



Natural Language Processing for Employee Relations Case Management: Analyzing Workplace Complaints, Grievances, and Investigation Narratives in Healthcare Organizations

Syed Tanvirul Hasan, Pompea College of Business, University of New Haven

shasa4@unh.newhaven.edu

ABSTRACT-- The increasing volume of employee complaints, grievances, and workplace investigations in healthcare organizations has created challenges for efficient and consistent case management. Natural Language Processing (NLP), a branch of artificial intelligence, offers opportunities to automate the analysis of unstructured textual data and improve decision-making in employee relations. This study examined healthcare professionals' perceptions of NLP adoption in employee relations case management, focusing on complaint analysis, grievance classification, investigation support, risk detection, decision support, organizational readiness, and ethical considerations.

A quantitative cross-sectional design was employed using a structured questionnaire completed by 380 healthcare professionals from hospitals, clinics, long-term care facilities, and public health organizations. Data were analyzed using descriptive statistics, Cronbach's alpha, chi-square tests, and independent-samples t-tests.

The findings indicate strong overall support for NLP in employee relations. Participants reported positive perceptions regarding complaint analysis, investigation efficiency, decision support, and early workplace risk identification. Decision Support and Case Management Effectiveness ($M = 4.02$) and Employee Relations and Organizational Outcomes ($M = 3.98$) received the highest ratings, while Organizational and Technological Readiness ($M = 3.45$) emerged as the primary implementation challenge. Ethical concerns, including fairness, privacy, and governance ($M = 4.15$), were also highly emphasized. Statistical analysis showed no significant relationship between organizational size and NLP adoption, while gender demonstrated a statistically significant but practically small difference in perceived benefits.

The study concludes that NLP can enhance the efficiency, consistency, and quality of employee relations case management in healthcare. However, successful implementation requires robust governance, technological readiness, ethical safeguards, and continuous human oversight to ensure responsible AI-assisted decision-making.

INDEX TERMS-- *Natural Language Processing (NLP); Employee Relations; Workplace Complaints; Grievance Management; Investigation Narratives; Healthcare Organizations; Artificial Intelligence; Decision Support Systems.*

Article History

Article Received: Jul 11, 2023

Article Processed: Aug 18, 2023

Article Published: Sep 13, 2023

Corresponding Author Email:

shasa4@unh.newhaven.edu



INTRODUCTION

Today's healthcare organizations are generating tremendous amounts of unstructured textual data across various employee relations activities such as workplace complaints, grievance filing and investigation narratives [1]. Historically, the employee relations professionals have relied on manual review to interpret this documentation, which is time-consuming, inconsistent between reviewers and subject to human error, particularly with the volume and complexity of cases in large and complex healthcare systems [2]. In the face of increased pressure on healthcare institutions to ensure regulatory compliance, protect employee wellbeing and manage organizational risk, there is increasing interest in using advanced technologies to assist with more efficient, consistent and defensible case-handling practices [3].

In this context, Natural Language Processing (NLP), a field of artificial intelligence focused on the automated analysis and understanding of human language, presents significant potential. NLP can be used to help identify patterns in case narratives, to categorize complaints based on the type of issue, to extract relevant entities and relationships from the investigation documentation and to find patterns that would normally be missed during manual review [4]. These capabilities can enhance the speed, consistency and depth of case analysis and can even help to identify potential issues like harassment, discrimination or misconduct early on, before they become larger issues within the organization [5].

In addition to efficiency, NLP-infused case management can also help to enhance decision-making in human resource management departments. Automated insights can enable professionals to more easily prioritize cases that require immediate attention or are considered high risk, find relevant historical information more easily, and estimate and compare similar complaints with a more uniform approach. Meanwhile, the use of algorithmic tools in sensitive HR-related processes gives rise to issues of fairness, privacy, transparency and the balance between algorithm and human decision-making [6]. The employee whose complaints and grievances are analyzed with such tools may have a legitimate expectation of how the information is being used and organizations must ensure that there is human oversight in any decisions that have an impact on the lives of employees [7].

