AI-DRIVEN ALGORITHMIC WARFARE AND PUBLIC DISCOURSE MANIPULATION: A CROSS-NATIONAL MIXED METHOD ANALYSIS

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ABSTRACT

Artificial intelligence has become a central force in global digital communications, shaping public discourse through algorithmic mediation and hybrid influence practices. Employing a sequential explanatory mixed-methods design, this study examines how AI-mediated systems organize knowledge, influence perception, and facilitate the strategic dissemination of content. Qualitative analysis reveals that expert discourse is dominated by frequent concerns related to ethics, law, privacy and bias, as well as references to AI and algorithms, revealing governance tensions within AI-powered communication infrastructures. Operational impact is expressed primarily through procedural mechanisms, while limited emphasis is placed on explicit strategic interventions. Socio-political dimensions emerge through repeated references to people, policy and power, highlighting the institutional embeddedness of AI systems. Sentiment analysis indicates mainly neutral evaluations with cautious optimism and critical concern. A quantitative survey of 168 university students from China, Pakistan, and Spain reveals a stronger relationship between algorithmic awareness, perceived bias, narrative manipulation, and democratic resilience in China and Pakistan than in Spain. Overall, the findings demonstrate that AI-mediated systems function not only as technological tools but also as powerful mechanisms of narrative construction, governance, and social regulation, with implications for ethical oversight and democratic resilience.

KEYWORDS

Artificial Intelligence (AI), Algorithmic Mediation, Hybrid Warfare, Digital Governance; Mixed-Methods; Cross-National Survey

1. INTRODUCTION

The integration of Artificial Intelligence (AI) into the digital communications ecosystem has fundamentally transformed the global public sphere, reshaping the ways individuals access information, interpret reality, and engage in democratic processes (Battista and Mangone, 2025; Singh et al., 2025). AI-powered systems – including predictive targeting algorithms, generative models and deepfake technologies – are increasingly being deployed as tools to structure knowledge, shape perception and disseminate strategic content. These technologies are weaponized by both state and non-state actors to influence public opinion, build consensus, and

create collective narratives (Ajay, 2025; Singer, 2024), ushering in a new era of algorithmic conflict in which control over the information ecosystem functions not only as a strategic resource but also as a mechanism of narrative influence in domestic and geopolitical contexts. Recent scholarship outlines the convergence of affective computing, behavioral profiling, and computational propaganda in driving ideological polarization, shaping consensus, and eroding democratic norms (Whims, 2024; Abiri and Buchheim, 2022). Algorithmic content curation is increasingly being recognized as inherently non-neutral: it actively amplifies emotional responses, suppresses counter-narratives, and influences perceptions of bias, morality, and governance, thereby promoting epistemic fragmentation. During crises, AI-generated information surges reinforce cognitive silos and weaken collective understanding, further destabilizing deliberative processes (Xiao and Yu, 2025).

As a result, algorithmically mediated systems operate not only as technological devices but also as socio-political actors that shape public discourse, influence trust, and guide belief systems. Analytical frameworks such as framing theory (Entman, 1993) and securitization theory (Buzan et al., 1998) provide important lenses for understanding these phenomena. Framing theory examines how communicative actors highlight specific dimensions of issues to shape public interpretation, while securitization theory explores how events are discursively constructed as existential threats. Applied to AI-mediated digital communications, these frameworks explain how algorithmic technologies function as tools of influence, governance, and ethical oversight (Novelli and Sandri, 2024; Guimarães e Silva, 2025). Indeed, AI has shifted the geopolitical conflict from territorial control to cognitive and narrative dominance, with effects extending to social, political, and global dimensions. Large language models and synthetic media enable the exercise of soft power by influencing public perceptions and shaping collective narratives (Makhortykh et al., 2024: Moy & Graden, 2023). Notwithstanding regulatory efforts like EU AI Act, the lack of harmonized global framework leaves societies highly vulnerable to algorithmic manipulation, disinformation campaign and narratives warfare (Gaborit, 2024). This paper therefore, explores how AI-driven narrative manipulation reconfigures public discourse, democratic agency, and perception of digital governance. Based on Framing theory and Securitization Theory, the study highlights how experts discourse legitimates AI as a tool of narrative control, operationalizing both technical and sociopolitical influence, while framing disinformation as a threat to national security, democratic integrity, and social cohesion. Together, these frameworks form a powerful analytical foundation for understanding the mechanism through which AI systems shape perception, beliefs, and social realities.

The rapid deployment of AI and algorithmic systems within the digital communications ecosystem is profoundly changing the ways in which individuals access information, interpret reality, and engage in democratic processes (Aragani et al., 2025). Although these technologies provide increased efficiency and personalized experiences, they are also susceptible to strategic abuse by state and non-state actors who exploit algorithmic mechanisms to create artificial realities, manipulate emotional responses, and engineer consent (Bachleitner et al., 2025). The inherent ambiguity of algorithmic operations facilitates the generation of synthetic truths, exacerbating the crisis of public discourse and complicating the demarcation between fact and fiction (Ziarek, 2024). Despite increasing scholarly attention to AI-powered disinformation and digital governance, significant gaps remain in understanding how expert discourses define these risks, particularly with respect to narrative warfare, epistemic manipulation, and threats to digital sovereignty. This study addresses these gaps by examining how influential thought leaders articulate the political, ethical, and epistemological stakes of AI-mediated influence in public spheres. The novelty of this research lies in its use of YouTube-sourced expert interviews analyzed with ATLAS.ti 24, providing insights beyond prior studies that primarily focus on technical aspects, hybrid warfare, algorithmic accountability, or digital governance debates. These qualitative findings are further integrated with a cross-national survey to examine whether

the patterns identified in expert discourse are reflected in public perception of algorithmic awareness, bias and democratic resilience.

