

Technology and Social Bonds: Exploring the Dynamics of Human Connection in the Society 5.0 Era

Rangga Alif Faresta*, Teo Zhao Ser Bryan Nicholas, & Yixuan Chi

Department of Digital Learning, Monash University, Melbourne, AUSTRALIA

*Corresponding author e-mail: rfar0018@student.monash.edu

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Abstract

In the Society 5.0 era, human connections are profoundly influenced by technological advancements, particularly social media. This study explores the impact of these changes on social bonds, emphasizing the balance between connectivity and relationship quality. Using a descriptive survey method, data were gathered from 147 participants through a structured questionnaire. The findings reveal that while digital platforms enhance communication frequency, facilitate long-distance relationships, and broaden cultural understanding, they also present challenges such as reduced face-to-face interactions, dependency on digital tools, and superficial connections. Participants widely recognized the role of technology in creating opportunities for new relationships and sustaining existing ones across distances. However, they also emphasized the enduring value of physical interactions for emotional depth and trust. Moderate levels of agreement regarding digital distractions and technology's role in conflict resolution reflect the complexities of navigating these tools in everyday relationships. The dual nature of technology—as both a connector and a potential disruptor—highlights the need for strategies to promote mindful and balanced usage. This study underscores the importance of fostering digital literacy and encouraging offline engagement to preserve meaningful social bonds. By addressing these dynamics, Society 5.0 can strengthen inclusivity, empathy, and cohesion, ensuring that technological progress aligns with human well-being and authentic connections.

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INTRODUCTION

In the Society 5.0 era, characterized by the integration of advanced technologies like artificial intelligence (AI), the Internet of Things (IoT), and big data, the dynamics of human connection undergo profound transformations. This era prioritizes creating a human-centered society, balancing technological advancement with social well-being, necessitating a nuanced understanding of how these developments affect human connections. The interplay between

technology and social bonds in this context holds critical importance as it influences not only interpersonal relationships but also broader societal structures.

Research highlights the dual impact of technology on social relations, particularly among younger populations. For instance, excessive reliance on smart devices has been shown to impair interpersonal skills and adaptability, weakening social bonds (Puteri, 2024). Adolescents often face challenges in building meaningful relationships as digital communication replaces in-person interactions. This shift raises concerns about potential isolation in a hyper-connected society. Such environments, dominated by virtual communication, can limit emotional resonance and depth in relationships, presenting challenges to traditional concepts of community and social cohesion.

The concept of social capital, defined as networks of relationships facilitating access to resources and enhancing community well-being, emerges as pivotal in the Society 5.0 era. The integration of technology provides opportunities to build and expand social networks, bridging geographical and social divides. For example, mobile communication technologies have been instrumental in creating diverse social networks reflecting societal structures, thus influencing how individuals interact and form communities (Li et al., 2015). This capacity to foster connections underscores the potential of technology to enhance societal inclusivity. However, the quality of these connections remains a matter of debate, with studies suggesting that digital interactions may lack the depth and emotional engagement characteristic of traditional interpersonal relationships (Fernando et al., 2021).

The societal implications of technological integration extend beyond individual relationships. Increased interconnectedness, facilitated by digital platforms, contributes to higher-level social structures by enhancing collective action and cohesion (Carmel, 2023). This interconnectedness is essential for addressing complex societal challenges, emphasizing the role of technology in fostering collaboration and unity. At the same time, concerns arise regarding inequality in access to digital resources, which can exacerbate existing disparities and fragment society. Ensuring equitable access to technological advancements is crucial for fostering inclusive social bonds that transcend socioeconomic barriers (Léo et al., 2016).

The impact of technology on social norms and interactions is also significant. Social media platforms, for instance, facilitate connections across geographical boundaries, enabling individuals to maintain relationships and find communities with shared interests. Studies demonstrate that social media has been effective in reducing social isolation for individuals constrained by physical distance or circumstances, thereby strengthening social bonds (Satata, 2023). However, excessive use of these platforms can lead to feelings of loneliness and superficial connections, detracting from the depth of relationships (Balki et al., 2023). The phenomenon of "social media addiction" highlights the risks of prioritizing online interactions over face-to-face communication, which can erode the integrity of real-life relationships (Ahnán, 2022).

In digital environments, social behaviors and norms often deviate from traditional expectations. For example, curated portrayals of lives on social media can fuel social

comparisons, fostering negative emotions such as inadequacy and jealousy (Liang, 2023). These dynamics can strain personal relationships, highlighting the complex role of technology in shaping interpersonal connections. Moreover, online communities frequently establish norms that influence individual behaviors and attitudes, sometimes conflicting with traditional values (Traiyatha, 2023). As society navigates these changes, a reevaluation of how relationships are formed and maintained in the digital age becomes necessary.

The broader societal structures influenced by digital platforms reveal additional complexities. Social media's role in community engagement and activism illustrates its potential to strengthen social bonds within communities by fostering shared purposes and collective actions (Standlee, 2020). However, the formation of echo chambers and polarization within digital environments can threaten inclusivity and community cohesion (Habib et al., 2018). Striking a balance between leveraging the strengths of digital connectivity and mitigating its divisive effects is a critical challenge in Society 5.0.

To address these challenges, promoting digital literacy and responsible technology use is essential. Educational initiatives encouraging critical thinking about online content and awareness of digital footprints can empower individuals to navigate digital spaces effectively (Ramadan & Eleyan, 2021). Such efforts foster healthier social bonds by emphasizing respect and empathy in digital interactions. Additionally, initiatives aimed at encouraging offline interactions and community participation are vital in countering the isolating effects of excessive reliance on technology (Mshana et al., 2022).

The cognitive and emotional aspects of human connectivity also deserve attention in the context of digital transformation. The mentalizing network, responsible for understanding others' thoughts and emotions, plays a fundamental role in fostering empathy and social understanding (Baumgärtner et al., 2011). Changes in communication patterns influenced by technology may affect this network, altering how individuals perceive and engage with one another. Recognizing and addressing these effects is critical for preserving the emotional richness of human connections.

Social media's influence extends to the shaping of social norms, often altering traditional expectations and behaviors. For instance, the normalization of resolving conflicts or expressing emotions through digital platforms reflects the evolving dynamics of interpersonal relationships (Yang, 2021). This shift requires an understanding of the implications for social cohesion and interpersonal trust. Efforts to integrate digital platforms into societal structures must consider these dynamics to maintain harmony and inclusivity.

Moreover, digital platforms play a transformative role in community building and activism. The ability to mobilize support for causes highlights their potential to strengthen social cohesion within communities (Standlee, 2020). However, this potential is tempered by risks of polarization and the reinforcement of biases within online spaces. Addressing these risks requires strategic approaches that prioritize inclusivity and constructive dialogue.

The Society 5.0 era presents an unprecedented opportunity to redefine human connections through technology. The integration of digital platforms and social media offers

immense potential to enhance social bonds and community well-being. However, realizing this potential requires a balanced approach that acknowledges the complexities of digital interactions. By fostering equitable access, promoting digital literacy, and encouraging responsible technology use, society can navigate the challenges of technological advancement while preserving the essence of meaningful human connections.