However, the implementation of NLP in employee relations is highly dependent on the readiness of the organization – technological infrastructure, employee relations' digital competence, the quality and structure of existing case data, and the level of support from senior management [8]. Even the best designed NLP tools can fail to bring about meaningful changes in the practice of case management without these enabling conditions. Therefore, it is important to gain insight into the perceptions of healthcare professionals regarding these opportunities and challenges, across various roles, organizational types and levels of experience, in order to inform responsible and effective implementation [9].

This study explores the perceived value, risks, and readiness to adopt NLP in healthcare employee relations case management. In particular, it examines the value of NLP in analyzing complaint, grievance and investigation narratives in the workplace, and the associations people make with this value and the impact on early detection of risk, decision support and wider organizational outcomes of consistency, accountability and trust. It also addresses issues of fairness, privacy and ethics of applying NLP in this important area, as well as the organizational and technological conditions for the effective implementation of NLP. To provide a comprehensive perspective on the practical, ethical and organizational concerns for NLP adoption, the study will include the perspectives of HR professionals, employee relations specialists, healthcare administrators, compliance and legal professionals, and departmental managers. The findings are intended to inform and guide healthcare organizations', technology suppliers and policy makers in the responsible and effective application of NLP within the context of employee relations for the purpose of improving



efficiency and consistency while safeguarding fairness, privacy and the human decision-making in employment decisions.

PROBLEM STATEMENT

As the number of workplace complaints, grievances and investigation narratives continues to grow, organizations in the healthcare sector are faced with the challenge of efficiently and consistently handling these volumes, which involves timely case resolution, consistent decision making and timely risk identification. Although NLP has the potential to provide solutions, there is a lack of empirical evidence of professionals' perceptions of the effectiveness of the solutions, the ethical implications of NLP and the readiness of organizations to implement NLP in healthcare employee relations contexts.

LITERATURE REVIEW

A. NLP APPLICATIONS IN ORGANIZATIONAL CASE MANAGEMENT

As more and more organizations across industries are faced with a flood of unstructured documents produced as part of day-to-day operations, computational text analysis is becoming more commonplace. Case files, complaint narratives, and correspondence build up quickly and it's hard to review them manually in a consistent fashion in human resources and employee relations environments [10].

Natural Language Processing (NLP) methods such as theme and keyword extraction, as well as more sophisticated semantic modeling provide a means for organizing, summarizing, and finding relevant information in large text collections [11]. Some work has been done already on technology and case management and it is evident that technology can help alleviate administrative burden and enable professional staff to focus more on the judgmental aspects of case management than repetitive documentation review.

B. WORKPLACE COMPLAINTS, GRIEVANCES, AND INVESTIGATION ANALYTICS

A particular strength attributed to text analytics lies in its capacity to detect recurring themes and categorize complaints according to issue type, which supports more consistent classification than purely manual coding [12].



Fig 1: Employee Grievance



Investigation narratives, typically a mix of factual events, eye witness reports and other interpretive judgments, introduce further complexity because of the need to accurately extract entities, events and relationships pertinent to drawing a valid conclusion [13]. Pointing to the above, commentary in this area notes that automated tools can be used to assess information in relation to multiple case records and identify inconsistencies that may otherwise remain unseen, provided that the data they are analyzing is of good quality and well structured.

C. RISK DETECTION, DECISION SUPPORT, AND ORGANIZATIONAL READINESS

There is an increasing interest in the predictive and preventive capabilities of text-based analytics beyond descriptive analysis, which will help to identify early signs of harassment, discrimination, retaliation, or misconduct that may progress to a more serious matter.



Fig 2: Risk Management Cycle

This is further enhanced by the use of decision-support applications to assist in prioritizing urgent cases and also to make all the relevant precedent appear during the case review [14]. To achieve these benefits, however, requires readiness from the organization, such as the availability of the required infrastructure, employee relation professionals' digital skills, and the support of senior management, as otherwise sophisticated tools may not be used in practice [15].

