

EMPLOYEE WELL-BEING: SENTIMENT ANALYSIS THROUGH NATURAL LANGUAGE PROCESSING (NLP)

Vasanth S¹, Abishek S², Naveen K S³, Dharanieesh U⁴, Manimozhiyan M⁵,

Hari Prasad P A⁶, Keerthi Kumar S⁷

^{1,2,3,4,5,6,7}BSc Computer Science, UG Students, PSG College of Arts & Science, Coimbatore

ABSTRACT

Employee well-being is a fundamental aspect of organizational success, influencing employee productivity, satisfaction, and engagement. It encompasses various dimensions, including mental, physical, emotional, and financial health. Modern work models, such as the 4-day work week, aim to enhance these dimensions. This study examines the impact of a shortened work week on government employees' well-being. Data from 620 employees across six organizations was analyzed using Natural Language Processing (NLP) techniques to evaluate emotional sentiment. Feedback platforms such as Glassdoor, Ambition Box, and TrustPilot provided textual data for analysis. Results show that the reduced work week improved psychological well-being, work-life balance, and satisfaction by offering more time for personal growth and family activities. This study highlights the potential of NLP in deriving actionable insights from employee feedback and contributes to the discourse on workplace innovations.

Keywords: Employee Well-Being, Sentiment Analysis, 4-Day Work Week, NLP, Text

1. INTRODUCTION

Employee well-being is increasingly recognized as a key factor in organizational success, encompassing not only physical health but also mental and emotional resilience. To assess and improve employee experiences, organizations are turning to Sentiment Analysis using Natural Language Processing (NLP). This approach allows companies to analyze large volumes of unstructured textual data, such as feedback from surveys, emails, and reviews, to uncover insights into employees' attitudes, emotions, and overall job satisfaction. By identifying trends in sentiment, organizations can pinpoint areas of concern, such as stress or dissatisfaction, and take proactive steps to address them, ultimately fostering a healthier, more engaged workforce. NLP-driven sentiment analysis provides a powerful tool for organizations to monitor and enhance employee well-being, leading to improved performance and retention.

1.1 The Importance of Employee Well-Being

Organizations today are increasingly acknowledging employee well-being as a strategic priority, recognizing that it is crucial to driving overall success and sustainability. Research has consistently shown that employees who feel valued and supported in their well-being tend to be more engaged, productive, and loyal to their employers (Bakker et al., 2014). Well-being, in this context, encompasses not just physical health, but also psychological and emotional resilience, all of which directly influence employees' ability to perform their roles effectively and maintain a high level of productivity.

In today's fast-paced corporate environment, stress and burnout have become common challenges, often leading to decreased performance, higher turnover rates, and overall dissatisfaction. As a result, it has become essential for organizations to rethink traditional work models that may contribute to these issues. Conventional work structures that prioritize long hours and rigid schedules often exacerbate stress levels and hinder employees' ability to maintain a healthy work-life balance. In response, studies have demonstrated that flexibility in working arrangements, such as remote work, flexible hours, or compressed workweeks, can significantly improve employee satisfaction, reduce absenteeism, and enhance overall mental health. These flexible models not only allow employees to manage their personal responsibilities more effectively but also foster a culture of trust and autonomy, leading to higher levels of job satisfaction and engagement.

By prioritizing well-being and incorporating flexible work arrangements, organizations can create a more resilient workforce capable of thriving in a demanding and ever-changing business landscape. This not only benefits employees but also positively impacts organizational performance by enhancing retention, reducing burnout, and driving productivity.

1.2 The Shift Toward Flexible Work Practices

The traditional 9-to-5 work schedule has been criticized for its rigidity, limiting personal development, relaxation, and work-life balance, often leaving employees in high-stress environments like the public sector overburdened. As an alternative, the 4-day work week has shown promising results globally, with trials in Iceland and companies like Microsoft Japan reporting improved productivity, reduced stress, and greater employee satisfaction. This research

explores the potential of adopting this model in the public sector, where workloads are heavy, and well-being is often overlooked. Benefits may include improved employee health, higher efficiency through outcome-focused work, and enhanced talent attraction due to greater flexibility.

