Review Article

Digital Transformation and Social Stratification: A Sociological Analysis of Digital Divide in Contemporary Society

Khaeriyah Khaeriyah [1]*, Nurasia Natsir [2]

[1,2] Sekolah Tinggi Ilmu Administrasi Yappi Makassar, Indonesia
Email : nurasianatsir@stiayappimakassar.ac.id

* Corresponding Author : Khaeriyah Khaeriyah

Abstract: The rapid advancement of digital technology has fundamentally transformed social structures, creating new forms of inequality and social stratification. The digital divide has emerged as a critical sociological phenomenon that reflects and reinforces existing social hierarchies while creating new patterns of inclusion and exclusion. This study examines the relationship between digital transformation and social stratification, analyzing how digital access, literacy, and participation contribute to contemporary forms of social inequality. The research investigates the mechanisms through which digital divides reproduce and transform traditional class structures. This sociological inquiry employs a mixed-methods approach, combining quantitative survey data from 500 households across different socioeconomic strata with qualitative ethnographic observations and in-depth interviews with 40 participants. The study utilizes Pierre Bourdieu's theory of capital and Anthony Giddens' structuration theory as analytical frameworks. The findings reveal three distinct digital classes: the "digitally privileged" (25%), "digitally struggling" (45%), and "digitally excluded" (30%). Digital capital significantly correlates with traditional forms of capital (economic, cultural, and social), creating compound advantages for privileged groups. The study demonstrates that digital transformation both reinforces existing inequalities and creates new forms of social differentiation. Digital transformation has become a new dimension of social stratification that intersects with traditional inequality patterns. The digital divide represents not merely a technological gap but a fundamental social divide that requires comprehensive sociological understanding and policy intervention to ensure equitable social development.

Keywords: Digital Capital, Digital Divide, Digital Sociology, Social Inequality, Social Stratification, Technology and Society

1. Introduction

Contemporary society is experiencing unprecedented digital transformation that fundamentally alters social relationships, institutional structures, and patterns of inequality. The proliferation of digital technologies has created new forms of social stratification that intersect with traditional class, race, gender, and geographical divisions (Castells, 2015). This digital revolution has given rise to what scholars term the "digital divide" – a multifaceted phenomenon that encompasses disparities in access to, use of, and benefits from digital technologies (Van Dijk, 2020).

From a sociological perspective, the digital divide represents more than a simple technological gap; it constitutes a new dimension of social inequality that both reflects and reinforces existing power structures while creating novel forms of social exclusion and privilege (DiMaggio et al., 2004). The concept of "digital capital" has emerged as a crucial

analytical tool for understanding how digital competencies, access, and participation become resources that individuals can leverage for social, economic, and cultural advancement (Ragnedda, 2017).

The significance of digital inequality has become particularly apparent during the COVID-19 pandemic, which accelerated digital adoption across various social domains including education, work, healthcare, and social interaction. This "digital acceleration" exposed and exacerbated existing digital divides, revealing how unequal access to digital resources can translate into differential life chances and social outcomes (Beaunoyer et al., 2020).

Classical sociological theories provide valuable frameworks for understanding these contemporary digital phenomena. Pierre Bourdieu's theory of capital forms – economic, cultural, social, and symbolic – offers insights into how digital resources function as new forms of capital that can be accumulated, converted, and transmitted across generations (Bourdieu, 1986). Anthony Giddens' structuration theory helps explain how digital technologies both shape and are shaped by social practices, creating recursive relationships between technological structures and human agency (Giddens, 1984).

This study contributes to the growing field of digital sociology by examining how digital transformation intersects with social stratification processes. The research addresses three key questions: (1) How do digital divides reflect and reproduce existing forms of social inequality? (2) What new forms of social stratification emerge from digital transformation? (3) How do different social groups experience and navigate digital inequality?

The analysis reveals that digital transformation has created a complex landscape of advantage and disadvantage that requires nuanced sociological understanding. Rather than simply democratizing access to information and opportunities, digital technologies have become new sites of social struggle and inequality reproduction.

2. THEORETICAL FRAMEWORK
Classical Sociology and Contemporary Digital Society

The intersection of digital technology and social stratification can be understood through the lens of classical sociological theory. Max Weber's multidimensional approach to social stratification – encompassing class, status, and power – provides a framework for analyzing how digital resources create new hierarchies and reinforce existing ones (Weber, 1978). Digital technologies create new "life chances" that are unequally distributed across social groups, leading to what we might call "digital life chances."