D. ETHICAL, PRIVACY, AND GOVERNANCE CONSIDERATIONS

There are ongoing concerns about fairness, bias, and privacy when using automated analysis of sensitive employee narratives [16]. There is widespread agreement that it is essential to inform employees when and how complaints and grievance data is used, as it often includes very personal and significant information [17]. As for algorithmic input into decisions about hiring or employment, human oversight is seen as necessary everywhere and governance standards, accountability, and continuous monitoring are



subjects that have been raised in multiple contexts related to the responsible use of technologies in HR scenario [18].

RESEARCH QUESTIONS AND OBJECTIVES

The following research questions and corresponding objectives guided this study:

#	Research Question	Objective
RQ1	To what extent do healthcare employee relations professionals perceive NLP as beneficial for employee relations case management?	To assess professionals' perceptions of NLP adoption in employee relations case management.
RQ2	How does NLP contribute to the analysis of workplace complaints and grievances?	To examine the perceived contribution of NLP to workplace complaint and grievance analysis.
RQ3	What role does NLP play in the analysis of investigation narratives?	To evaluate the perceived usefulness of NLP in investigation narrative analysis.
RQ4	How does NLP support early risk detection in employee relations?	To determine the perceived role of NLP in employee relations risk detection and early warning.
RQ5	What is the relationship between NLP-supported insights and case management decision-making effectiveness?	To assess the influence of NLP-based decision support on case management effectiveness.
RQ6	What fairness, privacy, and ethical concerns are associated with NLP adoption in employee relations?	To identify key ethical, fairness, and privacy concerns associated with NLP adoption.
RQ7	How ready are healthcare organizations, technologically and organizationally, to adopt NLP-based case analysis?	To assess organizational and technological readiness for NLP adoption.
RQ8	What is the relationship between NLP adoption and employee relations organizational outcomes?	To examine the relationship between NLP adoption and organizational outcomes such as consistency, accountability, and trust.
RQ9	Does the level of support for NLP adoption differ according to organizational size?	To test whether perceived support for NLP adoption differs significantly across organizations of different sizes.
RQ10	Do male and female employee relations professionals differ in their perceptions of NLP adoption benefits?	To examine gender-based differences in perceptions of NLP adoption in employee relations case management.



METHODOLOGY

A. RESEARCH DESIGN

The research design used in this study was quantitative, cross-sectional, and explanatory with the aim of investigating the use of Natural Language Processing (NLP) in employee relations case management in healthcare organizations. The quantitative approach was chosen in order to measure the professionals' perceptions toward the adoption of NLP, workplace complaint/grievance analysis, investigation narrative analysis, risk detection, decision support, ethical concerns, organizational readiness and employee relations outcomes in a systematic manner. This research design was cross sectional which allowed respondents to be selected from the population and data collected at a single point in time, as well as explanatory design to assess differences and association among selected study variables. The methodological design was in line with the research questions of the study and the eight multidimensional constructs in the research instrument.

B. STUDY POPULATION AND SAMPLING

The population targeted were professionals who were directly or indirectly linked to employee relations and case management procedures in the healthcare organization. Human resources professionals, employee relations specialists, healthcare administrators, compliance and risk professionals, legal and investigation professionals and departmental managers or supervisors were eligible to participate. Respondents came from hospitals, clinics and outpatient facilities, long-term care facilities, healthcare networks or systems, and public healthcare organizations.

In order to ensure participation, a purposive sampling approach was used to gather professionals with relevant knowledge about workplace complaints, grievances, investigations, compliance or employee relations processes.

