

Research article

Factors influencing sustainable E-participation in public service delivery: A case of rail infrastructure project

Rajesh R. Pai^a, Sreejith Alathur^{b,*}

^a Department of Humanities and Management, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal, 576104, Karnataka, India

^b Information Systems, Indian Institute of Management Kozhikode, India

ARTICLE INFO

Keywords:

Sustainable e-Participation
Transport projects
Social media influence
Gioia method
Public service delivery

ABSTRACT

This research aims to analysis factors influencing sustainable e-participation in development projects. The case of a semi-high-speed rail infrastructure project in a south Indian state is examined in this paper. The analysis considers e-participation-related social media content and news items from 2017 to 2022. Results reveal development themes and campaign strategies influence long-term e-participation. The findings demonstrate that government social media initiatives significantly influence knowledge generation in development projects and thus better-informed e-participation. The growing information-seeking culture among e-participants, on the other hand, compels for knowledge resources and the readiness of the initiators to divulge suitable decisions to meet citizens' requirements. Current research is limited by its concentration on a rail project. The moderators are expected to construct campaign event plans and involve rail initiatives to enable sustainable e-participation. Unlike previous studies that focused on the delays due to e-participation, the current research portrays the improvement of public service delivery.

1. Introduction

In the digital era, citizens increasingly use the information and communication technologies (ICTs) to participate in governance, decision-making, and public service delivery, making digital participation essential. This active citizen participation in the government and policymaking processes is known as electronic participation (e-participation) [1,2]. The research of e-participation often evaluates whether it facilitates meaningful democratic involvement or merely reinforces existing power structures. Improving the quality of user engagement in social interactions is critical and also introduces challenges like citizens concealing information to manage the emotional strain of online participations, leading to decreased utility of participation [3,4]. Additionally, governments frequently strive to shape or control the digital landscape including the social media platforms [5], which keep the field of e-participation studies in its nascent stage.

In recent years, political parties and participation groups have attempted to create online virtual events to mobilize support [6]. However, scholars have observed that even in developed countries, participation venue shifts to digital platforms are limited [7]. Emerging technologies like the Metaverse may enhance social connectivity and user engagement, creating "smart crowds" [8]. As democracy indexes are declining [9], the concerns grow over surveillance and Internet bullying, which impact user trust and participation (Tarafdar and Ray, 2021). This study investigates how e-participation could evolve to strengthen democratic decision-making.

* Corresponding author.

Studies on surveillance and algorithmic fairness in social media raise concerns about potential bias and inequity among participants [10–12]. Individuals, organizations, and government agencies shun or launch short-focus own platforms resulting in reduction in active daily users ([13]; Aral and Eckles, 2019; [14]). Users' security and privacy are jeopardized by restricted resource capabilities and non-universal framing conventions for temporary platforms [15]. Disappearing platforms put e-participation claims like lower engagement costs and a larger audience to the test. From India, changes in participation emotions are not as well reported as they are in Western countries [16,17]. Only a few factors, like ecological and economic politics, are identified in existing transport literature [18]. However, many who participate in online communities' report losing their ability to appreciate normalcy and become vulnerable to harmful culture or acquiring emotional difficulties. Thus, more research on e-participation is needed due to the long-term nature of development projects. By examining e-participation on rail modernization project in South India, this study seeks to fill this research vacuum.

Social media involvement has an impact on social life [19], political stability, tool and skill improvisation [20], though its utility for government agencies is less evident. Research suggests that the perceived ineffectiveness of online communities may result from stress and difficulty with non-coping behaviors [21]. The pattern of action persists, and many online studies dismiss the inventive decision culture or the production of national worth. Because information-seeking groups are often excluded from policymaking, resulting in a lack of representation and increased social discontent. Hence, this research seeks to answer the question: *How does citizen e-participation contribute to improving public service delivery?*

Given the relatively limited engagement of purpose-driven #tag followers, the participants felt less accomplished in a short period of time. As a result, spontaneous #tag followers dominated participation movements marked by political ambiguity and looseness. Many of these unstructured movements have a culture of defeatism and lack of resistance [22]. Consequently, social media, while a powerful mobilizing tool, does not always yield the desired outcomes. This study emphasizes the role of trust due to a lack of secure frames and restricted influencing chances becomes a critical element in facilitating sustainable e-participation for public service improvements [22], examining these dynamics within the context of the South Indian rail infrastructure project.

The paper is organized as follows: the introduction section discussed the significance of participant input as well as the role of e-participation in long term projects. Section 2 examines the literature on sustainable e-participation in development projects. Section 3 discusses a case of e-participation in rail infrastructure project. The findings are presented in Section 4, and the discussion and implications are presented in Section 5. Finally, in Section 6, there are some closing observations and future research directions.

2. Literature review

The platform economy faces challenges from a surge in misinformation, prompting governments to seek strategies to stabilize the increasingly volatile digital landscape. Concerns over the content and quality of discourse in participation forums are valid. This section reviews the sustainability of citizens' e-participation.

2.1. Environment of sustainable E-participation

Attempts to capture the decision points of customers in service delivery typically encourage customers to use social media and create content ([23][24]). In a customer centric business, the company is open to new ideas and comments in order to improve the product and service industries [25,26]. A boom of literature [27] has occurred that studies the 'algorithmic decisions,' essentially fairness and bias, to improve the 'customer centricity' with respect to business information exposure [10,28,29]. 'Customers are recognized as a persuasion element for technology adoption and corporate growth' [30].

Even though citizens' expectations come before public decisions, the latter is not necessarily a subset of the former. This is primarily due to the fact that citizens participations do not place a high importance on the absence of fairness or prejudice in e-participation. Moreover, the conclusion or impact of the participation process does not ultimately determine the e-participants' opinion. This becomes a significant worry, and experts advocate for an evaluation of the e-participation to improve public decision making.

Scholars interested in the sustainability of participation on social media platforms [31,32,33]. However, there is less research on e-participation requirements on long-term projects. For instance, terms such as hacktivism, clicktivism, and slacktivism are added to the word short term activism. George and Leidner [34] note the transition from clicktivism to hacktivism. According to Sakariassen and Meijer [35], it is difficult to comprehend 'inhibition' among the silent group online. The sustainability of participant involvement and inclusion of feedback is an emerging area of study [36].

2.1.1. Competency and sustainable e-participation

The e-participation competency specifies primarily the inclusive environment, including its character and outlets. The effort made by the participants and their influence on decision contribute to competency. Participation in organized events is increasing [37] and that those who initiate e-participation do so deliberately [38,39]. But policymakers deem knowledge translation crucial [40,41] as they strive to change digital platforms into enabling tools as opposed to reinforcing channels [42]. The e-participation experience may vary depending on the participant's awareness and how they digest the information supplied about situations. According to Sun [20] converges among e-participants who are less inclined to participate is minimal. The way people process the supplied information influences their involvement competence [43]. supports people in processing information in ways that enhance their involvement competence In the knowledge-based e-participation, the silent group is perpetually in a conundrum, even though the thinkers' group protects its place by organizing and administering actions. The contribution of the silent and thinker communities to policymaking is negligible in comparison to the activist communities. This is because the genesis of knowledge spread depends on philosophers, whose

positions are well-known in situations. Sustainability of activist groups is crucial, since the ambiguity of their participation experiences is perplexing and research-worthy.

