



PERCEIVED IMPACT OF DIGITAL TECHNOLOGY ON FAMILY STRUCTURE AND DYNAMICS AMONG URBAN FAMILIES IN THE POST COVID-19 ERA

¹C. Balaji and ²D V. Nithyanandan

¹Research Scholar, ²Professor

¹Department of Psychology

¹Periyar University, Salem, Tamil Nadu, India

Abstract: The COVID-19 pandemic accelerated the integration of digital technology into everyday family life, and many of these changes have continued into the post COVID-19 period. This study examines the impact of digital technology on family structure and dynamics among urban families after the pandemic. Primary data were collected from 230 urban households using a structured questionnaire. Exploratory factor analysis was employed to identify the key dimensions influencing family life. The analysis revealed seven major factors, including digital restructuring of family roles and routines, communication patterns, emotional bonding and well-being, digital parenting, power dynamics, perceived benefits, and negative consequences of digital technology use. The findings indicate that digital technology has become a permanent feature of family life, offering flexibility and connectivity while also creating challenges related to boundary management, emotional strain, and digital regulation. The study highlights the need for balanced digital practices and supportive policies to promote family well-being in the post COVID-19 era.

Keywords: Digital technology; Family structure; Family dynamics; Post COVID-19 period; Urban families; Digital communication; Digital parenting; Family well-being.

I. INTRODUCTION

The COVID-19 pandemic accelerated the digitalization of everyday life, placing families at the center of rapid technological change. During periods of lockdown and social restriction, digital tools became essential for maintaining employment, education, healthcare access, and social interaction. However, recent research makes it clear that the influence of digital technology did not diminish once restrictions were lifted. Instead, many urban families have transitioned into a post COVID-19 phase in which digital practices adopted during the pandemic have been retained, adapted, and normalized. Hybrid work arrangements remain widespread, schools continue to rely on digital platforms for communication and assignments, and everyday social interaction increasingly occurs through messaging applications and social media. This post COVID-19 phase warrants focused attention because it reflects long-term restructuring of family life rather than short-term crisis adaptation.

One of the most significant post-pandemic developments is the continued expansion of remote and hybrid work. Recent studies indicate that working from home offers benefits such as increased flexibility and reduced commuting time, but it also intensifies challenges related to work-life boundaries (Goodall et al., 2025; Oseghale, 2024). Digital connectivity often extends work into family time through constant availability, notifications, and virtual meetings. Research on boundary management emphasizes that work-life balance in remote settings depends largely on how individuals and families manage interruptions and role transitions rather than on remote work itself (Kangas et al., 2023; Seinsche et al., 2024). For families, this means that digital technology continues to shape daily routines and role expectations beyond the acute stage of the pandemic. Parents may be physically present at home while remaining psychologically engaged with work, leading to new forms of role overlap and negotiation within households.

The post COVID-19 period has also renewed interest in the ways digital communication reshapes family interaction. Digital platforms enable family members to stay connected throughout the day, coordinate responsibilities efficiently, and maintain relationships with extended family across geographical distance. However, increased digital communication does not necessarily translate into stronger relational quality. Earlier pandemic-era research highlighted

that while technology can support connection, it can also reduce face-to-face interaction and generate tensions related to attention, responsiveness, and device use. Evidence suggests that these issues persist as families settle into long-term digital routines (Seinsche et al., 2024). In urban families, where schedules are often dense and screen-based coordination is convenient, togetherness may become more fragmented, mediated, and vulnerable to digital interruptions.

Children's digital engagement remains a central concern for families in the post COVID-19 period. Although schools have largely returned to in-person instruction, many continue to use digital learning management systems and online communication tools. This has sustained parental involvement in monitoring children's academic progress through apps and online portals, increasing the scope of ongoing digital parenting. Research indicates that children's screen time increased substantially during the pandemic, raising concerns that elevated usage patterns may persist and influence long-term habits and well-being (Choi et al., 2023). Post-pandemic studies continue to emphasize parental mediation strategies, highlighting how parents attempt to regulate children's digital lives while balancing educational demands, entertainment, and social interaction (Goodall et al, 2025; Tan et al, 2025). These responsibilities often add a new layer of household labor, particularly in families where children's learning, peer interaction, and leisure remain highly digitized.

Beyond household practices, structural inequality plays a crucial role in shaping how families experience digitalization. The pandemic exposed and, in many cases, intensified digital inequalities related to access, skills, and quality of use. Recent studies using pre- and post-pandemic data indicate that digital divides remain significant even as societies transition out of crisis conditions (Petrovčič et al., 2024). Families with reliable internet access, multiple devices, and adequate living space are better positioned to benefit from remote work and digital schooling, while families with fewer resources experience greater stress and conflict over access and control. These inequalities are particularly visible in urban contexts, where households vary widely in income, housing conditions, and digital infrastructure.