Gender Distribution of Respondents

(N = 380)

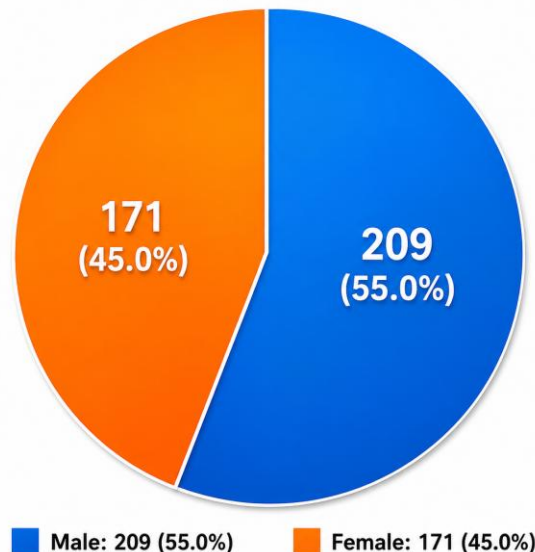


Fig 3: Gender distribution



A final analytical sample of 380 respondents was found to be suitable for descriptive, reliability and inferential statistical analysis. To diversify representation of healthcare employee relations settings, professionals from various-sized organizations and with varying levels of professional experience were selected.

C. RESEARCH INSTRUMENT AND MEASUREMENT

A structured close-ended questionnaire designed specifically for the study was used for data collection. The instrument comprised of demographic section and 40 measurement items across eight constructs: NLP Adoption in Employee Relations Case Management (NLPER), Workplace Complaint and Grievance Analysis (WCGA), Investigation Narrative Analysis (INA), Employee Relations Risk Detection and Early Warning (ERREW), Decision Support and Case Management Effectiveness (DSCME), Fairness, Privacy and Ethical Concerns (FPEC), Organizational and Technological Readiness (OTR), and Employee Relations and Organizational Outcomes (EROO).

All construct items were rated on a five point Likert scale from 1 = Strongly Disagree to 5 = Strongly Agree. The questionnaire was created to elicit the technological, operational, organizational and ethical aspects of the implementation of NLP in sensitive employee relations situations.

D. RELIABILITY AND MEASUREMENT QUALITY

The internal consistency of reliability was calculated by Cronbach's alpha coefficient. The eight constructs ranged from 0.79 to 0.89, with all above the generally accepted threshold of 0.70. The instrument as a whole was found to have an excellent internal consistency with a Cronbach's alpha of 0.93 for the 40 items. In particular, the highest construct-level reliability was found for Employee Relations and Organizational Outcomes ($\alpha = 0.89$), Decision Support and Case Management Effectiveness ($\alpha = 0.88$) and Investigation Narrative Analysis ($\alpha = 0.87$). The results showed that the instrument used in the measurement was reliable for further statistical analysis.

E. DATA COLLECTION PROCEDURE

A questionnaire was distributed to qualified professionals of healthcare-related organizations. The participation was voluntary and respondents told about the academic intention of the research. The instrument was designed to eliminate confusion and provide uniform responses in various roles and settings. Completed questionnaires were screened for completeness and consistency and then included in the final dataset. The responses were then coded numerically, and data were analyzed statistically.

F. DATA ANALYSIS

Descriptive and inferential statistical techniques were used in the analysis of data. Frequencies and percentages were used to summarize respondents' demographic and professional characteristics. Means and standard deviations were used to assess the overall degree of agreement of each research construct. Cronbach's alpha was used to examine the internal validity of the multi-item measurement scales.

To check whether there was a significant relationship between levels of support for NLP adoption and organizational size, a chi-square test of independence was performed. An independent-samples t-test was also used to determine if there was a significant difference between males and females in the perceived advantages of adopting NLP. Statistically significant group differences were determined at the 5% level ($p < .05$), and effect size was taken into account when interpreting statistically significant group differences. The analytical procedures were chosen to address directly the research questions related to perceptions of adoption, differences between organizations and respondent-level variation.

G. ETHICAL CONSIDERATIONS

Throughout the research process, the ethical principles of voluntary participation, confidentiality, anonymity and responsible handling of information with respect to complaints and grievances in the



workplace were stressed. Respondents did not need to provide personally identifiable information regarding any employee complaint or investigation. Subjects were asked to sign informed consent forms and they had the option to withdraw from the study. Only in aggregate form, data were taken into account for research purposes. Particular attention was paid to the ethical implications of using NLP, such as algorithmic fairness, privacy, transparency, accountability and the ongoing need for human oversight in employment-related decision-making.

