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The Influence mechanism of online communication on analysts' forecast bias: Based on earnings management

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ABSTRACT

Utilizing a dataset spanning from 2018 to 2023 of China's A-share listed companies, this study delves into the effects of online communication on analysts' forecasts. It examines the mediating roles of earnings management and information disclosure in this context. The findings reveal that analysts exhibit significantly higher forecast bias after engaging in online communication compared to non-participants. Nonetheless, online research, as an efficient means of information exchange, allows firms to better understand analysts' concerns and forecasting bases, enabling them to adjust earnings management strategies in a targeted manner to influence analysts' forecasts. Additionally, online research enhances the breadth and depth of corporate disclosure, providing analysts with a more abundant information source and subsequently improving forecast accuracy. This study underscores the multifaceted impact of online communication on analysts' forecasts, offering valuable insights for companies to optimize their interactions with analysts and elevate the quality of information disclosure amidst the digital era.

1. Introduction

Amidst the backdrop of the global economic downturn and the recurring epidemics, the operations of real enterprises have been significantly impacted, introducing considerable uncertainty into their business activities. The capital market, as a barometer of the real economy, reflects the natural and anticipated effects of the epidemic on the real economy (Li and Liu, 2022). In this context, analysts serve as crucial information intermediaries in the capital market, functioning both as a conduit for firms to disseminate information and as a vital basis for investors' decision-making (H. Li et al., 2020). Given that analysts' information acquisition relies heavily on exchanges with firms, safeguarding the efficiency of these interactions is paramount for maintaining the smooth operation of the capital market.

According to the information asymmetry theory, the cost of information acquisition directly influences the process of information collection. Furthermore, the choice of communication methods significantly impacts the cost of information. Analysts interact with listed companies through various methods, including performance briefings, site visits, and conference calls, with site visits emerging as the primary source of private information for analysts (Klein et al., 2020). During these visits, analysts engage in direct dialogue with company management, observing the production and operations of the firm, thereby obtaining valuable insights (Liu et al., 2021).

In recent years, online communication has emerged as a significant trend, although it lagged behind field research in prominence prior to the pandemic, despite showing an annual growth in its adoption. Initially, domestic listed companies primarily leveraged

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online platforms to engage with small and medium-sized investors. For example, Panorama pioneered an online 'performance exchange meeting' in 2006, and the Shenzhen Stock Exchange established a standardized interactive platform in 2010 for internet-based investor communication among listed companies. Online communication offers distinct advantages in information dissemination, naturally transcending geographical limitations, providing low participation costs, and being both convenient and timely. These benefits also lower the entry barriers for analysts from smaller firms with limited experience (Sánchez-Medina and Eleazar, 2020). Moreover, online platforms enable analysts and firms to focus on the communication content itself, minimizing distractions associated with field research, such as travel and accommodation logistics (Lee et al., 2021). From an information spillover standpoint, the content of online exchanges is more likely to be precisely documented in video and text formats, facilitating easier access and dissemination to analysts who were not directly involved in the original research. This enhances the reach and impact of the communicated information.

Drawing on a dataset of China's A-share listed companies from 2018 to 2023, this paper delves into the impact of online communication on analysts' forecasts, examining the mediating roles of earnings management and information disclosure. The findings indicate that analysts exhibit significantly higher forecast bias after engaging in online communication compared to non-participants. However, online research, as an efficient means of information exchange, enables firms to better understand analysts' concerns and the rationale behind their forecasts, allowing them to adjust earnings management strategies in a targeted manner to influence analysts' forecasts. Furthermore, online research enhances the scope and depth of corporate disclosure, providing analysts with a richer source of information, ultimately improving forecast accuracy. This study underscores the multifaceted role of online communication in analysts' forecasts, offering valuable insights for companies to optimize their interactions with analysts and enhance the quality of information disclosure in the digital era.

The contributions of this paper are two-fold: 1) It assists investors in assessing the credibility of analysts' forecasting results, enriching the literature on the factors influencing analysts' forecasting accuracy. 2) By focusing on analysts' forecasting accuracy, this paper identifies the lack of information credibility in online communication and explores the complementary effects of combining analysts' other information acquisition channels.