2.1.2. Long-term e-participation

The formation and demise of social movements is challenging because the event lifecycle management ecosystem is absent [44,45]. Previous research did not adequately assess long term e-participation. Tabulated in Table 1 are the antecedents to depleting e-participation that have been discussed in the literature.

Utilizing diagnostic, prognostic, and motivational frame approaches, social media involvement analysis is conducted by academics [22,19]. The evaluation of the prognosis future of the social network analysis [54,55] on the life span of the e-participation, but fewer research has attempted to comprehend the sustained pro-socio effect of participation and repeated initiation objectives. Thus, the polarizing effect of participation inhibits the availability of frames, thereby compromising the sustainability [19]. The topics of online engagement experiences are described in Table 2.

Studies indicate that the involvement of individuals and groups can influence their willingness to participate in online engagements, and organisers often use several mobilisation techniques to encourage participation [46,53].

2.2. Theoretical framework

It is obvious that there are insufficient research describing the suitability of initiators strategies for longevity of participating groups. In Table 3, influential ideas of crowd quality are reviewed.

Individuals and organizations influence the quality of social media participation groups. In addition, the efforts to comprehend the emerging participation culture in social media accept that aggrieved organizations and governments utilize social media to mobilize their populace through the facilitation of experience. There are fewer studies that explain the influence of prolonged participation on policy input provisions. Table 4 lists theories that can influence the Experience of Activists in Participation.

Literature analysis reveals that anger [66] is a common experience among participants in online engagement, with agencies and leaders seek to develop and frame platforms that attract and expand their follower base. Less is reported in the literature regarding how citizens perceive the reinforcement by these agents. Additionally, a notable research gap exists in understanding how agencies modify their participation platforms in order to facilitate participatory decision-making.

3. Methodology

This section will begin by discussing the context of participation followed by a description of data collecting and its analysis.

3.1. Case of SilverLine project and e-participation in Kerala, India

This article examines the 'SilverLine' (Semi High-Speed Rail) Project undertaken by Kerala Rail Development Corporation Limited <https://keralarail.com>. In 2017, the government of Kerala and the Ministry of Railways established the K-Rail public sector business (Government of India).

The company identifies possible projects for the improvement of Kerala's rail infrastructure. The geography of Kerala consists of a 580-km coastline in southern India. The current travel time between Kerala's northernmost district Kasaragod to its southernmost district Thiruvananthapuram is approximately 10–12 h. The SilverLine project aims to cut travel time to less than 4 h [79]. SilverLine is one of the K-Rail corporation's identified projects and has garnered traditional and new media interest since 2017. The response to the SilverLine addresses the project's potential environmental, economic, and political effects. Citizens who have suffered setbacks from the Covid-19 epidemic, tsunami, flood, landslides, and other natural calamities in the recent past are responsible for the participation. In Table 5, e-participation terms from the literature and those used in the SilverLine e-participation are included.

Table 1
Review of antecedents on depleting e-participation.

Author	Theme						Focus
	Inequality	Identity	Health	Socio-cultural	Politics	Ethics	
Somma [46]. Somma et al. [47]	✓	✓		✓	✓	✓	Lack of leadership strategies to mobilize participants and their survival strategies.
Inguanzo et al. (2022) [48]		✓		✓	✓	✓	The influence of authoritarianism on unlawful participation
Yetgin [49]		✓		✓		✓	The spread of content and SOPA
Lorenzini et al. [50]						✓	NLP Bias
Silva and Panahi [38].	✓					✓	Terms of governance between initiators and users
Martin et al. [51]					✓	✓	Business strategies and the impact of content creation
James et al. [52]		✓	✓			✓	Lack of positive dynamics health communication strategies
Pinazo Calatayud and Aldás [53]	✓	✓	✓	✓		✓	Lack of positive communication techniques and consciousness

Table 2
Components of long-term e-participation.

Theme	Study	Remarks
Regret	Kaur et al. [56]	Immersion and time spent on social media make the experience more regrettable.
Design	Rezai and Khazaei [57]; Azeez et al. [58].	An active design approach to the participating subject is essential for solving social problems.
Behavioral	Minge and Thüring [59]; Fine and Corte [60].	Long-term effects and prosocial behaviour are affected by pragmatic and hedonistic traits.
Interaction scope	Valenzuela [61]; Wang et al. [62]	The experience is enhanced by frequent opportunities for information, self-expression, and participation.
Inclusive Governance	Duguay, Burgess, and Suzor [63].	Gender-based experience is influenced by the technological framework of LGBTQ-inclusive content and efficient platform governance.
Nudge-content	Verhulsdonck and Shalamova [64]	Utilizes the 'choices' framework – Nudge effect to influence user behaviour by providing cognitive bias content.
Power	Mehraliyev, Choi, and King [65].	Utilizes CASA Framework - Power dominance among platform providers and the user as influence and platform experience facilitator.
Emotional components	Jasper [66]; Eniayejuni [67].	The emotional experience of participating in groups was dominated by 'Anger'.

Table 3
Influencing theories of sustainable e-participation.

Theory	Description	Publication
Anthropomorphic theory	The intention of organizers is to disseminate persuasive participation content.	d'Andréa and Ziller [68]
Social presence theory	Memory, time, and affective experiences during social presence and revisitation are typically interpreted using social representation theories.	Moscovici [69]
Public spaces theories	Publicity and network use in the context of participation risk, inhibition, silence, obligations, emotions, and rationality.	Sakariassen [70]
Influencer theory	User intent determines the decision of Social Media Influencers to associate with topics.	Chia et al. [71]

Table 4
Select theories that can affect the long-term e-participants.

Theory	Description	Autor(s)	Remarks
Frame theory	Indigenous groups' norms are less sustainable in online participations and have little influence outside of communities.	Lupien et al. [15]; Ivaturia and Chuab [72]	The group participations that 'evolving identity', which frames assume to be applicable, is inherently fragile.
Flow theory	Immersive and enjoyable experiences are essential for platform retention and participation.	Kaur, Dhir, and Rajala [73]; Zhang et al. [74].	The ten-item instrument for measuring flow includes enjoyment, concentration, and social interaction.
Aesthetic theory	Examines participation photographs and the criteria for visualisation (contrasts, black-and-white, etc.) to provide a sense of aesthetics.	Veneti [75]	The visual metaphoric framing of symbols, memes, and art enhances participation imagery and has the potential to mobilize individuals.
Deceptive content theories	By virtue of the digital environment, geo-Western regions are experiencing a proliferation of conspiracy theories. Controversial content influences the platform and the participation of actors.	Mahl et al. [76]	In media, conspiring content may amplify other types of deceptive content production.
Structuration theory	There may be a shift in tension between platforms or actors. communities of power or business models of agencies.	Silva and Panahi [38]	By evolving new forms of participation culture, the systems and their practices.
Wellbeing theory	Individual poverty and a country's democratic stability have an impact on the perception of participation.	Cummings [16]	The participation is bolstered by baffling expectations and a reforming political climate.
Withholding theories	Withholding information during the social exchange for prosocial events influences the factors of coping and threat.	Babič et al. [77]; Wu [78]	Offline and online collective participation are moderated by the coping response of the group's affiliated organisation.

Table 5
Participation mobilizing items in the literature.