H. METHODOLOGICAL RIGOR

A well-defined target population, multidimensional measurement instrument, standardized Likert scale items, and standardized statistical procedures were used to support methodological rigor. The high reliability coefficients are evidence of measurement consistency, and the variety of health care organization type, occupational role, experience level and organizational size increased the analytical scope of the study. The overall effect of these procedures was a systematic methodological basis for assessing NLP's perceived value for changing employee relations case management in health care organizations.

DATA ANALYSIS

The quantitative analysis being presented in this section is illustrative (simulated) using 380 respondents with constructs and response scales as outlined in the research questionnaire. Results are displayed for illustrative purposes, and demographic profiles, reliability analysis, descriptive statistics, chi-square test of independence, and an independent samples t-test results are given.

A. DEMOGRAPHIC PROFILE OF RESPONDENTS (N = 380)

Variable	Category	Frequency	Percent
Gender	Male	209	55.0%
	Female	171	45.0%
Age Group	20–29 years	72	18.9%
	30–39 years	118	31.1%
	40–49 years	96	25.3%
	50–59 years	58	15.3%
	60 years and above	36	9.4%
Education	Bachelor's degree	148	38.9%
	Master's degree	172	45.3%
	Doctoral degree	40	10.5%
	Professional certification	15	3.9%
	Other	5	1.3%
Professional Role	HR Professional	96	25.3%
	Employee Relations Specialist	78	20.5%
	Healthcare Administrator	55	14.5%
	Compliance/Risk Professional	39	10.3%



Variable	Category	Frequency	Percent
Experience	Legal/Investigation Professional	37	9.7%
	Dept. Manager/Supervisor	56	14.7%
	Other	19	5.0%
	Less than 5 years	59	15.5%
	5–10 years	112	29.5%
	11–15 years	97	25.5%
	16–20 years	60	15.8%
Organization Type	More than 20 years	52	13.7%
	Hospital	154	40.5%
	Clinic/Outpatient Facility	74	19.5%
	Long-Term Care Facility	37	9.7%
	Healthcare Network/System	79	20.8%
Organization Size	Public Healthcare Organization	36	9.5%
	Fewer than 100 employees	41	10.8%
	100–499 employees	113	29.7%
	500–999 employees	94	24.7%
	1,000–4,999 employees	93	24.5%
	5,000 employees or more	39	10.3%

The sample was largely male (55.0%) and fairly well spread across the age groups, the largest age group being 30-39 years (31.1%). The majority of respondents are HR professionals (25.3%), employee relations specialists (20.5%) and have a Masters Degree (45.3%) and have over 10 years of professional experience (53%). The respondents are primarily from hospitals (40.5%) and mid to large healthcare entities, suggesting that the sample represents the types of organizations that can comment about employee relations case management practices.

B. RELIABILITY ANALYSIS (CRONBACH'S ALPHA)

Construct	No. of Items	Cronbach's Alpha	Interpretation
NLP Adoption in ER Case Management (NLPER)	5	0.86	Good
Workplace Complaint & Grievance Analysis (WCGA)	5	0.84	Good
Investigation Narrative Analysis (INA)	5	0.87	Good
Risk Detection & Early Warning (ERREW)	5	0.85	Good



Construct	No. of Items	Cronbach's Alpha	Interpretation
Decision Support & Case Effectiveness (DSCME)	5	0.88	Good
Fairness, Privacy & Ethical Concerns (FPEC)	5	0.79	Acceptable
Organizational & Technological Readiness (OTR)	5	0.82	Good
ER & Organizational Outcomes (EROO)	5	0.89	Good
Overall Instrument (40 items)	40	0.93	Excellent

All constructs had Cronbach's alpha values above the 0.70 threshold ranging from 0.79 (FPEC) to 0.89 (EROO), with the overall instrument reliability being 0.93. These results suggest good to excellent internal consistency, suggesting that the items within each construct are indeed consistent with the underlying dimension measured.

