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| RESEARCH ARTICLE

A Study on Media Coverage of Algorithms under Framing Theory: The Case of Reports on Algorithms from Xinhua News Agency from 2021 to 2022

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| ABSTRACT
The continuous improvement and wide array of applications of algorithms have demonstrated both the promise of technological power and the perils of new problems and some entrenched social issues. At this time, mainstream media being a vital channel for information dissemination, their coverage of algorithms can reflect different attitudes and expectations towards algorithmic development from diverse groups. Thereby, the objective of this study is to explore how influential media tell the story of algorithms to people, how individuals from distinct walks view this contentious topic, and, accordingly, what we can expect to witness in the following report on algorithms from news agencies. Based on the Framing Theory, this study systematically analyzes the news reports about algorithms published by Xinhua News Agency over the past two years (2021-2022) on the basis of the thematic framework, responsibility framework, and emotional framework. The result of it reveals that Xinhua News Agency has paid much attention to the issues of regulation and governance of algorithms from the perspective of the government. Ethical concerns regarding its fair usage are also highly debated among the general public. Companies and research institutions mainly focus on publicizing their latest achievements in innovative applications and technological breakthroughs, while the former is absent from the discussions and draft of regulations in this line. Worthy of note, negative reports on this domain were prevalent among the public, while the Chinese government, businesses and research institutions tended to approach algorithm-related topics from a positive or neutral standpoint. In the future, relevant disputes will persist in the public opinion field, and people could enhance their algorithmic literacy throughout the process. Governance and development may go ahead in step. Co-governance with the engagement of enterprises and diversification of algorithmic applications both signify a promising tomorrow of this technology.

| KEYWORDS

Algorithms, framework theory, Xinhua News Agency

| ARTICLE INFORMATION

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1. Introduction

1.1 Research Background

For the past few years, negative events concerning algorithms have emerged one after another, algorithmic bias, data-driven price discrimination, and monitoring of workers by means of algorithms, to name a few. For one thing, in that these have, to some extent, harmed consumer interests, infringed labor rights and disrupted industry norms, a gigantic wave of discussion on the pros and cons of algorithms is provoked among not only stakeholders but also the public. For another thing, with the gradual improvement of 5G networks and the upgrade in computer processing power, algorithms continue to be refined and optimized and are widely applied in various industries. They show great potential in carbon emissions scheduling, autonomous driving for electric vehicles, cancer detection and diagnosis in smart healthcare, and make a difference in e-commerce, a news feed, credit

loans, insurance, healthcare, public safety and so on. There is a bright prospect and wide scope of application scenarios for algorithms in store.

For ordinary people, this cutting-edge technology in computer science has gradually penetrated their daily lives, such as food delivery, ride-hailing, and algorithmic recommendation feature on social platforms, influencing users' experiences and changing consumer behaviors as well as patterns. Nevertheless, the flip side of high familiarity with it is the comparatively limited understanding of how it works, corresponding to the "black box" theory, which means that the inner workings of algorithms are impossible to know because there is no access to them. Consequently, it is incumbent on the mass media, a critical channel for delivering and distributing reliable information and building communication bridges, to elucidate the enigmatic aspects of algorithms and strive to respond to the worries of the public, who are laymen of this edgy technology essentially. This will facilitate the popularization and promotion of new technologies and urge companies to explore new business models under the context of strengthened social stability.

1.2 Literature Review

The latest papers approach the topic of algorithms from a myriad of points of view, and the majority pertain to the algorithmic ethics and potential risks society is to face. Another angle starts from the attitudes or the awareness of algorithms of a certain group of people.

According to Liu et al. (2023), the emphasis is laid on the assessment of the algorithmic awareness of digital natives, who are born in an age with abundant digital technology and equipment and are equipped with the ability to master them instinctively. The conclusion is that attitudes vary among digital natives, and the position one takes has a salient bearing on his or her way of interacting with applications manipulated by algorithms and managing their usage of them. Plus, the paper mentions that students with more knowledge about how algorithms run and operate are apt to be more sanguine about their future and show higher acceptability.

Algorithmic opacity manifests its magnitude in loads of research, closely tied to people's pessimism about algorithms. Borrowing words from Eslami et al. (2019), users question or defend algorithmic opacity depending on their engagement with and personal gain from it, while adding transparency into the algorithm changed their attitudes. As for it, it is advised that programmers and system designers need to communicate the existence, operation, and impact of opaque algorithmic processes with users to dispel their concerns about potential biases or so.

