

The Influence of Environmental, Social, Economic, and Media Factors on Public Opinion Toward Coal Mining and Shipping Businesses

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Abstract— This study analyzes how environmental, social, economic, and media factors affect public opinion toward coal mining and shipping industries in Indonesia. Using quantitative methods and Partial Least Square-Structural Equation Modeling (PLS-SEM), data from 80 respondents were evaluated alongside sentiment analysis of 100 digital media comments. Results indicate that environmental and media factors significantly influence public support or opposition, while social and economic considerations comparatively lack significant impact. The implication is that industry and policymakers seeking greater public trust must prioritize transparent environmental stewardship and effective media communication.

Keywords—public opinion, coal industry, shipping, environmental perceptions, digital sentiment analysis.

I. INTRODUCTION

Coal mining and shipping remain key sectors in Indonesia's economy—supporting energy supply, exports, and employment. However, these industries also face persistent criticism for environmental degradation, social disruption, and perceived economic inequality. Public opinion on these sectors is increasingly shaped through digital platforms such as social media, news portals, and community forums. Understanding the underlying factors influencing public sentiment is crucial for policymakers and industry leaders to foster better relations with affected communities and broader society.

II. LITERATURE REVIEW

A. Public Opinion Formation

Public perception develops through complex interactions of personal experiences, media narratives, and societal discourse. Individual attitudes toward industries are shaped by media coverage, direct local impacts, and the perceived credibility of actors involved in debates (McCombs & Shaw, 2020).

B. Triple Bottom Line & Sustainability

The sustainability of extractive industries is now measured not only in economic returns, but also in environmental stewardship and social responsibility (Elkington, 2020). This approach, known as the triple bottom line, increasingly guides public evaluations of companies.

C. Media Analysis

Digital media analysis enables researchers to quantify evolving public sentiment, track emerging issues, and map shifts in opinion over time. Both manual content analysis and automated sentiment classification (e.g., lexicon-based approaches) are utilized to extract and quantify opinion trends from large data sets.

D. Prior Studies

Previous research highlights a consistent public concern regarding environmental impacts—including water and air pollution, deforestation, and health risks—associated with mining and shipping. Social and economic contributions are acknowledged but are often insufficient to offset negative perceptions unless visible and equitably distributed.

III. METHODOLOGY

A. Research Design

A quantitative, cross-sectional design was used. Data collection involved 80 purposively sampled respondents with knowledge of the coal industry, including residents of affected regions and active observers on social media. An online

questionnaire featuring 5-point Likert-scale items was supported by digital sentiment scraping of 100 public comments.

B. Operational Variables

- **Dependent Variable:**
 - Public Support/Opinion toward mining and shipping, measured by attitudes toward industry existence, government regulation, and environmental preferences.
- **Independent Variables:**
 - Environmental impacts
 - Social effects
 - Economic contributions
 - Media and innovation influence

C. Data Analysis

Analysis combined descriptive statistics, PLS-SEM for hypothesis testing, and lexicon- based sentiment analysis for digital data. Constructs’ validity was ensured by checking outer loading (>0.70), AVE (>0.50), Cronbach’s Alpha, and Composite Reliability (>0.70).

IV. RESULTS

A. Respondent Demographics

- **Gender:** Predominantly male
- **Age:** Majority 20–30 years old
- **Domicile:** Mostly from Java, Kalimantan, Sulawesi, Sumatra
- **Occupation:** Mostly students and private-sector employees

B. Instrument Validity & Reliability

Construct	AVE	Composite Reliability
Environment	0.788	0.937
Social	0.625	0.892
Economic	0.650	0.881
Media/Innovation	0.634	0.838
Support (Y)	0.748	0.899

C. Model Fit and Path Analysis

Relationship	Path Coefficient	t-Statistic	p-Value	Significance
Environment → Public Support	0.302	3.534	0.000	Significant
Social → Public Support	0.104	0.904	0.366	Not significant
Economic → Public Support	0.132	1.049	0.294	Not significant
Media → Public Support	0.467	3.969	0.000	Significant

R-square = 0.764, meaning 76.4% of the variance in public support can be explained by the four independent variables.

D. Sentiment Analysis

Of 100 public comments analyzed from digital media:

- **Negative sentiment:** 67%
- **Positive sentiment:** 33%

Negative comments focused on environmental pollution, displacement, and social injustice. Positive feedback recognized job creation and national energy contributions but was less prevalent.

IV. CONCLUSION

Findings confirm that **environmental impacts** and the **role of media** (including innovation) are the strongest determinants of public support or opposition to coal mining and shipping. Social and economic benefits are insufficient to override public concern over sustainability unless they are inclusively distributed and clearly communicated. Community engagement, transparent reporting, and environmentally-oriented innovations are critical for advancing public trust. Media exposure magnifies both positive and negative narratives, especially among younger and digitally savvy populations.

This study demonstrates that public opinion regarding mining and coal shipping sectors is most heavily influenced by concerns over environmental harm and how these issues are portrayed or mitigated in media. While economic and social variables matter, their real impact on public perception is marginal unless accompanied by solid evidence of sustainability initiatives and transparent communication.

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