also takes into account the success rate of the performance [52]. In this study, we focus on establishing and improving the core values. It is future work measuring the performance of the core values, as is intended with ESG and directives such as Corporate and Sustainability Reporting Directive (CSRD). We present a method that aims for maximum objectivity by examining 1000 profit and non-profit organizations. The primary distinction between companies and NPOs lies in their objectives [53]. Companies aim for profit to ensure continuity. Optimizing shareholder value has, since Friedman is always one of their primary goals, with the environment, society, or common good as a secondary concern [54]. In contrast, NPOs pursue societal, social, or scientific goals that benefit the community or society without seeking profit. The legal and fiscal systems recognize this difference. Furthermore, NGOs typically have a wider scope than NPOs. Foundations fund specific objectives identified by their founders, often created by companies or wealthy individuals. Charities are formed to collect scholarship funding for societal, social, or scientific purposes.

3.8 Sector, Competitors, and Peers. Step 8, Box 5

The next step is applying the core values to your organization's commercial or NPO. We found a mismatch between the core values mentioned in the literature and the data from the codes of conduct. Despite the core values explored in studies that are prominent for specific sectors, the data do not support this research.

Furthermore, in this step, we identify two categories: one concern *competitors* in the same sector, and the other concerns *peers* that your organization considers relevant for evaluating efforts and results. Organizations in the same sector. We investigated whether a typical core value identifies the sector. The data partially support the core values per sector, as presented in Table 5.

ID	Sector	Identifying Core Values	Found
I1.1	IT	Privacy [32, 55, 56]	23
I1.2		Transparency [3, 57, 58]	51
I1.3		Explainability [59]	0
I1.4		Bias [60, 61]	17
I1.5		Social responsibility [62, 63], ethical considerations	55
I1.6		Risk [64]	5
I1.7		Trustworthiness [65]	20
I1.8		Ethical concerns, Societal concerns[66, 67]	3
I1.9		Governance [68]	8
I1.10		Security [57]	46
I2	Rules, Laws, Regulations	Justice [69–71]	-
I3	Communications	DEI [40, 72]	74
I4	Health	Autonomy of the body [22]	5
I5	Banking	Integrity and Accountability [73, 74]	63
I6	Mining	Environment [75–77]	29
I7	Arts & Humanities	Authenticity, Freedom of expression [78, 79]	1
I8	Sustainable Development Goals (SDG)	Sustainability [80]	38
I9	Social domain	Empathy, Compassion [81–83]	89
I10	Science, Technology, and Innovation	Continuous learning, Curiosity [84, 85]	87
I11	Governance	Responsibility, Accountability [86–88]	19

Table 5 A limited example of identifying core values per sector. See also Appendix B.1 for a comprehensive list with supporting data. The 'Found'-column holds the number of organizations in our data set: the Fortune 500 and 500 NPOs.

The data does not indicate that there is an algorithm that leads to concluding core values for individual sectors. However, it is clear by human reading that some core values are more or only represented in a top-10 list of core values. Table 5 does indicate an identifying core value. The selection was random out of 89 sectors, and 360 comprised core values. Notably, there is a mismatch between the relevance of the literature and the data. 'Integrity' scores high in our data for almost all categories. However, this core value has not been identified for that sector. Identifying core values in literature does

not match the data. For IT (I1.2), 'transparency' is in the second place, with 51 organizations having it in their code of conduct. 'Privacy' scores much lower at position 23 in 23 organizations. Privacy and transparency are paramount in IT due to regulations such as the GDPR [32] and the AI Act [3]. These values are also discussed in standards such as [89]. Furthermore, although 'explainability' (I1.3) is documented [59], no core value is found in the codes of conduct supporting this value. It is safe, however, to put I1.3 and I1.2 together. Bias (I1.4) does not map to a reduced core value but to 12 core values, including 'honesty', 'fairness', 'accuracy', 'innovation', 'transparency', 'adaptability', 'avoid conflicts of interest', 'pride', 'national service', 'objectivity', 'non-discrimination', and 'non-profit, charity, foundation'. Typically, privacy concerns focus primarily on data protection, while transparency mainly relates to the openness of algorithmic processes. These two values often exist in tension, as increasing transparency may lead to decreased privacy and vice versa. Striking the right balance between privacy and transparency is crucial, as failing to respond adequately potentially erodes trust among users, customers, and society. Suppose organizations cannot sufficiently explain their approach to balancing these competing interests. In that case, they risk damaging their relationships with stakeholders and facing potential legal and reputational consequences, including societal consequences, as we have seen with losing trust in government during COVID. Second, no organizations in the sector 'Rules, Laws, and Regulations' are in the Fortune 500 list or NPOs. The core value 'justice' is only mentioned in the sector 'Aerospace & Defense'. In literature, however, 'justice' is a core value [69–71], indicating a gap between data and literature. For the sector 'Communications' (I3), the core value of 'inclusive communication' is relevant to particular audiences, and excluding, for instance, low digital literacy must be prevented. The most popular core value for Communication is 'freedom of speech'. This core value also seems essential in the sector 'Arts and Humanities', together with 'authenticity' according to literature. According to the data, the most popular core value is 'inclusivity'. An explanation is that the sector combines 'Arts' and 'Humanities' and 'inclusivity' is relevant to this sector.