According to another research by Jing (2023), the public's tendency towards algorithmic decisions is systematically evaluated. It argues that most literature reveals people indeed have an aversion towards algorithms and hold that their decisions are more unfair and less trustworthy. The ability and professional level of the algorithm are doubted as well due to misgivings about technical flaws. However, existing literature also reflects that people may prefer to appreciate algorithms in some application scenarios. It could be expressed as more compliance with the advice of the algorithm and higher expectations of its capacity to filter out latent discrimination as the data and programs under rigid operation procedures are not emotional. Also, compared with human error, consumers have fewer negative reactions to brand damage crises caused by algorithm error. From the affective viewpoint, some research illustrates that algorithms induce eerie feelings and negative emotions in people, and this directly evokes disgust and lower acceptance of AI and algorithms. This phenomenon may stem from people's innate fear of computers or robots, falling into "the Uncanny Valley". It can be rated as a kind of Artificial Intelligence anxiety deriving from speciesism, which here refers that humans harbor unjustified and disadvantageous consideration of those who are not classified as human races, such as algorithms. Lastly, the opinions on this technology are swayed by the task characteristics and user traits, interaction process, decision results and other factors. For instance, for the assignments entailing sentiment analysis, users would decline to resort to algorithmic decisions.

There are also several suggestions proposed. Liu and Lin (2022) argue that it is high time to face the instrumental rationality behind algorithms and get down to coping with the opacity of technology by disclosing the whole process of algorithmic operation. Moreover, morality and ethics should be factored into the design of algorithmic recommendations to meet diverse needs. Bar from businesses, users ought to improve their algorithmic literacy and awareness to keep sober in the digital world.

In summary, existing papers are centered around and go deep into three principal aspects, that is, the problem and its negative impacts, the attitude of a certain group towards a specific scenario applying algorithms, and how to tune up the setting of algorithms or users' behaviors for rational use.

1.3 Problem Statement and Objective

It is obvious that scholars are digging into people's thoughts about algorithms and relevant applications in a specific scenario, whereas to obtain a rather accurate conclusion, they narrow down respondents to fixed demographics so that a relatively general but macroscopic view eludes us. Beyond that, little attention is directed to how media, especially traditional mainstream ones that partly represent the authorities but still with some latitude, are intended to shape people's conception of algorithms. For this reason, this research is going to take reports on algorithms from Xinhua News Agency as study samples in order to explore which sort of framework mainstream media are adopting to build the image of algorithms in the public's minds, what multifarious interest groups rivet their eyes on, and how Xinhua News Agency would like to deal with the glad tidings and scandals of algorithms in the days to come.

2. Theoretical basis - Framing Theory

This paper employs the quantitative analysis method under the framing theory. In 1974, Irving Goffman first proposed the concept of "framing" to communication situations in his book Framing Analysis. He argued that framing is an important means by which people translate social reality into subjective thought, that is, the structure of people's or organizations' subjective interpretations and thinking about events (Goffman, 1974). Goffman's framing theory has been widely used to analyze the organizational principles of media coverage of news events and to explore the factors that influence the media's perception of a particular group's image, which is customarily referred to as "news framing".

Entman (1993) pushed the boundary of the theory forward. In his viewpoint, frames consist of two functions: selection and salience. By establishing frames, parts of reality are selected and highlighted in the context of communication, resulting in certain definitions, moral evaluations, or solutions. Media constructs news by emphasizing certain aspects and downplaying others in a bid to shape social reality through these frameworks and models. Through these frames, people are able to come to a consensus about social reality. This forms the theoretical foundation for the statement that "news belongs to a system of meaning production." Regarding concrete news facts, the intuitive choices made by communicators in terms of what to emphasize and prioritize allow these aspects to be prominently displayed in the text, which is the essence of news frames (Xiao, 2016).

This paper applies Tankard's "list of frames" approach and a framework checklist for researching specific issues primarily consisting of three levels of frames: thematic frames, responsibility frames, and narrative frames. News frames can be constructed from these three levels to create reality. High-level frames are primarily realized through headlines, introductions and other methods; intermediate-level frames are influenced by significant events, causes and histories, achievements and impacts, attribution and other factors within the article; and low-level frames refer to the words and rhetoric used in the article (Fang, 2011). The research framework adopted in the paper is a set of high-level pre-defined ones. Collected sample reports are categorized according to their titles and the main topic framework presented in the first paragraph. Both subject frameworks and narrative frameworks are at an intermediate level, with the author attributing the background, outcomes, and impact of significant newsworthy events to the pre-defined categories of the selected frameworks.

3. Methods

3.1 Samples

This paper gleans the news reports on algorithms between January 1, 2021, to December 31, 2022, from Xinhua News Agency and categorizes the selected articles into distinct news frameworks from the perspective of theme, responsibility, and narrative methods. Through comparing the number of articles, it is viable to come to a general idea about the social response to the merits and demerits of algorithms and their expectations towards this technology. There are 172 articles defined as ones with a strong correlation to the topic "algorithms", whose titles contain this word. However, 5 reports are included due to errors in retrieving fields, such as the one about the introduction of Chinese ancient mathematics modeling. Moreover, 3 articles are unavailable since they are archived. Consequently, in the aggregate, 164 reports are rated as valid data and engage in the following framework analysis.

3.2 Design

This paper digs into the topic through three approaches to news frameworks, namely, thematic framework, responsibility framework, and narrative framework.

3.2.1 Categorization of Thematic Framework

Governance and Regulations. Under this framework, the media focus on the efforts of government departments to formulate relevant policies and actively carry out various administrative measures. This includes convening seminars themed on algorithms and publishing the related system, and so on.