2. Theoretical analysis and research hypotheses

From an information disclosure perspective, online communication plays a pivotal role in enabling analysts to access private information, particularly when field research is limited. It offers a low-cost, timely, and interactive information exchange platform, which is conducive to mitigating information asymmetry.

Firstly, the online communication format inherently possesses the potential to generate private information. By posing direct questions about corporate information of interest (both positive and negative) through Q&A sessions with company management, analysts can enrich the information content of conference calls and reduce corporate information asymmetry (Mazur et al., 2021). Online research activities also leverage unique media advantages, utilizing internet technology to reduce investor participation costs and enhance information timeliness (Feng et al., 2022). In contrast, fieldwork is costly for analysts, involving travel, accommodation, and time-consuming data collection efforts (Kuo et al., 2021). Moreover, field research is constrained by time and space, with transportation costs and distance reducing the frequency of such visits (Wang et al., 2022).

Amidst epidemic prevention and control measures, the unpredictability of quarantine policies has further driven up research costs for analysts and investors. In contrast, online communication effortlessly overcomes time and space constraints, allowing investors, analysts, and corporate executives globally to join video conferences or calls simultaneously (Chen and Zhang, 2021). The larger number of participants in online interactions encourages comprehensive disclosure by management and reduces barriers for analysts from smaller brokerage firms. Unlike public investor online exchanges, those facilitated by securities analysts are highly valued by companies, fostering active engagement and collaboration (J. Li et al., 2020). This increased participation leads to more frequent communication, diverse viewpoints, and additional information.

Although online communication offers analysts a more direct information source, it also complicates information processing. In virtual settings, information is often delivered swiftly and in fragments, requiring efficient filtering and integration of key details (Park et al., 2021). This information overload may cause analysts to miss crucial details or skew their interpretations. Conversely, face-to-face communication allows analysts to pick up on non-verbal cues like facial expressions and body language, which are challenging to discern online (Paramati et al., 2021). The absence of these cues can impede analysts' ability to accurately evaluate a company's operations and future outlook, potentially resulting in forecast bias.

Based on the above, this paper proposes the following hypothesis:

H1. *Analysts exhibit significantly higher forecast bias after participating in online communication compared to non-participants.*

Online research serves as an efficient and convenient platform for information exchange between enterprises and analysts. It enables firms to reach a broader analyst community, collecting and analyzing their views and forecasts on earnings, outlook, and strategy. This direct feedback helps firms better understand analysts' concerns and the rationale behind their forecasts (Veganzones et al., 2023). As key information intermediaries in the capital market, analysts' forecasts are influenced by various factors, including public and private information, as well as personal judgment. Through online research, firms can identify potential biases or misunderstandings in analysts' forecasts, allowing for timely adjustments and communication to mitigate the adverse effects of information asymmetry.

Earnings management, defined as firms' adjustment of financial reports through legitimate means to influence stakeholders' decisions (Murinde et al., 2022), can be strategically leveraged by firms to influence analysts' forecasts. When firms detect biases in

analysts' earnings forecasts, they can adjust their earnings management strategies to enhance analysts' confidence in the company's prospects (Wu et al., 2022). For instance, firms may optimize their financial structure, improve operational efficiency, or adjust investment strategies to boost earnings levels.

In summary, by leveraging online research to understand analysts' concerns and forecasts, firms can tailor their earnings management strategies to influence analysts' forecast results. In this process, firms must uphold integrity and transparency, fostering mutual trust with analysts and jointly promoting the healthy development of the capital market.

Based on the above, this paper proposes the following hypothesis:

H2. *Firms can target and adjust their earnings management strategies through online research, thereby influencing analysts' forecast results.*

Traditional information disclosure methods, characterized by slow delivery and limited coverage, are often constrained by time and space. In contrast, online research, facilitated by the internet platform, enables real-time information delivery and comprehensive coverage. Firms can swiftly disseminate the latest operational data, strategic plans, and industry dynamics, keeping analysts abreast of the company's situation (El Diri et al., 2020). Furthermore, online research attracts more analysts, expanding the reach of information disclosure and enhancing its impact.