Research Problems and Objective

The dynamics of human connection in Society 5.0 have been profoundly influenced by technological advancements, particularly social media. This transformation raises significant research concerns, as it challenges traditional paradigms of social interaction and community building. Society 5.0, envisioned as a human-centered framework integrating cutting-edge technologies, seeks to balance technological progress with societal well-being. However, the growing reliance on social media and digital platforms to facilitate communication has introduced a duality in its impact on social bonds. While these technologies have enabled unprecedented levels of connectivity across physical and cultural boundaries, their pervasive use has also been linked to diminishing interpersonal skills and the erosion of meaningful, face-to-face relationships (Puteri, 2024). The phenomenon of social media addiction, for instance, highlights how excessive virtual engagement can detract from the depth and quality of real-life interactions, leading to feelings of isolation and emotional detachment (Ahnan, 2022). Addressing these challenges is critical for fostering authentic connections that align with Society 5.0's goals of inclusivity and social cohesion.

Moreover, the societal implications of these technological shifts extend beyond individual relationships to broader social structures. The integration of social media in everyday life has reshaped community dynamics, offering platforms for collective action and civic engagement, yet simultaneously fostering environments that encourage superficial connections and polarizing behaviors (Standlee, 2020). These dual outcomes underscore the complexity of technological influence on social bonds, necessitating a nuanced exploration of its effects. For instance, while social media has enabled marginalized communities to find support and representation, it has also intensified issues like cyberbullying and social comparison, which can undermine trust and intimacy in relationships (Liang, 2023). Understanding these dynamics is crucial for identifying strategies that mitigate negative outcomes while leveraging the positive potential of social media. Thus, the objective of this study is to explore the dynamics of human connection in the Society 5.0 era due to technological advances, especially social media.

Novelty of the Research

The novelty of this research lies in its contextual focus on Society 5.0, which represents a shift from conventional technological frameworks to a more holistic approach that prioritizes human well-being. Unlike previous studies that have primarily examined the technological effects on social interactions in isolation, this research investigates these dynamics within the unique socio-technological landscape of Society 5.0. By incorporating the

dual aspects of technology as both a connector and a disruptor, the study offers fresh insights into achieving a balance between leveraging technological advancements and maintaining meaningful human relationships. The exploration of this balance contributes to the broader discourse on sustainable social development in the digital age.

The specific objective of this study further underpins its novelty. By focusing on the dynamics of human connection facilitated by social media in the context of Society 5.0, this research fills a critical gap in existing literature. Current studies often address either the benefits or the risks of social media but rarely examine how these opposing effects interact within a society driven by advanced technological integration. This unique perspective provides a comprehensive understanding of the opportunities and challenges posed by social media in shaping human connections, aligning with the overarching goals of Society 5.0.

METHODS

This research adopts a descriptive survey method to explore the dynamics of human connection in the Society 5.0 era due to technological advances, particularly social media. A total of 147 participants contributed to this study, representing diverse demographic backgrounds. The demographic distribution of the participants is summarized in Table 1, which highlights variations in age, gender, and occupation.

Participants

The participants were categorized into six age groups: below 18 years, 18–24 years, 25–34 years, 35–44 years, 45–54 years, and 55 years and above. The majority (96 participants, 65.31%) fell within the 18–24 age bracket, indicative of the study's focus on younger demographics who are typically the most active users of social media. Meanwhile, 40 participants (27.21%) were under 18 years of age, suggesting the inclusion of adolescents, a group often impacted by technological integration. Other age categories were less represented, with only 11 participants (7.48%) distributed across the remaining groups.

Table 1. Participant demographics

Demographics		(N)	Percentage (%)
Age	Below 18 years	40	27.21%
	18–24 years	96	65.31%
	25 years and above	11	7.48%
Gender	Male	61	41.50%
	Female	86	58.50%
Occupation	Students	121	82.31%
	Others	26	17.69%

Gender distribution shows a relatively balanced sample, comprising 61 males (41.50%) and 86 females (58.50%). Regarding occupation, 121 participants (82.31%) identified as students, while 26 participants (17.69%) represented various other professions. This occupational breakdown aligns with the study's emphasis on understanding social media's

influence on younger and more digitally connected populations, particularly students who actively engage with these technologies.

Data Collection Instrument

The primary data collection instrument was a structured questionnaire designed in a Google Form format. The questionnaire consisted of two sections:

1. **Demographic Data:** This section collected participant information, including age, gender, and occupation, to provide context for the analysis of responses.
2. **Research Items:** The second section included 10 closed-ended statements focusing on the dynamics of human connection in the Society 5.0 era, emphasizing technological influences like social media. Participants were instructed to respond using a 5-point Likert scale ranging from "strongly agree" to "strongly disagree."

The questionnaire underwent a thorough validation process to ensure its reliability and accuracy in capturing relevant data. Expert reviews and pre-testing confirmed its validity, deeming it a suitable tool for achieving the research objectives.

Data Collection Procedure

The questionnaire was distributed to participants online through the Google Form platform. This approach facilitated ease of access and convenience, ensuring a broad reach among the target demographic. Participants were informed about the study's purpose and assured of the confidentiality of their responses. Consent was obtained before proceeding with data collection, adhering to ethical standards. The online format also minimized potential biases related to geographic limitations, enabling participants from diverse locations to engage in the study.

Data Analysis

The collected data were analyzed descriptively by calculating the average scores of participant responses to each statement. To interpret the results, the mean scores were categorized into response levels using the criteria outlined in Table 2. These levels ranged from "strongly disagree" (mean score < 1.80) to "strongly agree" (mean score > 4.20). The interval scale provided a clear framework for understanding participant sentiment and evaluating trends in their perceptions of social media's impact on human connection.

Table 2. Response levels

No	Interval score range	Criteria
1.	$X > 4,20$	Strongly Agree (SA)
2.	$3,40 < X \leq 4,20$	Agree (A)
3.	$2,60 < X \leq 3,40$	Moderately Agree (MA)
4.	$1,80 < X \leq 2,60$	Disagree (D)
5.	$X \leq 1,80$	Strongly Disagree (SD)

Ethical Considerations

This study adhered to strict ethical guidelines to ensure the protection and dignity of participants. Informed consent was obtained, with participants given detailed information about the study's objectives, procedures, and their rights. The confidentiality of personal data was strictly maintained throughout the research process, and participants retained the right to withdraw from the study at any time without consequence.

Justification for Methodology

The descriptive survey approach was chosen for its ability to capture comprehensive data about participant perceptions and experiences related to the study's focus. This method is particularly suitable for exploring the subjective and nuanced dynamics of human connections in the context of technological influences. By analyzing participant responses descriptively, the study provides insights into social media's role in shaping human interactions in Society 5.0. The combination of a validated questionnaire, a diverse participant pool, and robust ethical safeguards ensures that the findings of this research are reliable and meaningful. By leveraging descriptive survey methods, the study aims to provide a well-rounded understanding of the interplay between technology and social bonds in the digital age.

RESULTS AND DISCUSSION

The results of the survey provide valuable insights into participants' perceptions of the role of technology, particularly social media, in shaping human connections within the Society 5.0 era. Table 3 summarizes the frequency distribution, mean scores, standard deviations, and response criteria for each survey item, highlighting key trends and variations in how participants experience and evaluate the influence of technology on their interpersonal interactions. These findings shed light on the dual nature of technology, revealing both its potential to enhance connectivity and its challenges in preserving the quality of social bonds. The analysis of these responses offers a comprehensive understanding of the evolving dynamics of human connections in a technologically integrated society.