Karl Marx's analysis of capitalism and class struggle finds contemporary relevance in the digital economy, where access to digital means of production (technology, connectivity, skills) determines economic opportunities and social position (Fuchs, 2014). The concept of "digital labor" and platform capitalism reveals how digital technologies create new forms of exploitation and alienation while concentrating wealth among tech elites.

Émile Durkheim's concern with social solidarity and integration takes on new meaning in the digital age, where digital participation becomes essential for social inclusion and collective belonging (Durkheim, 1893). Digital divides can lead to new forms of social anomie and disconnection from mainstream society.

Bourdieu's Capital Theory and Digital Capital

Pierre Bourdieu's concept of capital provides a powerful analytical framework for understanding digital inequality. Digital capital can be conceptualized as a new form of cultural capital that encompasses digital skills, knowledge, and competencies that can be converted into economic and social advantages (Bourdieu, 1986). Digital capital manifests in various forms:

a. Technical capital: Basic digital literacy and technical skills
b. Informational capital: Ability to find, evaluate, and use digital information
c. Social capital: Digital networks and online social connections
d. Creative capital: Ability to create and share digital content

The accumulation and conversion of digital capital follow patterns similar to other forms of capital, with privileged groups having greater opportunities to develop and leverage digital competencies. Educational institutions, family background, and social networks play crucial roles in digital capital acquisition and transmission.

Structuration Theory and Digital Practices

Anthony Giddens' structuration theory offers insights into how digital technologies shape and are shaped by social practices (Giddens, 1984). Digital structures – including platforms, algorithms, and interfaces – both enable and constrain human agency, creating patterns of inclusion and exclusion that become embedded in social practices.

The recursive relationship between structure and agency in digital contexts reveals how technological design decisions, user practices, and social norms interact to create and reproduce digital inequalities. Understanding these dynamics is crucial for developing interventions that can transform digital structures to promote greater equality.

Digital Divide Literature

The concept of digital divide has evolved from simple binary distinctions (access/no access) to more nuanced understandings of digital inequality. Van Dijk's (2020) cumulative model of digital inequality identifies four successive types of access:

a. Motivational access: Psychological and social factors that influence technology adoption
b. Physical access: Availability of computers, internet connectivity, and digital devices
c. Skills access: Digital literacy and competencies required for effective technology use
d. Usage access: Meaningful participation in digital activities that provide social and economic benefits

This progression reveals how digital inequalities compound and reinforce each other, creating cumulative advantages for some groups and cumulative disadvantages for others.

3. METHODOLOGY

Research Design

This study employs a mixed-methods approach that combines quantitative analysis of digital inequality patterns with qualitative exploration of lived experiences of digital divide. The research design draws on the sociological tradition of community studies while incorporating contemporary digital ethnography methods.

Quantitative Component

Survey Design and Administration A structured questionnaire was administered to 500 households across three metropolitan areas, stratified by income level, educational attainment, and geographic location. The survey measured:

a. Digital access (devices, connectivity, affordability)
b. Digital skills (technical, informational, creative)
c. Digital usage patterns (frequency, variety, purposes)
d. Social and economic outcomes related to digital participation

Sampling Strategy Purposive stratified sampling was used to ensure representation across different socioeconomic groups:

a. High-income households (>$75,000): n=150
b. Middle-income households ($30,000-$75,000): n=200
c. Low-income households (<$30,000): n=150

Digital Capital Index A composite Digital Capital Index was constructed based on weighted scores across four dimensions:

a. Technical skills (25%)
b. Information literacy (25%)
c. Digital creativity (25%)
d. Online social participation (25%)

Qualitative Component

Ethnographic Observations Participant observation was conducted in three community settings: a public library computer lab, a community college digital literacy program, and a co-working space. Observations focused on how different social groups navigate digital spaces and technologies.

In-depth Interviews Semi-structured interviews were conducted with 40 participants selected to represent different positions within the digital hierarchy:

a. Digitally privileged (n=12): High digital capital, advanced users
b. Digitally struggling (n=16): Moderate digital capital, intermittent access
c. Digitally excluded (n=12): Low digital capital, limited access

Interview Topics

a. Personal histories of digital technology adoption
b. Daily digital practices and routines
c. Challenges and barriers to digital participation
d. Social relationships and networks in digital contexts
e. Experiences of digital inequality and exclusion

Data Analysis

Quantitative data were analyzed using SPSS 28.0, employing descriptive statistics, correlation analysis, cluster analysis, and multiple regression modeling. Qualitative data were analyzed using thematic analysis following Braun and Clarke's (2006) framework, with coding conducted using NVivo 12 software.