Authors	e-participation	Frequent #tag in participation Tweets
Masuda, Han and Lee [80].	Common traits	#KRail, #SilverLine
Farivar, Wang, and Yuan [81].	Endorsing traits	#Communism, #lefty
Rozema et al. [82].	Spatial elements	#LandAcquisition, #kfarmers
Born, Akkerman, and Thommes [83].	Trust in project	#keralamodel, #highspeedtrain
Dekoninck and Schmuck [84]	Developmental issues	#KeralaAgainstSilverline, #Development

This article examines the five-year Facebook page posts of the official Kerala Rail Development Corporation Limited from the date of its establishment on January 5, 2017, to January 31, 2022. We use Facebook because the number of followers (up to 35,015) and reactions are significantly greater than those of the other official social media channels of the SilverLine project that most commonly share identical information posted to their Facebook pages. Table 6 provides the social media pages on Kerala-rail campaign.

The majority of the responses are in English and Malayalam. The graphics comprise of prototypes, caricatures, statistics, and updates on culture and events. Most Malayalam-language videos contain informational and streaming programming.

Apart from the Facebook data, a total of 38708 Tweets were collected using the #tags - #krail, #SilverLine, #LandAcquisition, #dpr, #KeralaAgainstSilverline, and #silverlineproject. The analysis utilized the tidytext package in RStudio, an integrated development environment (IDE) for R, which provides access to various sentiment lexicons to classify emotions like joy, anger, sadness, etc. [85]. The collected Tweets were analyzed using the Gioia method [86] and open coding guided by the research question.

4. Results

The text analysis reveals that favorable elements are widespread throughout the peak discussing months. Figs. 1 and 2 provide a sentiment analysis of participation from January through February 2022 and March 2022.

From January through March of 2022, the statistics indicate a huge increase in participation events and social media material. Nevertheless, the sentiment analysis reveals that even as negative polarity develops, trust and fear also increase as the participation increases. In Figs. 3 and 4, a word cloud depicting participations in January–February 2022 and March 2022 illustrates the elements contributing to such polarizations.

The results of the word cloud indicate that the phrases linked with SilverLine contribute to both anger and fear in the January to March 2022 time period. However, the DPR shifted from surprise to rage, and trust-building content on the platforms became more common.

The main web portal of K-Rail corporation connects to 'Myth vs. Reality,' which addresses numerous issues presented in social media platforms. This analysis demonstrates the significance of the SilverLine project for the state to satisfy its tourist and infrastructure constraints and improvement issues. For instance, one of the answers to the removal of speed limits on the existing track is:

"Strengthening these 626 curves is a herculean taskand hence it is practically impossible to increase the speed"

The official web homepage of K-Rail firm provides a link to 'Myth vs. Reality,' which addresses a variety of issues posed in social media platforms. This analysis demonstrates the significance of the SilverLine project for the state to address its tourist and infrastructure improvement concerns, as well as the constraints of its current infrastructure. Tweets with varying experiences during participation events having more favorite counts are provided in Table 7.

The analysis of the tweets revealed factors that contribute sustainable e-participation. The following Fig. 5 shows the visual representation of the same.

4.1. Factors contribute for sustainable e-participation

Twitter responses indicate that frequent e-participants employ several techniques to create an environment where their shared material appears to gain popularity and support their leadership.

Public Participation and Governance: It involves stakeholder participation in decision-making [87], enhancing service quality and creating opportunities for public engagement. Governments may prioritize transparency, participation, and economic development to foster legitimacy and openness [88].

The post from Twitter indicates active participation of the citizen in the decision-making processes and ensures transparency, accountability and public voices are heard and valued in governance.

Why is the Kerala government so adamant about the K- Rail if the majority of the people in Kerala do not want it?.

The #KeralaAssembly will on Monday afternoon hold a two-hour long discussion on the #SilverLine project.

The tweets also emphasize the communication gap between the government action and public which otherwise requires local consultation to achieve sustainability in large-scale projects.

The people sitting in Delhi won't understand why there is uproar over #KRail in Kerala. They will see it only as unnecessary opposition to development. The actual enormity of devastation of life by taking over the huge number of houses for a railway line is unimaginable.

Table 6
Social media pages on Kerala-rail campaign.

Site	Description
Kerala Rail Development Corporation Limited (Official)	Webpage, Twitter Facebook pages
#silverline #krail #dpr #silverlinedpr	Twitter handles responding on K-Rail project
We are against Kerala-High-speed-rail-corridor HSRC	Facebook page with over 1K followers
Kerala K-Rail Virudha Samithi	Facebook page with over 1K followers

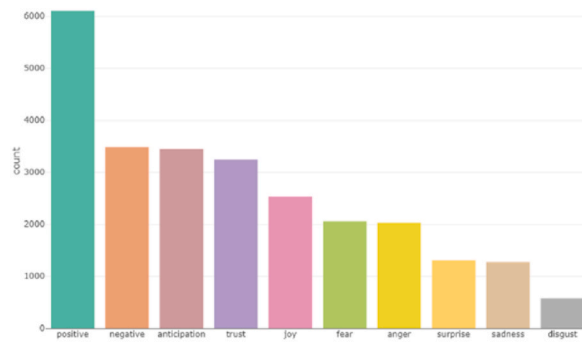


Fig. 1. Sentiment analysis of e-participation in Jan–Feb2022.

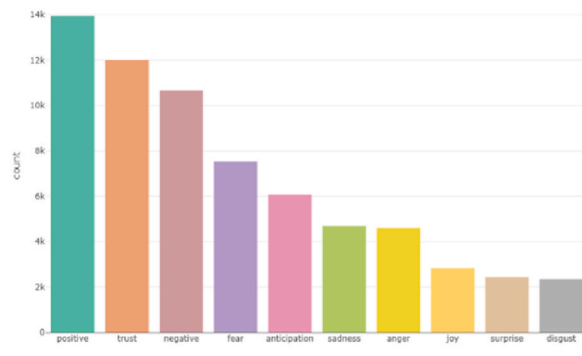


Fig. 2. Sentiment analysis of e-participation in March 2022.

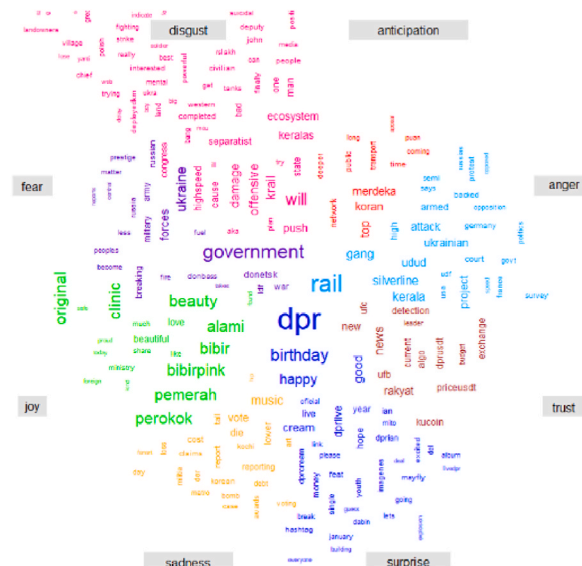


Fig. 3. Word cloud of e-participation in Jan–Feb2022.

Social Stability and Human Security: This dimension emphasizes the impact of large-scale on affected communities by highlighting their concerns about security and stability.

Disheartening to see people fighting to save their homes.