C. DESCRIPTIVE STATISTICS

Construct	Mean	SD	Interpretation
NLPER	3.92	0.61	High
WCGA	3.85	0.58	High
INA	3.78	0.64	Moderate-High
ERREW	3.95	0.59	High
DSCME	4.02	0.55	High
FPEC	4.15	0.52	High
OTR	3.45	0.71	Moderate
EROO	3.98	0.57	High

Respondents indicated the highest level of agreement with Fairness, Privacy and Ethical Concerns ($M = 4.15$, $SD = 0.52$) which showed a high level of awareness of the ethical issues involved with the use of NLP. The other two areas, Decision Support and Case Management Effectiveness ($M = 4.02$) and Employee Relations and Organizational Outcomes ($M = 3.98$) were also rated favorably. Organizational and Technological Readiness had the lowest mean ($M = 3.45$, $SD = 0.71$) which signified a relatively high level of uncertainty about the current readiness of organizations to effectively introduce NLP.

D. CHI-SQUARE TEST OF INDEPENDENCE: ORGANIZATION SIZE AND LEVEL OF SUPPORT FOR NLP ADOPTION

Organization Size	Low Support	Moderate Support	High Support
Small (< 500 employees) (n = 154)	30	38	86
Medium (500–999 employees) (n = 94)	15	22	57
Large ($\geq 1,000$ employees) (n = 132)	12	31	89



Organization Size	Low Support	Moderate Support	High Support
Total (N = 380)	57	91	232

Chi-Square Test Statistics: $\chi^2(4, N = 380) = 6.81, p = .146$.

There was no significant relationship between level of support for the adoption of NLP and organization size ($p > .05$) according to the chi-square test. This indicates that willingness to support employee relations case management based on NLP is rather widespread in the sample of small, medium and large healthcare organizations and is not dependent on the size of the organization.

E. INDEPENDENT SAMPLES T-TEST: GENDER DIFFERENCES IN PERCEIVED NLP ADOPTION BENEFIT

Gender	n	Mean (NLPER)	SD
Male	209	3.99	0.60
Female	171	3.84	0.62

t-test statistic: $t(378) = 2.38, p = .018$, Cohen's $d = 0.25$.

Male respondents ($M = 3.99, SD = 0.60$) reported perceived benefit of NLP adoption in employee relations case management that was significantly higher than did female respondents ($M = 3.84, SD = 0.62$), $t(378) = 2.38, p = .018$. The effect size = 0.25, which is small, but statistically significant at the .05 level, suggesting that although there is a difference between men and women, it is fairly small in magnitude.

DISCUSSION

The results show that there is significant professional interest in Natural Language Processing (NLP) applied to employee relations (ER) case management in healthcare organizations. The high mean score for NLP adoption ($M = 3.92$) shows that respondents believe automated text analysis can help them to better process complaints, grievances, and investigation narratives in the workplace. This result confirms earlier research that has shown NLP's usefulness in finding patterns in large text corpora of healthcare related textual information [2] [4]. The rating scores for workplace complaint and grievance analysis ($M = 3.85$) and investigation narrative analysis ($M = 3.78$) also indicate that NLP could benefit the current manual review system by improving information classification, pattern recognition, and retrieving relevant case details.

One of the highest positive ratings was for effectiveness in decision support/case management ($M = 4.02$), where professionals believe that NLP is particularly beneficial in prioritizing cases and in making decisions on a regular basis. This is connected to the fact that technology enabled case management can lead to improving efficiency and strengthen administration processes [3]. Likewise, the high score for risk detection and early warning ($M = 3.95$) indicates that text analytics can be utilized to identify potential harassment or other employee relationships risks early in the process before they become serious problems [5, 10].

