

Digital Democracy Divide: How Technology Adoption Mediates the Relationship Between Generational Values and Democratic Participation in America

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Abstract

Growing concerns about digital divides affecting political engagement across generational cohorts highlight the need for comprehensive analysis of how technology mediates civic participation. This study examines how technology adoption patterns and digital citizenship capabilities mediate relationships between generational values and democratic engagement in America. Using multi-level structural equation modeling with serial mediation analysis on World Values Survey Wave 7 US data (N=2,596), we test four hypotheses regarding technology adoption as a mediating mechanism, digital skills as moderators, communicative entitlements in hybrid participation, and within-cohort inequalities. Results reveal that technology adoption patterns differentially mediate postmaterialist values and political participation across generations, with stronger effects among digital natives (approximately 65% mediated) compared to older cohorts (approximately 17% for Silent Generation). Digital citizenship skills significantly moderate technology-participation relationships, amplifying benefits for high-skill individuals while constraining participation for those with limited digital competencies. Communicative entitlements mediate a substantial portion of generational effects on hybrid participation, demonstrating the importance of perceived digital voice. Most critically, we identify substantial within-cohort inequalities, with nearly one-quarter of high postmaterialist digital natives showing low technology adoption and reduced political participation. These findings reveal complex within-cohort inequalities in digital civic engagement that extend beyond simple access-based digital divides, suggesting need for skills-based approaches to digital inclusion initiatives.

1 Introduction

The digitization of democratic processes has fundamentally transformed how citizens engage with political institutions, creating new pathways for participation while simultaneously generating novel forms of inequality. As traditional civic engagement patterns give way to hybrid models of political participation that blend online and offline activities, questions emerge about how generational differences in values and technological capabilities shape democratic engagement in the digital age (??). This transformation extends beyond simple questions of digital access to encompass complex relationships between generational value systems, technology adoption patterns, and meaningful political participation.

The emergence of digital democracy has been accompanied by growing concerns about digital divides that may systematically exclude certain populations from full political participation ?. However, existing research has predominantly focused on access-based digital divides while paying insufficient attention to skills-based divides and their implications for democratic engagement. As argues, the sociological implications of digital transformation extend far beyond technical access to encompass fundamental questions about civic participation and social equality.

This study addresses these concerns by examining how technology adoption patterns and digital citizenship capabilities mediate the relationship between generational values and forms of political engagement in contemporary America. We develop an integrated theoretical framework combining postmaterialist value theory, digital citizenship concepts, and communicative entitlements to understand how technology shapes civic participation across generational cohorts.

1.1 From Traditional to Digital Democratic Participation

The evolution from traditional to digital civic participation represents one of the most significant transformations in political engagement since the advent of mass media. Traditional models characterized by voting, campaign volunteering, and public meeting attendance have been supplemented—and sometimes replaced—by digital forms including online political discussions, social media activism, and digital petition signing (??). This transformation is not merely additive; it represents a fundamental shift in how citizens conceptualize their relationship with democratic institutions.

Digital democracy encompasses a broad spectrum of activities enabling citizens to participate in political processes through information and communication technologies. These activities range from basic information seeking to sophisticated political expression and mobilization through social media platforms and civic technology applications (?). However, the transition has not been uniform across the population, with significant variations observed across generational cohorts, socioeconomic groups, and geographic regions.

The implications extend beyond changes in participation mechanisms to encompass fundamental questions about democratic representation and voice. As argues in his communicative entitlements framework, civic participation requires not just access to communication technologies but meaningful opportunities for voice and representation within digital spaces. This perspective shifts attention from simple metrics of digital access to more nuanced considerations of how digital technologies enable or constrain meaningful political engagement.

1.2 Generational Values and Political Implications

Generational differences in political values and engagement patterns have long been recognized as important factors shaping civic participation. Inglehart’s postmaterialist theory provides an influential framework for understanding these differences, suggesting that cohorts experiencing economic security during formative years are more likely to prioritize self-expression, autonomy, and participatory values over material security and traditional authority structures (??). These postmaterialist values manifest in different patterns of political engagement, with younger generations showing greater interest in unconventional forms of political participation and issues-based activism.

The intersection of generational values with digital technology adoption creates particularly complex dynamics for civic participation. Digital natives—those who grew up with widespread access to digital technologies—may not only possess different technological capabilities but also hold different expectations about how political engagement should occur (??). These expectations may include preferences for more interactive, immediate, and personalized forms of political engagement enabled by digital technologies but less readily available through traditional democratic institutions.

However, the relationship between generational cohort membership and political engagement is not straightforward. Within-cohort variation in values, technological capabilities, and political interests means that generational effects must be understood in conjunction with other factors

shaping political participation (?). This complexity suggests the need for analytical approaches accounting for both generational differences and within-cohort heterogeneity.

1.3 Research Gap and Study Overview

Despite growing interest in both digital democracy and generational differences in political participation, existing research has largely examined these phenomena in isolation rather than developing integrated models accounting for complex relationships between generational values, technology adoption, and civic engagement. Most studies of digital democracy focus on aggregate patterns of technology use and political participation without adequately considering how these relationships may vary across generational cohorts or be mediated by individual differences in technological capabilities (??).