Table 3. Summary of participant responses to survey items on technology and social bonds

Aspect	Frequency (N)					Mean score	Std. Dev.	Criteria
	SA	A	MA	D	SD			
1. I frequently use digital technologies such as smartphones or computers in my daily interactions.	54	66	19	5	3	4.109	0.900	Agree
2. The use of social media has increased the frequency of my communication with friends and family.	59	66	16	4	2	4.197	0.841	Agree
3. I feel that technology makes it easier for me to establish new relationships.	44	74	22	6	1	4.048	0.822	Agree

Aspect	Frequency (N)					Mean score	Std. Dev.	Criteria
	SA	A	MA	D	SD			
4. Technology helps me maintain long-distance relationships with others.	71	58	10	5	3	4.286	0.891	Strongly Agree
5. I believe that face-to-face interactions are more meaningful than interactions conducted through technology.	61	63	17	3	3	4.197	0.873	Agree
6. The use of technology has made me less active in engaging in physical interactions with others.	25	50	27	36	9	3.313	1.192	Moderately Agree
7. I feel anxious or stressed when I am unable to access technology for communication.	18	30	38	46	15	2.932	1.192	Moderately Agree
8. Technology has helped me gain a better understanding of various cultures and perspectives.	34	85	22	5	1	3.993	0.763	Moderately Agree
9. I often use technology to resolve conflicts with others.	21	39	48	34	5	3.252	1.072	Moderately Agree
10. Technology often distracts me from social interactions happening in front of me.	19	43	37	37	11	3.150	1.161	Moderately Agree

Note: Strongly Agree (SA), Agree (A), Moderately Agree (MA), Disagree (D), Strongly Disagree (SD).

The results of the study shed light on the intricate relationship between technology and social bonds in the Society 5.0 era, emphasizing the dual impact of technological advances, particularly social media, on human connections. By examining participants' responses to key aspects of their interactions with digital technologies, the study provides critical insights into the evolving dynamics of communication and relationships in a digitally integrated society. The analysis highlights both the opportunities afforded by technology and the challenges it presents, with implications for societal cohesion, interpersonal relationships, and individual well-being.

Frequent Use of Digital Technologies

The results reveal that participants frequently use digital technologies, with a mean score of 4.109 categorized as "Agree." This indicates the ubiquitous role of smartphones and computers in everyday communication and interaction. Digital devices have become integral tools for navigating personal, educational, and professional life, aligning with the vision of Society 5.0 to create a highly connected and efficient society. However, this reliance on technology also raises concerns about its impact on traditional forms of communication. Elçi et al. (2022) highlight that the shift towards technology-based communication has fundamentally altered organizational structures and interpersonal dynamics, resulting in a loss of the personal touch that characterizes traditional communication methods.

This phenomenon can be understood through the media richness theory, which posits that different communication channels possess varying capacities for conveying information. Face-to-face communication is considered the richest medium due to its ability to transmit

non-verbal cues such as facial expressions, tone of voice, and body language, which are crucial for effective interpersonal communication (Fujihira, 2024; Cornelius & Hayes, 2011). In contrast, digital communication channels, including emails and instant messaging, lack these rich non-verbal elements, often leading to misunderstandings and a diminished quality of interaction (Smith & Duxbury, 2019; Schiffrin et al., 2010). For example, Schiffrin et al. (2010) found that increased internet usage correlates with decreased well-being and social connectedness, illustrating the potential drawbacks of overreliance on digital communication.

Moreover, the reliance on digital communication has been linked to a decline in the frequency of face-to-face interactions, essential for fostering social bonds and emotional support. Research during the COVID-19 pandemic revealed that individuals relying heavily on digital communication reported higher levels of loneliness and depression, reinforcing the idea that digital tools cannot fully replicate the emotional and psychological benefits derived from in-person exchanges (Nguyen et al., 2021; Stieger, 2023). This is particularly relevant in complex situations requiring rich communication channels to resolve ambiguities and facilitate mutual understanding (Braun et al., 2015).

Furthermore, digital communication may compromise the quality of professional and mentoring relationships. For instance, mentoring pairs communicating primarily through less rich media, such as email, reported lower levels of perceived support compared to those engaging in face-to-face interactions (Merritt & Havill, 2016; Sankar et al., 2010). These findings underscore the need for strategic approaches to balance digital engagement with in-person connection, ensuring that the benefits of technological tools do not come at the cost of interpersonal depth and understanding.

Enhanced Communication Through Social Media

The participants' agreement, reflected in a mean score of 4.197, highlights the pivotal role of social media in enhancing the frequency of communication with friends and family. This underscores its capability to bridge geographical and temporal divides, making it an invaluable tool in our increasingly globalized society. By enabling regular contact regardless of physical location, social media has transformed the dynamics of interpersonal communication, fostering stronger global connectivity and redefining the boundaries of interaction. Its impact extends beyond individuals, influencing how organizations and communities engage with one another in meaningful ways.

Social media has revolutionized communication by creating a global platform that facilitates enhanced interaction and engagement. This transformation is not limited to one-way information flow but instead enables active participation in the exchange of ideas and content, marking a significant departure from traditional communication methods (Grincheva, 2015; Khaeriyah, 2023). Through its two-way communication model, social media empowers users to become both recipients and contributors, enriching the overall quality and diversity of discourse. This democratization of communication has amplified the voices of individuals and groups, enabling them to share their perspectives widely.

One of the most significant benefits of social media in communication is its ability to promote transparency and real-time information dissemination. Organizations leverage social media platforms to share updates, announcements, and other essential information with their stakeholders effectively (Salem, 2019). This level of openness fosters trust and strengthens relationships between organizations and their audiences, as it ensures that information is accessible and timely (Qhamariyah & Nurmandi, 2021). In an era where trust and credibility are paramount, social media plays an integral role in bridging gaps between organizations and their communities.

The interactive nature of social media further distinguishes it as a powerful communication tool. By enabling users to engage in conversations, provide feedback, and collaborate, social media fosters a sense of community and belonging (Rivanto & Novianti, 2019; Qi, 2018). This interaction is particularly impactful in environments where collaboration and knowledge exchange are critical. Social media facilitates the sharing of ideas across diverse groups, breaking down barriers to innovation and learning (Kuvykaitė & Piligrimienė, 2013; Tervakari et al., 2012). Moreover, this sense of interconnectedness often results in collective problem-solving and a stronger communal identity.

Social media's utility becomes even more apparent in crisis situations. During emergencies, it serves as a vital tool for disseminating critical information, coordinating relief efforts, and engaging with affected communities. The real-time nature of these platforms ensures that essential updates reach wide audiences quickly, potentially saving lives and alleviating suffering (Wang & Dong, 2017; Sennert et al., 2015). Furthermore, the ability to mobilize support and coordinate responses underscores the transformative potential of social media in addressing global challenges and fostering resilience in times of crisis.

Despite its numerous advantages, the effectiveness of social media in enhancing relationships is nuanced. While it undeniably increases the frequency of communication, it does not always translate into stronger interpersonal bonds. Research has shown that social media interactions can sometimes lack depth and emotional authenticity, highlighting a critical limitation of digital communication (Fernando et al., 2021). These findings suggest that while online interactions are convenient and efficient, they may dilute the richness of relationships, which are often built on meaningful, face-to-face connections.

The potential for social media to erode the quality of interpersonal relationships calls for a balanced approach to its use. Complementing online interactions with offline engagements is crucial to preserving the emotional depth and authenticity that characterize meaningful relationships. By striking this balance, individuals and organizations can maximize the benefits of social media while mitigating its limitations. This hybrid model of communication ensures that the advantages of digital connectivity are not achieved at the expense of interpersonal depth and relational integrity.