In the context of online research, firms have the capability to present information in a variety of formats, such as text, charts, and videos. This diversity in presentation aids analysts in comprehending the company's operational and financial standing more effectively. Through interactive sessions, analysts can ask questions and receive supplementary information, which helps in clarifying any doubts, minimizing misunderstandings, and ultimately enhancing the precision and comprehensiveness of the information at hand (Kim et al., 2021).

This refined and exhaustive disclosure of information bolsters analysts' confidence in the company's prospective growth trajectory. Consequently, it leads to an improvement in the accuracy of their forecasts, as they are better equipped with reliable and detailed insights into the company's operations and future outlook.

In contrast, traditional disclosure methods often lack sufficient interaction and feedback mechanisms, impeding communication between firms and analysts (McKillop et al., 2020). Online research, however, provides more interactive opportunities, enabling firms to learn about analysts' needs and concerns and adjust their disclosure strategies accordingly (Nguyen, 2022). This two-way interaction fosters long-term trust between firms and analysts, laying the groundwork for future cooperation and communication.

Based on the above, this paper proposes the following hypothesis:

H3. *Online research can enhance corporate information disclosure, thereby improving analysts' forecast results.*

3. Study design

3.1. Sample selection

For this study, the initial dataset was drawn from China's A-share listed companies, covering the period from 2018 to 2023. The dataset underwent several preprocessing steps to ensure its quality and relevance:

Samples from the financial, insurance, and real estate sectors were excluded to focus on other industries.

Samples with missing information regarding the categories or locations of research activities were removed to maintain data integrity.

Samples with incomplete data were also excluded to ensure robustness in the analysis.

Research records were carefully examined for keywords that indicated online communication, such as 'teleconference', 'video conference', 'online', and 'Tencent meeting'. Conversely, if records contained keywords like "on-site", "field", "offline", or specific locations, the research was classified as field research.

Following the matching process, the final dataset comprised 68,986 observations. The data were primarily obtained from the CSMAR and Wind databases, which are reputable sources for financial and corporate information in China.

3.2. Definition of variables

3.2.1. Dependent variable

Analyst Forecast (*Anan*): This paper uses the difference between the FEPS forecast of analyst j, who tracks listed company I in period t, and the actual value of EPS, which is obtained by lagging the absolute value and then dividing it by the actual value of EPS of the listed company I in period t.

3.2.2. Independent variables

Whether analysts participate in online communication (*Online*): This variable is a dummy variable that indicates whether analysts have participated in online communication with listed companies within the three months preceding the release of their research report. If an analyst has engaged in such communication, the variable "Online" takes the value of 1; otherwise, it takes the value of 0.

The variable "*Ln_Online*" represents the number of times analysts participated in online communication with companies within the three months prior to the release of their research report, with this count being logarithmically transformed.

3.2.3. Intermediary variables

Earnings management (*DA*): This paper measures accrued earnings management using the modified Jones model. For the purposes of this study, we focus on data from the one-year period before and after significant asset injection. Given the offsetting effects of positive and negative accruals (DA), we disregard the directionality of earnings management and measure DA as an absolute value.

Information disclosure (Infor): In this paper, we use the number of voluntary earnings announcements released as a measure.

3.2.4. Control variables

In order to control the influence of other factors, this paper controls for the following variables: firm's gearing ratio (Lev), firm's size (Size), firm's ability to grow (Growth), institutional shareholding (Ins), profitability (Roe), and nature of the firm (Soe). In addition, dummy variables for Industry (Ind) and Year (Year) are also included. These controls are essential as leverage can affect financial performance and earnings management strategies; firm size may influence operational dynamics and market perception; growth prospects impact financial performance and forecasts; institutional ownership affects governance and information transparency; profitability indicates financial health and influences forecasts and earnings management; the nature of the firm can shape operational and financial strategies; and industry and year dummies account for sector-specific and temporal effects, ensuring the observed relationships are not driven by broader trends.The specific definitions of variables are provided in Table 1.