Innovative Applications. This framework mainly revolves around the development of algorithms through a variety of ways and forms by virtue of the endeavor of businesses and its application in enterprise management and other commercial activities.

Development and Research. This framework is about algorithmic research carried out by individuals or groups with academic capability and the competitions or academic activities in this area.
Relevant Public Discussion. The framework refers to the public opinions on the latest dynamics of the algorithm, which majorly involves emerging problems and pressing issues that people have misgivings about.

3.2.2 Categorization of Responsibility Framework
Governmental Departments refer to the governments at all levels and the departments in charge of algorithm technology management, such as the Ministry of Industry and Information Technology of the People's Republic of China.

General Public stands for the society as a whole here, including non-technical personnel as well as individuals researching algorithm technology.

Enterprises constitute companies engaged in non-algorithm technology development and application.

Research Institutions include algorithm research institutions and professional technical development departments.

3.2.3 Categorization of Narrative Framework
The factual framework. It presents the facts in a straightforward and objective manner without extra personal opinions or emotional orientation. Its core is offering information instead of analysis or assessment.

The affective framework. The content of news displays relatively overt and intended attitudinal tendencies, often dotted with individual cases, personal experiences, or emotional calls. The goal of affective frameworks is to evoke emotion and empathy from the reader.

4. Analysis of Data

4.1 Thematic Frame

Among the 164 articles on algorithms published by Xinhua News Agency from 2021 to 2022, the most concerning topic is "Governance and Regulations", with a total of 60 articles accounting for 37% of news coverage in this period. To be more detailed, "Governance" emphasizes action taken by the charged department to scrutinize whether companies are abusing data algorithms for profits in the production and service process or not, while "Regulations" covers the draft and gradual implementation of laws and regulations to tackle existing problems. The former occupies roughly one-third (37%), and the latter 63%. The contrast suggests that, over the past two years, governments tightened the control over the tech giants who are risking stepping into the gray zone by replacing warnings with administrative punishment.

These figures indicate that Xinhua News Agency, as the speaker of the state, attaches great importance to the impact of algorithms which performs as a new variable in economic and social domains. After its negative effects have gained widespread attention and caused a social trust crisis, strengthening regulations in this field is on top of the agenda. For example, the in-depth report Food Deliverymen, Trapped in the System published by "People" magazine on September 8, 2021, made a splash. Subsequently, on September 27, Xinhua News Agency reported Several Measures for Promoting the Development of New Employment Forms issued by the Beijing Employment Working Group, which explicitly brought "platform-based laborers" such as Meituan food deliverymen and Didi drivers into the protected groups who are eligible to the minimum wages.

This is a preliminary attempt for regulators to execute strict penalties for the abuse of algorithms to leave workers' compensation insecure. An article titled Strengthening the Comprehensive Governance of Internet Information Service Algorithms in China published on September 29th, reported on the guidance issued by nine ministries regarding the strengthening of comprehensive governance of Internet information service algorithms. The guidance proposed the establishment of a governance mechanism, a well-functioned and coordinated regulatory system, and a standardized algorithmic ecosystem over about three years so as to build a paradigm of algorithmic governance. Such a clear plan of action would raise the alarm for practitioners in this industry and respond to public opposition to the monopolistic behaviors of internet giants and their infringement of labor rights.

Correspondingly, Xinhua News Agency cast a spotlight on "Problems" arising from algorithms in 25 reports. Public discussions on algorithms, including conference reports and editorial pieces, with 10 reports and a share of 6% of the all. Among these, the

algorithmic recommendation received the most heed and was the theme that had the longest history of media's consistent tracking. From the report From Reader to User, Don't Fall into the Trap of Algorithms on February 20th, 2021, to Facing the Social Challenges of Algorithms, Beware of Becoming an Algorithmic Prisoner on August 3rd, 2022, 15 reports referred to profound reflections on such mechanized recommendations. As such, the ethical issues of algorithmic recommendation were widely discussed, mainly about the consequent "echo wall" effect or "information silos" or "information cocoons", further resulting in the user's preferences being solidified into long-term behavior routines, which will make them stuck in an exclusive environment where everyone's views are convergent. In this way, people's initiative in news selection and interpretation is expected to be continuously inhibited (Peng, 2022), eventually leading to group polarization. On the other hand, instrumental rationality and value rationality require more deliberation. Users face the risk of the objective assimilated by this highly homogeneous information and take part in collective unconscious behaviors, especially irrational and provocative ones. Besides, the purpose of technology design is only to pursue immediate and maximum economic interests rather than the ultimate concern of human beings (Yang et al., 2022).

In addition, "Application" (referring to fresh ways to apply existent technology, such as in new areas) and "Innovative Application" (covering breakthroughs in algorithms and practical application scenarios) amount to 48 articles, taking up 29%. The applications involve multiple industries and fields, including but not limited to autonomous driving and paramedicine. From the integrated simulation of the auto-driving system to intelligent audio algorithms, from a brain scan for the diagnosis of Alzheimer to algorithmic medical care for the physical check, the favorable impact of algorithm application is conducive to shaping its positive image in the public's eyes and laying the social foundation for its application in the industry across the board.