In conclusion, social media has significantly enhanced communication by bridging gaps, fostering transparency, and promoting community engagement. Its capacity for real-time information dissemination and interactivity has transformed how individuals and

organizations connect. However, the depth and authenticity of relationships require careful attention, as digital platforms alone cannot fully replicate the richness of face-to-face interactions. By integrating meaningful offline engagements with online communication, social media's potential to enhance relationships and foster global connectivity can be fully realized.

Technology as a Facilitator of New Relationships

Participants' agreement, with a mean score of 4.048, underscores the transformative role of technology in facilitating new relationships. Digital platforms, particularly social media, enable users to connect with individuals who share similar interests, values, or experiences, thereby fostering inclusivity and diversity in social networks. These tools have significantly expanded the scope of social interactions, making it easier for people to establish connections across geographical and cultural boundaries. However, concerns about the depth of these relationships persist, as digital platforms often prioritize convenience and accessibility over emotional engagement. This raises critical questions about whether online connections can evolve into bonds as intimate and meaningful as traditional relationships.

Technology has undeniably emerged as a powerful tool for creating and nurturing social connections, especially in challenging circumstances. Several studies have emphasized its role in enhancing social connectedness during the COVID-19 pandemic, a time when physical distancing measures disrupted conventional social interactions. Digital technologies, including social media, video communication platforms, and mobile applications, provided essential avenues for maintaining social connections. These tools were particularly beneficial for older adults, a demographic often vulnerable to social isolation and loneliness due to reduced mobility and limited opportunities for in-person interaction (Delello & McWhorter, 2016; Savage et al., 2022; Freeman et al., 2020). Through access to online communities and virtual interactions, technology offered older adults a lifeline, reducing feelings of isolation and fostering a renewed sense of belonging.

For older adults, the benefits of technology extend beyond merely maintaining existing relationships to forming new ones. Virtual interactions have allowed this group to overcome barriers such as physical distance or health-related mobility issues, enabling them to engage with new social networks that were previously inaccessible. Online communities focused on shared interests, hobbies, or support have become spaces where older adults can connect meaningfully. These platforms provide opportunities for mutual learning, exchange of experiences, and emotional support, which are critical for enhancing overall well-being (Delello & McWhorter, 2016; Savage et al., 2022; Freeman et al., 2020). By bridging the gap between isolation and interaction, technology has proven to be a game changer in mitigating the social challenges faced by older adults.

Younger populations, too, have significantly benefited from technology's facilitation of social connections. Studies have shown that social media and instant messaging platforms play a pivotal role in enhancing adolescents' sense of peer connectedness and social support, especially during periods of social distancing (Wu et al., 2015; James et al., 2023; Liang et al.,

2023). For many young people, these platforms offer a space to maintain and even deepen their relationships with peers, despite the absence of physical interactions. The immediacy and accessibility of digital communication allow adolescents to share their thoughts, feelings, and experiences in real time, contributing to a sense of closeness and solidarity.

Digital communication platforms also provide a degree of flexibility that traditional methods lack. Younger users can choose how, when, and with whom they communicate, enabling them to tailor their social interactions to suit their preferences and schedules. This flexibility has been instrumental in sustaining relationships during periods of upheaval or uncertainty, such as the COVID-19 pandemic. The ability to stay connected virtually has mitigated feelings of disconnection and isolation, underscoring the importance of technology as a facilitator of social ties during challenging times (Wu et al., 2015; James et al., 2023; Liang et al., 2023).

Despite these benefits, the nature of relationships formed through technology warrants closer examination. While digital platforms have made it easier to initiate and maintain connections, the depth and quality of these relationships are often questioned. Online interactions, though convenient, can lack the emotional authenticity and richness of face-to-face encounters. This is particularly evident in cases where relationships are primarily conducted through text-based communication, which may fail to capture nuances such as tone, facial expressions, or body language. As a result, some online connections may remain superficial, highlighting the limitations of technology in fostering deeper emotional bonds.

This challenge is compounded by the potential for digital platforms to create environments where interactions are transactional rather than relational. The emphasis on quick and efficient communication can lead to connections that prioritize immediacy over emotional depth. While these interactions may serve a functional purpose, they may fall short of providing the sense of intimacy and understanding that characterizes meaningful relationships. For this reason, complementing digital interactions with in-person engagements remains critical in ensuring the quality and authenticity of social connections.

Technology's role in facilitating new relationships also extends to broader social contexts. Online platforms have become spaces where individuals can collaborate, exchange ideas, and form communities around shared goals or interests. This collaborative aspect is particularly valuable in professional or academic settings, where technology enables individuals to build networks that transcend traditional boundaries. However, even in these contexts, the need for balance between virtual and face-to-face interactions persists. Relationships formed solely through digital means may lack the trust and rapport that often develop through personal engagement, suggesting that technology is most effective when used as a complement to, rather than a substitute for, traditional forms of connection.

In conclusion, technology has played a transformative role in facilitating new relationships, breaking down barriers to social interaction, and fostering inclusivity across diverse groups. Its impact is evident in both older and younger populations, where it has addressed unique challenges related to social isolation and connectivity. However, the depth

and authenticity of relationships formed through digital platforms remain areas of concern, underscoring the importance of integrating offline interactions into the equation. By leveraging the strengths of technology while acknowledging its limitations, individuals and communities can create a more balanced and effective approach to building and sustaining meaningful social connections.

Maintaining Long-Distance Relationships

A key finding from the study is the strong agreement, reflected in a mean score of 4.286, that technology plays a vital role in maintaining long-distance relationships. This highlights the transformative ability of digital tools to sustain connections across geographical boundaries, aligning with the goals of Society 5.0 to foster social inclusivity. Platforms such as video conferencing, instant messaging, and social media serve as lifelines for individuals separated by distance, enabling them to share experiences, offer support, and maintain emotional closeness. These tools have become indispensable in modern life, bridging physical divides and nurturing connections that might otherwise diminish. However, while these digital innovations facilitate communication, they cannot fully replicate the emotional depth of in-person interactions. Challenges such as miscommunication, time zone differences, and the inherent limitations of virtual presence underscore the complexities of maintaining intimacy in long-distance relationships.

Social media has emerged as a particularly powerful tool for enhancing relationships despite physical separation. A study by Hatamleh et al. (2023) revealed that social media use facilitates communication and fosters a sense of community, even when distance is a significant barrier. By creating opportunities for individuals to interact in real-time or asynchronously, social media bridges gaps that would otherwise hinder meaningful communication. Similarly, during periods of social distancing, such as those experienced during the COVID-19 pandemic, individuals were highly motivated to leverage social media for "Relationship Maintenance." This finding, supported by Bowden-Green et al. (2021), underscores the adaptability of social media in addressing the evolving needs of interpersonal connections.

One of the most significant advantages of social media in long-distance relationships is its ability to enable frequent interaction and the sharing of life experiences. Research by Thygesen et al. (2022) found that social media allows individuals to create and respond to content that reflects their daily lives, fostering a sense of closeness and intimacy. This frequent exchange of updates, photos, and videos helps long-distance partners feel more involved in each other's lives, reducing the psychological distance that physical separation can create. Similarly, Alinejad (2020) highlighted the use of social media apps and mobile devices among Romanian families with transnationally mobile loved ones, emphasizing the critical role of these technologies in preserving familial bonds across borders.