The specific definitions of the variables are given in the Table 1 below:

3.3. Model construction

The basic model constructed in this paper is as follows:

$$Anan_{i,t} = \beta_0 + \beta_1 Online_{i,t} + \beta Control_{i,t} + \sum Ind + \sum Year + \varepsilon_{i,t} \tag{1}$$

$$Anan_{i,t} = \beta_0 + \beta_1 Ln\_Online_{i,t} + \beta Control_{i,t} + \sum Ind + \sum Year + \varepsilon_{i,t} \tag{2}$$

In order to verify the mediation effect of earnings management, this paper constructs the following model based on model (1):

$$DA_{i,t} = \beta_0 + \beta_1 Online_{i,t} + \beta Control_{i,t} + \sum Ind + \sum Year + \varepsilon_{i,t} \tag{3}$$

$$Anan_{i,t} = \beta_0 + \beta_1 Online_{i,t} + \beta_2 DA_{i,t} + \beta Control_{i,t} + \sum Ind + \sum Year + \varepsilon_{i,t} \tag{4}$$

$$DA_{i,t} = \beta_0 + \beta_1 Ln\_Online_{i,t} + \beta Control_{i,t} + \sum Ind + \sum Year + \varepsilon_{i,t} \tag{5}$$

$$Anan_{i,t} = \beta_0 + \beta_1 Ln\_Online_{i,t} + \beta_2 DA_{i,t} + \beta Control_{i,t} + \sum Ind + \sum Year + \varepsilon_{i,t} \tag{6}$$

In order to verify the mediation effect of information disclosure, this paper constructs the following model based on model (1):

$$Infor_{i,t} = \beta_0 + \beta_1 Online_{i,t} + \beta Control_{i,t} + \sum Ind + \sum Year + \varepsilon_{i,t} \tag{3a}$$

$$Anan_{i,t} = \beta_0 + \beta_1 Online_{i,t} + \beta_2 Infor_{i,t} + \beta Control_{i,t} + \sum Ind + \sum Year + \varepsilon_{i,t} \tag{4a}$$

Table 1
Variable definition table.

Variable type	Variable name	Variable symbol	Definition
Dependent variable	Analyst Forecasts	*Anan*	The difference between the forecast FEPS and the actual EPS of analyst j, who tracks listed company i in period t, is used to obtain the absolute value lag and then divided by the actual EPS of listed company i in period t.
Independent variable	Participate in online exchanges	*Online*	Online takes the value of 1 if the analyst has participated in an online communication with a listed company within 3 months and 0 otherwise.
	Participation in online exchanges	*Ln_Online*	The number of times analysts participated in online communication with companies in the 3 months prior to the publication of a research report; logarithmic processing was performed.
Intermediary variable	Earnings management	*DA*	Measured using the modified Jones model.
	Disclosure of information	*Infor*	Measured using the number of voluntary earnings announcements issued.
Control variable	Corporate gearing	*Lev*	Total liabilities at year-end/total assets at year-end
	Enterprise size	*Size*	Natural logarithm of total company assets
	Enterprise growth capacity	*Growth*	Company revenue growth rate
	Institutional shareholding	*Ins*	Company's year-end fund holdings
	Profitability	*Roe*	Net profit/owners' equity
	Nature of enterprise	*Soe*	State-owned enterprises take the value of 1, otherwise 0

$$Infor_{i,t} = \beta_0 + \beta_1 Ln\_Online_{i,t} + \beta Control_{i,t} + \sum Ind + \sum Year + \varepsilon_{i,t} \quad (5a)$$

$$Anan_{i,t} = \beta_0 + \beta_1 Ln\_Online_{i,t} + \beta_2 Infor_{i,t} + \beta Control_{i,t} + \sum Ind + \sum Year + \varepsilon_{i,t} \quad (6a)$$

4. Empirical analysis

4.1. Descriptive statistical analysis

The descriptive statistical analysis is presented in Table 2. As shown, the variable "Anan" (presumably representing analyst forecast accuracy or bias) has a minimum value of 0.067 and a maximum value of 37.295, with a mean of 2.452 and a standard deviation of 4.363. This indicates a significant variation in the accuracy or bias of analysts' earnings forecasts. The variable "*Online*" has a mean of 11.7 %, suggesting that 11.7 % of the forecasts were issued within three months of analysts participating in online communication. The variable "*Ln_Online*" has a mean of 0.075, indicating that online communication has become the predominant method of analyst research, which is consistent with the data on research activities conducted by companies.

