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Navigating and Addressing Public Concernsi AI: Insights from Social Media Analytics and Delphi Method

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Abstract: *Artificial intelligence (AI) is increasingly used in education, healthcare, finance, communication and public services. Alongside its potential benefits, its expansion has raised public concerns about privacy, data security, employment, fairness, misinformation, accountability and the transparency of automated decisions. Understanding these concerns requires more than measuring whether online discussion is positive or negative. It is also necessary to identify the issues people discuss, observe how those issues change over time, and examine which responses are considered practical by knowledgeable stakeholders. This paper presents an independent literature review and a proposed research framework that combines social media analytics with the Delphi technique. The proposed first stage analyses publicly available, relevant social media posts using data cleaning, topic identification, sentiment analysis and temporal analysis. The second stage presents the identified themes to a diverse expert panel through iterative, anonymous Delphi rounds to assess their importance and develop possible response priorities. The framework proposes evaluation through topic coherence, classification measures, expert agreement and transparent reporting. No new dataset has been collected and no Delphi survey has been conducted for this paper; therefore, it reports no original empirical results. Its contribution is a reproducible plan for connecting public discussion with structured expert judgement while considering privacy, platform bias and the limitations of online data.*

Keywords: Artificial intelligence, public concerns, social media analytics, sentiment analysis, natural language processing, topic modelling, Delphi method, AI governance, responsible AI.

I. INTRODUCTION

Artificial intelligence has moved from specialist research environments into everyday applications. Recommendation systems,virtual assistants, generative AI tools, automated screening and decision-support systems can influence what people see, learn and decide.

These applications may improve efficiency and access to services, but they can also create uncertainty about how data are collected, how decisions are made and who is responsible when an AI system causes harm. Public discussion is an important source of evidence about how people experience these changes.

Social media platforms contain questions, complaints,personal experiences, expectations and reactions to AI-related events. Analysing this material can help identify emerging themes at a scale that would be difficult to achieve through manual reading alone. However, social media users are not a representative sample of the entire population.

Online discussion should therefore be treated as an indicator of expressed concerns, not as a direct measurement of public opinion. Expert judgement can add another perspective. The Delphi method is a structured process in which a

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panel of experts responds to several rounds of questions, receives anonymised summaries of the group's responses and has an opportunity to reconsider earlier views.

It is useful when a topic is complex and a reasoned level of agreement sought. This paper proposes combining these two approaches. Social media analytics is used to discover and organise concerns expressed online, while Delphi consultation is proposed to evaluate the significance of those concerns and identify feasible responses.

The approach is designed as a research framework and requires implementation and validation before empirical conclusions can be drawn.

II. PROBLEM STATEMENT AND MOTIVATION

AI-related concerns are discussed across multiple online communities and in different contexts. The same issue may be expressed using different words, while a single post may contain more than one concern. Simple keyword counting may overlook context, sarcasm and changing meanings. Sentiment analysis alone may also be insufficient: a negative post about a particular AI product does not necessarily represent opposition to AI as a whole. A second challenge is the gap between identifying a concern and deciding how it should be addressed. Social media analytics can reveal recurring topics, but it cannot independently determine which policy, design or educational response is appropriate. Expert consultation can help interpret the findings, although expert panels may have their own professional or geographical biases. The central researchproblem is therefore: How can social media analytics and a structured

Delphi process be combined to identify, interpret and prioritise public concerns about AI, and to develop responsible recommendations for addressing them? The motivation is to create a transparent process that respects the difference between public expression and expert judgement. The framework does not assume that online popularity equals social importance or that expert agreement automatically represents the views of all affected communities.

III. AIM AND OBJECTIVES

The aim of this study is to propose an integrated framework for understanding public concerns about AI through social media analytics and expert consensus using the Delphi method.

The objectives are:

1. To review research on public perceptions, risks and concerns associated with AI.
2. To identify recurring AI-related concern categories in publicly accessible social media discussions.
3. To examine the use of natural language processing (NLP), sentiment analysis and topic modelling for organising online discussions.
4. To design a Delphi process through which experts can assess the importance and urgency of the identified concerns.
5. To develop a prioritisation approach that connects public concerns with feasible actions for AI developers, institutions and policymakers.
6. To identify ethical, methodological and data-quality limitations that may affect the reliability of the proposed framework.