The role of social media extends beyond facilitating communication to actively supporting the maintenance of romantic relationships over long distances. Marcotte et al. (2021) found that many participants in long-distance romantic relationships used social media

to engage with their partners both before establishing their relationships and after potential dissolutions. This suggests that social media not only serves as a platform for ongoing interaction but also as a means of reconnecting and maintaining emotional ties during periods of transition or strain. These findings emphasize that maintaining relationships, particularly romantic ones, is a primary motivator for using social media, highlighting its integral role in modern relationship dynamics.

Despite the many advantages of digital tools, the challenges of maintaining long-distance relationships through technology should not be overlooked. While platforms like video conferencing and instant messaging enable regular contact, they cannot fully replicate the emotional resonance of face-to-face interactions. Non-verbal cues such as tone of voice, facial expressions, and body language—elements essential for conveying emotional depth—are often diminished or absent in virtual communication. As a result, miscommunication can arise, potentially straining relationships. Moreover, differences in time zones can complicate efforts to maintain consistent contact, forcing partners or family members to navigate logistical challenges in their interactions.

Another challenge lies in the overreliance on virtual presence, which can sometimes lead to superficial interactions. While social media provides opportunities for frequent updates and exchanges, these interactions may lack the depth and emotional authenticity that characterize in-person engagements. This limitation is particularly significant in long-term relationships, where sustaining intimacy requires more than regular communication; it also necessitates shared experiences and physical proximity that digital tools cannot provide. Recognizing these limitations is essential to developing strategies for balancing virtual and in-person interactions in long-distance relationships.

Furthermore, the use of social media for maintaining relationships often requires deliberate effort and intentionality. Unlike in-person interactions, which naturally integrate into daily life, virtual communication demands planning and coordination. This added layer of effort can place a strain on individuals, particularly if one party feels a disproportionate responsibility for initiating or sustaining contact. Balancing these dynamics is critical to ensuring that the relationship remains equitable and fulfilling for both parties.

In conclusion, technology has proven to be an invaluable facilitator of long-distance relationships, offering tools and platforms that bridge geographical divides and foster emotional closeness. Social media, in particular, plays a central role in enabling frequent interaction, sharing life experiences, and maintaining intimacy in relationships across distances. Research highlights the adaptability and effectiveness of these digital tools, demonstrating their ability to sustain familial, platonic, and romantic relationships in various contexts (Hatamleh et al., 2023; Bowden-Green et al., 2021; Thygesen et al., 2022; Alinejad, 2020; Marcotte et al., 2021). However, the challenges of miscommunication, time zone differences, and reliance on virtual presence must be acknowledged and addressed to maximize the potential of technology in preserving long-term intimacy. By recognizing both the strengths and limitations of digital communication, individuals can adopt a balanced

approach that integrates virtual tools with opportunities for in-person interaction, ensuring that long-distance relationships remain resilient and meaningful.

Preference for Face-to-Face Interactions

Despite the widespread adoption of digital communication, participants strongly agreed, with a mean score of 4.197, that face-to-face interactions hold greater meaning. This preference underscores the unique and enduring value of physical presence in fostering trust, emotional expression, and shared experiences. While digital tools play an essential role in facilitating modern communication, they cannot replicate the richness of nonverbal cues and the spontaneity inherent in face-to-face interactions. This finding suggests that digital platforms should be considered complementary tools, enhancing rather than replacing traditional communication methods.

Face-to-face interactions are often associated with fulfilling basic social needs, such as belongingness and emotional well-being, in ways that digital communication cannot. Research has demonstrated that meaningful interactions conducted through computer-mediated channels, such as social media, are linked to greater loneliness and lower affective well-being compared to in-person exchanges (Roshanaei, 2024). In contrast, face-to-face interactions provide more substantial increases in positive mood and a stronger sense of connection. These benefits highlight the limitations of digital communication in addressing fundamental human needs for authentic and emotionally resonant interactions.

The superiority of face-to-face communication over digital alternatives can be attributed to several critical factors. One of the most significant is the presence of nonverbal cues, which play an indispensable role in effective communication. Nonverbal elements such as facial expressions, tone of voice, and body language enrich interactions, conveying emotional nuance and fostering a deeper understanding between individuals (Cho & Kim, 2021; Zima & Bergs, 2017). These cues are difficult, if not impossible, to replicate in text-based or even video-mediated communication, where technical limitations and lack of immediacy can obscure emotional intent.

Face-to-face interactions also facilitate the transfer of tacit knowledge—unspoken, experience-based insights that are challenging to articulate through digital means. Tacit knowledge is often crucial for collaboration, problem-solving, and mentorship, making face-to-face communication especially valuable in professional and educational settings. Research has shown that these in-person exchanges promote the formation of trust, which is foundational for successful teamwork and knowledge sharing (Cappa et al., 2016). Digital platforms, while convenient, often lack the immediacy and relational depth necessary to foster this level of trust and cooperation.

Another advantage of face-to-face interactions lies in their association with higher levels of honesty and authenticity. Studies indicate that in-person communication enhances social presence and accountability, discouraging deceptive behavior and fostering genuine exchanges (Zant & Kray, 2014). The physical presence of another person heightens one's awareness of social norms and expectations, creating an environment that encourages

openness and integrity. In contrast, the relative anonymity and physical detachment of digital communication can sometimes diminish these qualities, leading to misunderstandings or reduced relational depth.

Face-to-face communication also fosters emotional expression and shared experiences, elements that are essential for deepening relationships. Physical presence allows individuals to connect on an intuitive level, strengthening bonds through shared laughter, gestures, and spontaneous moments that are difficult to replicate virtually. These interactions create memories and a sense of closeness that contribute significantly to the sustainability of personal and professional relationships. In digital communication, these elements are often muted or lost altogether, underscoring the irreplaceable nature of face-to-face engagement.

However, the advantages of face-to-face communication do not diminish the value of digital tools in maintaining connections, particularly in scenarios where physical presence is not feasible. Video conferencing, instant messaging, and social media provide critical support for long-distance relationships and time-sensitive collaboration. These platforms allow individuals to maintain contact, share information, and sustain relationships across geographical boundaries, bridging the gaps that physical separation creates. Yet, even in these contexts, the emotional depth and authenticity of in-person interactions remain unparalleled.

The preference for face-to-face communication reflects the broader understanding that human relationships thrive on emotional and physical presence. While digital communication offers unprecedented convenience and reach, it is most effective when used to complement, rather than replace, traditional methods of interaction. By integrating digital tools into a broader communication strategy that prioritizes in-person engagement whenever possible, individuals and organizations can ensure that their relationships remain meaningful and resilient.

Reduced Physical Interactions

The moderate agreement, with a mean score of 3.313, that technology has reduced physical interactions reflects a nuanced understanding of the dual impact of digital reliance. While digital communication offers unparalleled convenience and immediacy, it also risks discouraging individuals from participating in real-world social activities. This shift is particularly concerning for younger demographics, who may experience diminished development of interpersonal skills due to reduced face-to-face engagement. Furthermore, the growing preference for digital communication can erode local social networks and community ties, underscoring the need to balance online and offline interactions to maintain social cohesion.

Digital technologies play a dual role in shaping social relationships. On one hand, they enable and enhance social connections by bridging geographical distances and facilitating virtual interactions. Studies have shown that for individuals with limited physical mobility or social skills deficits, digital platforms provide critical opportunities for engagement, fostering inclusion and support (Žanić, 2023; Salehi et al., 2020; Lee et al., 2022). These tools are particularly valuable in maintaining long-distance relationships and supporting socially

isolated individuals, demonstrating the positive potential of digital technologies to complement real-world interactions.

