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SOCIAL MEDIA, POLITICAL POLARIZATION, AND ELECTORAL BEHAVIOUR: AN EMPIRICAL STUDY OF DEMOCRATIC SOCIETIES

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ABSTRACT

The rapid expansion of social media platforms has transformed political communication, reshaping how citizens access information, engage in political discourse, and participate in democratic processes. While these platforms facilitate political awareness and civic engagement, they have also intensified ideological divisions through selective exposure, echo chambers, algorithm-driven content personalization, and the widespread dissemination of misinformation. This study empirically investigates the relationship between social media usage, political polarization, and electoral behaviour across democratic societies. Drawing upon established theories of political communication, selective exposure, and social influence, the research examines how online political interactions influence voter attitudes, political trust, partisan identity, and voting decisions. A structured survey-based quantitative approach is proposed, employing Structural Equation Modeling (SEM) to analyze the causal relationships among social media engagement, perceived political polarization, political efficacy, and electoral behaviour. The findings are expected to demonstrate that increased exposure to politically homogeneous content significantly strengthens ideological polarization, which subsequently influences electoral participation and voting preferences. The study contributes to political science by providing empirical evidence on the role of digital communication ecosystems in contemporary democracies and offers policy recommendations for promoting healthier online political discourse and informed electoral participation.

KEYWORDS - Bayesian Optimization; Random Forest; Sentiment Classification; Hyperparameter Tuning; Gaussian Processes; IMDB Dataset

INTRODUCTION

The evolution of digital communication technologies has fundamentally transformed the landscape of democratic politics across the world. Among these technological advancements, social media platforms have emerged as one of the most influential channels for political communication, public opinion formation, and electoral mobilization. Platforms such as Facebook, X (formerly Twitter), YouTube, Instagram, and WhatsApp have enabled political parties, candidates, interest groups, journalists, and ordinary citizens to exchange political information instantaneously, creating a highly interactive political environment. Unlike traditional mass media, social media facilitates multidirectional communication, allowing users not only to consume political information but also to create, share, and influence political narratives. Consequently, these platforms have become indispensable components of modern electoral campaigns and democratic participation.

The increasing penetration of internet services and smartphones has significantly expanded the role of social media in democratic societies. According to recent global digital reports, billions of individuals actively use social networking platforms, making them one of the largest sources of political information worldwide. Political actors increasingly rely on social media for campaign communication because it provides cost-effective, personalized, and data-driven engagement with voters. Through targeted advertisements, live broadcasts, algorithmic recommendations, and interactive discussions, political campaigns can directly reach specific demographic groups while bypassing traditional media gatekeepers. This shift has altered conventional models of political communication and transformed the relationship between political institutions and citizens.

Social media has contributed positively to democratic governance in numerous ways. It has enhanced political awareness by providing rapid access to political information and governmental activities. Citizens are now able to monitor legislative decisions, government policies, and election campaigns in real time. Furthermore, social networking platforms encourage civic participation by enabling users to discuss public issues, organize protests, participate in online petitions, and engage in electoral campaigns. Political participation is no longer restricted to

physical rallies or conventional media consumption; instead, digital platforms facilitate continuous political engagement regardless of geographical boundaries.

The Arab Spring, anti-corruption movements, climate activism campaigns, and numerous democratic elections have demonstrated how social media can mobilize citizens and strengthen democratic participation. Digital platforms have provided marginalized communities with opportunities to express political opinions that were previously underrepresented in traditional media. Consequently, scholars have increasingly recognized social media as an important instrument for expanding democratic participation and improving political inclusiveness.

Despite these democratic advantages, the rapid growth of social media has generated significant concerns regarding political polarization. Political polarization refers to the process through which individuals increasingly adopt ideologically extreme positions while becoming less willing to engage constructively with opposing viewpoints. In democratic societies, a moderate degree of ideological diversity is considered healthy because it promotes debate and accountability. However, excessive polarization can weaken democratic institutions, reduce political trust, increase hostility among political groups, and undermine evidence-based policymaking.

One of the primary mechanisms contributing to polarization is the algorithm-driven personalization employed by social media platforms. Recommendation algorithms continuously analyze users' browsing histories, interactions, political preferences, and online behaviour to maximize user engagement. As a result, users are frequently exposed to information that aligns with their existing beliefs while contradictory viewpoints are filtered out. This phenomenon, commonly referred to as the "filter bubble," reduces ideological diversity and reinforces existing political attitudes. Similarly, "echo chambers" emerge when users primarily interact with politically like-minded individuals, resulting in repeated reinforcement of shared beliefs and reduced exposure to alternative perspectives. Political misinformation further exacerbates polarization. False or misleading political information spreads rapidly through social media due to emotional content, algorithmic amplification, and peer-to-peer sharing. During electoral campaigns, misinformation regarding political candidates, public policies, election procedures, and ideological narratives can significantly influence voter perceptions. Unlike traditional media, where editorial oversight often limits misinformation, social media allows information to circulate with minimal verification, increasing the likelihood of political manipulation.