IV. LITERATURE REVIEW

Maghsoudi, Mohammadi and Habibipour (2024) provide the closest foundation forthe present topic. Their IEEE Access study combines large-scale Twitter data collection and text analytics with theDelphi method. It reports seven concern clusters: privacy and security, workforce displacement, existential risks, social and ethical implications, dependency on AI, misuse of AI, and lack of transparency. These categories offer a useful starting point for a new review, but they should not be treated as a fixed classification for every platform,country or period. Qi et al. (2024) examine public discussion in the post-ChatGPT period. Their work indicates that technology-focused and non-technology communities may emphasise different aspects of AI, including technical developments and employment-related issues. This supports analysing the context of online communities rather than treating all posts as one uniform dataset. Appiah and Htait (2025) analyse posts from Twitter, YouTube an Reddit using sentiment classification and

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topic-modelling techniques. Their study illustrates how NLP can be used to examine large collections of public discussion and how AI-related themes can be tracked over time. The results also demonstrate that online sentiment is not necessarily one-dimensional. Kouloukoui, De MarcellisWarin and Warin (2025) combine survey evidence with analysis of X posts to examine perceptions of AI risks and benefits.This type of combined approach is relevant because social media data and structured survey responses provide different forms of evidence. Mahmoud, Kumar and Spyropoulou (2025) analyse public comments about generative AI and identify themes such as employment and economic effects, problem-solving potential, limitations in creativity, misinformation, existential risks and privacy. Their work reinforces the need to examine both perceived benefits and perceived harms. Overall, the literature suggests that public concerns about AI are varied context-dependent and capable of changing as technologies and public events evolve. It also suggests that computational analysis can organise large-scale discussion, while structured human judgement can help interpret and prioritise the resulting themes.

V. PROPOSED METHODOLOGY

This paper proposes a sequential mixed-method research design. The social media stage identifies and organises expressed concerns. The Delphi stage then asks a panel of experts to assess and prioritise the resulting themes. The stages are described below as a plan for future implementation.

5.1 Research design: The study will use two connected stages: (A) computational analysis of public social media content and (B) expert consultation using the Delphi method. A written protocol should be prepared before data collection. iterative

5.2 Data sources and sampling: Subject to platform terms, access permissions and ethics approval where required, publicly accessible posts may be collected from selected platforms such as X, Reddit or YouTube. Search terms should cover AI and relevant applications, risks and benefits. The study should specify the collection period,language, platform, inclusion criteria and exclusion criteria. Private messages, closed groups and nonpublic user data should not be collected. Promotional spam, duplicates and posts unrelated to the research questions should be excluded using documented rules.

5.3 Data preparation: The collected text should be checked for duplicates,missing content, spam and irrelevant records. URLs and unnecessary personal identifiers should be removed or masked. Language identification and tokenisation may be applied where appropriate. Preprocessing decisions must be recorded because aggressive cleaning can remove context, especially in short posts, mixed-language text and informal expressions.

5.4 Concern identification and topic modelling: An initial codebook can be developed from the literature and refined after reviewing a sample of posts. Candidate concern categories may include privacy and security, employment and economic impact, fairness and discrimination, misinformation and misuse, transparency and accountability, social and ethical impact, dependency and autonomy, and safety or long-term risk. These are provisional categories; the analysis should allow new themes to emerge. Topic modelling, such as Latent Dirichlet Allocation (LDA), or embedding-based clustering may be explored. Human review should be used to label and interpret topics.

5.5 Sentiment and context analysis: Posts may be classified as positive, negative or neutral toward the relevant AI issue. Where feasible, a more detailed scheme can distinguish concern, support, uncertainty and mixed views. A manually annotated sample should be used to evaluate automated classification. Accuracy, precision, recall and F1-score should be reported, along with class-wise results. Sentiment should not be interpreted as a direct measure of an individual's stable attitude.

5.6 Temporal and Comparative Analysis: Concern frequencies and sentiment patterns may be compared across time periods and platforms where the sample sizes permit. Major events may be noted as context, but temporal association should not be presented as proof that an event caused a change in public opinion. Platform differences and changes in data access should be documented

5.7 Delphi panel selection: A purposive panel may include researchers in AI and computer science, AI ethics specialists, legal or policy professionals, educators, industry practitioners and civil-society representatives. The final