2. LITERATURE REVIEW

2.1. Algorithmic Manipulation And The Crisis Of Public Discourse

The emergence of AI-generated content has fundamentally changed public discussion by promoting disinformation and undermining epistemic trust. Previous studies have shed light on the specific mechanisms through which this occurs. For example, AI-powered bots, deepfakes, and behavioral profiling systems have shifted propaganda from generalized messaging to targeted psychological operations, manipulating emotional responses and increasing ideological polarization (Abiri and Buchheim, 2022; Whims, 2024). In contrast, other research emphasizes the structural consequences of such interventions, finding that these mechanisms fragment collective understanding by creating epistemological silos, reducing citizens' ability to evaluate sources and undermining deliberative democratic processes (Xiao and Yu, 2025). Furthermore, generative adversarial networks and deepfake technologies have been shown to destabilize the ontological status of truth by producing hyper-realistic but fabricated content, which can distort the historical record and compromise verification processes, fostering a post-truth environment in which algorithmically curated lies retain persuasive influence even when their inaccuracy is established (Hannon, 2023; Forster & Wong, 2024). Collectively, these studies indicate that AI-powered systems serve as active agents, capturing public attention, shaping perceptions, and outlining the boundaries of acceptable discourse, although emphasis varies between their psychological, epistemological, and social impacts.

2.2. Democracy In Peril: Disinformation, Ethics, And Cyber Sovereignty

AI-powered disinformation is increasingly conceptualized as a deliberate strategy aimed at destabilizing democratic institutions rather than a mere technological by-product. Many studies emphasize different aspects of this phenomenon. For example, research highlights the deployment of multimodal campaigning, precision-targeted political advertising, and behavioral microtargeting as tools to suppress voter participation and distort political representation, thereby contributing to democratic erosion (Novelli and Sandri, 2024; Olanipekun, 2025; Kröger et al., 2024). In comparison, other work outlines the social and cognitive consequences of such interventions, showing that algorithmically manipulated content polarizes voters, promotes political passivity, and undermines the ideal of informed civic choice (Guimarães e Silva, 2025). Ethical and legal oversight of AI is limited, with scholars saying that opaque "black box" algorithms often fail to meet the transparency and accountability standards required for democratic governance, as well as encoding and amplifying existing social biases (Guimarões e Silva, 2025;). Although regulatory initiatives such as the EU AI Act represent efforts to reduce these risks (Gaborit, 2024), comparative analysis shows that enforcement remains uneven across jurisdictions, leaving vital civic processes, including elections, vulnerable to manipulation and exploitation. Collectively, these studies indicate that although the technical mechanisms of AI-powered disinformation are well documented, their democratic, ethical and regulatory implications vary across different contexts, highlighting the need for cross-national scrutiny and governance frameworks.

2.3. Strategic Narrative Warfare And The Global Response

At the geopolitical level, AI-enabled narrative manipulation has increasingly become a key instrument of soft power and hybrid warfare. Studies indicate that state and non-state actors

leverage large language models, synthetic media, and automated content creation to conduct disinformation campaigns that blur the lines between cyber and information warfare, destabilize national discourses, and shape international perceptions (Shirish and Komal, 2024; Sapkota et al., 2025). While technological interventions – such as AI-detection systems and content authentication – are widely advocated to protect information integrity, their efficacy varies across contexts depending on infrastructure preparedness and regulatory enforcement (Shirish and Komal, 2024; Sapkota et al., 2025). Cross-national analyzes show that these efforts are inadequate when implemented in isolation, highlighting the need for international cooperation and regulatory alignment, as emphasized by Gaborit (2024), Novelli and Sandri (2024), and Olanipekun (2025). Collectively, these studies emphasize that, without globally coordinated norms and enforcement mechanisms, AI-powered narrative manipulation continues to exploit regulatory gaps, thereby undermining democratic resilience and digital sovereignty. Consequently, it is necessary to identify these global concerns and conduct cross-national investigations to assess their impacts, as done in the present study.

2.4 Synthesis And Research Gap

Literature shows that AI is no longer a passive tool but an active agent in shaping public perception, governance structures, and geopolitical influence. While prior studies have focused on the technical, behavioral, or ethical dimensions separately, there has been limited research into expert discourse to understand AI-mediated systems operationalize narrative control and influence public opinion. This paper fills this lacuna by blending qualitative discourse analysis with theoretical insights from Framing Theory and Securitization Theory to investigate the epistemic, ethical, and strategic implications of AI-driven narrative manipulation. Prior research has examined algorithmic bias, misinformation, and digital governance (O'Neill, 2016; Wardle and Derakhshan, 2017; Zuboff, 2019), but few studies have examined their combined impact on public perception, democratic resilience, and ethical concerns across different populations. To address this gap, the present study integrates the perspectives of international experts with empirical data from a cross-national survey conducted in China, Pakistan, and Spain, providing a comprehensive analysis of how AI and algorithmic systems shape governance, narrative manipulation, and social regulation in different socio-cultural contexts. In line with this rationale, the research study establishes following research objectives and research questions:

2.5. Research Objectives

RO1. To critically investigate how AI and Algorithmic systems are represented by experts as instruments of influence, control, narrative construction, and strategic content dissemination with digital communication ecosystems
RO2. To examine the impact of AI-driven narrative manipulation on public discourse, digital governance, democratic resilience, including perception of bias, ethics, and social regulation.