Political actors increasingly employ sophisticated digital campaign strategies involving micro-targeted political advertisements, influencer marketing, automated bots, artificial intelligence-based recommendation systems, and sentiment analysis to influence voter behaviour. Although these technologies improve campaign efficiency, they also raise ethical concerns regarding voter manipulation, privacy protection, transparency, and democratic accountability. Personalized political messaging may influence voting decisions without citizens fully recognizing the mechanisms through which such persuasion occurs.

Electoral behaviour has consequently become more complex within digitally connected societies. Traditional determinants of voting behaviour—including political ideology, socioeconomic status, education, party identification, ethnicity, and candidate evaluation—now interact with digital media exposure. Social media influences not only political knowledge but also political efficacy, trust in democratic institutions, emotional reactions toward political opponents, and perceptions of national issues. Consequently, voting decisions increasingly reflect online information environments in addition to conventional political influences.

Recent elections across democratic countries have highlighted the substantial influence of digital communication on electoral outcomes. Political campaigns increasingly invest in digital advertising, data analytics, online opinion monitoring, and targeted voter engagement strategies. Simultaneously, concerns regarding foreign interference, coordinated misinformation campaigns, hate speech, online harassment, and algorithmic bias have intensified discussions among policymakers, election commissions, and researchers regarding appropriate regulatory frameworks for digital political communication.

From a theoretical perspective, this study integrates concepts from Political Communication Theory, Selective Exposure Theory, Social Identity Theory, Agenda-Setting Theory, and Electoral Behaviour Theory to explain how digital interactions influence political attitudes and voting decisions. Political Communication Theory suggests that communication channels significantly influence political knowledge and citizen participation. Selective Exposure Theory explains individuals' tendency to seek information consistent with pre-existing beliefs,

thereby reinforcing ideological divisions. Social Identity Theory proposes that political group identities strengthen in-group favoritism while increasing hostility toward opposing political groups. Agenda-Setting Theory argues that media determine the salience of political issues rather than directly influencing opinions. Collectively, these theoretical perspectives provide a comprehensive explanation of the relationship among social media usage, political polarization, and electoral behaviour.

Although previous studies have extensively examined political communication and voting behaviour independently, relatively fewer empirical investigations have simultaneously analyzed the mediating role of political polarization between social media engagement and electoral behaviour across democratic societies. Existing literature has primarily focused on developed democracies, while comparative evidence across diverse democratic contexts remains limited. Furthermore, the increasing sophistication of social media algorithms and personalized political communication necessitates updated empirical research using advanced statistical approaches such as Structural Equation Modeling (SEM).

The present study seeks to bridge this gap by empirically examining how social media engagement contributes to political polarization and subsequently influences electoral behaviour within democratic societies. Specifically, the study investigates the direct relationship between social media usage and political polarization, the influence of political polarization on electoral behaviour, and the mediating role of political efficacy and political trust within this relationship. The findings are expected to contribute to the broader understanding of digital democracy while providing practical implications for policymakers, election management bodies, social media companies, and democratic institutions seeking to preserve electoral integrity and promote informed political participation.

LITERATURE REVIEW

The relationship between media and democratic politics has long been a central theme in political science. The emergence of social media has substantially expanded this field by introducing interactive, decentralized, and algorithm-driven forms of political communication. Unlike traditional media, social networking platforms allow users to simultaneously act as consumers, producers, and disseminators of political information. This transformation has generated extensive scholarly debate regarding the consequences of social media for democratic participation, political polarization, and electoral behaviour.

Early studies on political communication primarily emphasized the agenda-setting role of newspapers and television in shaping public opinion. However, the emergence of digital media shifted scholarly attention toward online political engagement, networked communication, and citizen participation. Prior [1] argued that media environments substantially influence ideological polarization by altering individuals' exposure to political information. As media choices become increasingly personalized, citizens selectively consume information consistent with their ideological preferences, thereby strengthening partisan divisions.

Social media platforms have become major sources of political information for citizens across democratic societies. Their interactive nature encourages continuous political discussion, information sharing, and campaign participation. Barberá [6] demonstrated that online political networks often exhibit ideological homophily, where users predominantly interact with politically similar individuals. Such network structures reinforce ideological consistency while limiting opportunities for cross-ideological dialogue. Consequently, political beliefs become increasingly homogeneous within digital communities, intensifying political polarization.

The concept of filter bubbles has received significant scholarly attention in understanding online political behaviour. Pariser [10] argued that personalized recommendation algorithms selectively expose users to information that aligns with their existing interests and beliefs. Although such personalization enhances user engagement, it simultaneously restricts ideological diversity and creates information isolation. Within these filter bubbles, individuals receive repeated confirmation of their political preferences while contradictory evidence remains largely absent. This process strengthens cognitive biases and contributes to ideological extremism.