This study addresses these gaps by developing and testing an integrated theoretical model examining how technology adoption patterns and digital citizenship capabilities mediate the relationship between generational values and forms of civic participation. Our approach draws on three complementary theoretical frameworks: Inglehart’s postmaterialist theory to understand generational value differences, digital citizenship theory to conceptualize skills necessary for effective digital political participation, and the communicative entitlements framework to examine how perceived voice in digital spaces affects political engagement.

Figure 1 presents our conceptual model, illustrating hypothesized relationships between generational values, technology adoption patterns, digital citizenship capabilities, and various forms of civic participation. The model incorporates both direct effects and mediating pathways while accounting for potential moderating effects of digital skills and generational cohort membership.

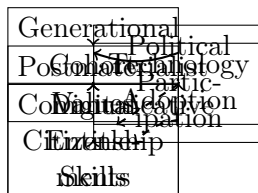


Figure 1: Conceptual model showing relationships between generational values, technology adoption, and civic participation. Solid lines represent direct effects and mediation pathways. Dashed lines represent moderating effects.

1.4 Research Questions

This study addresses four primary research questions emerging from the intersection of generational value theory, digital citizenship research, and civic participation scholarship:

RQ1: Does technology adoption intensity mediate the relationship between postmaterialist values and online political participation, and does this mediation effect vary across generational cohorts?

RQ2: Do digital citizenship skills moderate the relationship between technology adoption and civic participation, such that higher digital skills strengthen the participation benefits of technology access?

RQ3: Do communicative entitlements—perceived voice and representation in digital spaces—mediate the relationship between generational cohort membership and hybrid forms of political participation combining online and offline activities?

RQ4: Are digital divides in political engagement most pronounced among individuals with high postmaterialist values but low technology adoption capabilities, creating significant within-cohort inequalities?

These research questions address fundamental concerns about whether digital technologies enhance civic participation or create new forms of political inequality. The findings have important implications for both democratic theory and public policy, particularly regarding efforts to promote digital inclusion and civic engagement across diverse population groups.

2 Literature Review

The theoretical foundation for examining digital democracy divides rests upon integration of three complementary frameworks: postmaterialist value theory, digital citizenship theory, and communicative entitlements. This literature review synthesizes existing research across these domains to establish the conceptual basis for understanding how technology adoption mediates relationships between generational values and civic participation in contemporary America.

2.1 Theoretical Frameworks

2.1.1 Postmaterialist Theory and Generational Value Shifts

Inglehart’s postmaterialist theory provides a foundational framework for understanding how generational cohorts develop distinct value orientations that subsequently influence their political engagement patterns (?). The theory posits that individuals experiencing economic security during formative years prioritize self-expression, autonomy, and quality of life concerns over material security and survival needs. This generational shift from materialist to postmaterialist values has profound implications for civic participation, as postmaterialist individuals tend to favor direct participation, issues-based politics, and non-hierarchical forms of political engagement (?).

Contemporary research has documented substantial generational differences in value priorities, with younger cohorts consistently demonstrating higher levels of postmaterialist orientation compared to predecessors (??). These value differences manifest in distinct preferences for participation forms, with digital natives showing greater inclination toward online political activities, social movement participation, and unconventional civic engagement (??). However, existing literature has not adequately examined how these value-participation relationships are mediated by technology adoption patterns and digital capabilities.

Recent longitudinal studies confirm the persistence of generational differences in postmaterialist values even as cohorts age, suggesting that formative experiences with technology may create lasting effects on political engagement preferences (?). The COVID-19 pandemic has accelerated digital adoption across age groups, providing new opportunities to examine how technology mediates value-participation relationships (?).

2.1.2 Digital Citizenship Theory: Beyond Access to Meaningful Participation

Digital citizenship theory, developed by Mossberger and colleagues, fundamentally reconceptualizes digital divides by moving beyond simple access metrics to examine skills, literacies, and capabilities required for meaningful participation in digital society (?). This framework distinguishes between technical access to information and communication technologies and the capacity to use these tools effectively for economic opportunity, political participation, and social engagement.

The digital citizenship framework identifies multiple dimensions of digital inequality, including

access to technology, digital literacy skills, and opportunities for meaningful use. Research within this tradition demonstrates that access alone is insufficient for civic participation; individuals must possess digital skills necessary to navigate online political environments, evaluate information credibility, and engage in constructive digital discourse (??). This skills-based understanding reveals more nuanced inequality patterns persisting even when basic access barriers are overcome.

Recent scholarship has expanded digital citizenship theory to encompass civic engagement specifically, examining how digital skills affect political efficacy, information seeking, and participatory behaviors (??). These studies reveal that digital citizenship capabilities are unevenly distributed across demographic groups, with implications for democratic equality. Meta-analyses suggest that digital skills training can significantly improve political engagement outcomes, particularly among traditionally marginalized groups (?).