The study also examines strategies to ensure uninterrupted public services, such as staggered schedules and digital transformation. A successful shift could transform public sector employment, fostering a healthier workforce and improving service quality.

2. LITERATURE REVIEW

2.1 Defining Employee Well-Being

Employee well-being is a comprehensive and multi-dimensional concept that encompasses various aspects of an individual's overall health and satisfaction, both in and outside the workplace. It plays a critical role in determining not only personal happiness but also organizational success. The key dimensions of employee well-being include:

1. **Physical Well-Being:** This aspect focuses on ensuring the physical safety of employees while promoting health and wellness through initiatives such as ergonomic workplace design, access to health programs, and encouragement of healthy lifestyle choices. A safe and health-conscious environment minimizes workplace hazards and enhances employee vitality, directly impacting productivity.
2. **Psychological Well-Being:** Psychological well-being addresses emotional resilience, mental health, and the ability to manage stress effectively. Employers can foster this dimension by providing access to mental health resources, creating supportive work environments, and encouraging open communication. Psychological well-being ensures that employees feel valued and supported, reducing burnout and fostering sustained engagement.
3. **Work Satisfaction:** This involves creating a sense of fulfillment and purpose through meaningful job roles, career development opportunities, and a positive workplace culture. When employees feel aligned with their job responsibilities and the organization's mission, it leads to higher motivation, loyalty, and job satisfaction.

2.2 Role of Sentiment Analysis

Sentiment analysis, a key aspect of NLP, helps interpret unstructured data like employee feedback by categorizing sentiments into positive, negative, or neutral. This enables organizations to gain actionable insights into workplace issues and improve decision-making. For example, analyzing comments about workload or management policies can reveal patterns of dissatisfaction or highlight successful practices.

As noted by Kastrati et al. (2021), sentiment analysis uncovers recurring themes and trends, helping organizations address concerns proactively and enhance employee satisfaction. By demonstrating responsiveness to feedback, organizations can build trust, boost engagement, and create a more productive work environment.

2.3 The 4-Day Work Week: Balancing Productivity and Well-Being

The 4-day work week seeks to enhance productivity while reducing employee stress. Case studies from Iceland highlight key benefits, including an improved work-life balance as employees spend more time with family, reduced stress levels due to increased relaxation, and higher engagement, with workers more focused and motivated during work hours.

While these outcomes are promising, the impact of this model on public-sector organizations remains underexplored. Given the unique challenges of maintaining uninterrupted services and managing heavy workloads, this research aims to examine the feasibility and benefits of implementing a 4-day work week in the public sector, offering insights into its potential to improve employee well-being and organizational efficiency.

3. OBJECTIVE OF STUDY

This study is focused on exploring the well-being and satisfaction of government employees by addressing key aspects related to their professional and personal lives. The specific objectives are as follows:

1. Identify Well-Being Benchmarks for Government Employees:

The study seeks to establish standard indicators and metrics that define well-being for government employees. This includes evaluating aspects such as physical health, mental health, work-life balance, financial stability, and overall job satisfaction. By identifying these benchmarks, the research aims to provide a framework for assessing the general well-being of employees in this sector and offer actionable insights for policy-making and organizational improvements.

2. Explore Key Factors Affecting Employee Satisfaction and Mental Health:

Understanding the underlying factors that influence job satisfaction and mental health is critical. This objective involves identifying variables such as workload, workplace environment, career growth opportunities, recognition, stress levels, and access to mental health support. The study will delve into how these elements interplay to either

enhance or hinder the overall satisfaction and mental health of employees, providing a comprehensive perspective on their professional experiences.

3. Analyze the Impact of a 4-Day Work Week Using Sentiment Analysis Techniques:

With the growing interest in alternative work schedules, the study will specifically examine the potential effects of implementing a 4-day work week for government employees. By employing sentiment analysis techniques, the research will analyze employee feedback, opinions, and attitudes toward this initiative. This includes evaluating perceived benefits such as increased productivity, better work-life balance, and reduced burnout, as well as challenges like workload compression or operational feasibility. The insights gained will help assess whether a 4-day work week could be a viable strategy for enhancing employee well-being and efficiency.