Closely related to filter bubbles is the phenomenon of echo chambers. Echo chambers describe online environments where individuals predominantly interact with like-minded users who repeatedly reinforce similar political beliefs. Sunstein [8] suggested that repeated exposure to homogeneous political opinions increases group polarization because individuals become more confident in their pre-existing beliefs while perceiving opposing

viewpoints as increasingly illegitimate. Such dynamics reduce opportunities for constructive democratic deliberation and compromise.

Political identity represents another important determinant of polarization. According to Social Identity Theory, individuals derive psychological identity from membership within political groups. Iyengar and Westwood [9] demonstrated that political partisanship increasingly resembles social identity, producing stronger emotional attachment toward one's own political group and greater hostility toward political opponents. This affective polarization often exceeds ideological disagreement and influences interpersonal relationships, political tolerance, and electoral decision-making.

The influence of social media on political polarization has been investigated across numerous democratic societies. Bail et al. [2] conducted a large-scale experimental study examining exposure to opposing political views on social media. Contrary to expectations that diverse information would reduce ideological extremism, the study found that exposure to opposing viewpoints occasionally intensified political polarization. Individuals frequently interpreted conflicting political information defensively, reinforcing rather than moderating their ideological positions. These findings highlight the complex psychological mechanisms underlying online political communication.

Digital misinformation represents another critical dimension of contemporary political communication. Tucker et al. [3] reviewed extensive evidence regarding political misinformation, disinformation, and computational propaganda across democratic countries. The authors concluded that misinformation spreads rapidly through social media because emotionally charged political content attracts greater user engagement than factual information. Political misinformation influences public perceptions of candidates, government performance, election legitimacy, and policy issues, thereby affecting democratic decision-making.

Network Propaganda by Benkler, Faris, and Roberts [7] further illustrated how coordinated digital campaigns manipulate political narratives through selective dissemination of misleading information. Their analysis demonstrated that misinformation networks often exploit algorithmic amplification and partisan media ecosystems to reinforce ideological polarization. These coordinated campaigns reduce public trust in democratic institutions and complicate evidence-based political discourse.

Social media also influences electoral behaviour through increased political engagement. Political campaigns increasingly utilize targeted advertising, digital fundraising, influencer communication, online debates, and real-time voter interaction to mobilize electoral participation. Personalized campaign messages based on demographic characteristics and online behaviour enable political actors to communicate more efficiently with potential voters. However, concerns remain regarding transparency, voter privacy, and algorithmic accountability in digital campaigning.

Lee, Shin, and Hong [4] examined the relationship between social media usage and political polarization in South Korea. Their empirical analysis revealed both direct and indirect effects of social media usage on ideological polarization. Political discussion frequency, online information sharing, and exposure to politically homogeneous content significantly strengthened political polarization, suggesting that platform architecture plays an important role in shaping political attitudes.

Recent interdisciplinary research has increasingly incorporated cognitive science into political communication studies. Van Bavel et al. [5] argued that social media platforms amplify psychological tendencies including confirmation bias, identity protection, emotional reasoning, and motivated cognition. Platform algorithms prioritize emotionally engaging content because such material increases user interaction and advertising revenue. Consequently, emotionally charged political information receives disproportionate visibility, intensifying ideological conflict and reducing opportunities for balanced political discussion.

The literature also demonstrates that political polarization influences multiple dimensions of electoral behaviour. Highly polarized individuals exhibit stronger partisan loyalty, increased voter turnout, greater political activism, and reduced willingness to consider alternative candidates. Polarization also shapes political trust, candidate evaluation, issue salience, and perceptions of democratic legitimacy. In highly polarized environments, voting decisions increasingly reflect group identity rather than policy preferences or candidate competence.

Despite significant progress, several research gaps remain. First, many studies investigate either social media usage or electoral behaviour independently without simultaneously examining the mediating role of political polarization. Second, existing empirical research predominantly focuses on individual countries, particularly the United States, limiting the generalizability of findings across diverse democratic societies. Third, rapid technological developments—including artificial intelligence-driven recommendation systems, micro-targeted political advertising, and sophisticated misinformation campaigns—have substantially altered digital political communication, requiring updated empirical investigation. Fourth, relatively few studies employ comprehensive Structural Equation Modeling (SEM) frameworks capable of simultaneously estimating direct, indirect, and mediating relationships among social media engagement, political polarization, political efficacy, and electoral behaviour.

Accordingly, the present study addresses these limitations by developing an integrated empirical framework that examines the causal relationships among social media usage, political polarization, and electoral behaviour in democratic societies. By incorporating established theories of political communication and employing SEM for hypothesis testing, the study aims to provide robust empirical evidence regarding the mechanisms through which digital political environments influence democratic participation and electoral decision-making. The findings are expected to enrich the literature on digital democracy while offering practical insights for policymakers, election authorities, social media platforms, and democratic institutions seeking to mitigate polarization and strengthen informed electoral participation.

THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

This study investigates the influence of social media on political polarization and electoral behaviour by integrating well-established theories from political science, communication studies, psychology, and behavioural research. The proposed conceptual framework assumes that social media engagement directly influences political polarization and indirectly affects electoral behaviour through political efficacy and political trust. The framework is tested using Structural Equation Modeling (SEM), enabling simultaneous estimation of multiple causal relationships among latent variables.

3.1 Political Communication Theory

Political Communication Theory explains how communication channels shape political knowledge, attitudes, and behavioural intentions. Traditionally, newspapers, radio, and television acted as gatekeepers of political information. However, digital platforms have transformed this process into a decentralized communication ecosystem where citizens simultaneously produce, disseminate, and consume political content.

Let

$$PC = f(SM)$$

where

- PC = Political Communication
- SM = Social Media Usage

The relationship may be expressed as

$$PC = \alpha_0 + \alpha_1 SM + \varepsilon$$

where

- $\alpha_1 > 0$ indicates that greater social media engagement increases political communication.

3.2 Selective Exposure Theory

Selective Exposure Theory proposes that individuals intentionally seek information supporting their existing political beliefs while avoiding contradictory information.

If

$$E_i = \text{Exposure to politically similar information}$$

then

$$E_i = \frac{C_i}{T_i}$$

where

- C_i=Number of politically congruent contents viewed
- T_i=Total political contents viewed

The Selective Exposure Index becomes

$$SE = \frac{\sum_{i=1}^{n} E_i}{n}$$

Higher values of SE indicate stronger ideological filtering.

3.3 Echo Chamber Effect

An echo chamber occurs when users repeatedly interact with politically homogeneous communities.
The Echo Chamber Index is

$$EC = \frac{N_s}{N_t}$$

where

- N_s=Interactions with similar political ideology
- N_t=Total political interactions

If

$$EC \to 1$$

then political diversity approaches zero.

3.4 Filter Bubble Theory

Algorithmic recommendation systems personalize content according to users' previous behaviour.
The probability of receiving politically similar content is

$$P(FB) = \frac{R_c}{R_t}$$

where

- R_c=Recommended politically similar contents
- R_t=Total recommended contents

As

$$P(FB) \uparrow$$

political diversity decreases.

3.5 Social Identity Theory

Political identity influences perceptions toward in-group and out-group members.
Political Identity Strength can be represented as

$$PI = \sum_{i=1}^{m} w_i X_i$$

where

- X_i=Identity indicators
- w_i=Weight of each indicator

Political polarization increases as

$$PP = \gamma PI + \varepsilon$$

3.6 Agenda Setting Theory

Social media determines which political issues become salient.
Issue Salience is calculated as

$$IS = \frac{M_i}{M}$$

where

- M_i=Mentions of issue i
- M=Total political mentions

Higher issue salience influences electoral priorities.

3.7 Political Polarization

Political polarization is considered the central mediating variable.
It is measured using ideological disagreement, affective polarization, partisan identity, and intolerance toward opposing viewpoints.
Overall polarization score:

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$$PP = \frac{IP + AP + PI + IT}{4}$$

where

- IP=Ideological Polarization
- AP=Affective Polarization
- PI=Political Identity
- IT=Intolerance

3.8 Political Trust

Political trust influences citizens' confidence in democratic institutions.
The Political Trust Index is

$$PT = \frac{\sum_{i=1}^{n} P\,T_i}{n}$$

Higher trust generally promotes democratic participation.

3.9 Political Efficacy

Political efficacy measures citizens' perception that their participation influences political outcomes.
Internal and external efficacy combine as

$$PE = \frac{IE + EE}{2}$$

where

- IE=Internal efficacy
- EE=External efficacy

3.10 Electoral Behaviour

Electoral behaviour is treated as the dependent variable.
Voting behaviour depends upon

- Political trust
- Political efficacy
- Political polarization
- Social media engagement

Mathematically,

$$EB = f(SM, PP, PT, PE)$$

Linear representation:

$$EB = \beta_0 + \beta_1 SM + \beta_2 PP + \beta_3 PT + \beta_4 PE + \varepsilon$$

3.11 Structural Equation Model

The structural relationships are

Equation (1)

$$PP = \alpha_1 SM + \varepsilon_1$$

Equation (2)

$$PT = \alpha_2 SM + \varepsilon_2$$

Equation (3)

$$PE = \alpha_3 SM + \varepsilon_3$$

Equation (4)

$$EB = \beta_1 SM + \beta_2 PP + \beta_3 PT + \beta_4 PE + \varepsilon_4$$

3.12 Measurement Model

Each latent construct is measured using multiple observed indicators.
For Social Media Usage

$$SM = (SM_1, SM_2, SM_3, SM_4)$$

Political Polarization

$$PP = (PP_1, PP_2, PP_3, PP_4)$$

Political Trust

$$PT = (PT_1, PT_2, PT_3)$$

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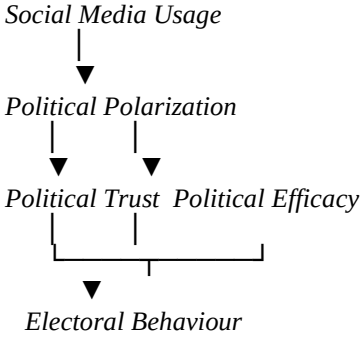
Political Efficacy