ID	Sector	Core Values
U1	Aerospace & Defense	anti-torture stance, reflection
U2	Banks: Commercial and Savings	utilitarianism
U3	Entertainment	altruism
U4	Food & Drug Stores	limited government
U5	Motor Vehicles & Parts	youth
U6	Petroleum Refining	meritocracy

Table 6 Unique core values per sector.

Additionally, Table 6 presents data for a total of 8646 core values, including variations for 89 sectors only for six sectors, a unique core value. The other sectors do not have a unique core value. Upon further examination of these core values, it would probably not be the first value that comes to mind for these sectors. It is safe to conclude that an algorithmic calculation of identifying sectors by unique core values based on the

data does not contribute to answering research question 2. Identifying core values for a specific sector makes more sense when using the literature.

3.9 Asses Expectations for Target Audiences. Step 9, Box 6

Users, customers, and society are typically assessed using scientific methods from social sciences such as interviews, questionnaires, and focus groups. However, it is crucial to involve the target audience for understanding or acceptance. Subjectivity is, of course, inherent, but both unavoidable and desirable. It is desirable because individuals carry out the code of conduct, and personal involvement and adherence support organizational values. This step is unsuitable for ethical reasoning about core values, but for acquiring a list of core values. The target audiences include a wide range of people, from students, lecturers, customers, and patients to citizens and society. This step is supported by the literature in this study.

A problem with applying methods from the social sciences is that, although the core values are methodologically correctly established, they still might lack ethical morality. Research has been carried out involving customers, platforms, or co-creation.

3.10 Identify Personal Values. Step 10, Box 7

In decision-making, awareness of and adherence to core values enhance employee well-being and a more focused, robust organization. When leaders and employees align their choices with the company's fundamental principles, it creates a cohesive work environment and strengthens the organization's overall effectiveness. This is not only because it is a formal agreement signed with the employment agreement but also because it is the cultural context that continuously affects employees in every decision and action. In addition, many companies have an annual code of conduct training that all employees must pass. Personal values have multiple and different sources. They might originate from family values raised by an individual, enlightenment, science, religion, tradition, and society, including influences from friends or laws [90, 91]. It is nearly impossible to judge the origin of values, as it is an observation of actual behavior where a desire for change involves action. However, some might consider the values and standards worth fighting for.

3.11 Established Core Values. Step 11, Box 8

Finally, when the core values are established for what an organization is and wants to be -the mission- a process can be defined, including ethical committees, flowcharts, and ethical frameworks. An example of a framework is the Dutch Fundamental Rights and Algorithms Impact Assessment (FRAIA) [92]. Figure 5 and Table 7. Furthermore, in addition to establishing core values, the organization is also required to update the values [93].

4 Conclusions

There are five research questions to answer.