As cutting-edgy technology, algorithms have imperfections and defects likewise, which require a certain degree of tolerance to give it enough time and space for iterative updates. With the progress of technology, some of the current problems and dilemmas will be resolved due to more knowledge experts gain and the deeper understanding the public has. Tech giants have also taken action to ameliorate their system settings and adjust the business model, integrating humanistic care into cold machines to show their social responsibility. Shouzi Chew, the chief executive officer of TikTok, once publicly asserted that they had built a team with thousands of people plus machines to identify inappropriate content, such as violence, child sexual abuse and pornography. Also, users below 16 going viral are restricted by default, and instant messaging and live streaming features are unavailable. In fact, Xinhua News Agency attempts to depict a holistic picture of this controversial topic, algorithms, to the utmost by a considerable volume of reports on the gains and losses of it.

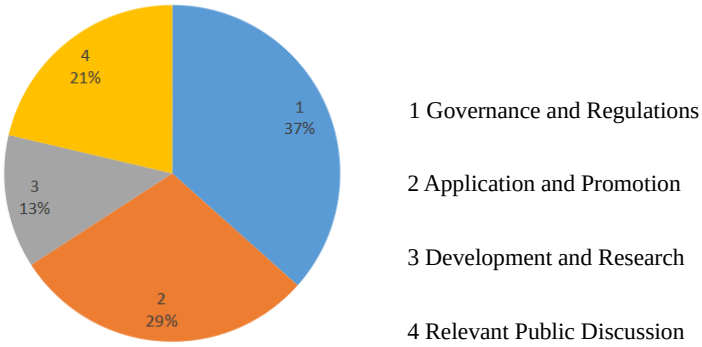

Fig 1. Pie chart of thematic distribution

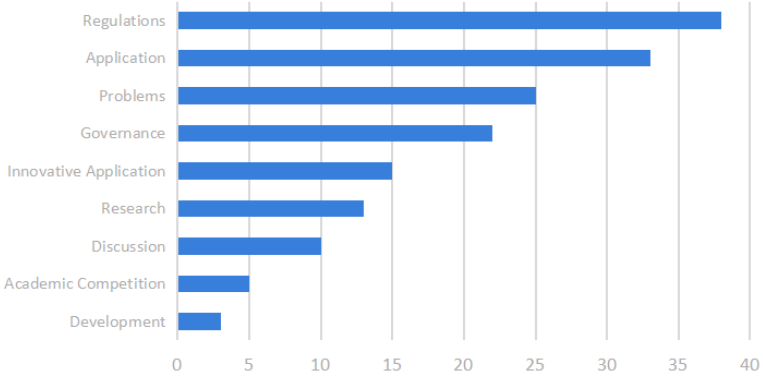

Fig 2. Bar chart of detailed thematic distribution

4.2 Responsibility Frame

In this paper, the responsible subjects of 164 correlated reports are divided into four categories, namely, government, enterprises, the public and research institutions. First of all, it can be seen from Figure 3 that "reviews from the public", the largest proportion, reaches 60 articles and makes up 36.59%. In accordance with Figure 4, the public focus mainly falls on the "Problems" and "Regulations". "Algorithm Discrimination in the" Black Box ", Don't Let the Algorithm Go Astray", "Readers Become Users, Don't Fall into 'Trap' of The Algorithm", "N Paths to Regulate the Algorithm", and 19 articles kept an eye on assorted issues deriving from algorithms, and reflected on whether information asymmetry caused by the black-box attribute consolidates businesses' vantage point, incurring the imbalance between both sides and the oblivious losses of interests of the vulnerable one. Social news of such similar topics emerged one after another, which aggravated people's distrust of algorithms to some degree. From Figure 5, the number of the masses taking negative attitudes constitutes the maximum share, same as the neutral ones, and that of positive reports is relatively low. Hence, society shows a wait-and-see or negative position at large, given persistent troubles, algorithm bias, abuse, unfair use, and ethics, to name a few.

Additionally, the government also showed a keen interest in algorithmic issues, with a total of 43 articles (26.22%). The government is most concerned about regulation and governance, with 31 articles (including "Regulation", "Governance", and "Regulation and Governance"), the related passages accounting for 72.09% of the total. The State Internet Information Office acts as the principal part of governance, repeatedly cooperating with relevant departments for joint efforts, which is mentioned in Four Departments: No Use of Algorithms to Implement Monopoly and Unfair Competition, Seven Departments Issued Opinion Require Service Platforms Make Algorithm Keep Neutral, and State Internet Information Office: Users Can Choose to Close the Algorithm Recommendation Service. Policies launched are primarily divided into three aspects. They are guiding documents to strengthen supervision of enterprises as well as e-commerce platforms, thorough investigations or on-site inspections, regulatory campaigns involving cracking down on the abuse of big data collected from customers, urging organizations to self-exam and self-correct, checking the backup of data to ensure the concerning entities would assume their responsibilities rightly. The third part is governance symposiums, seminars, and other academic meetings held by the government or academic institutions to gather the views of multiple parties for a better balance of each one's interests. The government bears both regulatory responsibilities and the task of promoting economic development, so it basically maintains a neutral attitude toward algorithms to harness this double-edged sword. It responded positively to public concerns and filled the void in laws and regulations left behind by the galloping growth of Internet enterprises in China. But from a forward-looking perspective, algorithms undoubtedly benefit technological innovation, the optimization of business models, and the creation of new economic drivers, which underpin the conceivable leap in the position in the international industrial chain for China. Thereby, the government bears great expectations for algorithms to synergize with other industries.