4. METHODOLOGY

4.1 Research Design

This study adopts a descriptive research design to systematically investigate the relationship between work models and employee well-being. The descriptive approach enables a detailed examination of various factors influencing government employees' satisfaction and mental health while focusing on the potential impact of alternative work schedules, such as the 4-day work week.

By employing this design, the study aims to achieve the following:

- **Detailed Observation and Description:**

The research seeks to provide a comprehensive description of the current state of government employees' well-being, their satisfaction levels, and their attitudes toward existing and proposed work models. This involves gathering qualitative and quantitative data that reflect employees' lived experiences, perceptions, and concerns.

- **Assessment of Factors Influencing Well-Being:**

A descriptive design allows for an in-depth analysis of specific variables such as workload, workplace environment, career growth opportunities, job security, mental health support, and personal life balance. These factors will be examined to understand their contributions to overall employee well-being.

- **Evaluation of the 4-Day Work Week:**

The study evaluates the feasibility and potential outcomes of a 4-day work week through descriptive metrics. It focuses on understanding how such a work model might affect productivity, job satisfaction, work-life integration, and mental health. Sentiment analysis techniques will further enrich the descriptive analysis by identifying common themes and sentiments expressed by employees.

- **Data-Driven Insights for Policy Recommendations:**

By using a descriptive approach, the study ensures a systematic presentation of findings, offering clear and actionable insights. This design is particularly suited to capturing and documenting the complexities of work models and their impact on well-being, providing a robust basis for policy-making and organizational improvement.

4.2 Data Collection

The study utilizes both primary and secondary data to analyze the impact of work models on employee well-being, ensuring a well-rounded perspective.

Primary Data

Primary data were gathered through open-ended survey responses from 620 employees across six government organizations. The survey explored job satisfaction, mental health, and opinions on the 4-day work week, allowing for detailed insights into employee experiences. Participants represented diverse departments, including Finance, Human Resources, and IT, ensuring a comprehensive view of different work cultures and roles.

Secondary Data

Secondary data were obtained from Glassdoor and TrustPilot, providing additional feedback on workplace satisfaction, management practices, and organizational culture. These reviews enriched the findings by offering broader context and validating trends observed in the primary data.

This dual approach ensures a balanced analysis of employee well-being and the effectiveness of innovative work models.

4.3 Analysis Tools

To analyze the collected data effectively, Natural Language Processing (NLP) techniques were employed to process textual feedback and identify sentiment trends. These tools enabled a structured and insightful examination of employee responses, revealing underlying patterns and sentiments. The process involved three key stages:

1. Preprocessing

The initial step focused on preparing the textual data for analysis. This included:

- **Text Cleaning:** Removing irrelevant terms such as stop words (e.g., "the," "and") and punctuation.
- **Tokenization:** Breaking down sentences into individual words or phrases for easier processing.
- **Lemmatization:** Reducing words to their base forms (e.g., "working" to "work") to unify variations.

This step ensured that the data was refined and optimized for accurate analysis.

2. Sentiment Categorization

The processed data was classified into three sentiment categories:

- **Positive Sentiment:** Feedback indicating satisfaction, appreciation, or favorable opinions.
- **Neutral Sentiment:** Comments reflecting balanced or indifferent views.
- **Negative Sentiment:** Responses highlighting dissatisfaction, concerns, or criticism.

This categorization helped identify overall sentiment trends and variations across departments or work models, providing actionable insights into employee attitudes.

3. Visualization

To present the findings in an intuitive and engaging manner, graphical representations were created:

- **Word Clouds:** Highlighted frequently used terms and themes in the feedback, emphasizing recurring sentiments or concerns.
- **Heatmaps:** Illustrated sentiment distribution across different departments, organizations, or work models, offering a visual overview of trends.

5. FINDINGS AND DISCUSSION

5.1 Sentiment Analysis

The sentiment analysis revealed distinct trends among the two employee communities, highlighting their responses to the 4-day work week and how it impacted their well-being and activities outside of work.