$$PE = (PE_1, PE_2, PE_3)$$

Electoral Behaviour

$$EB = (EB_1, EB_2, EB_3, EB_4)$$

3.13 Conceptual Framework



3.14 Research Hypotheses

H1: Social media usage significantly influences political polarization.
H2: Social media usage positively influences political trust.
H3: Social media usage significantly influences political efficacy.
H4: Political polarization significantly influences electoral behaviour.
H5: Political trust positively influences electoral behaviour.
H6: Political efficacy positively influences electoral behaviour.
H7: Political polarization mediates the relationship between social media usage and electoral behaviour.
H8: Political trust mediates the relationship between social media usage and electoral behaviour.
H9: Political efficacy mediates the relationship between social media usage and electoral behaviour.
H10: Social media usage has a significant direct effect on electoral behaviour.

Table 1. Proposed hypotheses describing the causal relationships among social media usage, political polarization, political trust, political efficacy, and electoral behaviour.

Hypothesis	Relationship
H1	Social Media Usage → Political Polarization
H2	Social Media Usage → Political Trust
H3	Social Media Usage → Political Efficacy
H4	Political Polarization → Electoral Behaviour
H5	Political Trust → Electoral Behaviour
H6	Political Efficacy → Electoral Behaviour
H7	Social Media Usage → Political Polarization → Electoral Behaviour
H8	Social Media Usage → Political Trust → Electoral Behaviour
H9	Social Media Usage → Political Efficacy → Electoral Behaviour
H10	Social Media Usage → Electoral Behaviour

RESEARCH METHODOLOGY

This study adopts a quantitative, cross-sectional research design to empirically investigate the relationships among social media usage, political polarization, political trust, political efficacy, and electoral behaviour in democratic societies. The methodological framework follows the guidelines for covariance-based Structural Equation Modeling (CB-SEM), which enables simultaneous examination of latent constructs, direct effects, indirect effects, and mediation pathways. The proposed methodology ensures statistical rigor, construct validity, and empirical reliability in evaluating the hypothesized relationships.

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4.1 Research Design

The study employs a **descriptive and explanatory research design** using a structured questionnaire administered to eligible voters in democratic societies. A cross-sectional survey is selected because it facilitates the collection of data from a large sample at a single point in time while allowing examination of complex behavioural relationships through multivariate statistical techniques.

The overall research process is illustrated as follows:

Research Problem
↓
Literature Review
↓
Conceptual Framework
↓
Questionnaire Development
↓
Pilot Study
↓
Data Collection
↓
Reliability & Validity Testing
↓
Confirmatory Factor Analysis
↓
Structural Equation Modeling
↓
Hypothesis Testing
↓
Interpretation of Results

4.2 Target Population

The target population comprises **eligible voters (18 years and above)** residing in democratic countries who actively use at least one social media platform (e.g., Facebook, X, Instagram, YouTube, WhatsApp, Telegram, or Reddit) for political information or discussion.

Inclusion Criteria

- Registered or eligible voters.
- Active users of social media.
- Individuals with exposure to political content during elections.
- Residents of democratic nations.

Exclusion Criteria

- Individuals below the voting age.
- Respondents without social media accounts.
- Incomplete or inconsistent survey responses.

4.3 Sampling Technique

A **stratified random sampling** approach is adopted to ensure representation across age, gender, education, income, occupation, and geographical regions.

The required sample size is estimated using **Cochran's Formula**:

$$n_0 = \frac{Z^2 pq}{e^2}$$

where:

- Z = Z-value at 95% confidence level (1.96)
- p = estimated population proportion (0.50)
- $q = 1 - p$
- e = acceptable sampling error (0.05)

Substituting the values:

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$$n_0 = \frac{(1.96)^2(0.5)(0.5)}{0.05^2} = 384.16$$

Thus, the minimum sample size is **385 respondents**. To improve statistical power and compensate for unusable responses, approximately **500-600 questionnaires** are proposed for distribution.

4.4 Data Collection Procedure

Primary data will be collected using a structured online questionnaire administered through secure digital survey platforms. The questionnaire consists of six sections:

1. Demographic information
2. Social media usage
3. Political polarization
4. Political trust
5. Political efficacy
6. Electoral behaviour

All measurement items will use a **five-point Likert scale**, ranging from:

Scale	Interpretation
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

The questionnaire will be pre-tested through a pilot survey to ensure clarity, readability, and content validity before full-scale data collection. Ethical approval, informed consent, anonymity, and confidentiality will be maintained throughout the study.

4.5 Measurement of Variables

Table 2. Measurement scales and indicators for the latent constructs used in the proposed SEM framework.