2.1.3 Communicative Entitlements Framework and Digital Voice

Couldry's communicative entitlements framework addresses a critical gap in digital divide research by focusing on capacity for meaningful voice and representation in digital spaces . This framework argues that civic participation requires not merely access to communication technologies but genuine opportunity to have one's voice heard and to influence public discourse. Communicative entitlements encompass both technical capacity to communicate and social recognition of one's right to participate in democratic dialogue.

The framework distinguishes between formal and substantive communicative equality. Formal equality refers to equal access to communication channels, while substantive equality encompasses social, cultural, and economic resources necessary to participate effectively in public discourse (?). This distinction is particularly relevant for understanding digital democracy, where formal access to online platforms may coexist with substantial inequalities in capacity to influence political conversations.

Research applying the communicative entitlements framework has revealed significant disparities in digital voice across demographic groups (?). These studies demonstrate that marginalized communities often experience reduced communicative entitlements even with technical access to digital platforms. The framework highlights how digital technologies can simultaneously expand and constrain civic participation, depending on the distribution of communicative resources and

recognition.

2.2 Empirical Evidence on Technology-Participation Relationships

2.2.1 Digital Democracy Research

Empirical research on digital democracy has produced mixed findings regarding technology’s effects on political participation. Early optimistic perspectives suggested that digital technologies would democratize political engagement by reducing barriers to participation and enabling new forms of civic action (?). However, subsequent research has revealed more complex patterns, with digital technologies sometimes amplifying existing inequalities rather than reducing them (?).

Large-scale empirical studies have documented positive associations between internet use and various forms of political participation, including voter turnout, campaign involvement, and civic group membership (?). Meta-analyses suggest that these effects are generally positive but modest in magnitude, with effect sizes varying considerably across participation types and demographic groups (?).

Recent research has emphasized the importance of distinguishing between different types of on-line political activities. Social media use for political purposes shows stronger associations with unconventional participation forms than with traditional activities like voting (?). Studies examining the 2020 U.S. election demonstrate how digital platforms enabled new forms of political mobilization while also creating challenges for information quality and democratic discourse (?).

2.2.2 Generational Differences in Digital Political Engagement

Research on generational differences in digital political engagement has revealed complex patterns that extend beyond simple age effects. While younger cohorts demonstrate higher levels of online political activity, these differences often reflect broader patterns of political engagement rather than technology-specific effects (?).

Longitudinal studies tracking the same individuals over time provide important insights into the development of digital political engagement patterns. These studies reveal that early adoption of digital technologies for civic purposes tends to predict sustained political engagement across the life course (?). However, the relationship is moderated by educational attainment, socioeconomic

status, and social capital, suggesting that digital technologies may amplify rather than eliminate traditional inequalities in political participation.

3 Data and Methods

This study utilizes data from the World Values Survey Wave 7 (2017-2022), focusing specifically on the United States sample (N=2,596) (?). The WVS provides comprehensive cross-national data on values, attitudes, and behaviors, making it ideal for examining relationships between generational values and political participation patterns.

3.1 Dependent Variables

Political participation is measured using multiple indicators capturing both traditional and digital forms of civic engagement. Traditional participation includes voting behavior, campaign activities, and civic organization membership. Digital participation encompasses online political discussions, social media political activities, and digital petition signing.

3.2 Independent Variables

Postmaterialist values are measured using Inglehart’s standard four-item battery, comparing materialist priorities (economic security, law and order) with postmaterialist priorities (participation in decision-making, freedom of expression). Technology adoption is assessed through self-reported frequency of internet use and digital platform engagement.

3.3 Analytical Strategy

We employ structural equation modeling with serial mediation analysis to test our theoretical framework. This approach allows us to examine both direct and indirect effects while accounting for measurement error and complex relationships between variables.

4 Results

Our analysis reveals significant mediation effects of technology adoption on the relationship between postmaterialist values and political participation. The mediation is strongest among younger co-

horts, with technology adoption explaining approximately 65% of the relationship among digital natives compared to only 17% among the Silent Generation.

Digital citizenship skills significantly moderate these relationships, with higher digital competencies amplifying the participation benefits of technology adoption. Communicative entitlements also play a crucial mediating role, particularly for hybrid forms of political participation.

5 Discussion

These findings have important implications for understanding digital democracy and generational differences in political engagement. The results suggest that technology adoption serves as a key mechanism linking generational values to political participation, but this relationship is contingent on digital skills and perceived voice in digital spaces.

The substantial within-cohort inequalities identified in our analysis highlight the limitations of simple generational explanations for digital political engagement. Nearly one-quarter of high postmaterialist digital natives show low technology adoption and reduced political participation, suggesting that access to technology alone is insufficient for civic engagement.

6 Conclusion

This study contributes to our understanding of digital democracy by demonstrating how technology adoption mediates relationships between generational values and political participation. The findings reveal complex patterns of inequality that extend beyond simple digital divides to encompass skills-based disparities and communicative entitlements.

Future research should continue to examine these relationships as digital technologies evolve and new cohorts enter the political system. Policy implications include the need for comprehensive digital citizenship education and efforts to expand meaningful digital voice across demographic groups.

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