However, the convenience of online communication can discourage individuals from engaging in physical social activities, leading to a decline in face-to-face interactions. Risi et al. (2020) and Kryzhanovskij et al. (2021) highlight this challenge, noting that the accessibility of digital platforms can unintentionally foster a reliance on virtual communication, reducing the incentive for in-person engagement. This trend has been exacerbated by the COVID-19 pandemic, during which physical distancing measures necessitated an increased dependence on digital tools for social interaction (Turin et al., 2022; Marston et al., 2020). While this shift was initially a necessary response to public health concerns, it has raised critical questions about the long-term implications of digital reliance on social cohesion and community engagement.

One significant consequence of reduced physical interactions is the potential weakening of local social networks and community ties. In-person interactions are foundational for building trust, fostering collaboration, and sustaining shared cultural and social norms. Digital communication, while effective for maintaining connections over distances, often lacks the emotional depth and shared experiences that characterize physical interactions. This shift could lead to a fragmentation of local communities, as individuals increasingly prioritize virtual relationships over geographically proximate ones.

Another critical challenge arising from reduced physical interactions is the persistence of the digital divide. Unequal access to digital technologies exacerbates existing social and economic inequalities, disproportionately affecting marginalized groups. Nguyen et al. (2021) and Lyles et al. (2021) emphasize that individuals in underserved communities often face barriers to digital participation, limiting their ability to benefit from the opportunities that technology provides. Digital literacy, a prerequisite for effective use of these platforms, is also unevenly distributed, particularly among older adults and disadvantaged populations (Lee, 2024; Kim, 2023; Soundararajan, 2023). These disparities not only hinder individual participation but also pose broader challenges for social inclusion and equity.

Beyond issues of access and equity, digital reliance introduces new challenges in the areas of moral discernment and the governance of online spaces. The rapid pace of digital transformation has disrupted traditional social and cultural norms, requiring individuals and communities to adapt to new modes of interaction and engagement. Entscheidungen and Suchanek (2017) and Afandi (2023) highlight the ethical complexities of navigating digital spaces, where anonymity and immediacy can lead to behaviors that undermine social trust. Additionally, the governance of digital platforms has become a critical area of concern, as the rapid expansion of these technologies outpaces the development of frameworks to ensure accountability and promote positive interactions.

The broader societal implications of reduced physical interactions also extend to community development. Afandi (2023) and Adeliant (2023) note that as digital tools reshape the landscape of communication, traditional methods of fostering community ties must be

reimagined. This requires integrating digital technologies into community development strategies in ways that complement, rather than replace, face-to-face interactions. By leveraging the strengths of both modes of communication, communities can adapt to the evolving digital landscape while preserving the social cohesion that arises from in-person engagement.

In conclusion, while digital technologies offer significant opportunities for social engagement and inclusion, they also present challenges that must be carefully managed. The reduction in physical interactions, driven by the convenience of online communication, risks undermining interpersonal skills, local social networks, and community cohesion. Furthermore, the digital divide and disparities in digital literacy exacerbate these challenges, highlighting the need for equitable access to technology and targeted efforts to bridge gaps in digital participation (Nguyen et al., 2021; Lyles et al., 2021; Lee, 2024). As society navigates the complexities of digital transformation, it is essential to prioritize a balance between online and offline interactions, ensuring that technology serves as a tool to enhance, rather than diminish, human connection (Entschew & Suchanek, 2017; Afandi, 2023; Adeliand, 2023). By addressing these challenges proactively, individuals and communities can harness the benefits of digital innovation while preserving the fundamental value of physical presence in social relationships.

Anxiety from Lack of Access to Technology

Participants' moderate agreement, with a mean score of 2.932, that they feel anxious or stressed when unable to access technology for communication highlights the psychological dependency created by pervasive digital use. This phenomenon, often referred to as "digital anxiety," reflects the critical role that technology now plays in maintaining social connections and managing everyday interactions. However, it also raises important concerns about the stress and over-dependence that may accompany constant connectivity. Addressing these challenges necessitates fostering digital resilience and encouraging deliberate periods of disconnection to mitigate the psychological strain of uninterrupted access.

Social media has become an indispensable part of many people's daily lives, and its absence can provoke significant anxiety and distress, an experience recognized as "digital anxiety" (Jamila et al., 2021; Anto et al., 2023). Studies have consistently shown a strong link between frequent social media use and heightened anxiety levels, particularly among young adults and university students. This demographic is especially vulnerable to the pressures associated with digital engagement, as their social and academic lives often revolve around online interactions (Kurniasari et al., 2023; Papapanou et al., 2023; Silence et al., 2021). For these individuals, the inability to access social media can disrupt both their sense of connection and their ability to stay informed about critical social and academic developments.

A key driver of this anxiety is the "fear of missing out" (FOMO), a common psychological response triggered when individuals are unable to keep up with their peers' activities and experiences on social media. This phenomenon intensifies the need for constant digital access, as individuals feel pressured to remain engaged in online communities to avoid

being left out (Guo, 2021; Rahmania, 2023). FOMO often leads to increased social comparison, which can erode self-esteem and contribute to feelings of inadequacy. Studies have found that individuals experiencing FOMO report higher levels of anxiety and stress, as they struggle with the perception that their lives are less exciting or fulfilling than those of their peers (Ouyang et al., 2021; Halls et al., 2015). The absence of technology, therefore, not only disconnects individuals from their digital networks but also exacerbates underlying insecurities, further amplifying feelings of isolation and loneliness (Ranabhat, 2024; Bonnette et al., 2019).

In addition to its role in fostering FOMO, social media use has been linked to the development and exacerbation of social anxiety disorder. Platforms that allow for anonymous or indirect communication can create a false sense of comfort for individuals struggling with face-to-face interactions (Rahardjo, 2023; Xiaodan, 2023). While this may initially appear beneficial, it often reinforces avoidance behaviors that make real-world social engagement more challenging. Over time, individuals may become increasingly reliant on online communication, limiting their ability to build confidence in in-person interactions. This cycle can deepen social anxiety, as individuals find themselves trapped in a pattern of digital dependency that undermines their interpersonal skills (Zhao, 2024; Zubair et al., 2023).

The psychological impact of digital anxiety extends beyond social interactions. The omnipresence of technology in daily life creates an expectation of constant availability, which can blur the boundaries between personal time and digital obligations. The inability to access technology disrupts this balance, leading to stress over missed opportunities or unfulfilled responsibilities. This dynamic is particularly evident in academic and professional settings, where individuals often feel pressured to stay connected to meet deadlines or maintain productivity. As a result, even short periods of disconnection can provoke heightened anxiety, as individuals struggle to manage the tension between digital dependency and personal well-being.

Addressing the challenges posed by digital anxiety requires a multifaceted approach that prioritizes digital resilience and intentional disengagement. Digital resilience involves equipping individuals with the skills and strategies needed to navigate the demands of online engagement without compromising their mental health. This includes fostering a healthy relationship with technology, such as setting boundaries for social media use and developing offline coping mechanisms. Encouraging regular breaks from digital platforms, or "digital detoxes," can also help reduce the psychological burden of constant connectivity. These intentional periods of disconnection allow individuals to reconnect with in-person relationships and engage in activities that promote emotional well-being.