Community 1 (310 Employees)

- **57% Positive Impact:** A significant majority reported that the 4-day work week had a positive effect on their lives, citing improved work-life balance and reduced stress levels.
- **17% Engaged in Physical Activities:** Many employees used the extra day to focus on fitness routines, such as exercising, yoga, or outdoor activities, contributing to better physical and mental health.
- **13% Spent More Time with Family:** Employees valued the opportunity to bond with family members, strengthening personal relationships and overall satisfaction.
- **13% Sought Better Task Allocation:** Some employees expressed a desire for improved task distribution during the shorter workweek to prevent workload compression and ensure efficiency.

Community 2 (310 Employees)

- **37% Spent More Time with Family:** A significant proportion of employees prioritized family interactions, finding joy and contentment in shared moments with loved ones.
- **17% Focused on Learning New Skills:** Many employees utilized the extra time for professional and personal development, engaging in activities like taking courses, attending workshops, or self-study.
- **14% Participated in Sports:** Sports and recreational activities became a popular choice, fostering physical health and community engagement.
- **19% Engaged in Personal Reflection:** Employees allocated time for introspection, mindfulness, or pursuing hobbies, enhancing their psychological well-being.

Employees in this community leveraged the reduced workweek as an opportunity for personal growth, skill enhancement, and recreation, contributing to their overall psychological and emotional well-being.

These findings underscore the multifaceted benefits of a 4-day work week, particularly in fostering healthier lifestyles, stronger relationships, and personal development. At the same time, they highlight the need to address task allocation concerns to maximize the effectiveness of this work model.

5.2 Departmental Trends

The sentiment analysis revealed unique trends across different departments, reflecting how the 4-day work week impacted employees based on the nature of their roles and responsibilities.

Finance

- **Feedback:** Mixed sentiments emerged from the Finance department. While some employees appreciated the additional day off, others expressed concerns over uneven workload distribution during the shorter workweek.
- **Challenges:** The time-sensitive and high-pressure nature of financial tasks, such as reporting deadlines and audits, often led to feelings of workload compression. Employees felt that balancing tasks within fewer working days required better planning and allocation.
- **Opportunities:** Improved task management strategies and enhanced collaboration tools could alleviate these concerns, allowing employees to better enjoy the benefits of the reduced workweek.

Human Resources (HR)

- **Feedback:** Strongly positive sentiments dominated in the HR department, with employees emphasizing the improvement in work-life balance brought by the 4-day work week.
- **Highlights:** Many HR professionals reported reduced stress levels and greater flexibility, enabling them to focus on strategic tasks, personal growth, and family time. The nature of HR workflows, which often allows for planned execution, aligned well with the condensed schedule.
- **Opportunities:** Continued flexibility in scheduling and time for skill enhancement can further bolster satisfaction in this department.

Information Technology (IT)

- **Feedback:** The IT department showed high positivity regarding the 4-day work week, as the flexibility of the model complemented their team workflows and project-based tasks.
- **Highlights:** Employees appreciated the balance between autonomy and structured collaboration, reporting increased productivity and morale. Many cited that remote-friendly work practices already prevalent in IT made the transition smoother.
- **Opportunities:** Expanding flexibility and access to advanced collaboration tools can sustain this positivity and further enhance team performance.

6. DISCUSSION

6.1 Implications of the 4-Day Work Week- The study's findings underscore the transformative potential of implementing a 4-day work week in government organizations. The results demonstrate a range of benefits that extend to both employees and the organizations they serve, highlighting its viability as an innovative work model.

Enhanced Productivity

- Employees reported increased focus and efficiency during their working hours, driven by a stronger sense of time management and prioritization.
- The condensed work schedule encouraged employees to minimize distractions and optimize their efforts, leading to measurable improvements in output quality and timeliness.

Reduced Stress Levels

- The additional day off provided employees with more time for personal pursuits, physical activities, and family interactions, contributing to improved mental health and reduced burnout.
- Employees experienced a better balance between professional and personal responsibilities, fostering overall well-being and satisfaction.