1. The first research question concerns **how to make a decision when there is a 'legal gap' that does *not* mandate or prohibiting research, design, or implementation of feasible technology**. In such cases, the only remaining compass is a moral compass with values, standards, and ethical perspectives. Values, standards, and ethical perspectives are the fundamental beliefs and principles that guide human action and behavior. These values and beliefs arise from and are shaped by culture, religion, and family traditions. They can evolve. In contrast, ethical frameworks such as utilitarianism, deontology, and virtue ethics tend to be more stable and less affected by changing circumstances.
2. The second question was if **sectors can be identified by unique core values**. The literature supports this question. Data also affirmatively support this question, although no algorithm calculates the uniquely identifiable core value. Human knowledge is required to point to these specific values. We had a particular interest in the domain of IT with core values 'privacy' and 'transparency', where privacy is primarily concerned with data and transparency related to algorithms. We could not find literature or data that support the balance of these conflicting values. This study also cites the core value of 'justice' in rules, laws, and regulations and 'autonomy' in healthcare and medicine.
3. The third question concerns the **determination of objectivity without losing personal values when establishing core values, leading to a code of conduct**. We introduced a flowchart (Figure 4) with four steps for this challenge. The first step is collecting data on the codes of conduct of commercial and NPO s. The core values were extracted using six LLMs. This resulted in 8646 core values, including variations that were reduced to a comprehensive list of 362. The next decision is to appreciate and order the core values by considering the sector, peers, and competitors. This might include considering values not identified in an organization's sector. For instance, the banking sector might consist of values from the mining sector because the 'environment' is also an issue for banking. The following step includes the values of customers, students, patients, citizens, or society. The last step in establishing values takes into account the values of an individual employee. An abstract entity, such as an organization, is upheld by individuals in an organization or society. This extends from small and medium enterprises or small NPOs to democracy. Finally, these steps together form the input for a code of conduct, the installation of an ethics committee, processes, and flowcharts.
4. The fourth question is about the **deployment of LLMs in analyzing the codes of conduct**, statements with mission, vision, and strategy, and texts about smaller NPOs. The core values were extracted using six LLMs: Anthropic, ChatGPT, Gemini, Llama3, Mistral, and Perplexity.
5. The last research question considers the **criteria for validating results produced by the LLMs**. The following metrics were deployed:
   (a) Accuracy.
   (b) Bias.
   (c) Completeness.
   (d) Consistency.
   (e) Relevance.

5 Future Work

Future work includes first a review of ethics methods, frameworks, models, and tools. See Figure 5 for a presentation of the frameworks plotted in the radar diagram.

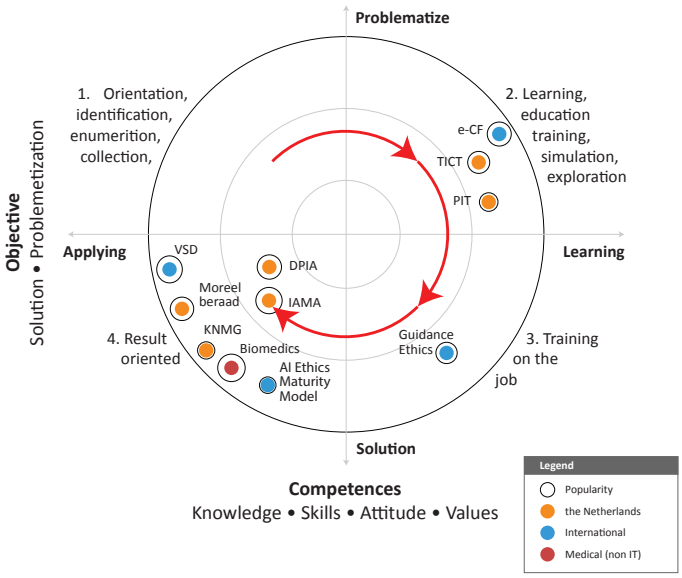

Fig. 5 Ethics methods, frameworks, models, tools plot on the radar, balancing application and learning on the horizontal x-axis and problematizing and solving problems on the vertical y-axis.

ID	Framework	Popularity (EN)	Popularity (NL)	Popularity (Total)
F1	AI Ethics Maturity Model	52	0	52
F2	KNMG	72	70	72
F3	PIT	129	10	129
F4	Guidance Ethics	612	5	652
F5	TICT	544	31	544
F6	e-CF [94]	4240	6	4240
F7	DPIA	4420	133	4420
F8	VSD	11100	94	11100
F9	IAMA & FRAIA	17800	32	17832
F10	BioMedics	42900	315	42900

Table 7 Popularity of Ethics Frameworks on Google Scholar (June 2024)

Secondly, an evaluation of the performance of the core value is essential. Although many codes of conduct present socially desirable values, regulatory bodies and legislators are developing methods to measure the performance of these core values, particularly in terms of sustainability. Several initiatives have emerged to address this need, including:

- Commission for Sustainable Development (Commission on Sustainable Development (CSD))[10].
- Corporate Sustainability Reporting Directive (CSRD)[11].
- European Health Data Space[12].
- The Global Reporting Initiative (Global Reporting Initiative (GRI))[13].
- Science-Based Targets initiative (Science Based Targets Initiative (SBTI))[14].
- Sustainalytics[15].