The analysis integrated quantitative and qualitative findings to develop a comprehensive understanding of digital stratification processes. Triangulation between data sources enhanced the validity and depth of insights.

4. RESULTS

Digital Stratification Patterns

The analysis revealed distinct patterns of digital stratification that mirror and extend traditional forms of social inequality. Three primary digital classes emerged from cluster analysis:

Table 1: Digital Class Distribution and Characteristics

Digital Class	Population %	Avg. Income	Education Level	Digital Capital Score
Digitally Privileged	25%	$82,000	Bachelor's+	8.2/10
Digitally Struggling	45%	$45,000	High School+	5.4/10
Digitally Excluded	30%	$28,000	<High School	2.1/10

Intersection of Traditional and Digital Capital

Statistical analysis revealed strong correlations between traditional forms of capital and digital capital:

Table 2: Correlation Matrix of Capital Forms

	Economic Capital	Cultural Capital	Social Capital	Digital Capital
Economic Capital	1.00	0.67**	0.54**	0.71**
Cultural Capital	0.67**	1.00	0.62**	0.78**
Social Capital	0.54**	0.62**	1.00	0.69**
Digital Capital	0.71**	0.78**	0.69**	1.00

$**p < 0.01$

The strong correlations indicate that digital capital does not represent a democratizing force that levels social playing fields. Instead, it reinforces existing advantages and disadvantages.

Digital Access and Usage Patterns

Physical Access Disparities

a. High-income households: 95% have high-speed internet, 3.2 devices per person
b. Middle-income households: 78% have high-speed internet, 1.8 devices per person
c. Low-income households: 42% have high-speed internet, 0.6 devices per person

Skills and Literacy Gaps Significant differences emerged in digital competencies:

Table 3: Digital Skills by Socioeconomic Status

Skill Category	High Income	Middle Income	Low Income	Significance
Basic Technical	92%	76%	34%	$p < 0.001$
Information Literacy	85%	58%	22%	$p < 0.001$
Digital Creation	71%	39%	12%	$p < 0.001$

Skill Category	High Income	Middle Income	Low Income	Significance
Online Safety	88%	64%	28%	p < 0.001

Digital Practices and Social Outcomes

Economic Outcomes Digital participation strongly correlated with economic opportunities:

a. Job searching online: Digitally privileged (89%), Struggling (56%), Excluded (18%)

b. Online entrepreneurship: Privileged (34%), Struggling (12%), Excluded (3%)

c. Digital banking/finance: Privileged (94%), Struggling (67%), Excluded (23%)

Educational Outcomes Digital divides significantly impacted educational experiences:

a. Online learning success: Strong correlation with digital capital (r = 0.73, p < 0.001)

b. Academic research skills: Higher among digitally privileged students

c. Educational technology use: Limited by access and skills barriers

Social Outcomes Digital participation affected social connections and civic engagement:

a. Online social networks: Larger and more diverse among digitally privileged

b. Civic participation: Higher online political engagement among high digital capital groups

c. Social support: Digital networks provide additional resources for privileged groups

Qualitative Findings: Lived Experiences of Digital Inequality

The Digitally Privileged: "Digital Natives" and "Power Users" Interviews with digitally privileged participants revealed sophisticated digital practices integrated seamlessly into daily life. These individuals demonstrated:

a. Intuitive navigation of multiple platforms and devices

b. Creative and productive uses of technology

c. Ability to leverage digital tools for career advancement

d. Extensive online social and professional networks

"Technology is just part of how I think and work. I can't imagine life without being connected and having access to all these tools." - Sarah, marketing professional, age 28

The Digitally Struggling: "Intermittent Users" and "Basic Adopters" Middle-class participants often had access to technology but lacked advanced skills or consistent connectivity. Common themes included:

a. Frustration with technological complexity

b. Limited ability to troubleshoot problems

c. Dependence on others for technical support

d. Anxiety about online safety and privacy

"I can do basic things like email and Facebook, but when something goes wrong, I'm lost. My kids have to help me." - Maria, administrative assistant, age 45

The Digitally Excluded: "Non-Users" and "Reluctant Adopters" Low-income participants faced multiple barriers to digital participation:

a. Cost barriers to devices and connectivity

b. Limited digital literacy and confidence

c. Lack of relevant content and services

d. Social isolation from digital communities

"I'd like to learn, but I can't afford a computer and internet. The library has computers, but there's always a wait and I feel embarrassed asking for help." - James, unemployed, age 52

5. DISCUSSION

Digital Capital as a New Form of Social Stratification

The findings demonstrate that digital capital has emerged as a significant dimension of social stratification that intersects with and reinforces traditional forms of inequality. The strong correlations between digital capital and economic, cultural, and social capital suggest that digital technologies do not create a level playing field but rather provide new mechanisms through which existing advantages are maintained and transmitted.