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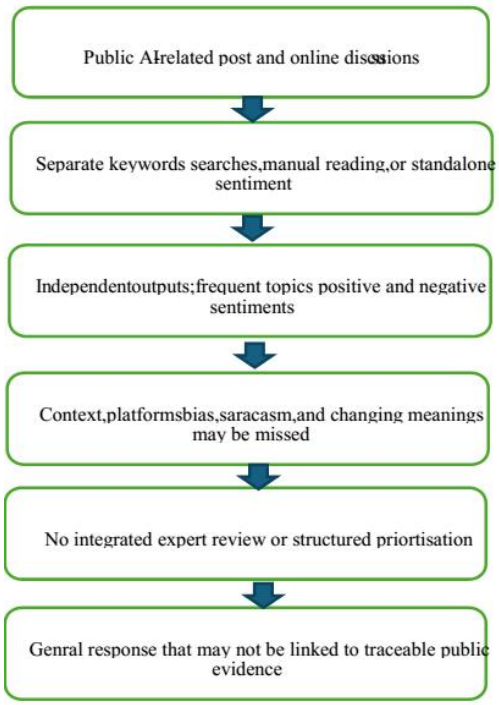
number of panellists should be justified by the scope and feasibility of the study. Eligibility criteria, recruitment procedures, informed consent and steps to manage conflicts of interest should be stated

5.8 Delphi rounds: In Round 1, panellists may review the themes from the social media stage, suggest missing issues and provide comments. In Round 2, they may rate each concern for importance, urgency and potential impact using a five-point or seven-point Likert scale. An anonymised summary of group responses should be shared before the next round. In Round 3, panellists may reconsider their ratings and assess proposed response strategies. The number of rounds and stopping rule should be defined in advance

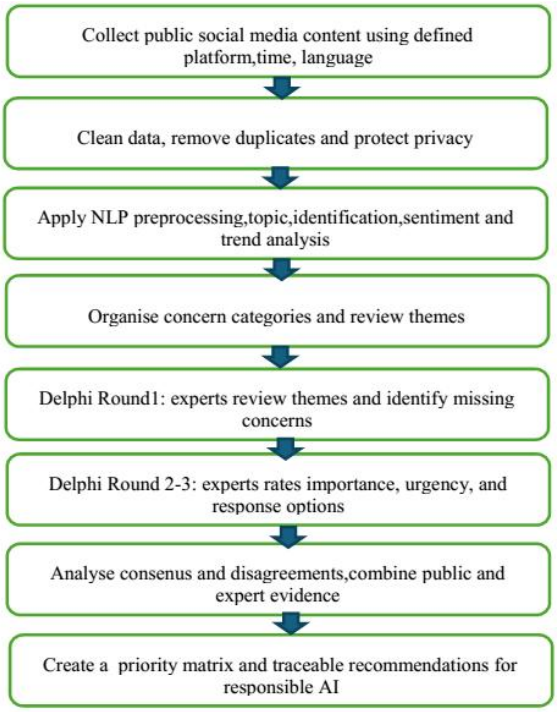
5.9 Consensus and prioritisation: The study should define consensus before analysing responses. For example, it may report median ratings, interquartile range (IQR), percentage agreement and the stability of ratings between rounds. A possible operational rule is to classify an item as having strong agreement when at least 70% of panellists select the top two rating categories and the IQR is no greater than one point. This is a proposed rule, not a universal Delphi standard, and should be justified or adjusted in the final protocol. Items without consensus should remain visible rather than being removed.

5.10 Integration of findings: A joint evidence matrix should connect each social-media-derived concern with its frequency or trend, representative anonymised examples, expert importance rating, level of consensus and suggested action. This makes it possible to distinguish frequently discussed issues from issues experts consider especially serious. The final recommendations should explain the evidence and uncertainty behind each priority.



EXISISTING SYSTEM

Fig.1.Block diagram of Existing System



PROPOSED SYSTEM

Fig.2. Proposed framework forAddresing Public Concern in AI using Social Media Analytics and The Delphi Method

VI. CONCLUSION

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Public concerns about artificial intelligence include technical, economic, social and ethical dimensions. Social media analytics can help researchers identify themes and observe how online discussion changes,but it cannot independently represent the views of the entire population or decide which responses are appropriate. The Delphi method offers a structured way to obtain and refine expert judgement, while also requiring careful panel design and transparent consensus rules. This paper has presented an independent review and a proposed framework that combines these approaches. Its main contribution is the separation of concern discovery, expert assessment and recommendation development, together with an evidence matrix that connects the stages. Since no original social media dataset or Delphi survey has been analysed for this paper, the framework should be tested in future research before empirical claims are made. A responsible approach should preserve uncertainty, protect participants and make the reasoning behind recommendations clear.

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