Last but not least, enterprises as well as research institutions fixed their eyes on innovative applications, with the difference that the former frequently got involved in "Problems" due to the misuse or abuse of algorithms for profit, while the latter concentrated on technology development and innovative applications, or attended some official seminars. The two are the main forces for furthering the advancement of algorithms. Research institutions are mostly composed of research teams from prestigious universities that are committed to the improvement of arithmetic power, accuracy, and the integration of algorithms with other state-of-the-art technologies, like "Internet of Things", "Cloud-Native" and "Blockchain". Corporations, on the other hand, shed more light on reports on practical applications in specific fields, such as Vivo's self-developed image imitation, SMIC's intelligent controller chip, and Nebula Digital's "Two-instruments" AI algorithm platform, etc. To conclude, institutions devoted themselves to underlying R&D, while businesses endeavored to commercialize these edgy technologies. In that, relatively speaking, with expertise and a holistic and comprehensive cognitive structure of algorithms, enterprises and research institutions are well aware of the commercial and technical value of it, which propels them to make concerted efforts in innovation and applications and release positive signals to the market via manifold media to enhance the social acceptance of algorithms. Xinhua News Agency could be one of their targeted platforms.

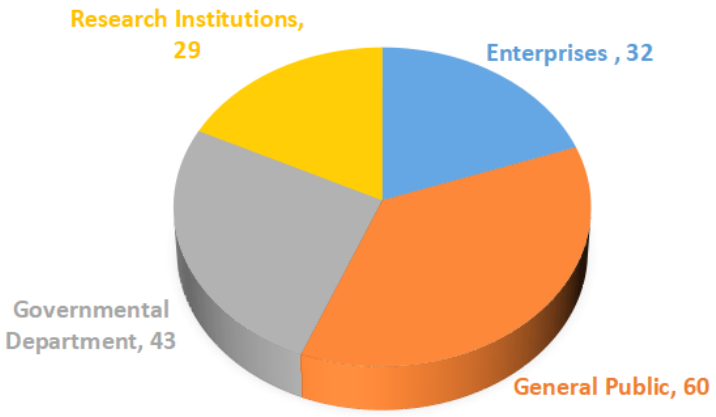

Fig 3. Pie chart of the responsible subjects

	Enterprises	General Public	Governmental Departments	Research Institutions
Academic Competition		1	4	
Application	15	3	4	11
Development		2	1	
Discussion	1	8	1	
Governance		17	6	
Innovative Application	7	2		6
Problems	4	19	2	
Regulations	4	8	25	
Research	1			12

Fig 4. Table of the focus of different responsible subjects

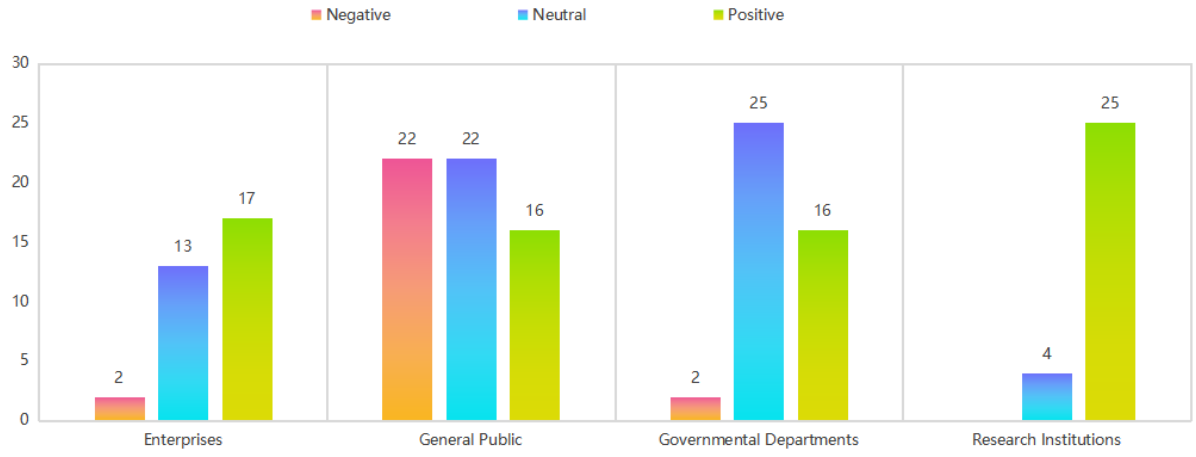

Fig 5. Bar chart of attitudes held by each responsible group

4.3 Narrative Framework

According to the frequency of each narrative framework employed by Xinhua News Agency in reports on algorithms, the factual frame is the dominant one, which was adopted by 122 reports with a share of 64% of the total. This is consistent with common sense that facts underlie news. The rest are all classified as affective frames. News stories were presented from a positive and neutral outlook in most cases, whose percentage stands at 45% and 39%, respectively. In contrast, only 16% of the coverage is negative, which manifests that the problems in algorithms are expected to be solved through continuous optimization and upgrade, and fault tolerance can exempt it from fierce attack to some degree.