The concept of "digital habitus" – the internalized dispositions and practices related to digital technology use – helps explain how digital inequalities become embedded in daily life. Digitally privileged individuals develop intuitive relationships with technology that enable them to navigate digital environments effectively and exploit new opportunities as they emerge.

Cumulative Advantage and Digital Inequality

The research reveals a pattern of cumulative advantage where initial digital privileges compound over time. Digitally privileged individuals not only have better access to technology but also develop superior skills that enable them to extract greater value from digital participation. This creates a "Matthew effect" in digital contexts where "to those who have, more will be given."

The intersection of multiple forms of capital creates particularly stark advantages for privileged groups. High-income individuals with cultural capital (education) and social capital (networks) are best positioned to acquire and leverage digital capital for further advancement.

Digital Exclusion and Social Marginalization

Digital exclusion represents a new form of social marginalization that can exacerbate existing disadvantages. As more social, economic, and civic activities move online, those without digital access and skills face increasing barriers to full social participation.

The qualitative findings reveal how digital exclusion creates psychological impacts including feelings of embarrassment, anxiety, and social isolation. These emotional dimensions of digital inequality often receive insufficient attention in policy discussions focused primarily on access and skills.

The Persistence of Offline Inequalities in Online Spaces

Contrary to early utopian visions of the internet as a democratizing force, the research demonstrates that offline inequalities are reproduced and often amplified in digital contexts. Social hierarchies, cultural distinctions, and economic advantages shape how individuals experience and benefit from digital technologies.

The concept of "digital reproduction" describes how digital technologies serve to maintain existing social structures rather than disrupting them. Platform algorithms, interface designs, and content ecosystems often reflect and reinforce the preferences and perspectives of privileged groups.

Implications for Social Theory

This research contributes to sociological theory by demonstrating how classical concepts of social stratification require updating for the digital age. Digital capital represents a new dimension that must be incorporated into contemporary analyses of social inequality.

The findings support theories of cumulative advantage and intersectionality, showing how multiple forms of disadvantage interact to create particularly severe digital exclusion. The research also highlights the importance of considering both material and symbolic dimensions of digital inequality.

Policy Implications

The sociological analysis reveals that addressing digital inequality requires more than simply providing access to technology. Comprehensive approaches must address:

Structural Interventions:

a. Affordable broadband infrastructure
b. Device access programs
c. Digital literacy education
d. Inclusive design principles

Cultural Interventions:

a. Community-based digital programs
b. Peer learning networks
c. Culturally relevant content creation
d. Digital confidence building

Institutional Interventions:

a. Educational curriculum integration
b. Workplace digital training
c. Government service accessibility
d. Healthcare technology support

Limitations and Future Research

This study has several limitations that suggest directions for future research. The cross-sectional design limits causal inferences about digital inequality development over time. Longitudinal studies could reveal how digital divides evolve and whether interventions successfully reduce inequalities.

The focus on household-level analysis may obscure important within-family dynamics, particularly regarding age and gender differences in digital participation. Future research should examine how digital inequalities intersect with other social identities and life course transitions.

Additionally, rapid technological change means that digital inequality patterns may shift as new technologies emerge. Research must continually update its understanding of how artificial intelligence, virtual reality, and other emerging technologies create new forms of advantage and disadvantage.

6. Conclusions

This sociological analysis reveals that digital transformation has created new dimensions of social stratification that intersect with traditional forms of inequality in complex ways.

Rather than democratizing access to information and opportunities, digital technologies have become new sites of social struggle where existing advantages are maintained and new forms of exclusion emerge.

The concept of digital capital provides a valuable framework for understanding how digital competencies, access, and participation function as resources that can be accumulated and converted into social, economic, and cultural advantages. The research demonstrates that digital capital is not equally distributed across social groups but rather follows patterns that reinforce existing hierarchies while creating new forms of differentiation.

The identification of three distinct digital classes – the digitally privileged, digitally struggling, and digitally excluded – reveals the stratified nature of digital society. These digital positions are strongly correlated with traditional measures of socioeconomic status, suggesting that digital divides reflect deeper structural inequalities rather than simply technological access issues.