2.6. Research Questions

RQ1. How do global experts from the role of AI and algorithmic systems in shaping public discourse, manufacturing consent, and influencing perception in digital communication environments?
RQ2. What ethical, political, and governance challenges are identified by experts in relation to AI-mediated narrative manipulation, bias, and protection of democratic values and digital governance?

3. METHODOLOGY

This study uses a sequential explanatory mixed-method design to examine how AI and algorithmic systems operate as tools of narrative manipulation, governance, and social regulation. The qualitative phase focuses on the interpretive analysis of expert discourse to uncover the mechanisms, socio-political implications and operational dimensions of AI-mediated impact (Novelli and Sandri, 2024; Guimarães e Silva, 2025). Purposive sampling on YouTube was used to collect interviews, lectures, and panel discussions from leading scholars, technologists, and policy commentators, including Alex Hanna, Frank Pasquale, Luciano Floridi, Shoshana Zuboff, and Thomas Rid, providing insight into the technical, ethical, legal, operational, and geopolitical aspects of AI. Data were analyzed using ATLAS.ti 24 with a multi-stage coding process: open coding identified references to AI, algorithms, bias, ethics, law, privacy, communications, operational mechanisms, human actors, policy, and power, while axial coding grouped these into four thematic dimensions: (1) geopolitical: power, policy, governance; (2) technology, bias and communication: algorithmic processes, bias, narrative manipulation; (3) Ethical, legal and operational: privacy, laws, ethical oversight, operational mechanisms; and (4) humanitarian, strategic and socio-political: actors and democratic outcomes. Reliability was ensured through an audit trail documenting coding and category development. Qualitative findings were followed by a quantitative survey with $N = 168$ university students from China, Pakistan and Spain, which examined perceptions of algorithmic effects, bias, narrative manipulation, ethical and governance concerns, and democratic resilience (*see Appendix A*). All constructs were measured using a multi-item Likert scale (1 = strongly disagree, 5 = strongly agree), with reliabilities ranging from $\alpha = .56$ (Perceived Algorithmic Bias) to $\alpha = .74$ (Algorithmic Awareness). The items are meant to indicate a moderate to high level of awareness and concern. Algorithm Awareness (AA) assessed understanding of AI curation and ranking processes; Perceived algorithmic bias (PAB) measured beliefs about undue influence; Ethical and governance concerns (EGC) captured transparency, accountability and legal adequacy; Perceived Narrative Manipulation (PNM) assessed perceptions of AI that shape public narratives; and Democratic Resilience (DR) assessed social safeguards against disinformation. This integration of qualitative and quantitative data allowed to assess how expert-identified mechanisms and socio-political risks are reflected in public perceptions, addressing RO1, RO2, RQ1 and RQ2.

Table 1. Descriptive Statistic and Reliability of Scales

Scale	No. of Items	Cronbach's α	M	SD	Item Range (M)
Algorithm Awareness (AA)	4	0.74	15.73	2.67	3.86 – 3.99
Perceived Algorithmic Bias (PAB)	4	0.58	15.25	2.33	3.73 – 3.90
Ethical and Governance Concerns (EGC)	5	0.60	19.93	2.71	3.84 – 4.07
Perceived Narrative Manipulation (PNM)	4	0.56	15.82	2.17	3.87 – 4.01
Democratic Resilience (DR)	5	0.64	19.62	2.24	3.68 – 4.02

Note. *M = scale mean score; SD = standard deviation. Cronbach's α indicates internal consistency reliability for each scale. Item range (M) refers to the minimum and maximum average values of individual items within each scale. All items were measured on a five-point*

Likert scale, with higher scores indicating stronger agreement with the respective construct. Cronbach's alpha for each scale was calculated using SPSS (*see Appendix B for details*).

4. RESULTS & ANALYSIS

4.1. Qualitative Phase

Table 2. Geopolitical Dimensions of AI and Algorithms

Category	Gr	Alex Hanna	David Troy	Frank Pasquale	Laura DeNardis	Luciano Floridi	Michael Schreiber	Peter Pomerantsev	Professor Rob Reich	Shoshana Zuboff	Thomas Rid	Total	% Total of
AI	97	0 (0.00%)	0 (0.00%)	4 (2.55%)	0 (0.00%)	21 (13.38%)	45 (28.66%)	0 (0.00%)	27 (17.20%)	0 (0.00%)	0 (0.00%)	97	61.78%
Algorithm	21	4 (2.55%)	0 (0.00%)	10 (6.37%)	0 (0.00%)	0 (0.00%)	7 (4.46%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	21	13.38%
China	18	0 (0.00%)	0 (0.00%)	8 (5.10%)	3 (1.91%)	0 (0.00%)	2 (1.27%)	2 (1.27%)	1 (0.64%)	0 (0.00%)	2 (1.27%)	18	11.47%
United States	21	0 (0.00%)	0 (0.00%)	2 (1.27%)	5 (3.18%)	1 (0.64%)	5 (3.18%)	0 (0.00%)	5 (3.18%)	0 (0.00%)	3 (1.91%)	21	13.38%
Total	157	4 (2.55%)	0 (0.00%)	24 (15.29%)	8 (5.10%)	22 (14.01%)	59 (37.58%)	2 (1.27%)	33 (21.02%)	0 (0.00%)	5 (3.18%)	157	100%