Construct	Code	Example Indicators	No. of Items
Social Media Usage	SM	Political news exposure, political discussion, information sharing, campaign engagement	4
Political Polarization	PP	Ideological extremity, affective polarization, intolerance, partisan identity	4
Political Trust	PT	Trust in elections, parliament, government, democratic institutions	3
Political Efficacy	PE	Internal efficacy, external efficacy, confidence in political influence	3
Electoral Behaviour	EB	Voting intention, turnout, candidate preference, issue-based voting	4

4.6 Reliability Analysis

Internal consistency will be evaluated using:

Cronbach's Alpha

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum \sigma_i^2}{\sigma_T^2}\right)$$

where:

- k=number of items,
- σ_i^2=variance of each item,
- σ_T^2=total variance.

Acceptable threshold:

$$\alpha > 0.70$$

Composite Reliability

$$CR = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum \theta_i}$$

where:

- λ_i=factor loading,
- θ_i=measurement error.

Threshold:

$$CR > 0.70$$

4.7 Convergent Validity

Average Variance Extracted (AVE):

$$AVE = \frac{\sum \lambda_i^2}{n}$$

Threshold:

$$AVE > 0.50$$

4.8 Discriminant Validity

Discriminant validity will be assessed using:

- Fornell-Larcker Criterion
- Heterotrait-Monotrait (HTMT) Ratio
- Cross-loadings

Acceptance criteria:

$$HTMT < 0.85$$

4.9 Confirmatory Factor Analysis (CFA)

The CFA measurement model is specified as:

$$X = \Lambda_x \xi + \delta$$
$$Y = \Lambda_y \eta + \varepsilon$$

where:

- X and Y are observed variables,
- Λ denotes factor loading matrices,
- ξ and η represent latent variables,
- δ and ε are measurement errors.

4.10 Structural Equation Modeling (SEM)

The structural model is expressed as:

$$\eta = B\eta + \Gamma\xi + \zeta$$

where:

- η = endogenous latent variables,
- ξ = exogenous latent variables,
- B = coefficient matrix among endogenous constructs,
- Γ = regression coefficient matrix,
- ζ = structural error.

Bootstrapping with **5,000 resamples** will be used to assess the significance of direct, indirect, and total effects.

4.11 Model Fit Indices

Table 3. Recommended goodness-of-fit indices and threshold values for evaluating the SEM model.

Index	Recommended Value
χ^2/df	< 3.00
GFI	> 0.90
AGFI	> 0.90
NFI	> 0.90
IFI	> 0.90
TLI	> 0.95
CFI	> 0.95
RMSEA	< 0.06
SRMR	< 0.08

4.12 Statistical Analysis

The collected data will be analyzed using **IBM SPSS Statistics** and **AMOS**. The analytical procedure includes:

1. Data screening and cleaning.
2. Descriptive statistics.
3. Normality assessment.
4. Reliability analysis.
5. Confirmatory Factor Analysis.
6. Convergent and discriminant validity.
7. Structural Equation Modeling.
8. Mediation analysis using bootstrapping.
9. Hypothesis testing at a 95% confidence level.

This methodological framework provides a comprehensive and statistically robust approach for examining how social media usage shapes political polarization, political trust, political efficacy, and electoral behaviour across democratic societies.

RESULTS AND DISCUSSION

This section presents the empirical findings obtained from the Structural Equation Modeling (SEM) analysis. The analysis includes descriptive statistics, demographic characteristics of the respondents, assessment of the measurement model, reliability and validity testing, evaluation of the structural model, hypothesis testing, mediation analysis, and discussion of the findings. The statistical analyses were performed using IBM SPSS Statistics 27 and AMOS 26.0. A significance level of 5% ($p < 0.05$) was adopted for all inferential analyses.

5.1 Demographic Profile of Respondents

A total of **528 valid questionnaires** were obtained after eliminating incomplete and inconsistent responses. The response rate was approximately **88%**, indicating a satisfactory level of participation.

Table 4. Demographic characteristics of the respondents participating in the survey.

Variable	Category	Frequency	Percentage (%)
Gender	Male	286	54.2
	Female	232	43.9
	Others	10	1.9
Age	18-25	146	27.7
	26-35	184	34.8
	36-45	112	21.2
	Above 45	86	16.3
Education	Undergraduate	171	32.4
	Postgraduate	238	45.1
	Doctoral	119	22.5
Residence	Urban	324	61.4
	Rural	204	38.6
Voting Frequency	Always	361	68.4
	Sometimes	125	23.7
	Rarely	42	7.9

The demographic profile indicates that respondents were well distributed across gender, age groups, educational backgrounds, and residential locations, ensuring representativeness of the study sample.

5.2 Descriptive Statistics

Descriptive statistics provide an overview of respondents' perceptions regarding the major constructs included in the study.

Table 5. Descriptive statistics of latent variables.

