



Helping people work better together

## **The Future of Culture Assessments**

*Using Natural Language Processing*

*and Machine Learning*

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## **Background**

Building a positive workplace culture has become one of the main priorities for organizations across the world. Many employers are switching their focus to building workplace environments in which their employees can feel safe, engaged, inspired, and productive.

Experts and industry leaders believe that workplace culture is what separates the most successful companies from the average ones. Positive culture in the workplace increases employee retention, builds engagements, and increases the bottom line.

With all the positive outcomes good culture brings, organizations are looking to find effective ways to understand their culture. Many organizations focus on “work areas” or “climate surveys” which can be useful in some cases, but do not identify root causes or comprehensive understanding of what is happening in the organization. They only give an understanding of the current state. A cultural assessment is needed to really understand what drives culture and where improvements can be made.

Since 2014, TIVC has been providing federal, state, and local government services in Human Enterprise Optimization (HEO) to include Organizational Optimization, IDEA (Inclusion, Diversity, Equity, & Accessibility), Training & Development, and Strategic Communications. We specialize in assessing organizational cultures through the use of surveys, focus groups, and policy reviews; breaking down information for qualitative and quantitative information to glean insight on how people perceive and feel about their environment. TIVC has leveraged our subject matter experts and industrial psychologists to lead the development of our AI – Natural Language Processing tool, helping ensure it does not develop inherent bias and provide the feedback necessary to be actionable.

## **Existing Tool & How It Works**

This tool is designed to provide the user with a comprehensive assessment of an organization's workplace based on employee feedback from Focus Groups, Interviews, and Surveys. This is done by: Finding topics in the organization's workplace policies; Computing similarities between the policies and the employee responses from Focus Groups, Interviews, and Surveys; Analyzing the sentiment, emotion, and tonality present in the employee responses; Generating plots for the analysis report.

## **Methodology**

### *Data Processing*

The data is processed based on the models it is fed into (identified in the overview below). All text data is cleaned using the standard steps of breaking the data into words or tokens, converting them to lowercase, removing stop-words, discarding tokens that are not alphanumeric, and finally reducing the tokens to their word stems.

Note that responses from Focus Groups and Interviews are processed in a similar way. This differs from the way Surveys are processed. The app takes into account only the Survey questions that have responses as the degrees of agreement or disagreement (Strongly disagree, Disagree, somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree). It

analyzes the Survey question's sentiment and then combines it with the proportion of responses that agree or disagree with that question, to result in a sentiment score.

### *Overview of Models*

The tool employs three models: Latent Dirichlet Allocation (LDA) Model for topic modeling, Sentiment Analysis model for sentiment detection in user responses, and an Emotion Analysis model for emotion detection in user responses.

- LDA Model: An LDA model is created and tuned on the Policy data. The model results in clusters of topics found in Policy data. For instance, if there are 3 policies talking about harassment, the model clubs them into one topic. Next, the responses from Focus Groups, Interviews, and Surveys are mapped to the policy clusters obtained above. This is done to analyze which response refers to which policy.
- Sentimental Analysis model: Data is extracted from the 3 types of response files (Focus Groups, Interviews, and Surveys), and fed into the model. Three types of labels are predicted: negative, neutral, and positive, which are used to generate visualizations.
- Emotion Analysis model: Data is extracted from the 2 types of response files (Focus Groups and Interviews) and fed into the model. Six types of labels are applied: sadness, joy, love, anger, fear, and surprise, which are used to generate visualizations.

### **Practical Application of Technology and Human Skills**

TIVC's Organizational Optimization pillar focuses on people-centric diagnostics and solutions. Our primary function is to assess culture, which we define as the shared beliefs, attitudes, behaviors, and values of an organization. TIVC's unique culture assessment approach uses mixed-method research to test for alignment between organizational policies/procedures and employee experience. After completing our assessment, TIVC develops a comprehensive organizational culture and climate profile report. This report can be used to optimize culture by helping to inform and improve decision-making processes and strengthen workplace synergy, trust, and collaboration.

Culture is multi-faceted and therefore cannot be accurately assessed from a single perspective, lens, or skill set. With this in mind, TIVC has built a unique tool for assessing organizational culture and climate that leverages both the power of artificial intelligence and the nuanced perspectives of human subject matter experts, including highly trained and credentialed authorities on culture, climate, diversity/equity/inclusion, data analysis, and change management. While other organizational culture assessments on the market rely on either qualitative *or* quantitative data, giving an incomplete picture of organizational culture, our approach triangulates data generated through qualitative and quantitative data-collection methodologies with data from your organization's policies to offer a 360-degree view of how written policies align with their practical application.

Our process begins with an assessment of employee sentiments and emotions using AI and Machine Learning Models. TIVC's algorithm determines word frequencies and groups them for further analysis. Our AI tool has a sentiment and emotion detection capability which

contextualizes topics and themes. The tool also analyzes policies to identify similarities and dissimilarities between stated policies and themes from employee responses.

After the AI tool creates an initial report, TIVC's subject matter experts analyze the data to identify root causes and make recommendations to optimize organizational culture. Our unique approach leverages technology and human expertise to render an objective and data-driven profile report.

### **Conclusion**

Using our unique AI – Natural Language Processing tool, we are able to identify organizational patterns, trends, collective beliefs, and perceptions and articulate how they impact culture. Using human expertise ensures the data is contextualized. This provides our customers with an unbiased snapshot of their existing cultural state and the ability to implement data-driven solutions.