From the cross-section analysis of narrative methods and attitudes taken, news stories under the factual framework witness an optimistic or at least neutral view of algorithms, whereas ones under the affective framework are pessimistic about it. We can deduce that human artificial intelligence anxiety works here or disturbs our rationale to some degree. Juxtaposed with the fact that algorithms keep moving ahead, agitation about its hazards captured more attention. As a result, fear or worries about the dark side of algorithms may be ascribed to psychological mechanisms of self-defense and could be cognitive illusions constructed by people selves rather than the truth they should see. Otherwise, it is reasonable to expect that an affective framework would also be widely applied to the allegation of facts.

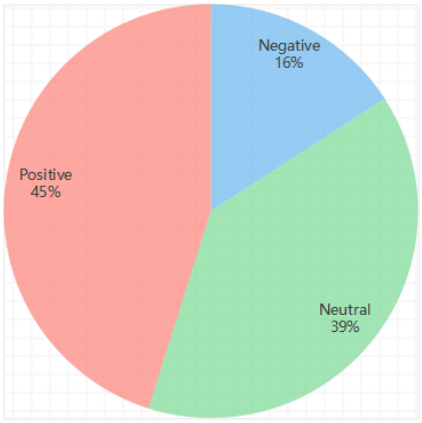

Fig 6. Pie chart of the distribution of attitudes

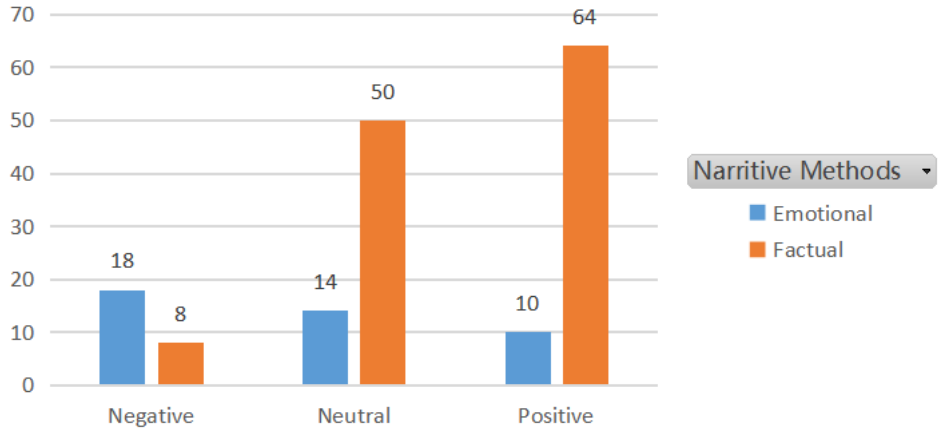

Fig 7. Bar chart of narrative methods adopted when taking different attitudes

5. Predicted Trends of Xinhua's Reports Based on the Past Coverage

Disputes on Algorithms cannot be Ignored. As technology plays an increasingly essential role in economic and social development, the commercial and technological value buried in algorithms brings people unlimited hope on the one hand, while on the other hand, it resembles Pandora's box, probably leading people to go astray. According to the data cited in this paper and related studies, the public has a relatively negative impression of algorithms. Take the young college students as an example; the users' affective attitude is overall neutral and negative, whereas the value attitude is generally neutral.

Since nothing happens for no reason, it is of great significance to enhance awareness of the problem. There are a host of issues that need to be solved in time, such as the blind pursuit of profit maximization, resultant infringement on personal privacy, the tendency of homogeneous content, the inundation of extremism speech, the encroachment of personal time, biased and partial content under the algorithmic recommendation. All of these scandals are eroding social trust in this technology bit by bit, and if we let alone the diffusion of suspicion, the wobbling confidence in algorithms could doom its prospects. Undoubtedly, Xinhua News Agency is obliged to clue the public into these dangers.

As a matter of fact, the algorithm controversy demands long-term heed taken by the public media. In light of agenda-setting theory, the media are duty-bound to channel the public's attention to algorithm disputes, guide them to air their opinions, balance the interests of all parties, and furniture viable ideas and remedies for existing problems. Bar from real-time updates, it is suggested to ratchet up the exposure of business effort, for regulations without obedience are equivalent to an empty cheque, and nobody would buy it. Only when tech companies revise their products and services to promise fair use, even when these limitations added may go counter to their economic interests, people are readier to embrace algorithms. Social responsibility assumed by enterprises could be a more effective booster for users to regain trust in this technology, so the reports concerning the topic are worth more exposure.