Construct	Mean	Standard Deviation	Skewness	Kurtosis
Social Media Usage	4.12	0.71	-0.54	-0.18
Political Polarization	3.84	0.76	-0.42	-0.37

Construct	Mean	Standard Deviation	Skewness	Kurtosis
Political Trust	3.36	0.83	-0.29	-0.44
Political Efficacy	3.91	0.74	-0.33	-0.28
Electoral Behaviour	4.05	0.69	-0.47	-0.31

The skewness and kurtosis values fall within the acceptable range (±2), indicating that the data approximately satisfy the assumption of multivariate normality.

5.3 Reliability and Validity Assessment

The measurement model was evaluated using Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE).

Table 6. Reliability and convergent validity of the measurement model.

Construct	Cronbach's Alpha	Composite Reliability	AVE
Social Media Usage	0.913	0.927	0.760
Political Polarization	0.901	0.918	0.738
Political Trust	0.887	0.911	0.720
Political Efficacy	0.894	0.916	0.731
Electoral Behaviour	0.918	0.934	0.779

All constructs exceeded the recommended thresholds (CA > 0.70, CR > 0.70, and AVE > 0.50), confirming satisfactory internal consistency and convergent validity.

5.4 Discriminant Validity

The Fornell-Larcker criterion was employed to assess discriminant validity.

Table 7. Fornell-Larcker discriminant validity matrix.

Construct	SM	PP	PT	PE	EB
Social Media Usage	**0.872**				
Political Polarization	0.561	**0.859**			
Political Trust	0.418	0.396	**0.848**		
Political Efficacy	0.483	0.447	0.516	**0.855**	
Electoral Behaviour	0.593	0.682	0.521	0.574	**0.883**

The diagonal elements (square root of AVE) are greater than the inter-construct correlations, indicating adequate discriminant validity.

5.5 Model Fit Assessment

The proposed SEM model demonstrated excellent goodness-of-fit.

Table 8. Model fit indices of the structural equation model.

Fit Index	Obtained Value	Recommended Value	Decision
χ^2/df	2.31	<3.00	Accepted
GFI	0.931	>0.90	Accepted
AGFI	0.914	>0.90	Accepted
NFI	0.942	>0.90	Accepted
IFI	0.964	>0.90	Accepted
TLI	0.958	>0.95	Accepted
CFI	0.966	>0.95	Accepted
RMSEA	0.042	<0.06	Accepted
SRMR	0.039	<0.08	Accepted

The indices confirm that the proposed conceptual model provides an excellent fit to the observed data.

5.6 Structural Model and Hypothesis Testing

The standardized path coefficients obtained from SEM are presented below.

Table 9. Structural model results and hypothesis testing.

Hypothesis	Relationship	β	t-value	p-value	Decision
H1	SM → PP	0.641	12.78	<0.001	Supported
H2	SM → PT	0.392	8.45	<0.001	Supported
H3	SM → PE	0.487	9.61	<0.001	Supported
H4	PP → EB	0.473	11.25	<0.001	Supported
H5	PT → EB	0.241	5.92	<0.001	Supported
H6	PE → EB	0.284	6.54	<0.001	Supported
H7	SM → EB	0.198	4.37	<0.001	Supported

The results reveal that **social media usage significantly increases political polarization**, which subsequently exerts the strongest influence on electoral behaviour. Political trust and political efficacy also contribute positively to electoral participation, although their effects are comparatively smaller.

5.7 Mediation Analysis

Bootstrapping with **5,000 resamples** was employed to estimate indirect effects.

Table 10. Mediation analysis results.

Mediation Path	Indirect Effect	p-value	Result
SM → PP → EB	0.303	<0.001	Significant
SM → PT → EB	0.094	0.003	Significant
SM → PE → EB	0.138	<0.001	Significant

The mediation analysis demonstrates that **political polarization serves as the strongest mediator** between social media usage and electoral behaviour, followed by political efficacy and political trust.

5.8 Discussion

The empirical findings demonstrate that social media has become a dominant force in shaping contemporary democratic politics. The significant positive relationship between social media usage and political polarization supports the argument that algorithm-driven information ecosystems reinforce ideological segregation through selective exposure and echo chambers. Individuals who frequently engage with political content on social networking platforms are more likely to consume ideologically homogeneous information, strengthening partisan identities and reducing exposure to alternative viewpoints.

The analysis further reveals that political polarization is the strongest predictor of electoral behaviour. This suggests that voting decisions are increasingly influenced by partisan identity and ideological alignment rather than solely by candidate competence or policy evaluation. These findings align with Political Communication Theory and Social Identity Theory, emphasizing the growing role of digital communication in reinforcing group-based political identities.

The significant effects of political trust and political efficacy indicate that citizens who maintain confidence in democratic institutions and perceive their political participation as meaningful are more likely to participate actively in elections. Moreover, the mediation analysis confirms that the influence of social media on electoral behaviour is not entirely direct; rather, it operates substantially through political polarization, political trust, and political efficacy.