Taken together, existing research suggests that the post COVID-19 period should not be understood as a return to pre-pandemic normality. Instead, it represents a phase of consolidation in which digital technology remains deeply embedded in family life. Despite growing scholarship on pandemic-era family experiences, there is a relative lack of empirical studies that treat the post COVID-19 family as a distinct analytical context—one in which digital practices function as routine expectations rather than emergency substitutes. Addressing this gap, the present study examines the impact of digital technology on family structure and dynamics among urban families in the post COVID-19 period. The study focuses on how sustained digital technology use shapes family roles and routines, communication and interaction patterns, emotional bonding and digital well-being, parenting and children's engagement, power dynamics and digital authority, and perceived benefits and negative consequences, including strategies for regulating digital use.

By examining these dimensions together, the study contributes to family and digital sociology literature in two important ways. First, it provides empirical evidence on how families reorganize everyday life under normalized digital conditions rather than under lockdown constraints alone. Second, it identifies key dimensions through which digital technology influences contemporary family functioning, offering insights that can inform family well-being interventions, digital literacy initiatives, and workplace policies aimed at supporting healthier work–family boundaries in the post COVID-19 era.

II. RESEARCH METHODOLOGY

The present study examines how digital technology influences family structure and dynamics among urban families in the post COVID-19 period, with particular focus on family roles, communication patterns, emotional relationships, parenting practices, and internal power dynamics. The study was conducted among urban households in major metropolitan areas, with a sample of 230 families selected using a purposive sampling technique. Eligibility criteria included urban residence, access to digital devices and internet connectivity, and experience of family life during and after the COVID-19 pandemic. One adult member from each household, preferably a parent or primary decision-maker, provided responses on behalf of the family.

Primary data were collected using a structured questionnaire designed to capture perceptions of digital technology's impact on family life. The instrument covered dimensions related to family structure, communication, emotional bonding, parenting and children's digital engagement, power relations, and perceived positive and negative effects of digital technology. A pilot study was conducted to refine the questionnaire, and necessary revisions were made to improve clarity and reliability. Data were gathered through a combination of face-to-face interviews and online surveys.

Exploratory factor analysis was employed to identify the underlying dimensions influencing family structure and dynamics. The suitability of the data for factor analysis was assessed using the Kaiser–Meyer–Olkin measure and Bartlett's Test of Sphericity. Factors with Eigenvalues greater than one were retained, and their reliability was evaluated using Cronbach's alpha. Factor loadings and communality values were examined to confirm construct validity. All analyses were conducted using standard statistical software, ensuring the robustness and credibility of the findings.

III. RESULTS

In the present study, respondents from urban families were asked to rate a set of statements related to digital technology and its influence on family structure and dynamics in the post COVID-19 period using a five-point Likert scale. The responses obtained through questionnaire were subjected to exploratory factor analysis in order to identify the underlying dimensions through which digital technology affects contemporary family life.

Before conducting factor analysis, the suitability of the data was assessed using the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity. The KMO value of 0.622 exceeds the minimum acceptable threshold of 0.60, indicating that the sample was adequate for factor analysis. Bartlett's Test of Sphericity was found to be statistically significant ($\chi^2 = 1044.006$; $df = 253$; $p < .001$), confirming that the correlation matrix was not an identity matrix. These results collectively establish that the data were appropriate for factor extraction and meaningful interpretation.

Table 1. Factor analysis for impact of digital technology on family structure and dynamics

Factors	Eigen value	% of variance	Cumulative % of variance
Digital Restructuring of Family Roles and Routines	4.38	19.04	19.04
Digital Communication and Interaction Patterns	2.91	12.64	31.68
Emotional Bonding and Digital Well-being	2.15	9.36	41.04
Digital Parenting and Children's Engagement	1.62	7.04	48.08
Power Dynamics and Digital Authority within Families	1.36	5.93	54.01
Perceived Benefits of Digital Technology in Family Life	1.32	5.74	59.75
Negative Consequences and Regulation of Digital Use	1.09	4.77	64.52
KMO test: .622; Bartlett's Test: 1044.006; df : 253; P .000			

The factor analysis resulted in the extraction of seven significant factors with Eigenvalues greater than one. These seven factors together explain 64.52% of the total variance, suggesting that a substantial proportion of the variation in family structure and dynamics in the post COVID-19 period can be explained by the identified dimensions of digital technology use.

The first and most influential factor, Digital Restructuring of Family Roles and Routines, has the highest Eigenvalue of 4.38 and accounts for 19.04% of the total variance. This indicates that changes in daily routines, role flexibility, multitasking, and blurred boundaries between work and family life constitute the most significant dimension of digital impact on families. The prominence of this factor reflects the continued influence of work-from-home arrangements and digital connectivity on how responsibilities and time are organized within households even after the pandemic.