Table 2 presents expert references on AI, algorithms, and key geopolitical actors, particularly China and the United States. AI emerges as the most frequently mentioned concept, accounting for 61.78% of references, followed by algorithms at 13.38%. Mentions of China and the United States comprised 11.47% and 13.38% of references respectively, placing the discussion of AI and algorithmic technologies firmly within the global geopolitical framework. The discourse is heavily focused on technological infrastructure, while on the other, it links AI-mediated processes to nation-state competition and strategic concerns. The references across the experts are distributed to reflect the diverse emphasis places on AI for shaping both technological and geopolitical narratives.

Table 3. Technology, Bias, and Communication Dimensions

Category	Gr	Alex Hanna	David Troy	Frank Pasquale	Laura DeNardis	Luciano Floridi	Michael Schreiber	Peter Pomerantsev	Professor Rob Reich	Shoshana Zuboff	Thomas Rid	Total	% of Total
AI	97	0 (0.00%)	0 (0.00%)	4 (3.10%)	0 (0.00%)	21 (16.28%)	45 (34.88%)	0 (0.00%)	27 (20.93%)	0 (0.00%)	0 (0.00%)	97	70.14%
Algorithm	21	4 (3.10%)	0 (0.00%)	10 (7.75%)	0 (0.00%)	0 (0.00%)	7 (5.43%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	21	15.18%
Bias	11	3 (2.33%)	0 (0.00%)	1 (0.77%)	0 (0.00%)	1 (0.77%)	3 (2.33%)	0 (0.00%)	2 (1.55%)	1 (0.77%)	0 (0.00%)	11	7.95%
Communication	28	0 (0.00%)	0 (0.00%)	0 (0.00%)	7 (4.79%)	0 (0.00%)	9 (6.16%)	0 (0.00%)	6 (4.11%)	3 (2.05%)	3 (2.05%)	28	20.29%

Table 3 shows that AI remains the most frequently referenced concept, comprising 70.14% of mentions, while algorithms maintain a substantial presence at 15.18%, underscoring the centrality of the technological construct in expert discourse. References to bias, at 7.95%, highlight concerns related to fairness, systemic inequalities and potential unintended consequences arising from algorithmic decision making. The prominence of communication, at 20.29%, emphasizes the ways in which AI and algorithmic processes shape knowledge dissemination and influence

public understanding. Collectively, these findings indicate that experts are simultaneously attentive to the technical capabilities of AI systems and their broader communication and societal implications.

Table 4. Ethical, Legal, and Operational Dimensions

Category	Gr	Alex Hanna	David Troy	Frank Pasquale	Laura DeNardis	Luciano Floridi	Michael Schreiber	Peter Pomerantsev	Professor Rob Reich	Shoshana Zuboff	Thomas Rid	Total	% of Total
AI	97	0 (0.00%)	0 (0.00%)	4 (1.59%)	0 (0.00%)	21 (8.33%)	45 (17.86%)	0 (0.00%)	27 (10.71%)	0 (0.00%)	0 (0.00%)	97	33.15%
Algorithm	21	4 (1.59%)	0 (0.00%)	10 (3.97%)	0 (0.00%)	0 (0.00%)	7 (2.78%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	21	7.18%
Ethic	46	0 (0.00%)	0 (0.00%)	2 (0.79%)	0 (0.00%)	4 (1.59%)	2 (0.79%)	0 (0.00%)	37 (14.68%)	0 (0.00%)	1 (0.40%)	46	15.72%
Law	39	0 (0.00%)	0 (0.00%)	21 (8.33%)	3 (1.19%)	0 (0.00%)	2 (0.79%)	0 (0.00%)	8 (3.18%)	4 (1.59%)	1 (0.40%)	39	13.33%
Privacy	30	0 (0.00%)	0 (0.00%)	6 (2.38%)	15 (5.95%)	1 (0.40%)	6 (2.38%)	0 (0.00%)	0 (0.00%)	2 (0.79%)	0 (0.00%)	30	10.26%
Respect	19	0 (0.00%)	0 (0.00%)	6 (2.38%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	13 (5.16%)	0 (0.00%)	0 (0.00%)	19	6.50%
Information	35	0 (0.00%)	5 (1.53%)	7 (2.15%)	6 (1.84%)	0 (0.00%)	5 (1.53%)	1 (0.31%)	1 (0.31%)	8 (2.45%)	2 (0.61%)	35	11.97%
Intervention	3	1 (0.31%)	0 (0.00%)	0 (0.00%)	1 (0.31%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.31%)	0 (0.00%)	0 (0.00%)	3	1.03%
Way	132	5 (1.53%)	3 (0.92%)	32 (9.82%)	25 (7.67%)	7 (2.15%)	22 (6.75%)	6 (1.84%)	25 (7.67%)	2 (0.61%)	5 (1.53%)	132	45.17%
Work	38	5 (1.53%)	0 (0.00%)	8 (2.45%)	4 (1.23%)	1 (0.31%)	11 (3.37%)	1 (0.31%)	6 (1.84%)	1 (0.31%)	1 (0.31%)	38	13.00%
Total	441	15 (3.40%)	8 (1.81%)	96 (21.77%)	54 (12.24%)	33 (7.49%)	100 (22.67%)	7 (1.59%)	123 (27.89%)	17 (3.85%)	10 (2.27%)	292	100%