The tweets also reveal that participants attempt to relate their experiences to global events, as they commonly employ #hashtags

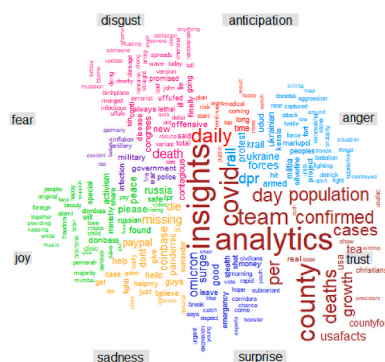


Fig. 4. Word cloud of e-participation in March 2022.

Table 7

Tweets with long term e-participation components during participation events having more favorite count.

Timestamp	Tweet text	Created by	Influencer strategy
30-12-2021 09:31	530 km long #SilverLine (@OfficialKRail) will transform Kerala's transport infrastructure and contribute to our overall development, including that of tourism. The ₹63,941 Cr complete green project will reduce travel time between the North & South ends of Kerala to just 4 h.	Official Tweet of Chief Minister	Nudge-content. Favorite Count 1320
02-01-2022 15:24	"Kerala #silverline project is a calculated politics for CPM to@make commission for their goons to do the party work, #krail is absolutely against the interest of people and central policy on high speed rail."	A respondent with the political suffix	Design experience Favorite Count 3
06-01-2022 02:30	I trust @ ... to complete #KRail #SilverLine by 2025 as promised, because he has honoured such promises before. I'm tweeting from the non-existent Trivandrum-Kasaragod waterway (promised by May-2020) using the unavailable #KFon internet (promised by Dec-2020).	Media Personality	Interaction experience Favorite Count -920
04-02-2022 17:29	So E.Sreedharan says Vande Bharat is not practical and will not work in Kerala, due to the many curved tracks. So the question remains: If rest of India can get high speed trains, why must Kerala be deprived of high speed transportation? #KRail	Nonresident Keralite	Behavioral experience Favorite Count -224
03-01-2022 04:13:05	#Kochi metro incurs ₹1000 crore loss in 5 years, KSRTC's debt is mounting day by day and in 2019 it was ₹ 3500 crores, everything managed by #Kerala govt is in loss. ₹ 120000 cr #KRail is another idea for politicians to make money and put the burden of debt on the common man.	A respondent with Politicalcoveragee	Regret experience Favorite Count -178
19-01-2022 14:06	According to #KRail DPR, a ticket from Kasargod to Trivandrum in the year 2050 will be ₹6253. By 2072, a family of four from Kasargod will have to pay ₹1.80 lakh to go to Trivandrum and comeback. Hope K-Rail will offer bank loans for passengers to buy tickets. Don't blink!	Oppositional political party	Governance experience Favorite Count -175
02-02-2022 11:04:05	The MoS on Railways agrees that #KRail's DPR is incomplete and the techno-economic viability is yet to be conducted. Without Union Government's approval, why is Kerala Government trying to acquire land with haste?	Politician	Power experience Favorite Count -155
04-01-2022 14:37:32	Kerala communists are trying to fund a 1 lakh crore white elephant project called #KRail which they claim to be a "futuristic high-speed" rail that runs at 130 km/h 🚄 by 2035 while ... has already built expressways in 2021 which can reach an astonishing 170 km/h.	Individual with pseudonym	Emotional experience Favorite Count -152

comparable to Ukraine, etc., which have garnered international attention.

Very much similar to the situation of people in Ukraine. ...

Human Rights and Ethical Governance: This dimension emphasizes the importance of human rights and the ethical conduct of governance that includes fairness, non-discrimination, and transparency.

The post on the Twitter reveals the concerns over the ethical treatment of activists, particularly mothers and children and condemn the government's use of force, questioning human rights violations.

Shocking video from Kottayam, where Police forcefully dragged a Mother and child on the road, who were protesting a ...

#krail protests in kerala, police torturing civilians, this is the real face of

The Tweets that share news articles supporting project objectives are less likely to be retweeted and shared. For instance, hostile content is more widely disseminated:

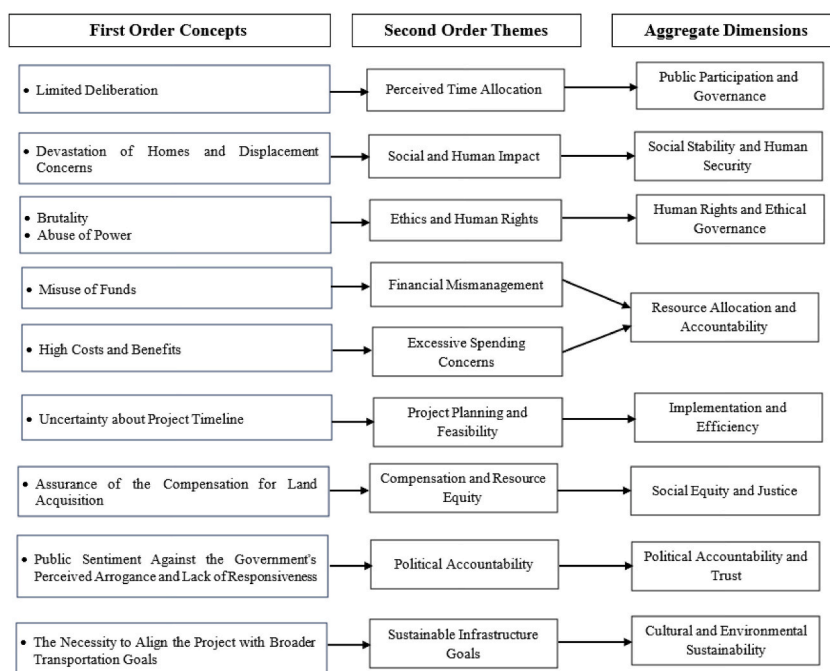


Fig. 5. Factors influencing sustainable e-participation.

Modern day #Fascism, right at your doorstep! An elected govt grabbing land & property of its own people using brute ...

“The most compelling environmental issue before us is climate change ... the #SilverLine project (in #Kerala) scores high with respect to India’s own climate objective of achieving net-zero emissions by 2070”.

It demonstrates that extensive investigation of the work is unlikely to have a favorable impact on the participating organizations.

Implementation and Efficiency: This dimension focuses on the feasibility of project execution and raises concerns over the cost estimations highlighting the need for more detailed project planning strategies for sustainable outcomes.

Minimum 10–12 yrs required to complete a project like this. How did you arrive at the estimated cost? That’s not me ...

The tweets also mention the need for analyzing the factors that have led to the execution of similar projects like the GAIL pipeline so that practicability and credibility of the KRail project will be effective.

There was a lot of noise around the GAIL pipeline, but the project is gearing up for commissioning. Those who are v ...

Resource Allocation and Accountability: This dimension plays an important role in organizational governance emphasizing the ability to call individuals accountable for their actions [89] while emphasizing the effective allocation of funds for project commissioning and achieving organizational goals [90].

The study responses highlight concerns about financial transparency and potential corruption emphasizing the need for accountability in resource management with a focus on resource prioritization and cost-effectiveness.

A huge financial misappropriation is brewing behind the K Rail project. The consultancy of the project has been dir ...

K-Rail: Rs 2,000 crore for land acquisition; 1000 crore for KSRTC modernization

#KRail is utter useless project which will benefit only

Social Equity and Justice: Promoting equity and social justice is integral to civil engineering as mentioned in its code of ethics. Members are urged to, “acknowledge the diverse historical, social, and cultural needs of the community, and incorporate these considerations in their work,” and to “consider and balance societal, environmental, and economic impacts, along with opportunities for improvement, in their work” [91]. In the research paper, the analysis of social media posts highlighted that communities with varying levels of social equity experienced disparities in infrastructure damage and recovery speeds [92].