People should be cautioned to consciously fight for the initiative in the game between users and algorithms. Although a surging number of users have gradually realized that algorithmic power swings their judgment and decision-making on some occasions, the actual behaviors that externalize their resistance are rare, and eventually, they end up with compromises and passive acceptance. However, it is feasible to protect users' rights and whittle down the digital control of algorithms by improving users' media literacy, increasing their understanding of algorithms, and actively practicing "reverse algorithms" to find algorithmic loopholes and try to manipulate the evolution and output of algorithms (Zhao & Lin, 2022).

In our perspectives, the starting point of the cultivation of algorithmic awareness and literacy rests in recognition of the presence of algorithms in assorted scenarios of daily life. For instance, when consumers are doing some window shopping online with the full awareness that the underlying mechanism of recommendations is controlled by algorithms, it is more likely to jump out of the advertisement pitfalls and reexamine their desires for products. Owing to humans naturally being biased towards bad news, news about the abuse and misuse of algorithms are inclined to click through the link. Nevertheless, we admit that such news working as warnings is informative for viewers to nurture their critical thinking and necessary vigilance about algorithmic decisions, as long as the description of problems is accurate without purposeful exaggeration. Over and above, Xinhua News Agency has revealed a tendency towards positive image-building, which could be attributed to its power behind the scene, the government, who yearns to capitalize on this technological boom to inject new momentum into the economy. Such intention can be perceived from the high proportion of coverage with the involvement of authorities pertinent to regulations. In our view, more rigid supervision of algorithms implies that they attach considerable importance to it and are eager to allay the fear of the public towards it to pave the way for its following headway. This being case, Xinhua News Agency carries double tasks. One is to notify people of the latent risks of algorithms to educate them to be alert to hazards in AI area before more all-around protection is introduced, while the other is to disseminate messages that departments responsible for chaos begotten by algorithms are going to great lengths to normalize market and the application of advanced technology.

The Regulatory system of algorithms needs urging to be perfected continuously with the participation of multiple subjects. Pluralistic bodies are called to engage in the process of algorithms, among which the government with a leading position of power performs as the escort as well as monitor. Under the context of the accelerating digitization in China, driven by the exigency of cracking down on cybercrime and diminishing the risk of privacy leakage, the Data Security Law has been well implemented since it was released in 2021, and the newly revised Personal Information Protection Law is going to be introduced, so that China's regulatory system in this area witnesses progress step by step, and the rights as well as interests of users, are effectively safeguarded.

At the same time, the Chinese government is devoted to forming a complete ecological chain of the digital economy. China's market of network security services is projected to further expand, buttressed by the related preferential policies on this industry and the growing investment from domestic enterprises and international giants. On the other side, from our study, a possible problem has to do with the absence of firms in the process of discussing how to supervise rational use. As the final executor of rules laid down by policymakers, businesses should be allowed to voice their visions and difficulties when it comes to economic benefits to shun an unrealistic goal set by regulators unilaterally. In the seminars about the governance of algorithms, officials and scholars from top universities, like Peking University and Tsinghua University, remain as the protagonist, while the figures in the business field may attend from time to time.

For all that, more workshops witness representatives from business parties, such as Baidu, ByteDance, Tencent, Microsoft and so forth. On July 16, 2021, the symposium on AI Enterprise Internal Governance Model and System Construction was held by Institution for AI International Governance of Tsinghua University and the Chinese Institution of New Generation Artificial Intelligence Development Strategies of Nankai University, and there were 18 business deputies invited, who introduced the practical exploration of algorithm governance in their respective enterprises. Li Hang, head of Bytedance's research department, pointed out that deep learning faces challenges such as interpretability, robustness and controllability and needs to be co-governed by multiple subjects. The director from Intel (China) underscored the complexity of the integration of people, processes, systems, and data throughout the process of algorithmic output. The representative from Douyin Group added how to implement ethical principles and governance rules into specific compliance and evaluation work matters in practices. Accordingly, firms in the same line dealing in different activities will confront discrepant issues and also boast their distinctive methods to address problems. Another excellent example is the fifth Dual-mode IT Wuzhen User Conference, "Intelligent Operation and Maintenance Algorithm Seminar", staged on September 18, 2022, which was jointly held by Bizseer and Guotai Junan. Ye Puyu, a senior engineer of Guotai Junan, discussed the innovation direction of log anomaly monitoring, index anomaly detection and observability, and the feasible path of intelligent operation and maintenance algorithm governance based on the enterprise practice in his speech. From the aforementioned cases, it is conspicuous that the call for cooperation between subjects in the regulations and governance of algorithms presumably makes it a trend for the rise of news stories about seminars involving attendants from governments, corporations and research institutions or other fields.