4.2. Main test regression results

To further validate the model selection, a Hausman test was performed on the variables, resulting in the choice of the fixed effects model for analysis. Table 3 presents the relationship between online research and analysts' forecasts. The results indicate that online research has a positive and statistically significant effect at the 1 % level. This suggests that analysts' forecast bias is significantly higher after participating in online communication compared to those who do not participate. Thus, Hypothesis H1 is supported.

Online research provides analysts with a more direct and real-time source of information. In contrast to traditional research methods, online research transcends geographical and temporal constraints, enabling analysts to communicate more swiftly and frequently with corporate management and industry experts. The real-time and high-frequency nature of this communication facilitates a more comprehensive understanding of a company's operating conditions, market prospects, and potential risks, ultimately aiding analysts in making more accurate predictions about the company's future performance. But ,online research may also introduce bias due to information overload, lack ofnon-verbal cues, or technological disruptions.

4.3. Endogeneity test

The selection of appropriate instrumental variables is crucial for conducting an endogeneity test to assess the positive correlation between online research and analysts' forecast bias. Instrumental variables are a tool used to address endogeneity by selecting variables that are correlated with the independent variables (in this case, online research) but uncorrelated with the error term. When selecting instrumental variables, it is essential to ensure that they are closely linked to the online research activity while not directly influencing analysts' forecast bias.

In this study, we use the rank variable, constructed from the last rating assigned to the company by the first analyst in the previous year, as an instrumental variable for participation in online research. This rank variable is based on the analyst team's ratings in their latest report on the company, with the five ratings of 'Buy, Hold, Neutral, Reduce, and Sell' assigned numerical values of 2, 1, 0, −1, and −2, respectively. We employ the two-stage least squares (2SLS) method for testing, and the results presented in Table 4 demonstrate that these results are consistent with the benchmark regression results. This consistency indicates that the empirical tests conducted in this paper exhibit good robustness.

4.4. Intermediation effect

Online research, as a means of information gathering and communication, can shape analysts' comprehension and projections

Table 2
Descriptive statistical analysis.

	N	Mean	Std	Min	Max
Anan	68,986	2.452	4.363	0.067	37.295
Online	68,986	0.117	0.329	0	1
Ln_Online	68,986	0.075	0.274	0	2.796
DA	68,986	0.059	0.116	0.001	0.558
Infor	68,986	0.725	1.437	0.000	4.000
Lev	68,986	0.479	0.229	0.075	0.906
Size	68,986	21.308	1.239	19.758	26.825
Growth	68,986	0.189	0.425	−0.536	2.437
Ins	68,986	0.173	0.135	0.013	0.436
Roe	68,986	0.132	0.219	−0.237	0.386
Soe	68,986	0.397	0.426	0	1

Table 3
Results of the main regression test.

	(1) Anan	(2) Anan
Online	0.415***	
	(7.58)	
Ln_Online		2.173***
		(9.28)
Lev	−0.435***	−0.746***
	(−4.58)	(−5.37)
Size	−0.039	−0.118
	(−1.28)	(−1.32)
Growth	0.043***	0.269***
	(4.36)	(6.58)
Ins	0.325***	1.183***
	(7.69)	(9.47)
Roe	−11.725***	−10.636***
	(−11.58)	(−15.95)
Soe	0.016	0.007
	(0.39)	(0.25)
Cons	1.126***	0.927***
	(5.53)	(7.69)
Ind	Yes	Yes
Year	Yes	Yes
N	68,986	68,986
Adj.R²	0.307	0.209

Table 4
Endogeneity test.