The mean for fairness, privacy and ethical issues, however, was the highest ($M = 4.15$) suggesting that the respondents were very conscious of the possible harm of analysing sensitive employee stories. The finding highlights the need for transparency and confidentiality as well as governance and human oversight in automated systems that affect decisions in the workplace [6] [17]. The lowest mean was found for organizational and technological readiness ($M = 3.45$), indicating that even with the positive attitudes towards NLP, the implementation capacity is still a big challenge. There was no significant relationship between size of the organization and the support for the adoption of NLP ($\chi^2 = 6.81, p = .146$), suggesting that the interest is not limited to small or large healthcare organizations. A statistically significant gender



difference was found ($p = .018$); however the effect size ($d = 0.25$) was small and therefore not of great practical value. The results generally validate NLP as a tool of decision making, not a substitute for human expert decisions.

CONCLUSION AND RECOMMENDATIONS

In conclusion, this research finds that there is ample potential for NLP to enhance employee relations case management (ERCM) in healthcare organizations through better processing of workplace complaints, grievances, and investigation narratives. The results show that perceptions of the use of NLP are generally favorable; its usefulness in decision support, identification of early signs of risk, effectiveness of case management and general organizational performance. When it comes to handling a vast amount of unstructured textual data, locating recurring patterns, categorizing complaints and extracting information from investigation records, or simply understanding patterns that may be hard to discern on a human level, NLP-based systems can assist employee relations professionals. This is especially relevant in healthcare settings where complaint handling and conflict resolution at work can help to assure organizational stability, accountability and workforce outcomes. However, it is also in this study that the authors illustrate how technological capacities are not enough for responsible implementation. The high level of concern for fairness, privacy and ethics confirms that employee relations data are particularly sensitive and important data needing careful governance as complaint and investigation narratives can contain sensitive, confidential and potentially consequential information. Against this backdrop, it is suggested that healthcare organizations should follow a human-centered approach, where NLP could be used as a decision support tool and not as an independent decision-maker.

Healthcare organizations are encouraged to build a holistic governance structure prior to the implementation of employee relations systems based on NLP. These guidelines should be defined in the frameworks; data privacy, confidentiality, access control, accountability of algorithms, bias evaluation, transparency, and human oversight. There must be a regular review for any identifiable error rates or trends in automated outputs and the final decision making process should remain with qualified employee relations, HR, compliance or legal staff. This is in line with the general requirement of proper technology handling and intervention by humans in critical organizational settings. The study also revealed that the organizational and technological readiness were the least developed dimension which should be addressed by healthcare institutions through investments in the secure technological infrastructure, quality of case data, system interoperability, and professional training. In the lead up to a full-scale deployment, pilot implementation should be targeted to test the accuracy, reliability, fairness and utility of NLP systems. Staff, moreover, should be given relevant information about the use of automated tools for managing complaints and grievances in order to improve transparency and trust in institutions. Future research can involve conducting trials using actual case data collected longitudinally in various healthcare settings to compare the NLP-supported case management process with manual management processes. To conclude, successful use of NLP in employee relations case management requires a combination of technological advances and human oversight, ethical management practices, and an ongoing dedication to improvement.

REFERENCES

- [1] M. McCreaddie, B. Benwell, and A. Gritti, "A qualitative study of National Health Service (NHS) complaint-responses," *BMC Health Services Research*, vol. 21, no. 1, Art. no. 696, 2021.
- [2] K. Kim, G. Y. Ye, A. M. Haddad, N. Kos, S. Zisook, and J. E. Davidson, "Thematic analysis and natural language processing of job-related problems prior to physician suicide in 2003–2018," *Suicide and Life-Threatening Behavior*, vol. 52, no. 5, pp. 1002–1011, 2022.