CM assures 4-time compensation for SilverLine project land acquisition

Finding Land for service roads , flyovers etc not mentioned in #Krail DPR. How many trees will be uprooted? Where is land to plant trees to compensate this? At least 20000 ppl will be impacted by land acquisition. Current estimate is not realistic.

The analysis of the tweet highlights the importance of addressing individuals’ needs who are affected by land acquisition. The

government's effort to provide fair compensation reflects its commitment to equity and justice.

Political Accountability and Trust: This dimension highlights the leaders role in maintaining clear and consistent communication about the project for fostering the trust among the general public.

#KRail detailed project report says there will be tall walls to support the semi-high speed rail track, which may be used for generating ad revenue. CM ... says there wouldn't be any tall walls. He asks to trust him! So why was the detailed project report prepared?!

KRail is going to derail ... 's arrogance! Very much looking forward to it.

While the agencies mention past successes, they assert that "implementation is not without conflict with citizens." The authorities also initiate multiple studies to address citizen concerns in order to obtain insight and refine the ideas.

Cultural & Environmental Sustainability: Culture and sustainable social development are closely interconnected [93]. A research study identified key barriers to environmental sustainability in construction projects within developing countries, including limited knowledge, external pressures, technological challenges, and unfavorable environmental conditions [94].

This study emphasizes the importance of integrating environmental sustainability into infrastructure development and policymaking.

"A developed country is not a place where the poor have cars. It's where the rich use public transportation" – Gu ...

K-rail protestors and their casteist and sexist slurs reveal the toxic culture we live in. What is worse is mainstr ...

5. Discussions

Social media platforms enhance urban planning by enabling broad stakeholder interaction, fostering public participation, gathering comments, and addressing complex urban challenges [95]. This study is analytical and tries to explore how public sentiment is shaped and its impact on the planning and execution of strategic projects and it does not promote or oppose any specific movements or opinions.

In response to the K-Rail e-participation, the government is giving attractive compensation packages, building on its history of efficient compensation distribution in previous projects such as 'national highway' and 'Gail' projects. Despite these measures, activists remain concerned about the state's financial burden resulting from the project. The government acknowledges that large-scale project implementation frequently necessitates borrowing funds highlighting the need for a pragmatic approach to funding. Social media campaigns have been deployed to raise awareness, offering technical insights into the project's design and benefits. These include information on light detection and ranging survey, soil piping concerns, flood risks, and cost analysis. The advertising also emphasizes the benefits such as reduced travel time, environmental sustainability, and economic growth opportunities for the state.

The government's track record of successful land acquisition and timely compensation has boosted confidence in its capacity to execute the K-Rail project. However, social media analysis reveals that opposition is driven by concerns about long-term feasibility, financial sustainability, and environmental impact. As Miranda [19] and Valenzuela et al. [96] describes the impact of social media on participation opportunities and the potential for belief polarization. In the case of K-Rail, opposition appears to be influenced more by pre-existing surroundings and environmental concerns than by diverse viewpoints. This underscores the importance of addressing both past successes and future challenges in large-scale project implementation.

The post opposing the silver line project focuses extensively on the project's feasibility and socio-economic impact. This suggests that the anti-movement is not driven by explicit political gains, even though some posts reflect underlying political ideologies through pseudonyms or symbolic profile pictures.

The content shared on official K-Rail social media sites is identical to that shared on other platforms reflecting a consistent strategy to manage public dissent. However, companies pay less attention to the dynamic nature of involvement on social networking platforms. Additionally, many responses using project-related hashtags were not directly retweeted, but aggregated response videos gain more retweets over a period. Thus, anti-protest strategies are less likely to afford responders opportunities to garner attention via social networks.

Social media participation is not sustained because the increasing generation of knowledge decreases fear and opposition. During these interactions, the government have opportunities to refine project plans based on public feedback. Additionally, e-participation in development projects helps to mitigate risks of political disruptions stemming from religious or ethnic-based hate campaigns. By fostering transparency and dialogue, social media can serve as a platform for constructive participation, ensuring smoother implementation of development projects while addressing public concerns effectively.

6. Implications

Managerial Implications: This study offers managerial implications for policymakers and project managers involved in strategic infrastructure projects like the K-Rail and SilverLine initiatives.

Policymakers should utilize social media to foster transparent and inclusive discussions, build trust and reduce resistance. Protest-related content, often rooted in traditional media like national newspapers [97], significantly influences online discourse. To address this, managers should integrate a multi-channel communication approach, combining traditional media, social media, and offline engagements. Recognizing the interconnectedness of these platforms ensures consistent messaging to amplify project narratives and

counter misinformation effectively.

The study also highlights the importance of concise and visually engaging content in simplifying complex project details. Explaining technical and financial aspects, such as distinctions between "broad-gauge vs. narrow-gauge" or "high-speed vs. semi-high speed," through brief videos, blog posts, and articles, can make information more accessible to stakeholders. Implementing targeted outreach strategies with clear and simplified communication can lower participation barriers, fostering greater public understanding and engagement.

Social implications: Regarding the participation, the affected groups' social media posts focus mostly on their legal battles to safeguard their properties and buildings. However, the constraints placed on the official representation of the platforms to prioritize community interests indicate the need for more inclusive mechanisms to achieve sustainable cities and communities so that it would be inline with the sustainable development goals [98]. E-participants who are not involved in the legal appeal have a minimal influence on court procedures. When articulating the objectives, the affected community must be able to build venues that are conducive to out-of-court dispute resolution.

The aesthetic representation in the form of climate protests also plays a crucial role in shaping public perception. The expected impact of the project on ecological systems is illustrated through graphical representations, self-harming postures, and theatrical performances. The impacted groups should be at the core of the representational mechanism of these activities.

Additionally, the study observed responses ranging from expressions of individuality to group dynamics. The initiators' K-Rail protest statements outline the project's greater benefits and drawbacks, there is a need to balance these narratives by emphasizing the specific concerns of regional participants. Projects should aim to amplify the engagement experience of local communities to have a unity and shared vision towards development.

Policy implications: The K-rail project highlights the tension between the psychological and instrumental needs of the inhabitants, as revealed by the social media posts. Policymakers should address these viewpoints, particularly between those advocating reduced travel needs and those who commute regularly, by fostering dialogue that bridges these divides on digital platforms. Effective policies should consider the role of initiators in balancing ecological concerns with the critical need for economic development, fostering sustainable and inclusive outcomes.

The study also highlights the challenge of limited opinion exchange engagement when the activities focus on opposing the needs of others. Policies should encourage inclusivity in planning gatherings and participants' representations over individual or group-centric narratives ensuring shared concerns than the self-oriented agendas.

Additionally, it was identified that the K-Rail dissent occurs cyclically in nature with intermittent succession of breaks, and after each break, the political leadership or organizers attempt to re-engage participants suggests the need for consistent communication strategies. Thus, policymaker should leverage these moments to amplify the views of political or affected groups while addressing political motivations. Transparent mechanisms can ensure public sentiments are incorporated into decision-making, fostering trust and reducing resistance.