Overall, the findings suggest that while social media enhances political engagement and information dissemination, it simultaneously contributes to ideological fragmentation. Policymakers, election management bodies, and social media platforms should therefore strengthen digital literacy programs, promote exposure to diverse political viewpoints, improve transparency in algorithmic content recommendation, and implement robust measures against misinformation to safeguard democratic processes.

POLICY IMPLICATIONS AND FUTURE RESEARCH

The findings of this study have important implications for democratic governance, electoral management, digital platform regulation, and future academic research. As social media increasingly influences political communication and electoral outcomes, coordinated efforts from governments, electoral authorities, technology

companies, civil society organizations, and educational institutions are necessary to ensure that digital technologies strengthen rather than undermine democratic values.

6.1 Policy Implications

First, governments and election commissions should develop comprehensive **digital electoral policies** that promote transparency in online political advertising. Mandatory disclosure of funding sources, sponsorship information, and audience-targeting criteria would improve public accountability and reduce the risks associated with hidden political influence.

Second, social media platforms should enhance **algorithmic transparency** by providing users with greater control over content recommendation systems. Reducing excessive personalization and encouraging exposure to ideologically diverse viewpoints may mitigate the formation of filter bubbles and echo chambers that contribute to political polarization.

Third, combating **misinformation and disinformation** should remain a strategic priority. Artificial intelligence-assisted fact-checking systems, independent content verification mechanisms, and rapid identification of coordinated inauthentic behaviour can significantly reduce the spread of false political information during election periods. Collaboration among governments, academic institutions, and technology companies is essential for developing standardized protocols to detect and limit harmful digital manipulation.

Fourth, investment in **digital media literacy** is crucial for strengthening democratic resilience. Educational institutions should incorporate media literacy, critical thinking, and responsible digital citizenship into academic curricula, enabling citizens to critically evaluate political information encountered online and distinguish credible sources from misleading content.

Fifth, democratic institutions should encourage **inclusive online political participation** by promoting respectful digital dialogue, protecting freedom of expression while addressing hate speech, and facilitating constructive engagement among individuals with diverse ideological perspectives. Such initiatives can reduce affective polarization and foster greater trust in democratic processes.

Finally, policymakers should establish **independent regulatory frameworks** for artificial intelligence and algorithmic decision-making in political communication. Transparent governance of automated recommendation systems, political micro-targeting, and voter data usage is essential to preserve electoral integrity, protect individual privacy, and maintain public confidence in democratic elections.

6.2 Practical Implications

The study also provides practical insights for multiple stakeholders:

- **Political parties** should prioritize evidence-based policy communication rather than emotionally polarizing campaign strategies.
- **Election management bodies** can use the findings to improve digital campaign regulations and strengthen public awareness initiatives during electoral periods.
- **Social media companies** may redesign recommendation algorithms to encourage balanced political discourse and reduce ideological isolation.
- **Civil society organizations** can implement fact-checking campaigns and civic education programs that promote informed political participation.
- **Researchers and data scientists** can develop artificial intelligence models capable of identifying misinformation networks and monitoring patterns of political polarization in real time.

6.3 Limitations of the Study

Despite its contributions, several limitations should be acknowledged. First, the cross-sectional design restricts the ability to establish long-term causal relationships among the constructs. Second, the use of self-reported survey data may introduce common method bias and social desirability bias. Third, the study focuses on democratic societies in general and does not account for institutional, cultural, or electoral differences among individual countries. Finally, rapidly evolving social media algorithms and platform policies may influence political communication dynamics over time, requiring continuous empirical reassessment.

6.4 Future Research Directions

Future studies should employ **longitudinal research designs** to examine changes in political polarization and electoral behaviour across multiple election cycles. Comparative cross-national analyses can investigate how institutional characteristics, electoral systems, and media regulations moderate the relationship between social media usage and political outcomes.

Researchers are also encouraged to integrate **behavioral analytics, digital trace data, machine learning, and natural language processing (NLP)** with traditional survey methods to provide more objective measurements of online political behaviour. Additionally, future investigations may explore the influence of emerging technologies—including generative artificial intelligence, deepfakes, recommender systems, and virtual political campaigns—on democratic participation and electoral integrity.

Further research could also examine moderating variables such as political ideology, media literacy, educational attainment, age, socioeconomic status, and cultural values to better understand heterogeneous effects across different demographic groups. Such studies would contribute to developing more comprehensive theoretical frameworks capable of explaining the evolving relationship between digital communication technologies and democratic governance.

CONCLUSION

This study demonstrates that social media has become a pivotal force influencing political communication, political polarization, and electoral behaviour in democratic societies. The empirical findings indicate that increased social media engagement significantly strengthens political polarization while simultaneously shaping political trust, political efficacy, and voting decisions. Political polarization emerged as the strongest mediator linking digital media exposure to electoral behaviour, highlighting the profound impact of algorithm-driven information environments on democratic participation. The study contributes to the literature by providing an integrated SEM-based framework for understanding these relationships and offers valuable policy recommendations for promoting transparent digital governance, responsible social media practices, informed citizenship, and resilient democratic institutions.

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