- [3] B. Martin and N. Kaminski-Ozturk, "Evaluating the operational efficiency of nursing regulatory boards' discipline case management," *Journal of Nursing Regulation*, vol. 13, no. 1, pp. 62–69, 2022.
- [4] L. He, C. He, Y. Wang, Z. Hu, K. Zheng, and Y. Chen, "What do patients care about? Mining fine-grained patient concerns from online physician reviews through computer-assisted multi-level qualitative analysis," in *AMIA Annual Symposium Proceedings*, vol. 2020, pp. 544–553, 2021.
- [5] E. Quinlan, S. Robertson, A. M. Urban, I. M. Findlay, and B. Bilson, "Ameliorating workplace harassment among direct caregivers in Canada's healthcare system: A theatre-based intervention," *Work, Employment and Society*, vol. 34, no. 4, pp. 626–643, 2020.
- [6] A. Kirkland and M. Hyman, "Civil rights as patient experience: How healthcare organizations handle discrimination complaints," *Law & Society Review*, vol. 55, no. 2, pp. 273–295, 2021.
- [7] T. Ahmed, A. Mosaddeque, A. Hossain, U. Twaha, M. Rowshon, and B. Babu, "The dynamics of AI and automation in financial forecasting, human resources planning, and resources optimization for designing an effective national healthcare policy," *Journal of Business Insight and Innovation*, vol. 1, no. 2, pp. 78–88, 2022.
- [8] M. Shahuazzaman, T. A. Shiva, M. S. Sumon, and K. Saifuddin, "Mental health of women breast cancer survivor at different stages of the disease," *Jagannath University Journal of Earth and Life Sciences*, vol. 5, no. 1, pp. 1–12, 2019.
- [9] B. B. Dunford, K. J. Mumford, R. W. Boss, A. D. Boss, and D. S. Boss, "Integrated conflict management systems pay off with lower levels of formal grievances and lower turnover rates," *ILR Review*, vol. 73, no. 2, pp. 528–551, 2020.
- [10] C. Newman, A. Nayebare, S. Neema, A. Agaba, and L. P. Akello, "Uganda's response to sexual harassment in the public health sector: From 'Dying Silently' to gender-transformational HRH policy," *Human Resources for Health*, vol. 19, no. 1, Art. no. 59, 2021.
- [11] M. Hodgins, D. Lewis, S. MacCurtain, P. McNamara, V. Hogan, and L. Pursell, "'...A bit of a joke': Policy and workplace bullying," *SAGE Open*, vol. 10, no. 2, Art. no. 2158244020934493, 2020.
- [12] R. Huque, Z. Al Azdi, B. Ebenso, S. Nasreen, A. A. Chowdhury, H. Elsey, and T. Mirzoev, "Patient feedback systems at the primary level of health care centres in Bangladesh: A mixed methods study," *SAGE Open*, vol. 11, no. 2, Art. no. 21582440211011458, 2021.
- [13] M. Sun, T. Oliwa, M. E. Peek, and E. L. Tung, "Negative patient descriptors: Documenting racial bias in the electronic health record: Study examines racial bias in the patient descriptors used in the electronic health record," *Health Affairs*, vol. 41, no. 2, pp. 203–211, 2022.
- [14] T. James, "A review of blockchain-integrated enterprise systems for secure operations, economic resilience, and industry transformation," *Journal of Computational Systems & Engineering Insights*, vol. 1, no. 1, 2023.
- [15] L. Locock, Z. Skea, G. Alexander, C. Hiscox, L. Laidlaw, and J. Shepherd, "Anonymity, veracity and power in online patient feedback: A quantitative and qualitative analysis of staff responses to patient comments on the 'Care Opinion' platform in Scotland," *Digital Health*, vol. 6, Art. no. 2055207619899520, 2020.



- [16] S. Ujiie, S. Yada, S. Wakamiya, and E. Aramaki, "Identification of adverse drug event-related Japanese articles: Natural language processing analysis," *JMIR Medical Informatics*, vol. 8, no. 11, Art. no. e22661, 2020.
- [17] N. Djurkovic, D. McCormack, H. Hoel, and D. Salin, "The role of human resource professionals (HRPs) in managing workplace bullying: Perspectives from HRPs and employee representatives in Australia," *Personnel Review*, vol. 50, nos. 7–8, pp. 1599–1612, 2021.
- [18] H. Eyre, A. B. Chapman, K. S. Peterson, J. Shi, P. R. Alba, M. M. Jones, *et al.*, "Launching into clinical space with medspaCy: A new clinical text processing toolkit in Python," in *AMIA Annual Symposium Proceedings*, vol. 2021, pp. 438–447, 2022.