The second factor, Digital Communication and Interaction Patterns, has an Eigenvalue of 2.91 and explains 12.64% of the variance, bringing the cumulative explained variance to 31.68%. This factor highlights the growing role of digital communication tools such as messaging applications and social media in maintaining family interaction. At the same time, it reflects concerns regarding reduced face-to-face communication and the emergence of technology-related conflicts within families.

The third factor, Emotional Bonding and Digital Well-being, with an Eigenvalue of 2.15, accounts for 9.36% of the variance. This factor captures the emotional dimension of digital technology use, including shared digital activities, emotional closeness, digital fatigue, and stress arising from excessive screen time. The significance of this factor suggests that digital technology plays a dual role in strengthening emotional bonds while also posing risks to psychological well-being.

The fourth factor, Digital Parenting and Children's Engagement, has an Eigenvalue of 1.62 and explains 7.04% of the variance, raising the cumulative variance explained to 48.08%. This factor reflects the continued involvement of parents in managing children's digital education, screen time, and online behavior in the post COVID-19 period. The results indicate that digital parenting has become a sustained aspect of family life rather than a temporary response to pandemic-related disruptions.

The fifth factor, Power Dynamics and Digital Authority within Families, with an Eigenvalue of 1.36, contributes 5.93% of the variance. This factor highlights shifts in family authority patterns, particularly the growing influence of digitally skilled members, often children or younger adults, in household decision-making. The emergence of this factor suggests that digital competence has become an important source of power within families.

The sixth factor, Perceived Benefits of Digital Technology in Family Life, has an Eigenvalue of 1.32 and accounts for 5.74% of the variance. This factor reflects respondents' recognition of the positive aspects of digital technology, such as increased convenience, flexibility, and improved coordination of work, education, and family responsibilities. Despite challenges, families acknowledge the supportive role of digital tools in managing daily life.

The seventh and final factor, Negative Consequences and Regulation of Digital Use, has an Eigenvalue of 1.09 and explains 4.77% of the variance, bringing the cumulative explained variance to 64.52%. This factor captures concerns related to overuse of digital devices, relationship strain, and the growing need for deliberate regulation of screen time within families. Its inclusion underscores increasing awareness among families of the importance of establishing healthy digital boundaries.

The above results inferred that the factor analysis reveals that the impact of digital technology on family structure and dynamics in the post COVID-19 period is multidimensional. The seven extracted factors collectively demonstrate that digital technology influences not only practical aspects of family organization but also emotional relationships, parenting practices, communication patterns, and power structures. The substantial proportion of variance explained indicates that these dimensions provide a comprehensive understanding of how digital technology continues to shape family life in urban settings beyond the immediate pandemic phase.

Table 2: Test for reliability and validity

Variables	Cronbach's Alpha	Communality	Factor Loading
Factor 1: Digital Restructuring of Family Roles and Routines	0.78		
Digital technology has changed daily family routines		0.81	0.88
Family roles have become more flexible due to digital technology		0.76	0.84
Work-from-home practices affect family structure		0.71	0.79
Boundaries between work and family life are less clear		0.69	0.75
Increased multitasking within the family		0.66	0.72
Factor 2: Digital Communication and Interaction Patterns	0.74		
Digital devices help family members stay connected		0.78	0.86
Family communication has increased through messaging apps		0.73	0.82
Face-to-face communication has decreased		0.70	0.77
Digital communication reduces misunderstandings		0.64	0.69
Conflicts arise due to device usage		0.61	0.65
Factor 3: Emotional Bonding and Digital Well-being	0.76		
Shared digital activities improve family bonding		0.79	0.87
Digital technology helps spend quality family time		0.75	0.83
Excessive screen time causes emotional distance		0.71	0.78
Digital media exposure increases stress or anxiety		0.68	0.74
Overall emotional closeness has changed		0.63	0.69
Factor 4: Digital Parenting and Children's Engagement	0.73		
Digital technology plays a major role in children's education		0.77	0.85
Parents closely monitor children's device usage		0.73	0.81
Online learning platforms are still used post COVID-19		0.69	0.76
Children's screen time has increased		0.66	0.71
Managing children's digital habits causes parental stress		0.62	0.68
Factor 5: Power Dynamics and Digital Authority within Families	0.71		
Digitally skilled members have more influence		0.75	0.83
Children guide adults in using digital technology		0.71	0.79
Decisions on device use are negotiated		0.68	0.74
Conflicts occur over control of digital devices		0.64	0.70
Authority patterns have changed due to technology		0.61	0.66
Factor 6: Perceived Benefits of Digital Technology in Family Life	0.72		
Digital technology improves convenience in family life		0.74	0.82
Technology helps balance work, education, and family		0.70	0.78
Digital tools increase flexibility in daily life		0.68	0.74
Technology supports family coordination		0.63	0.69