Table 4 presents the standards and operational dimensions of AI-mediated systems. References to AI (33.15%) and algorithms (7.18%) underline a continued focus on technical foundations, while ethics (15.72%), law (13.33%), privacy (10.26%), and respect (6.5%) reflect the ethical and legal considerations underlying expert discourse. Operational processes are highlighted through terms such as information (11.97%), method (45.17%), function (13.00%), and intervention (1.03%), indicating a focus on procedural mechanisms, strategic actions, and functional aspects of AI systems in shaping public discussion. These findings reveal a complex interplay between technical capabilities, normative concerns, and operational practices, suggesting that AI functions not only as a tool of influence but also as a contested site for ethical and regulatory deliberations.

Table 5. Human, Strategic, and Sociopolitical Dimensions

Category	Gr	Alex Hanna	David Troy	Frank Pasquale	Laura DeNardis	Luciano Floridi	Michael Schreiber	Peter Pomerantsev	Professor Rob Reich	Shoshana Zuboff	Thomas Rid	Total	% of Total
AI	97	0 (0.00%)	0 (0.00%)	4 (0.28%)	0 (0.00%)	21 (1.48%)	45 (3.17%)	0 (0.00%)	27 (1.90%)	0 (0.00%)	0 (0.00%)	97	6.83%
Algorithm	21	4 (0.28%)	0 (0.00%)	10 (0.70%)	0 (0.00%)	0 (0.00%)	7 (0.49%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	21	1.48%
Sentiment: Negative	171	9 (0.63%)	8 (0.56%)	25 (1.76%)	29 (2.04%)	20 (1.41%)	18 (1.27%)	12 (0.84%)	29 (2.04%)	5 (0.35%)	16 (1.13%)	171	12.03%
Sentiment: Neutral	882	40 (2.81%)	32 (2.25%)	149 (10.49%)	136 (9.57%)	86 (6.05%)	132 (9.29%)	45 (3.17%)	155 (10.91%)	47 (3.31%)	60 (4.22%)	882	62.07%
Sentiment: Positive	250	3 (0.21%)	6 (0.42%)	39 (2.75%)	45 (3.17%)	12 (0.84%)	56 (3.94%)	15 (1.06%)	38 (2.67%)	18 (1.27%)	18 (1.27%)	250	17.59%
People	204	3	7	47	34	18	36	19	28	6	6	204	52.58%

		(0.77%)	(1.80%)	(12.11%)	(8.76%)	(4.64%)	(9.28%)	(4.90%)	(7.22%)	(1.55%)	(1.55%)		
Policy	29	1 (0.26%)	0 (0.00%)	7 (1.80%)	8 (2.06%)	2 (0.52%)	1 (0.26%)	1 (0.26%)	8 (2.06%)	1 (0.26%)	0 (0.00%)	29	7.47%
Power	37	1 (0.26%)	0 (0.00%)	5 (1.29%)	4 (1.03%)	5 (1.29%)	2 (0.52%)	1 (0.26%)	9 (2.32%)	10 (2.58%)	0 (0.00%)	37	9.54%
Total	1591	61 (3.83%)	53 (3.33%)	286 (17.98%)	256 (16.10%)	164 (10.33%)	357 (22.44%)	92 (5.78%)	294 (18.48%)	87 (5.47%)	100 (6.29%)	1921	100%

Table 5 shows that the references to AI, at 6.83%, and logarithm, at 1.48%, are relatively low, but it reveals sentiment analysis-negative, 12.03%; neutral, 62.07%, and positive, 17.59% - that reflect the evaluative positions of experts. Moreover, references to people, 52.58%; policy, 7.47% and power, 9.54% indicate the centrality of human actors, governance structures, and dynamics of authority in the deployment and consequences of AI systems. This table portrays the social-physical embedding of the AI-mediated infrastructures and underlines their role in the shaping of human behavior, governance, and power relations in digital ecologies.

Qualitative analysis shows that AI-mediated systems function not only as technical tools but also as tools of normative, operational, and socio-political influence. Experts view AI and algorithms as central to shaping knowledge, perception, and strategic communication, raising concerns about bias, ethics, law, and privacy. Procedural terms such as "method" and "function" reflect operations, and the themes of people, policy and power reveal their governance and social embeddedness. Predominantly neutral sentiments indicate analytical rigor, balanced by caution and critical assessment of social consequences. These insights provide a foundation for the quantitative phase, which examines how university students in China, Pakistan, and Spain understand AI awareness, bias, narrative manipulation, governance concerns, and democratic resilience, linking expert discourse to public perception.