7. Conclusion

This study highlights the dynamic role of agencies and residents in refining the implementation of a rail project demonstrating how Internet platforms encourage democratic engagement beyond elections, especially when events impact the lives of citizens. While these platforms facilitate participation, activities driven by dissatisfaction often limit the scope of constructive policy input. Therefore, managing sentiments to maintain a conducive environment can impact long-term policy engagement strategies. Agencies that generate most of the content shift their attention to controlling the wellness environment, thereby influencing the long-term policy input methods. Emotional reactions such as outrage, is limited by 'self' and hence lacks a holistic perspective to address societal or national interests.

Numerous participation events are dominated by agency-driven content development, which aids the veracity of data but is insufficient for bringing trust and citizen-driven development themes. The opposition helps raise social and technical problems such as 'wide gauge vs. standard gauge rail lines,' environmental impact, and financial viability, compelling agencies to perform additional research. Thus, some agencies have devised techniques designed to provide groups with convincing information that fosters a positive participation experience. It was discovered, however, that such a culture of knowledge creation strengthened the opposition parties, resulting in delay in implementation.

Participation against development plans, such as rail projects, were met with resistance worldwide, and few states were able to implement the recommendations. Proposals that cannot be amended and projects that are cancelled due to community opposition result in the loss of invested funds and the credibility of agencies to undertake projects. This emphasizes the importance of fostering transparent, and inclusive policymaking processes.

Limitation: The research examines e-participation in a development project by analyzing public sentiment from social media platforms. Concerns include the potential for discussions leading to opposition, societal polarization, and the amplification of emotions, which may hinder constructive discourse. Additionally, the data collected from social media may not fully capture participant competence, potentially leading to biases or inhibiting genuine opinions. Future research could explore alternative public engagement methods, such as anonymous surveys, to foster neutral and constructive discussions. Investigating strategies to mitigate online sentiment polarization could further enhance public participation in policy-making and urban planning.

E-participation is crucial during the initial stages of project implementation as it allows the government to adjust deliverables based on citizen expectations. However, this study does not account for the effective implementation in the e-participation experience following the successful implementation of similar projects, such as the Kochi Metro in Kerala. Additionally, research does not address

the impact of citizens' prior opposition participation in a similar transport project in the same region, which could otherwise provide valuable context for understanding current participation dynamics. Thus, future research could investigate e-participation experiences post-implementation of projects and its influence on citizen engagement and sentiment offering deeper insights.

CRedit authorship contribution statement

Rajesh R. Pai: Writing – review & editing, Software, Formal analysis. **Sreejith Alathur:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Investigation, Formal analysis, Conceptualization.

Data availability statement

Data will be made available on request. For requesting data, please write to the corresponding author.

Declaration of competing interest

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

References

- [1] B. Shin, J. Floch, M. Rask, P. Bæck, C. Edgar, A. Berdichevskaia, P. Mesure, M. Branlat, A systematic analysis of digital tools for citizen participation, *Gov. Inf. Q.* 41 (3) (2024) 101954.
- [2] M. Adnan, M. Ghazali, N.Z.S. Othman, E-participation within the context of e-government initiatives: a comprehensive systematic review, *Telematics and Informatics Reports* 8 (2022) 100015.
- [3] X. Cheng, X. Su, B. Yang, A. Zarifis, J. Mou, Understanding users' negative emotions and continuous usage intention in short video platforms, *Electron. Commer. Res. Appl.* 58 (2023) 101244.
- [4] L. Cini, Resisting algorithmic control: understanding the rise and variety of platform worker mobilisations, *New Technol. Work. Employ.* 38 (1) (2023) 125–144.
- [5] N. Pandey, R. Dé, M.N. Ravishankar, Improving the governance of information technology: insights from the history of Internet governance, *J. Inf. Technol.* 37 (3) (2022) 266–287.
- [6] S.S. Bodrunova, <? covid19?> Contributive action: socially mediated activities of Russians during the COVID-19 lockdown, *Media Int. Aust.* 177 (1) (2020) 139–143.
- [7] J. Pressman, A. Choi-Fitzpatrick, Covid19 and protest repertoires in the United States: an initial description of limit change, *Soc. Mov. Stud.* 20 (6) (2021) 766–773, <https://doi.org/10.1080/14742837.2020.1860743>.
- [8] V.A. Kornilovich, V.I. Vasilenko, O.A. Kulikova, Stability of the state system in the context of digital transformation, in: *Proceedings of the International Scientific Conference "Smart Nations: Global Trends in the Digital Economy"*, vol. 1, Springer International Publishing, Cham, 2022, February, pp. 65–73.
- [9] EIU., *Democracy Index 2021: less than half the world lives in a democracy. 2022.* Available at: <https://www.eiu.com/n/democracy-index-2021-less-than-half-the-world-lives-in-a-democracy/> (Accessed 19 February 2025).
- [10] S. Akter, Y.K. Dwivedi, S. Sajib, K. Biswas, R.J. Bandara, K. Michael, Algorithmic bias in machine learning-based marketing models, *J. Bus. Res.* 144 (2022) 201–216.
- [11] K. Riemer, S. Peter, Algorithmic audiencing: why we need to rethink free speech on social media, *J. Inf. Technol.* 36 (4) (2021) 409–426.
- [12] J.T. Wade, P.L. Roth, J.B. Thatcher, M. Dinger, Social media and selection: political issue similarity, liking, and the moderating effect of social media platform, *MIS Q.* 44 (3) (2020).
- [13] Paul K., Milmo D., 'Every move scrutinized': Facebook's rocky road to the metaverse, *Guardian*. 2022. Available at: <https://www.theguardian.com/technology/2022/feb/13/meta-facebook-metaverse-zuckerberg-future>. (Accessed 19 February 2025).
- [14] P. Varis, Trump tweets the truth: metric populism and media conspiracy, *Trab. Lingüística Apl.* 59 (2020) 428–443.
- [15] P. Lupien, A. Rincón, A. Lalama, G. Chiriboga, Framing Indigenous Protest in the Online Public Sphere: A Comparative Frame Analysis, *New media & society*, 2022 14614448221074705.
- [16] P.M. Cummings, Democracy and student discontent: Chilean student protest in the post-Pinochet era, *J. Polit. Lat Am.* 7 (3) (2015) 49–84.
- [17] M. Wennerhag, Patterns of protest participation are changing, *Sociol. Forsk.* (2017) 347–351.
- [18] G. He, A.P. Mol, Y. Lu, Public protests against the Beijing–Shenyang high-speed railway in China, *Transport. Res. Transport Environ.* 43 (2016) 1–16.
- [19] S.M. Miranda, A. Young, E. Yetgin, Are social media emancipatory or hegemonic? Societal effects of mass media digitization in the case of the SOPA discourse, *MIS Q.* 40 (2) (2016) 303–329.
- [20] C. Sun, V.J. Shute, A.E. Stewart, Q. Beck-White, C.R. Reinhardt, G. Zhou, S.K. D'Mello, The relationship between collaborative problem solving behaviors and solution outcomes in a game-based learning environment, *Comput. Hum. Behav.* 128 (2022) 107120.
- [21] M.K. Stein, E.T. Lim, C.W. Tan, Explaining persistent ineffectiveness in professional online communities: multilevel tensions and misguided coping strategies, *J. Assoc. Inf. Syst. Online* 23 (1) (2022) 372–400.
- [22] D. Goh, N. Pang, Protesting the Singapore government: the role of collective action frames in social media mobilization, *Telematics Inf.* 33 (2) (2016) 525–533.
- [23] N. Huang, Y. Hong, G. Burch, Social network integration and user content generation, *MIS Q.* 41 (4) (2017) 1035–1058.
- [24] M. Shukla, R. Misra, R. Gupta, Why do consumers engage in a social media brand community: investigating the effect of psychological empowerment on commitment and loyalty, *J. Consum. Market.* 40 (6) (2023) 734–747.
- [25] B. Yang, Y. Liu, Y. Liang, M. Tang, Exploiting user experience from online customer reviews for product design, *Int. J. Inf. Manag.* 46 (2019) 173–186.
- [26] B. Yang, Y. Liu, W. Chen, A twin data-driven approach for user-experience based design innovation, *Int. J. Inf. Manag.* 68 (2023) 102595.
- [27] Schrage M., Why user experience always has to come first. *Harvard Business Review*. 2016. Available at: <https://hbr.org/2016/09/why-user-experience-always-has-to-come-first>. (Accessed 19 February 2025).
- [28] D. Shin, B. Zhong, F.A. Biocca, Beyond user experience: what constitutes algorithmic experiences? *Int. J. Inf. Manag.* 52 (2020) 102061.
- [29] M.H. Teodorescu, L. Morse, Y. Awwad, G.C. Kane, Failures of fairness in automation require a deeper understanding of human-ML augmentation, *MIS Q.* 45 (3) (2021).
- [30] I. Verhulst, A. Woods, L. Whittaker, J. Bennett, P. Dalton, Do VR and AR versions of an immersive cultural experience engender different user experiences? *Comput. Hum. Behav.* 125 (2021) 106951.
- [31] L. Gao, The emergence of the human flesh search engine and political protest in China: exploring the Internet and online collective action, *Media Cult. Soc.* 38 (3) (2016) 349–364.