Organizational Benefits

- Enhanced employee well-being translated into higher morale and engagement, which are critical for maintaining a motivated workforce.
- Reduced absenteeism and turnover rates were observed, as employees felt more valued and satisfied with their work environment.
- Organizations benefited from a more energized workforce, which positively impacted team dynamics and collaboration.

Challenges and Opportunities

While the findings highlight significant advantages, the study also points to potential challenges, such as workload distribution in certain departments like Finance. Addressing these issues through better planning and resource allocation will be key to maximizing the effectiveness of the 4-day work week.

6.2 Organizational Impact

The introduction of the 4-day work week has profound implications for organizations, influencing key areas such as workforce retention, productivity, and employer branding. These impacts collectively position organizations as forward-thinking and employee-centric, enhancing their competitive advantage.

Higher Retention

- **Employee Loyalty:** Flexible schedules significantly reduce burnout and improve job satisfaction, leading to higher employee retention rates. Employees are more likely to remain in organizations that prioritize their well-being and provide a healthy work-life balance.
- **Cost Savings:** Retaining employees reduces costs associated with hiring, onboarding, and training new staff, offering long-term financial benefits for the organization.
- **Organizational Stability:** A stable workforce fosters stronger institutional knowledge, team cohesion, and consistent performance.

Improved Productivity

- **Enhanced Efficiency:** Employees reported better mental health and reduced stress levels, enabling them to perform more efficiently during their working hours. A refreshed and motivated workforce often delivers higher-quality outputs.
- **Focus and Prioritization:** The compressed work schedule encouraged employees to prioritize essential tasks, minimize distractions, and work more strategically, resulting in improved overall productivity.
- **Team Collaboration:** Positive morale and increased engagement contributed to smoother collaboration and better teamwork across departments.

Employer Branding

- **Attracting Top Talent:** Organizations offering innovative and flexible policies, such as a 4-day work week, are more appealing to job seekers, especially top talent seeking progressive workplaces.
- **Reputation Enhancement:** Emphasizing employee-centric practices improves the organization's reputation in the industry, positioning it as a desirable place to work.
- **Diversity and Inclusion:** Flexibility in work schedules can attract a more diverse workforce by accommodating different needs, such as those of working parents or individuals with caregiving responsibilities.

7. CONCLUSION

This study highlights the positive impact of a 4-day work week on government employees' well-being, revealing significant improvements in satisfaction, mental health, and productivity. Sentiment analysis using Natural Language Processing (NLP) identified key trends, showing that employees valued the additional personal time for family, recreation, and self-development, leading to reduced stress and enhanced job satisfaction. The flexibility of the reduced workweek also fostered greater focus and efficiency, contributing to higher productivity. Furthermore, the model positively influenced organizational outcomes by improving employee retention, strengthening employer branding, and creating a more engaged workforce. While challenges in workload distribution were noted, these can be addressed through strategic planning, making the 4-day work week a promising approach for enhancing both individual well-being and organizational success.

8. RECOMMENDATIONS

To effectively implement a 4-day work week, organizations can begin with pilot programs to test its feasibility, gathering practical insights on productivity and employee satisfaction from specific teams. Ongoing feedback analysis is essential, as regularly collecting employee input helps identify potential issues, such as workload imbalances and stress, allowing for necessary adjustments to optimize the model. Furthermore, integrating flexible work policies, including remote work options, alongside the 4-day work week can enhance employee autonomy and work-life balance by reducing commute times and offering more flexible scheduling. This combined approach ensures that the 4-day work week is a sustainable, long-term strategy that benefits both employees and the organization.

9. REFERENCES

- [1] Bakker, A. B., & Oerlemans, W. G. (2014). Subjective Well-Being in Organizations. Annual Review of Organizational Psychology.
- [2] Kastrati, Z., Dalipi, F., & Imran, A. S. (2021). Sentiment Analysis Using NLP. Applied Sciences.
- [3] Wright, T. A., & Bonett, D. G. (2007). Job Satisfaction and Psychological Well-Being. Journal of Management.