	Phase I Online	Phase II Anan
Online		0.352***
		(13.27)
Rank	0.257***	
	(7.36)	
Controls	Yes	Yes
Ind	Yes	Yes
Year	Yes	Yes
F/Chi2	173.283	765.94
N	68,986	68,986
Adj.R²	0.493	0.307

regarding companies. The frequency, thoroughness, and caliber of online research may affect the volume and quality of information analysts receive, ultimately influencing the precision of their forecasts. Earnings management, on the other hand, involves companies altering their financial reports through accounting techniques to their advantage, which can distort their reported financial standing and operational outcomes, thereby affecting analysts' evaluations and predictions. When companies engage in earnings management, it can complicate analysts' efforts to accurately assess a company's financial health, leading to biased forecasts. The findings in

Table 5
Intermediation effect (1).

	(1) DA	(2) Anan	(3) DA	(4) Anan
Online	0.158***	−0.264**		
	(6.35)	(−2.09)		
Ln_Online			0.023**	−1.729***
			(2.18)	(−3.18)
DA		−0.082*		−0.015*
		(−1.76)		(−1.73)
Controls	Yes	Yes	Yes	Yes
Cons	1.715**	0.518	2.195***	0.626
	(2.32)	(1.29)	(3.39)	(1.05)
Ind	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
N	68,986	68,986	68,986	68,986
Adj.R²	0.274	0.165	0.296	0.182

columns (1) and (3) of Table 5 suggest that online research can incentivize companies to engage in earnings management. The coefficients for online research in columns (2) and (4) are lower than those in the primary regression results, indicating that earnings management mediates this relationship. Online research may prompt companies to manage their earnings, which subsequently influences analysts' forecasts. Thus, Hypothesis H2 is supported. Through online research, companies can better understand analysts' concerns and the reasoning behind their forecasts, enabling them to tailor their earnings management strategies to influence analysts' projections. Simultaneously, adjustments to earnings management strategies can further affect analysts' forecast bias. Hence, earnings management serves as a mediator between online research and analysts' forecast bias.

Online research serves as a primary means of information acquisition, providing analysts with direct access to and understanding of a company's business strategy, market environment, and other pertinent factors. The real-time communication and interaction during the research process enable analysts to obtain first-hand information, which can be utilized to make more accurate predictions about a company's future performance.

Disclosure is a vital means by which public companies publicly disseminate information about their management and operations to investors and the public. This information, encompassing the company's financial condition, operating results, and risk profile, is essential for analysts. Through information disclosure, analysts can acquire more detailed insights into the company, allowing them to conduct a more comprehensive assessment of its value and prospects.

Table 6 presents the mediation effect of information disclosure. The results in columns (1) and (3) indicate that online research can encourage firms to disclose information. The results in columns (2) and (4) show that the coefficients for online research are lower than those from the primary regression results, suggesting that information disclosure acts as a mediator in the relationship between online research and analysts' forecasts. Thus, Hypothesis H3 is supported.

Online research facilitates direct communication between analysts and firms, while disclosure provides detailed and official information about the companies. Analysts may use the information disclosed by firms to validate and supplement their initial impressions gained through online research. Therefore, disclosure serves as a crucial bridge between online research and analysts' forecast bias.

4.5. Analysis of moderating effects

The fees associated with participating in online communication, coupled with additional access to information, may form a complementary relationship with the information obtained through online communication. This complementary effect can enhance analysts' ability to identify valid information and make more optimistic forecasts. Field research, another primary method of analyst research, differs notably from online communication. It enables analysts to directly observe a company's operations, engineering, and business units, providing them with a deeper understanding of its production processes, corporate culture, and employee morale.

In this study, the variable "Svisit" is used to indicate whether an analyst has participated in field research with a company within three months prior to the publication of their research report. It takes a value of 1 if the analyst has participated and 0 if they have not. The variable "Lvisit" represents the number of times the analyst has engaged in corporate field exchanges within the same three-month period, with this count being logarithmically transformed. Table 7 demonstrates that participation in both field and online research has complementary effects, contributing to improved analyst forecast accuracy.