- [32] D. Zhukov, K. Kunavin, S. Lyamin, Online rebellion: self-organized criticality of contemporary protest movements, *Sage Open* 10 (2) (2020) 2158244020923354.
- [33] S. Glazunova, M. Amadoru, Anti-regime influentials" across platforms: a case study of the free navalny protests in Russia, *Media Commun.* 11 (3) (2023) 187–202.
- [34] J.J. George, D.E. Leidner, From clicktivism to hacktivism: understanding digital activism, *Inf. Organ.* 29 (3) (2019) 100249.
- [35] H. Sakariassen, I.C. Meijer, Why so quiet? Exploring inhibition in digital public spaces, *Eur. J. Commun.* 36 (5) (2021) 494–510.
- [36] G. Ye, L. Hudders, S. De Jans, M. De Veirman, The value of influencer marketing for business: a bibliometric analysis and managerial implications, *J. Advert.* 50 (2) (2021) 160–178.
- [37] R. Seebruck, A typology of hackers: classifying cyber malfeasance using a weighted arc circumplex model, *Digit. Invest.* 14 (2015) 36–45.
- [38] L. Silva, H. Panahi, Catch me if you can: online protests on sites powered by user-generated content, *Inf. Manag.* 54 (1) (2017) 103–114.
- [39] R. Solomon, Electronic protests: hacktivism as a form of protest in Uganda, *Computer law & security review* 33 (5) (2017) 718–728.
- [40] A. Dijksterhuis, L.F. Nordgren, A theory of unconscious thought, *Perspect. Psychol. Sci.* 1 (2) (2006) 95–109.
- [41] T. Greenhalgh, S. Wiering, Is it time to drop the 'knowledge translation' metaphor? A critical literature review, *J. R. Soc. Med.* 104 (12) (2011) 501–509.
- [42] T. Elliott, J. Earl, Online protest participation and the digital divide: modeling the effect of the digital divide on online petition-signing, *New Media Soc.* 20 (2) (2018) 698–719.
- [43] M. Gärtner, D. Andersson, D. Västfjäll, G. Tinghög, Affect and prosocial behavior: the role of decision mode and individual processing style, *Judgment and Decision making* 17 (1) (2022) 1–13.
- [44] M. Tarafdar, D. Kajal Ray, Role of social media in social protest cycles: a sociomaterial examination, *Inf. Syst. Res.* 32 (3) (2021) 1066–1090.
- [45] L. Jasny, D.R. Fisher, How networks of social movement issues motivate climate resistance, *Soc. Netw.* 75 (2023) 159–169.
- [46] N.M. Somma, Social movements and exchanges: sketch of a theory, *Ration. Soc.* 33 (4) (2021) 480–511.
- [47] N.M. Somma, M. Bargsted, F. Sánchez, Protest issues and political inequality in Latin America, *Am. Behav. Sci.* 64 (9) (2020) 1299–1323.
- [48] I. Inguanzo, A. Mateos, H. Gil de Zúñiga, Why do people engage in unlawful political protest? Examining the role of authoritarianism in illegal protest behavior, *Am. Polit. Res.* 50 (3) (2022) 428–440.
- [49] Yetgin, E., A.G. Young, and S.M. Miranda, Cultural production of protest frames and tactics: Cybermediaries and the SOPA movement. *Proceedings of the 33rd International Conference on Information Systems*, (2012).
- [50] J. Lorenzini, H. Kriesi, P. Makarov, B. Wüest, Protest event analysis: developing a semiautomated NLP approach, *Am. Behav. Sci.* (2021) 00027642211021650.
- [51] K. Martin, B. Josephson, G. Vadakkapatt, J. Johnson, Lobbying and the like: managing the regulatory environment, *NIM Marketing Intelligence Review* 13 (2) (2021) 38–43.
- [52] T.L. James, E.D.V. Calderon, F. Bélanger, P.B. Lowry, The mediating role of group dynamics in shaping received social support from active and passive use in online health communities, *Inf. Manag.* 59 (3) (2022) 103606.
- [53] D. Pinazo Calatayud, E. Nos Aldás, Developing moral sensitivity through protest scenarios in international NGOs' Communication, *Commun. Res.* 43 (1) (2016) 25–48.
- [54] O. Troisi, G. Fenza, M. Grimaldi, F. Loia, Covid-19 sentiments in smart cities: the role of technology anxiety before and during the pandemic, *Comput. Hum. Behav.* 126 (2022) 106986.
- [55] S.N. Geniole, B.M. Bird, A. Witzel, J.T. McEvoy, V. Proietti, Preliminary evidence that brief exposure to vaccination-related internet memes may influence intentions to vaccinate against COVID-19, *Comput. Hum. Behav.* 131 (2022) 107218.
- [56] P. Kaur, A. Dhir, S. Chen, R. Rajala, Understanding online regret experience using the theoretical lens of flow experience, *Comput. Hum. Behav.* 57 (2016) 230–239.
- [57] M. Rezaei, M. Khazaei, The challenge of being activist-designer. An attempt to understand the New Role of Designer in the Social change based on current experiences, *Des. J.* 20 (sup1) (2017) S3516–S3535.
- [58] S.A. Azeez, F.A. Mustafa, R.M. Ahmed, The role of the active design approach in improving the environmental psychology of a healthy built environment: the case of a university campus, *Buildings* 13 (8) (2023) 1999.
- [59] M. Minge, M. Thüring, Hedonic and pragmatic halo effects at early stages of user experience, *Int. J. Hum. Comput. Stud.* 109 (2018) 13–25.
- [60] G.A. Fine, U. Corte, Dark fun: the cruelties of hedonic communities 1, *Sociol. Forum* 37 (1) (2022, March) 70–90.
- [61] S. Valenzuela, Unpacking the use of social media for protest behavior: the roles of information, opinion expression, and activism, *Am. Behav. Sci.* 57 (7) (2013) 920–942.
- [62] P. Wang, K. Li, Q. Du, J. Wang, Customer experience in AI-enabled products: scale development and validation, *J. Retailing Consum. Serv.* 76 (2024) 103578.
- [63] S. Duguay, J. Burgess, N. Suzor, Queer women's experiences of patchwork platform governance on Tinder, Instagram, and Vine, *Convergence* 26 (2) (2020) 237–252.
- [64] G. Verhulsdonck, N. Shalamova, Creating content that influences people: considering user experience and behavioral design in technical communication, *J. Tech. Writ. Commun.* 50 (4) (2020) 376–400.
- [65] F. Mehraliyev, Y. Choi, B. King, Expert online review platforms: interactions between specialization, experience, and user power, *J. Trav. Res.* 60 (2) (2021) 384–400.
- [66] J.M. Jasper, Constructing indignation: anger dynamics in protest movements, *Emotion Review* 6 (3) (2014) 208–213.
- [67] A. Eniayejuni, Impact of positive and negative emotions on protest for institutional reform: an analysis of #EndSars Twitter posts, *Acta Psychol.* 236 (2023) 103929.
- [68] C. d'Andréa, J. Ziller, Violent scenes in Brazil's 2013 protests: the diversity of ordinary people's narratives, *Televis. N. Media* 17 (4) (2016) 324–334.
- [69] S. Moscovici, *Social Representations: Essays in Social Psychology*, Nyu Press, 2001.
- [70] H. Sakariassen, A digital public sphere: just in theory or a perceived reality for users of social network sites? *MedieKultur: Journal of Media & Communication Research* 36 (68) (2020) 126–146.
- [71] K.C. Chia, C.C. Hsu, L.T. Lin, H.H. Tseng, The identification of ideal social media influencers: integrating the social capital, social exchange, and social learning theories, *J. Electron. Commer. Res.* 22 (1) (2021) 4–21.
- [72] K. Ivaturi, C. Chua, Framing norms in online communities, *Inf. Manag.* 56 (1) (2019) 15–27.
- [73] P. Kaur, A. Dhir, R. Rajala, Assessing flow experience in social networking site based brand communities, *Comput. Hum. Behav.* 64 (2016) 217–225.
- [74] L. Zhang, Z. Shao, J. Benitez, R. Zhang, How to improve user engagement and retention in mobile payment: a gamification affordance perspective, *Decis. Support Syst.* 168 (2023) 113941.
- [75] A. Veneti, Aesthetics of protest: an examination of the photojournalistic approach to protest imagery, *Vis. Commun.* 16 (3) (2017) 279–298.
- [76] D. Mahl, M.S. Schäfer, J. Zeng, Conspiracy theories in online environments: an interdisciplinary literature review and agenda for future research, *New Media Soc.* (2022) 14614448221075759.
- [77] K. Babić, M. Černe, C.E. Connolly, A. Dysvik, M. Škerlavaj, Are we in this together? Knowledge hiding in teams, collective prosocial motivation and leader-member exchange, *J. Knowl. Manag.* 23 (8) (2019) 1502–1522.
- [78] D. Wu, Empirical study of knowledge withholding in cyberspace: integrating protection motivation theory and theory of reasoned behavior, *Comput. Hum. Behav.* 105 (2020) 106229.
- [79] Keralarail, Alignment-of-silver-line-corridor, Available at: keralarail.com/alignment-of-silver-line-corridor, 2022. (Accessed 27 January 2022).
- [80] H. Masuda, S.H. Han, J. Lee, Impacts of influencer attributes on purchase intentions in social media influencer marketing: mediating roles of characterizations, *Technol. Forecast. Soc. Change* 174 (2022) 121246.
- [81] S. Farivar, F. Wang, Y. Yuan, Opinion leadership vs. para-social relationship: key factors in influencer marketing, *J. Retailing Consum. Serv.* 59 (2021) 102371.
- [82] J.G. Rozema, M. Cashmore, A.J. Bond, J. Chilvers, Respatialization and local protest strategy formation: investigating high-speed rail megaproject development in the UK, *Geoforum* 59 (2015) 98–108.