The qualitative findings illuminate the lived experiences of digital inequality, revealing how digital exclusion creates not only practical barriers but also psychological impacts including embarrassment, anxiety, and social isolation. These findings highlight the importance of understanding digital inequality as a multidimensional phenomenon that affects individual dignity and social belonging.

From a theoretical perspective, this research demonstrates the continued relevance of classical sociological concepts while highlighting the need for theoretical innovation to address contemporary digital phenomena. Digital capital emerges as a new form of capital that must be incorporated into analyses of social stratification, while concepts like digital habitus and digital reproduction help explain how digital inequalities become embedded in social practices.

The policy implications are clear: addressing digital inequality requires comprehensive approaches that go beyond simply providing access to technology. Interventions must address the structural, cultural, and institutional factors that shape digital participation patterns. This includes not only infrastructure development and skills training but also efforts to create more inclusive digital environments and to address the underlying social inequalities that digital divides reflect and reinforce.

Future research should continue to explore how digital inequalities evolve as technologies change and how different social groups adapt to new digital environments. Longitudinal studies could reveal whether current digital divides persist or whether new patterns of inclusion and exclusion emerge. Additionally, comparative research across different national and cultural contexts could illuminate how broader social structures shape digital inequality patterns.

The ultimate goal of this sociological inquiry is to contribute to more equitable digital futures where technology serves to enhance human capabilities and social connections rather than perpetuating existing inequalities. This requires ongoing dialogue between researchers, policymakers, technologists, and communities to ensure that digital transformation serves the common good rather than concentrating advantages among already privileged groups.

As society becomes increasingly digital, understanding and addressing digital inequality becomes ever more critical for social justice and democratic participation. The sociological perspective offers essential insights into these challenges by revealing the social structures and

processes that shape digital experiences and outcomes. Only through such understanding can we work toward digital futures that truly serve all members of society.

References

Beaunoyer, E., Dupéré, S., & Guitton, M. J. (2020). COVID-19 and digital inequalities: Reciprocal impacts and mitigation strategies. Computers in Human Behavior, 111, 106424.

Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), Handbook of Theory and Research for the Sociology of Education (pp. 241-258). Greenwood.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77-101.

Castells, M. (2015). Networks of outrage and hope: Social movements in the Internet age. Polity Press.

DiMaggio, P., Hargittai, E., Celeste, C., & Shafer, S. (2004). Digital inequality: From unequal access to differentiated use. In K. Neckerman (Ed.), Social inequality (pp. 355-400). Russell Sage Foundation.

Durkheim, E. (1893). The division of labor in society. Free Press.

Fuchs, C. (2014). Digital labour and Karl Marx. Routledge.

Giddens, A. (1984). The constitution of society: Outline of the theory of structuration. University of California Press.

Hargittai, E. (2010). Digital na(t)ives? Variation in internet skills and uses among members of the "net generation." Sociological Inquiry, 80(1), 92-113.

Jenkins, H., Purushotma, R., Weigel, M., Clinton, K., & Robison, A. J. (2009). Confronting the challenges of participatory culture: Media education for the 21st century. MIT Press.

Lutz, C. (2019). Digital inequalities in the age of artificial intelligence and big data. Human Behavior and Emerging Technologies, 1(2), 141-148.

Norris, P. (2001). Digital divide: Civic engagement, information poverty, and the Internet worldwide. Cambridge University Press.

Ragnedda, M. (2017). The third digital divide: A Weberian approach to digital inequalities. Routledge.

Robinson, L., Cotten, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., ... & Stern, M. J. (2015). Digital inequalities and why they matter. Information, Communication & Society, 18(5), 569-582.

Scheerder, A., van Deursen, A., & van Dijk, J. (2017). Determinants of Internet skills, uses and outcomes. A systematic review of the second-and third-level digital divide. Telematics and Informatics, 34(8), 1607-1624.

Selwyn, N. (2004). Reconsidering political and popular understandings of the digital divide. New Media & Society, 6(3), 341-362.

Van Deursen, A. J., & Van Dijk, J. A. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. New Media & Society, 21(2), 354-375.

Van Dijk, J. (2020). The digital divide. Polity Press.

Weber, M. (1978). Economy and society: An outline of interpretive sociology. University of California Press.

Zillien, N., & Hargittai, E. (2009). Digital distinction: Status-specific types of internet usage. Social Science Quarterly, 90(2), 274-291.