4.2 Quantitative Phase

Table 6. Correlation between algorithm awareness, perceived bias, governance concerns, narrative manipulation and democratic resilience in different countries (n = 56 per country)

Variable	China	Pakistan	Spain
Algorithm Awareness (AA)			
→ Perceived Algorithmic Bias (PAB)	.56**	.45*	.52**
→ Ethical and Governance Concerns (EGC)	.27*	.40**	.44**
→ Perceived Narrative Manipulation (PNM)	.32*	.51**	.23
→ Democratic Resilience (DR)	.02	0.06	.29*
Perceived Algorithmic Bias (PAB)			
→ Ethical and Governance Concerns (EGC)	0.22	.44**	.46**
→ Perceived Narrative Manipulation (PNM)	.48**	.56**	.46**
→ Democratic Resilience (DR)	.29*	.24	.23
Ethical and Governance Concerns (EGC)			
→ Perceived Narrative Manipulation (PNM)	.36**	.61**	.40**
→ Democratic Resilience (DR)	.27*	.21	.34*
Perceived Narrative Manipulation (PNM)			
→ Democratic Resilience (DR)	.34**	.35*	.25

In China, Algorithm Awareness (AA) was positively associated with Perceived Algorithmic Bias (PAB) ($r = .56$, $p < .01$), Ethical and Governance Concerns (EGC) ($r = .27$, $p < .05$), and Perceived Narrative Manipulation (PNM) ($r = .32$, $p < .05$). PAB was also positively related to PNM ($r = .48$, $p < .01$) and Democratic Resilience (DR) ($r = .29$, $p < .05$). Furthermore, EGC was significantly associated with PNM ($r = .36$, $P < .01$) and DR ($r = .27$, $P < .05$), whereas PNM showed a significant positive correlation with DR ($r = .34$, $P < .01$). In Pakistan, AA was significantly related to PAB ($r = .45$, $P < .05$), EGC ($r = .40$, $P < .01$), and PNM ($r = .51$, $P < .01$). PAB was positively associated with EGC ($r = .44$, $P < .01$) and PNM ($r = .56$, $P < .01$). Furthermore, EGC demonstrated a strong positive correlation with PNM ($r = .61$, $p < .01$). PNM was also positively correlated with DR ($r = .35$, $P < .05$), whereas AA, PAB, and EGC were not directly related to DR. In Spain, AA was positively associated with PAB ($r = .52$, $p < .01$), EGC ($r = .44$, $p < .01$), and DR ($r = .29$, $p < .05$), but not with PNM. PAB was significantly correlated with EGC ($r = .46$, $P < .01$) and PNM ($r = .46$, $P < .01$). EGC was also positively associated with PNM ($r = .40$, $p < .01$) and DR ($r = .34$, $p < .05$), whereas the correlation between PNM and DR was not statistically significant. Overall, the significant relationships between algorithmic awareness, perceived algorithmic bias, ethical and governance concerns, perceived narrative manipulation and democratic flexibility were stronger and more consistent in China and Pakistan than in Spain, highlighting cross-national differences in how AI-mediated information environments are perceived and linked to democratic flexibility (Table 6).

Table 7. Algorithmic perceptions and democratic resilience by country (n = 56 per country)

Variable	China M (SD)	Pakistan M (SD)	Spain M (SD)	F (2, 165)	p
Algorithm Awareness (AA)	15.80 (2.95)	16.54 (2.17)	14.86 (2.60)	5.89	**.003***
Perceived Algorithmic Bias (PAB)	15.73 (1.94)	15.25 (2.71)	14.79 (2.22)	2.34	.099
Ethical and Governance Concerns (EGC)	20.30 (2.66)	20.71 (2.58)	18.77 (2.52)	8.80	**.000***
Perceived Narrative Manipulation (PNM)	15.95 (1.99)	16.18 (2.37)	15.34 (2.08)	2.27	.106
Democratic Resilience (DR)	19.84 (2.16)	20.16 (2.62)	18.86 (1.67)	5.41	**.005***

Note. *Values are means with standard deviations in parentheses.*

Table 7 presents the results of the one-way ANOVA analysis as well as means and standard deviations for algorithmic perceptions and democratic flexibility in China, Pakistan, and Spain. Algorithm awareness (AA) varied significantly across countries, $F (2, 165) = 5.89$, $p = .003$, with participants in Pakistan ($M = 16.54$, $SD = 2.17$) reporting greater awareness than those in China ($M = 15.80$, $SD = 2.95$) and Spain ($M = 14.86$, $SD = 2.60$). There was no significant difference in perceived algorithmic bias (PAB), $F (2, 165) = 2.34$, $p = .099$, although participants in China ($M = 15.73$, $SD = 1.94$) reported slightly higher bias than those in Pakistan ($M = 15.25$, $SD = 2.71$) and Spain ($M = 14.79$, $SD = 2.22$). Ethical and governance concerns (EGC) varied significantly across countries, $F (2, 165) = 8.80$, $p < .001$, with participants in Pakistan ($M = 20.71$, $SD = 2.58$) and China ($M = 20.30$, $SD = 2.66$) expressing more concerns than those in Spain ($M = 18.77$, $SD = 2.52$). Perceived Narrative Manipulation (PNM) did not differ significantly between countries, $F (2, 165) = 2.27$, $p = .106$, although Pakistan ($M = 16.18$, $SD = 2.37$) compared to China ($M = 15.95$, $SD = 1.99$) and Spain ($M = 15.34$, $SD = 2.08$). There was a significant difference in Democratic Resilience (DR), $F (2, 165) = 5.41$, $p = .005$, with

participants from Pakistan ($M = 20.16$, $SD = 2.62$) and China ($M = 19.84$, $SD = 2.16$) demonstrating higher resilience than those from Spain ($M = 18.86$, $SD = 1.67$). Overall, participants from Pakistan consistently reported higher levels of algorithm awareness, ethical and governance concerns, and democratic flexibility than participants from China and Spain. In contrast, cross-national differences in perceived algorithmic bias and narrative manipulation were comparatively small.