The algorithm application scenarios are on the track of diversification. In the era of information, promoting the synergy between algorithms and industries is an inevitable challenge as well as a golden chance to transform and upgrade China's industrial mix. In the primary industry, algorithms serve as the main pillars of smart agriculture. By utilizing large machinery, sensory equipment, growth models and information systems extensively, it is achievable to optimize planting structure, prevent climate disasters, and decrease pests and diseases to increase crop yields and boost the revenues of farmers. Turning to the secondary industry, algorithms are primarily applied in three areas: monitoring and detection, intelligent decision-making, and human-computer interaction. "Algorithm on the Cloud" Boost Ningxia's Industry Digitally from Xinhua News Agency, presented that the algorithms have been able to monitor workshop production in real-time through the big data board, which displays current processes and conditions with reference to various product parameters and realize whole life cycle traceability of each commodity (Zhao & Ji, 2022). In the tertiary industry, numerous heated concepts are mushrooming, with compelling instances of algorithmic medical care, personalized learning and algorithmic financial products. Taking algorithmic medicine as an example, in AI Algorithms Drive Immunotherapy posted on the Xinhua Website, it is pointed out that a series of immunological problems largely rely on the optimization of computational methods, such as analyzing immune databases, recognizing the structure of antigens, constructing single-cell differentiation trajectory, categorizing novel cells, predicting the strength of immune response and clinical prognostic association (Zhang & Ma, 2022).

In addition, more application scenarios are emerging as the construction of China's digital infrastructure picks up speed and more commitment is made to facilitate the implementation of projects. It is anticipated to enhance production efficiency in telecommunications, manufacturing, energy and other traditional industries by virtue of its unparalleled computing power. Recently, energy companies have been dedicated to developing intelligent information systems based on deep learning algorithms and huge amounts of data generated every day to predict future trends and fluctuations in electricity demand, thereby reducing energy waste. Plus, it is planned to cut down costs by optimizing traffic flows, logistics and government management to prop up the daily operation of metropolises. In Xiong'an New Area, a major engineering project aiming to build a "futuristic" city in China, Underground Logistics System (ULS), is under construction. Jingdong Logistics has been commissioned to take the lead in carrying out actual underground logistics research work in specific areas, and they tried to develop underground pipeline logistics, which takes advantage of algorithms to regulate flows of express delivery packed into smart capsule boxes and transport them through pipelines. The latest progress in this area deserves timely coverage from News Agencies, for they can enhance the masses' confidence in the bright tomorrow promised by algorithms advocates. Thanks to these endeavors, algorithms are believed to play a critical role in making economic and social headway in the coming decades.

6. Conclusion

This paper focuses on the coverage with regard to algorithms in the mainstream media. Based on stories from Xinhua News Agency, a state-owned news agency, we compiled and analyzed relevant reports from 2021-2022 by virtue of framing theory and came to the following conclusions.

Firstly, the theme receiving the most intense attention from Xinhua News Agency is governance measures for unfair usage and innovative applications, followed by issues derived from application. Meanwhile, academic contests and seminars are referred to occasionally. Secondly, reports are dominated by commentary articles from the public perspective, which indicates that public

misgivings outweigh the solutions provided by both the government and businesses (or the given answers are not satisfactory enough). Departments that take charge of governance and regulation of algorithms are the subject with the second highest exposure, implying that the Chinese government strives to settle problems without delay and create a sound environment for the advancement of algorithms. Thirdly, enterprises often appear in the reports regarding innovative applications of algorithms while having a low profile in the discussion about regulations. Such absence may result in unrealistic targets set by policymakers unilaterally. Lastly, collected news tends to opt for a positive or neutral attitude, signifying affirmation to algorithms. Also, the factual framework is more frequently adopted to avert provoking people's negative feelings or amplifying the existent flaws. Apparently, algorithms are liable to trigger Artificial Intelligence Anxiety, particularly in its immature phase, so the selective evasion of the affective framework is sensible and understandable.

We make simple predictions about the trend of reports on algorithms as well. Here are three main directions. Disputes on algorithms will be a long-term focus, as it could be an effective way to alleviate public concerns on account of the "black box". Meanwhile, reporters or editors should embed the tasks of instilling a sense of algorithms in audiences and fostering readers' algorithmic literacy into their narrative goals implicitly, as taking the initiative in the game between humans and computers is vital for algorithmic ethnics, which defends this technology from the criticism of the resultant alienation of humans owing to being overused of or over-relied on. Shifting sight to the administration dilemma, we discover that the omission of business subjects in some official discussions about governance and regulations could be blamed for the gap between rules on paper and action in reality. Furthermore, a comprehensive regulatory system is still on the way when more opinions from multiple bodies ought to be taken into consideration. On a final note, algorithmic application scenarios are proliferating and diversifying. Its feature of assisting in intelligent decision-making in finance, governance, business management, education, healthcare and loads of other fields is pinned great hope.

However, there are several imperfections awaiting improvement. The samples we selected are not all-around enough, for ones that merely refer to comments on algorithms are left out, given the operability of research. Beyond that, our conclusions could lack absolute accuracy given our relatively small amount of data and an inch of subjective analysis and judgment. The choice of platform may be rated as a variable and make a difference as well. Being a state-owned news agency, the content it reported could be swung by governmental policies and stances. We sincerely wish that more elaborate and all-sided research can be conducted in the coming future to weaken these extraneous influences.

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