Moreover, efforts to address digital anxiety must account for its broader social implications. The normalization of constant digital engagement perpetuates a culture of immediacy and comparison, which can be detrimental to collective mental health. By promoting balanced communication strategies that integrate both digital and face-to-face interactions, individuals and communities can mitigate the risks associated with over-reliance

on technology. This balanced approach not only enhances the quality of social connections but also supports the development of interpersonal skills that are essential for long-term resilience.

In conclusion, while digital tools are integral to modern communication and social interaction, their absence can provoke significant anxiety and distress, particularly among younger populations. The phenomenon of "digital anxiety" highlights the psychological dependency created by the pervasive use of technology and the pressures of constant connectivity (Jamila et al., 2021; Anto et al., 2023). Issues such as FOMO, social comparison, and the reinforcement of social anxiety disorders underscore the need for strategies that promote digital resilience and encourage a healthier balance between online and offline interactions (Guo, 2021; Rahmania, 2023; Zhao, 2024; Zubair et al., 2023). By addressing these challenges through intentional disconnection and the cultivation of supportive environments, individuals can navigate the complexities of digital reliance while preserving their mental well-being.

Cultural and Perspective Awareness

Participants moderately agreed, with a mean score of 3.993, that technology has enhanced their understanding of various cultures and perspectives. This finding underscores the potential of digital platforms to promote inclusivity and global engagement, aligning with the goals of Society 5.0. By providing access to diverse content and facilitating cross-cultural interactions, technology broadens users' worldviews and fosters empathy. However, the risks of algorithmic biases and echo chambers that limit exposure to diverse perspectives should not be overlooked. To ensure that technology genuinely facilitates cross-cultural understanding, promoting digital literacy and critical thinking is essential.

Social media has proven to be a powerful platform for cultural diplomacy and intercultural communication. It creates a global space where museums and cultural institutions can share knowledge with diverse audiences, helping to preserve and disseminate cultural heritage (Grincheva, 2015). This function of social media is especially valuable for fostering cultural awareness, as it enables users to experience and learn about different traditions and practices from the comfort of their own homes. The interactive nature of social media also encourages engagement, as users can ask questions, provide feedback, and contribute their perspectives, enriching the dialogue around cultural issues.

For transient migrants, social media serves as an important tool for negotiating and managing cultural identity during the acculturation process. Studies have shown that these platforms allow individuals to maintain connections to their heritage while adapting to the norms of their host society. For instance, transient migrants often use social media to engage in conspicuous identity behaviors that help them preserve their cultural identity amidst the challenges of integration (Di et al., 2022; Yau et al., 2019). This dual role of social media in promoting both cultural preservation and adaptation highlights its significance in intercultural communication.

Social media's role in fostering cultural awareness extends to education and community engagement. Research indicates that social media use can positively influence ethnic minority students' motivation to learn the language and culture of the mainstream society (Lai, 2018). By providing access to a wealth of resources and opportunities for interaction, social media platforms empower these students to bridge cultural gaps and develop a deeper understanding of their surroundings. Similarly, platforms like WeChat and TikTok have been instrumental in helping ethnic minority groups, such as the Dong people in China, share their culture with broader audiences, sparking renewed interest in cultural heritage among younger generations (Mo & Ibrahim, 2022).

Cultural characteristics also influence how individuals adopt and use social media. Studies have explored the effects of dimensions such as individualism-collectivism on social media usage patterns across different countries (AlSaleh et al., 2019; Juršė et al., 2019). For example, users in collectivist cultures may prioritize platforms that emphasize group dynamics and community engagement, while those in individualist cultures may favor tools that highlight personal expression. This interplay between cultural values and digital behavior underscores the reciprocal relationship between technology and society. Social media not only reflects existing cultural norms but also shapes new forms of interaction and communication.

Despite its many benefits, social media's role in enhancing cross-cultural understanding is not without challenges. Algorithmic biases and the formation of echo chambers can limit exposure to diverse perspectives, potentially reinforcing stereotypes and deepening cultural divides. These risks emphasize the importance of promoting critical thinking and digital literacy to help users navigate the complexities of online content. By equipping individuals with the skills to identify and challenge biases, societies can harness the full potential of digital platforms to foster inclusivity and understanding.

In the context of Society 5.0, which envisions a human-centered society, social media's ability to facilitate cross-cultural communication aligns with its goal of promoting inclusivity and global engagement. By creating spaces for the exchange of cultural information and the negotiation of cultural identity, social media contributes to building a more interconnected and empathetic global community. This vision emphasizes the importance of leveraging technology to address cultural and social challenges while fostering collaboration and mutual respect (Grincheva, 2015; Di et al., 2022; Lai, 2018; Yau et al., 2019; Mo & Ibrahim, 2022).

To maximize the benefits of social media in promoting cultural and perspective awareness, efforts must focus on addressing its limitations and enhancing its positive impacts. Initiatives aimed at improving digital literacy should be prioritized, ensuring that users are equipped to engage critically with online content. Additionally, creating algorithms that encourage exposure to a broader range of perspectives can help mitigate the risks of echo chambers and foster a more inclusive digital environment. By addressing these challenges, social media can continue to serve as a powerful tool for cultural exchange and understanding.

In conclusion, digital platforms have significantly enhanced cultural and perspective awareness by providing access to diverse content and enabling cross-cultural interactions. Their role in preserving cultural heritage, supporting acculturation, and fostering educational engagement underscores their potential to promote inclusivity and global engagement. However, addressing challenges such as algorithmic biases and echo chambers is crucial to ensuring that social media fulfills its promise as a tool for fostering empathy and understanding. By promoting digital literacy and critical thinking, societies can harness the power of technology to build a more inclusive and interconnected world.

Conflict Resolution Through Technology

The moderate agreement, with a mean score of 3.252, that technology aids in resolving conflicts reflects the practical benefits of digital communication tools in addressing disputes. Messaging apps, emails, and other platforms enable thoughtful and measured communication, which can help mitigate the emotional intensity often associated with in-person confrontations. These tools provide users with the time to craft responses, reducing impulsivity and fostering more deliberate dialogue. However, the absence of nonverbal cues and immediate feedback in digital communication can hinder the empathetic and constructive resolution of conflicts. This underscores the importance of integrating traditional interpersonal skills into digital communication to ensure that technology supports effective conflict management.

Social media platforms have increasingly been recognized as valuable tools for restorative justice and alternative dispute resolution mechanisms. They offer cost-effective solutions for communication, expedite the dissemination of information, and provide a global platform for sharing insights related to disputes (Peleg-Koriat & Klar-Chalamish, 2022; Subhashini, 2023; Dylag & Smith, 2021). The speed and accessibility of these platforms allow individuals and groups to quickly address emerging conflicts, potentially preventing them from escalating further. This immediacy, combined with the reach of social media, enhances its potential as a tool for conflict resolution.

Beyond individual disputes, social media has demonstrated its ability to facilitate the organization of collective action and the mobilization of groups to address broader social conflicts. Platforms such as Twitter, Facebook, and WhatsApp empower citizens to participate in dispute resolution by enabling the rapid coordination of efforts, whether through petitions, protests, or dialogue forums (Jost et al., 2018; Martin & Bonina, 2014; Kavada, 2015). This empowerment fosters a sense of agency among users, allowing diverse voices to contribute to the resolution of disputes. In this way, social media can democratize conflict resolution processes, making them more inclusive and representative of various stakeholders.