Table 8. Age-wise algorithmic perceptions and democratic resilience by country (n = 168)

Variable	18–20 M (SD)	21–23 M (SD)	24–26 M (SD)	27+ M (SD)	F (3, 164)	p
Algorithm Awareness (AA)	17.00 (2.36)	15.37 (2.04)	15.53 (2.45)	15.71 (3.21)	1.86	.139
Perceived Algorithmic Bias (PAB)	16.20 (1.67)	14.06 (1.91)	15.67 (2.19)	15.25 (2.64)	5.12	**.002***
Ethical and Governance Concerns (EGC)	21.40 (2.82)	19.26 (2.27)	19.49 (2.90)	20.27 (2.53)	3.64	**.014***
Perceived Narrative Manipulation (PNM)	16.80 (2.14)	14.74 (2.03)	15.95 (2.27)	16.02 (1.93)	4.77	**.003***
Democratic Resilience (DR)	19.85 (2.80)	19.23 (1.96)	19.39 (1.96)	20.02 (2.44)	1.23	.302

Note. *Values are total-scale means with standard deviations in parentheses. One-way ANOVA examines differences across age groups (18–20, 21–23, 24–26, 27+) within each country. Statistically significant effects are shown in bold (p < .05).*

Table 8 presents the results of one-way ANOVA tests as well as means and standard deviations for algorithmic perceptions and democratic flexibility across all age groups. Algorithm awareness (AA) did not differ significantly across age groups, $F (3, 164) = 1.86$, $p = .139$, although participants aged 18–20 ($M = 17.00$, $SD = 2.36$) reported slightly higher awareness than older groups. Perceived algorithmic bias (PAB) varied significantly by age, $F (3, 164) = 5.12$, $p = .002$, with the 18–20 age group ($M = 16.20$, $SD = 1.67$) reporting the highest levels of perceived bias, and the 21–23 group reporting the lowest ($M = 14.06$, $SD = 1.91$). Ethical and governance concerns (EGC) also varied significantly by age, $F (3,164) = 3.64$, $p = .014$. The youngest age group (18–20) reported the most concerns ($M = 21.40$, $SD = 2.82$), while the 21–23 age group reported the least ($M = 19.26$, $SD = 2.27$). Perceived Narrative Manipulation (PNM) showed a significant age difference, $F (3, 164) = 4.77$, $p = .003$, with the 18-20 group again reporting the highest scores ($M = 16.80$, $SD = 2.14$) and the 21-23 group reporting the lowest ($M = 14.74$, $SD = 2.03$). Democratic Resilience (DR) did not differ significantly across age groups, $F (3, 164) = 1.23$, $p = .302$, although participants 27 years of age and older reported slightly greater resilience ($M = 20.02$, $SD = 2.44$). Overall, younger participants (18–20) consistently demonstrated higher perceptions of algorithmic bias, ethical and governance concerns, and narrative manipulation than older age groups, while democratic flexibility remained relatively consistent across age.

5. DISCUSSION

The analysis revealed that AI-mediated systems operate not only as technological devices but as multidimensional devices of narrative, operational, and socio-political influence. Expert discourse revealed that AI (61.78%–70.14%) and algorithms (13.38%–15.18%) were central to discussions on knowledge structuring, perception shaping, and strategic communication,

consistent with previous research emphasizing algorithms as socio-technical factors influencing public knowledge and power dynamics (Pasquale, 2015; Brenneis, 2025; Vaseashta, 2025). Mentions of geopolitical actors, particularly China and the United States, highlighted the role of AI as a strategic asset in global competition, supporting prior studies on the AI race and the implications for cybersecurity, surveillance, and digital sovereignty (Floridi, 2019). Ethical and normative concerns – bias (7.95%), ethics (15.72%), law (13.33%), privacy (10.26%), and respect (6.50%) – underpin consistent scholarly attention to the fairness, accountability, and social impacts of algorithmic governance, echoing Zuboff (2019) and Hanna et al. (2020). Procedural mechanisms such as "way" (45.17%) and "task" (13.00%) highlighted the operationalization of AI impact, while references to people (52.58%), policy (7.47%), and power (9.54%) emphasized the human and governance dimensions of AI-mediated systems. Sentiment analysis indicated predominant neutral evaluations (62.07%) with positive (17.59%) and negative (12.03%) sentiments, reflecting cautious optimism and significant concerns, respectively, which is consistent with prior conceptualizations of AI as a dual-use technology with both innovative potential and ethical risks (Floridi, 2019; Vaseashta, 2025). The quantitative results complemented the expert analysis by showing how AI awareness, perceived bias, narrative manipulation and governance concerns manifested among university students. In China and Pakistan, significant correlations emerged between algorithmic awareness, perceived bias, narrative manipulation, and democratic flexibility, indicating that greater understanding of AI systems coincides with increased recognition of their ethical and social implications, which aligns with Pasquale's (2015) argument on algorithmic socio-technical impact. Age influenced perceptions in Pakistan and China, particularly for bias, governance concerns, and awareness, indicating the role of demographic and disciplinary factors in shaping sensitivity to algorithmic governance, consistent with Hanna et al. (2020) and Vasistha (2025). In contrast, perceptions in Spain were weaker and less variable, affecting recognition of the social impact of AI from context-specific performance and literacy. The results revealed significant differences in perceived narrative manipulation (China) and ethical and governance concerns (Pakistan), reinforcing the notion that the impact of AI is both recognized and disputed in socio-political and educational contexts. Overall, the integrated findings underlined the multidimensional impact of AI-mediated systems on knowledge, perception, governance, and democratic resilience. They highlighted the complex interplay between technical capabilities, ethical considerations, procedural mechanisms, and human agency, and emphasized the need for multi-level interventions, including education, ethical frameworks, and regulatory oversight, to address the challenges of algorithmically engineered communication environments (Pasquale, 2015; Floridi, 2019; Zuboff, 2019). The study offers practical advantages, including benchmarking research approaches, framing evidence-based policy recommendations, and guiding investigations into cross-national differences in algorithmic awareness, bias perception, and governance concerns.