4.6. Robustness test

The information resources made available to analysts by their affiliated securities firms may vary due to factors such as location, size, research capabilities, and interest relationships with listed companies. This variability can influence analysts' access to information and their independence, ultimately affecting the quality of their forecasts. To account for these factors, this paper further incorporates brokerage (Brokerage) and region (Region) fixed effects into the baseline regression model. The results presented in Table 8 indicate that the regression results remain robust even after controlling for these fixed effects.

Table 6
Intermediation effect (2).

	(1) Infor	(2) Anan	(3) Infor	(4) Anan
Online	0.213***	−0.184**		
	(6.52)	(−2.19)		
Ln_Online			1.705*	−2.138***
			(1.74)	(−3.39)
Infor		−0.119*		−1.058
		(−1.74)		(−1.05)
Controls	Yes	Yes	Yes	Yes
Cons	2.215***	0.925*	3.327**	1.158**
	(4.26)	(1.74)	(2.29)	(2.06)
Ind	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
N	68,986	68,986	68,986	68,986
Adj.R²	0.225	0.173	0.253	0.196

Table 7
Moderating effects.

	(1) Anan	(2) Anan
Online	0.259***	
	(10.26)	
Svisit	0.067	
	(1.08)	
*Online*Svisit*	−0.235***	
	(−2.89)	
Ln_Online		2.164***
		(8.29)
Lvisit		0.025
		(1.37)
*Ln_Online*Lvisit*		−0.762***
		(−3.29)
Controls	Yes	Yes
Cons	1.157**	1.235***
	(2.26)	(2.58)
Ind	Yes	Yes
Year	Yes	Yes
N	57,276	57,276
Adj.R^2	0.207	0.194

Table 8
Robustness test.

	(1) Anan	(2) Anan
Online	0.337***	
	(5.58)	
Ln_Online		1.729***
		(8.14)
Controls	Yes	Yes
Cons	2.925***	3.326***
	(5.16)	(4.57)
Ind	Yes	Yes
Year	Yes	Yes
Brokerage	Yes	Yes
Region	Yes	Yes
N	52,663	52,663
Adj.R^2	0.179	0.206

5. Conclusions

After a comprehensive analysis of data from China's A-share listed companies spanning 2018 to 2023, this paper elucidates the impact of online communication on analysts' forecasts, with a focus on the mediating roles of earnings management and information disclosure. The study finds that analysts participating in online communication exhibit significantly higher forecast bias compared to non-participants, highlighting the dual-edged nature of online platforms. While these platforms provide direct access to corporate information, they may also introduce bias due to information overload, lack of non-verbal cues, or technological disruptions. Consequently, analysts must diligently screen and integrate information to enhance forecast accuracy. Furthermore, online research empowers firms to gain deeper insights into analysts' concerns and forecast rationale, enabling them to tailor earnings management strategies to influence analysts' projections. This underscores the positive role of online research in fostering information exchange, allowing firms to formulate more effective disclosure and earnings management strategies, thereby enhancing their market reputation and share price performance.

Additionally, the research reveals that online research facilitates corporate disclosure, leading to improved analysts' forecasts. As an efficient and convenient medium, online research enables firms to provide analysts with timely and accurate information regarding their operations, finances, and strategies, thereby reducing information asymmetry in the forecasting process. This enhanced disclosure fosters long-term cooperation and trust between firms and analysts, laying a foundation for sustainable development. In summary, online communication exerts a complex influence on analysts' forecasting, potentially increasing bias or enhancing accuracy through adjustments in disclosure and earnings management strategies. Therefore, analysts should approach online communication with caution and objectivity, while firms should actively embrace new communication methods to strengthen collaboration with analysts and jointly promote the healthy development of the capital market.

CRediT authorship contribution statement

Yiwan Huang: Writing – review & editing, Writing – original draft, Visualization, Validation, Funding acquisition, Formal analysis, Data curation. **Zhanbin Feng:** Writing – review & editing, Writing – original draft, Visualization, Funding acquisition, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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