- [83] M. Born, A. Akkerman, K. Thommes, Peer influence on protest participation: communication and trust between co-workers as inhibitors or facilitators of mobilization, *Soc. Sci. Res.* 56 (2016) 58–72.
- [84] H. Dekoninck, D. Schmuck, The mobilizing power of influencers for pro-environmental behavior intentions and political participation, *Environmental Communication* 16 (4) (2022) 458–472.
- [85] J. Silge, D. Robinson, *Text Mining with R: A Tidy Approach*, O'Reilly Media, Inc, 2017.
- [86] D.A. Gioia, K.G. Corley, A.L. Hamilton, Seeking qualitative rigor in inductive research: notes on the Gioia methodology, *Organ. Res. Methods* 16 (1) (2013) 15–31.
- [87] K.S. Quick, J.M. Bryson, Public participation, in: *Handbook on Theories of Governance*, Edward Elgar Publishing, 2022, pp. 158–168.
- [88] G. Sharma, X. Bao, L. Peng, Public participation and ethical issues on E-governance: a study perspective in Nepal, *Electron. J. eGovernment* 12 (1) (2014) 80–94.
- [89] Y.F. Zhang, Too little or too much transparency? Influencing accountability in project management through the practices of using digital technologies, *Int. J. Proj. Manag.* 42 (6) (2024) 102636.
- [90] K.K. Nkrumah-Young, P. Powell, Resource allocation models and accountability: a Jamaican case study, *J. High Educ. Pol. Manag.* 30 (3) (2008) 245–259.
- [91] L.A. Shuster, What does infrastructure have to do with social justice and equity?, Available at: <https://www.asce.org/publications-and-news/civil-engineering-source/civil-engineering-magazine/issues%20/magazine-issue/article/2021/11/what-does-infrastructure-have-to-do-with-social-justice-and-equity>, 2021. (Accessed 29 November 2024).
- [92] A.J. Rodriguez, A. Ciftci, K. Howell, K. Kokini, B. Wright, A. Nikalje, Promoting Equity, Diversity and Social Justice through Faculty-Led Transformative Projects, *Innovative Higher Education*, 2021, pp. 1–22.
- [93] S. Packalén, Culture and sustainability, *Corp. Soc. Responsib. Environ. Manag.* 17 (2) (2010) 118–121.
- [94] D.G.J. Opoku, J. Ayarkwa, K. Agyekum, Barriers to environmental sustainability of construction projects, *Smart and Sustainable Built Environment* 8 (4) (2019) 292–306.
- [95] T. Hussain, D. Wang, B. Li, Stakeholder perspectives on the role of social media in urban green space, land management, and resilience in gilgit-baltistan, *Land* 13 (7) (2024) 962.
- [96] S. Valenzuela, D. Halpern, J.E. Katz, J.P. Miranda, The paradox of participation versus misinformation: social media, political engagement, and the spread of misinformation, *Digital Journalism* 7 (6) (2019) 802–823.
- [97] Thomas J.J., The SilverLine is not a vanity project. 2022. Available at : www.thehindu.com/opinion/op-ed/the-silverline-is-not-a-vanity-project/article65094608.ece, (Accessed 19 February 2025).
- [98] UNESCO. Education for Sustainable Development Goals, Learning Objectives, UNESCO, Paris, France, 2017. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000247444>. (Accessed 14 November 2024).