Thirdly, the mismatch between the core values mentioned in the literature and the core values that we found by analyzing codes of conduct needs to be investigated further. Similarly, the incidental mismatches in what LLMs consider a 'value' and what humans consider a 'value' need to be resolved.

Declarations

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[10] https://sustainabledevelopment.un.org/
[11] https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en
[12] https://health.ec.europa.eu/ehealth-digital-health-and-care/european-health-data-space_en
[13] https://www.globalreporting.org/
[14] https://sciencebasedtargets.org/
[15] https://www.sustainalytics.com/

Appendix A Coding Examples

Implementation examples in Python can be found at Google Colab.

Appendix B Data

B.1 NPO, NGO, Philanthropy, Charity, Foundation

Additionally, collected data and analysis are available as an online appendix on http://domainname.com/legal-vacuum.

B.2 Popularity of Core Values for Fortune 500 and 500 NPOs

The top 25 core values are listed in Figure B1.

#	Core Value	Human	GenAI Total	Anthropic	ChatGPT	Gemini	Llama3	Mistral	Perplexity
1	integrity	154	722	316	414	213	195	58	329
2	transparency	41	666	179	337	89	205	30	243
3	accountability	34	602	151	248	113	223	15	264
4	respect	65	516	210	254	157	110	21	244
5	collaboration	20	509	189	235	102	89	25	202
6	fairness	103	487	152	210	78	109	21	138
7	innovation	56	483	164	251	103	87	31	206
8	responsibility	72	470	180	190	96	127	25	160
9	compliance	30	436	158	180	77	95	30	91
10	respectful	4	407	159	137	143	149	9	242
11	community engagement		399	116	205	57	68	27	74
12	sustainability	38	378	112	183	87	76	24	111
13	inclusivity	2	352	119	152	43	86	13	157
14	rules, laws, regulations		341	92	134	67	58	26	76
15	humanitarianism		338	115	87	84	130	9	140
16	confidentiality	45	336	116	125	50	77	29	92
17	environmental conservation		335	124	140	63	61	26	118
18	customer-centricity		333	105	140	119	28	22	109
19	corporate social responsibility		331	110	90	86	122	13	127
20	well-being	4	318	115	58	103	128	8	87
21	policies	6	311	103	78	82	128	8	134
22	military	2	309	102	76	80	128	7	134
23	dignity, equity, inclusion (dei)		305	123	160	43	43	21	102
24	accuracy	20	302	111	121	37	81	33	115
25	workplace	7	301	96	88	82	112	16	84

Fig. B1 Consolidated core values popularity index for commercial organizations and NPOs. There are differences between the two types of organizations. See the online appendix for all 362 core values.

#	Core Value	Anthropic
1	integrity	
5	responsibility	
3	respect	
4	compliance	
8	respectful	
9	innovation	
10	corporate social responsibility	
14	humanitarianism	
16	military	
15	policies	

#	Core Value	Llama3
1	integrity	
2	transparency	
6	accountability	
11	well-being	
12	workplace	
8	respectful	
16	military	
14	humanitarianism	
15	policies	
10	corporate social responsibility	

#	Core Value	ChatGPT
1	integrity	
2	transparency	
3	respect	
9	innovation	
7	fairness	
4	compliance	
6	accountability	
5	responsibility	
24	honesty	
25	ethics	

#	Core Value	Mistral
1	integrity	
60	code of conduct	
33	human rights	
22	confidentiality	
39	information	
4	compliance	
50	partnership	
19	rules, laws, regulations	
78	data privacy	
26	health and safety	

#	Core Value	Gemini
1	integrity	
3	respect	
8	respectful	
13	customer-centricity	
11	well-being	
6	accountability	
9	innovation	
5	responsibility	
17	collaboration	
10	corporate social responsibility	

#	Core Value	Perplexity
1	integrity	
8	respectful	
3	respect	
6	accountability	
9	innovation	
2	transparency	
5	responsibility	
15	policies	
14	humanitarianism	
16	military	

Fig. B2 Top-10 per LLM showing pretty much the same order, except the laptop versions Llama3 and Mistral. This indicates a positive reliability because the Top-10 has a high similarity.

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