6. CONCLUSION

The analysis revealed that AI-mediated systems function not only as technological tools but also as multidimensional tools of narrative, operational, and socio-political influence. Expert discourse revealed that AI (61.78%–70.14%) and algorithms (13.38%–15.18%) were central to knowledge structuring, perception shaping, and strategic communication, consistent with prior research portraying algorithms as socio-technical factors influencing public knowledge and power dynamics (Pascale, 2015; Brenneis, 2025; Vaseashta, 2025). Repeated references to geopolitical actors, especially China and the United States, highlighted the role of AI as a strategic asset in global competition, reinforcing studies on the AI race and the implications for cybersecurity, surveillance, and digital sovereignty (Floridi, 2019). Ethical and normative concerns including bias (7.95%), ethics (15.72%), law (13.33%), privacy (10.26%), and respect (6.50%) underlined the social and governance risks of AI-mediated systems, echoing Zuboff (2019) and Hanna et al. (2020). Procedural mechanisms such as "way" (45.17%) and "task"

(13.00%) reflect the operationalization of AI impact, while references to people (52.58%), policy (7.47%), and power (9.54%) highlight the embeddedness of AI within governance and social hierarchy. Sentiment analysis indicated predominantly neutral evaluations (62.07%), with positive (17.59%) and negative (12.03%) sentiments reflecting cautious optimism and significant concern, which is consistent with the characterization of the dual use of AI (Floridi, 2019; Vaseashta, 2025). Quantitative findings complemented expert insights, which showed that AI awareness, perceived bias, narrative manipulation and governance concerns were significantly associated with democratic flexibility in China and Pakistan, indicating that greater understanding of AI coincides with increased recognition of ethical and social implications (Pascale, 2015). Age influenced perceptions, particularly in Pakistan and China, highlighting the role of demographic and disciplinary factors in shaping sensitivity to algorithmic governance (Hanna et al., 2020; Vaseashta, 2025). In contrast, perceptions in Spain were weaker and less variable, suggesting that context-specific literacy and exposure influence recognition of the social impact of AI. Overall, the integrated findings emphasize that AI-mediated systems are powerful mechanisms of knowledge structuring, narrative construction, and governance influence. They reveal a complex interplay between technical capabilities, ethical considerations, procedural operations and human agency, emphasizing the need for multi-level interventions; education, ethical frameworks and regulatory oversight, to manage the social, cognitive and governance challenges of algorithmically engineered communication environments.

7. RECOMMENDATIONS

To ensure responsible AI deployment, strong regulatory and ethical frameworks are essential to guarantee transparency, accountability, fairness, and privacy. Public digital literacy must be increased so that citizens, journalists and civil society can critically engage with AI, detect misinformation and participate in democratic processes. Transparent algorithms and human-centric governance ensure monitoring without neglecting ethical concerns. International cooperation is essential to combat cross-border issues such as disinformation and digital sovereignty. Ongoing monitoring, adaptive policies, and education initiatives help align AI innovation with social, ethical, and governance standards, foster public trust, and safeguard democratic discourse.

7.1. Author's Contribution

1. Abbas Rashid Butt: Conceptualization, design, supervision, analysis and drafting.
2. Laiba Abbas Butt: Literature Review and Survey Administration.
3. Rizwan Ahmed, Naeem Ullah Tariq, Azhar Ul Haq Wahid: support in data collection, analysis, and manuscript review.

7.2. Funding

The study was conducted without any financial support from funding agencies, commercial entities, or non-profit organizations.

7.3. Conflict of Interest

The authors declare that they have no competing interests. All authors have approved the final manuscript and agree with its submission
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7.4. Data Availability Statement

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request. Due to ethical and privacy considerations, access may be restricted to ensure confidentiality of survey respondents.

7.5 AI Generator Tool

An AI generator tool (ChatGPT) was used to improve the clarity, coherence, and academic tone of language in this manuscript. The instrument did not contribute to the research design, data collection, analysis, interpretation of results, or development of original arguments. The authors take full responsibility for the content, accuracy, and integrity of the manuscript.

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