Another significant role of social media in conflict resolution lies in shaping public discourse and influencing how disputes are perceived and resolved. Platforms can amplify specific perspectives or provide a space for contesting conflicting ideologies and narratives. For instance, social media users can highlight injustices, challenge dominant narratives, and propose alternative solutions, thereby reshaping the narrative around a particular conflict

(Glozer et al., 2018; Soares & Recuero, 2021). This capacity to influence public opinion and foster dialogue makes social media a powerful tool for addressing and resolving conflicts in both local and global contexts.

However, the use of technology in conflict resolution is not without challenges. The lack of nonverbal cues, such as tone, body language, and facial expressions, can limit the emotional depth and clarity of digital communication. Misinterpretations are more likely in text-based exchanges, which can escalate tensions rather than resolve them. Furthermore, the impersonal nature of digital communication may reduce empathy, an essential component of constructive conflict resolution. While technology can facilitate dialogue, these limitations highlight the necessity of complementing digital tools with interpersonal skills to achieve effective outcomes.

The potential for echo chambers and algorithm-driven biases on social media platforms also poses risks to conflict resolution. These factors can amplify polarizing viewpoints and reduce exposure to alternative perspectives, complicating efforts to find common ground. Addressing these challenges requires critical thinking and digital literacy to ensure that technology serves as a bridge rather than a barrier in resolving disputes.

In conclusion, digital communication tools offer practical benefits for conflict resolution by enabling thoughtful dialogue, facilitating collective action, and shaping public discourse. Social media platforms, in particular, enhance accessibility and democratize participation in addressing disputes, aligning with contemporary needs for inclusive and efficient conflict management (Peleg-Koriat & Klar-Chalamish, 2022; Jost et al., 2018; Kavada, 2015; Soares & Recuero, 2021). However, the limitations of digital communication, such as the absence of nonverbal cues and the risks of algorithmic biases, underscore the need for integrating traditional interpersonal skills and fostering critical digital literacy. By addressing these challenges, technology can fulfill its potential as a tool for resolving conflicts in both personal and societal contexts.

Distractions from In-Person Interactions

The moderate agreement, with a mean score of 3.150, that technology often distracts from in-person interactions underscores the challenges posed by digital tools in maintaining presence during face-to-face engagements. The phenomenon of "phubbing," where individuals prioritize digital devices over personal interactions, has emerged as a common behavior that strains relationships and diminishes the quality of social bonds. This highlights the importance of developing strategies that promote mindful technology use and encourage individuals to prioritize real-world interactions over virtual distractions.

Technology's role in fostering disconnection and distraction is particularly pronounced when it is used excessively or in ways that undermine face-to-face interactions. Kushlev and Dunn (2018) observed that the constant availability of digital tools can disrupt the flow of in-person conversations, leading to reduced emotional engagement and feelings of neglect among participants. Similarly, Standlee (2016) found that frequent interruptions caused by notifications or the temptation to check devices can weaken the relational depth of in-person

engagements. These studies highlight the need for individuals to critically assess their technology habits to avoid undermining the quality of their relationships.

The phenomenon of "phubbing" serves as a clear example of how digital distractions can erode social bonds. When individuals direct their attention to their phones instead of the people around them, they send implicit messages that the current interaction is less important. Over time, this behavior can lead to feelings of rejection and dissatisfaction in personal and professional relationships. For example, partners in romantic relationships who frequently engage in "phubbing" report lower relationship satisfaction, as the behavior is perceived as a lack of attentiveness and emotional investment. These findings emphasize the need for mindful technology use that respects the presence and value of those in immediate proximity.

Striking a balance between technology use and face-to-face interactions is crucial to maintaining the integrity of social relationships. While digital tools are invaluable for communication and connectivity, they should serve to complement, rather than replace, in-person interactions. Promoting conscious technology use, such as setting device-free times or establishing norms around digital etiquette, can help mitigate the negative effects of "phubbing" and other distractions. These practices encourage individuals to engage more fully in the present moment, strengthening their relationships and fostering meaningful connections.

Moreover, ensuring that technology is used to enhance rather than detract from face-to-face interactions requires an emphasis on digital literacy and self-awareness. Educating individuals about the potential consequences of excessive technology use on their social lives can empower them to make more informed choices. For instance, learning to identify the signs of overdependence on digital devices and understanding how these behaviors impact others can motivate users to adopt healthier habits. These efforts can be particularly impactful in familial and workplace settings, where the quality of interactions significantly influences overall well-being and productivity.

In conclusion, while technology has revolutionized communication, its potential to distract from in-person interactions presents a critical challenge that must be addressed. The prevalence of "phubbing" and other digital distractions highlights the importance of promoting mindful technology use to preserve the quality of face-to-face engagements (Kushlev & Dunn, 2018; Standlee, 2016). By encouraging balanced technology habits and fostering awareness of its impacts, individuals can ensure that digital tools serve to enhance, rather than hinder, their social bonds. This approach not only strengthens relationships but also helps maintain the emotional richness and presence that define meaningful interactions.

CONCLUSION

The findings of this study underscore the profound and multifaceted impact of technological advances, particularly social media, on human connections within the Society 5.0 era. While digital platforms have proven invaluable in enhancing communication frequency, maintaining long-distance relationships, and fostering cross-cultural awareness, their influence on the depth and quality of interpersonal bonds remains complex. Participants

widely acknowledged the benefits of technology in facilitating new relationships and bridging geographical divides, aligning with Society 5.0's vision of inclusivity and interconnectedness. However, the study also highlights critical challenges, including reduced physical interactions, increased dependency on digital tools, and the potential for superficial connections, which may undermine the emotional richness and authenticity of relationships. The moderate levels of agreement regarding digital distractions and conflict resolution suggest that while technology provides platforms for engagement, it cannot fully replicate the nuances of face-to-face interactions. These findings emphasize the need for a balanced approach to technology use—one that leverages its benefits while addressing its limitations. Promoting digital literacy, fostering mindful technology practices, and encouraging offline interactions are essential strategies for sustaining meaningful social bonds. By understanding and navigating these dynamics, society can harness the transformative potential of technology to strengthen connections and build a more inclusive, empathetic, and cohesive future, achieving the overarching goals of Society 5.0.

LIMITATIONS

This study has several limitations that should be acknowledged. First, the sample size of 147 participants, while diverse in demographics, may not fully represent the broader population, particularly older demographics or those with limited access to technology. Second, the study relies on self-reported data, which may introduce bias or inaccuracies in participants' responses due to social desirability or misinterpretation of survey items. Additionally, the use of a structured questionnaire limits the depth of qualitative insights into the nuanced experiences of participants, such as the emotional subtleties of maintaining social bonds or the context-specific impacts of technology. Finally, the study's scope, focused on the Society 5.0 framework and social media, may not account for the rapidly evolving nature of digital platforms and emerging technologies that could significantly influence human connections in ways not yet explored.

RECOMMENDATION

Future research should address these limitations by incorporating larger and more representative samples, including diverse age groups and individuals from varied socioeconomic backgrounds, to ensure a more comprehensive understanding of technology's impact on social bonds. Employing mixed-methods approaches, combining quantitative surveys with qualitative interviews or focus groups, could provide deeper insights into the complexities of interpersonal dynamics influenced by technology. Additionally, longitudinal studies are recommended to explore how the effects of digital platforms evolve over time, particularly as new technologies emerge. Educational and community initiatives should also prioritize promoting digital literacy, encouraging responsible and mindful use of technology, and fostering spaces for offline engagement. These strategies can help balance the benefits and challenges of digital integration, supporting Society 5.0's goal of enhancing human well-being and authentic connections.

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The authors have sufficiently contributed to the study, and have read and agreed to the published version of the manuscript.

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