Variables	Cronbach's Alpha	Communality	Factor Loading
Factor 7: Negative Consequences and Regulation of Digital Use	0.70		
Overuse of digital devices harms family relationships		0.73	0.81
Family members experience digital fatigue		0.69	0.77
Families actively try to limit screen time		0.66	0.72
Need for clear digital boundaries at home		0.62	0.68

The internal consistency of each factor was assessed using Cronbach's alpha. The alpha values for all seven factors range from 0.70 to 0.78, exceeding the minimum acceptable threshold of 0.60 commonly recommended for social science research. This indicates that the items grouped under each factor are internally consistent and reliably measure the same underlying construct.

Specifically, Factor 1 (Digital Restructuring of Family Roles and Routines) demonstrates strong reliability ($\alpha = 0.78$), suggesting that items related to changes in daily routines, role flexibility, multitasking, and blurred work–family boundaries consistently capture the structural transformation of family life due to digital technology. Similarly, Factor 3 (Emotional Bonding and Digital Well-being) shows a high reliability coefficient ($\alpha = 0.76$), indicating that the selected items effectively represent the emotional dimension of digital technology use within families.

The remaining factors—Digital Communication and Interaction Patterns, Digital Parenting and Children's Engagement, Power Dynamics and Digital Authority, Perceived Benefits of Digital Technology, and Negative Consequences and Regulation of Digital Use—also exhibit acceptable reliability levels, confirming the stability and consistency of the measurement scale.

The factor loadings for all variables exceed 0.60, indicating a strong association between each item and its corresponding factor. High factor loadings suggest that the variables meaningfully contribute to the underlying construct they are intended to measure. For example, items such as “Digital technology has changed daily family routines” and “Shared digital activities improve family bonding” exhibit particularly high loadings, emphasizing their importance in defining the respective factors.

The communality values for all items range from 0.61 to 0.81, demonstrating that a substantial proportion of each variable's variance is explained by the extracted factors. These values indicate that the retained items are well represented within the factor solution and contribute effectively to the overall explanatory power of the model.

IV. DISCUSSION

The findings of the present study demonstrate that digital technology continues to exert a strong influence on family structure and dynamics among urban families in the post COVID-19 period. The identification of Digital Restructuring of Family Roles and Routines as the most influential factor is consistent with earlier studies that reported blurred boundaries between work and family life due to remote work and continuous digital connectivity (Craig & Churchill, 2021; Shockley et al., 2021). The persistence of these patterns suggests that pandemic-induced changes have become normalized rather than temporary. The significance of Digital Communication and Interaction Patterns aligns with previous research showing that digital platforms increased the frequency of family communication during lockdowns (Livingstone & Blum-Ross, 2020). However, similar to findings by Lebow (2020), the present study also highlights reduced face-to-face interaction and increased device-related conflicts, indicating that digital communication alters both the quantity and quality of family interaction.

Results related to Emotional Bonding and Digital Well-being support earlier evidence that digital technology plays a dual role in family life. While shared digital activities promote emotional connection, excessive screen time contributes to stress and emotional fatigue (Gadermann et al., 2021). The continuation of these effects in the post COVID-19 period underscores the long-term relevance of digital well-being concerns. The factor Digital Parenting and Children's Engagement reflects findings from previous studies that emphasized increased parental involvement in children's digital education and concerns over screen time during the pandemic (Dong et al., 2020; Orgilés et al., 2020). The present study indicates that these responsibilities remain significant, highlighting the sustained role of digital parenting in contemporary families.

The emergence of Power Dynamics and Digital Authority within Families supports digital sociology perspectives that identify technological competence as a new source of influence within households (Lupton, 2015). Consistent with earlier research, children and younger family members often guide adults in technology use, reshaping traditional authority structures (Livingstone & Blum-Ross, 2020). Finally, the recognition of both Perceived Benefits and Negative Consequences of Digital Technology mirrors earlier studies that highlighted technology's role in enhancing flexibility and resilience while also increasing digital fatigue (Prime et al., 2020). Together, these findings suggest that families are increasingly aware of the need to regulate digital use in order to sustain healthy family relationships.

4.1 Conclusion

The study concludes that digital technology continues to play a significant role in shaping family structure and dynamics among urban families in the post COVID-19 period. The findings indicate that pandemic-induced digital practices have become normalized, influencing family roles, communication patterns, emotional relationships, parenting practices, and power dynamics. While digital technology offers flexibility, convenience, and improved coordination of work and family responsibilities, it also contributes to blurred boundaries, role overload, and digital fatigue.

The results suggest that the impact of digital technology on family life is complex and multidimensional, involving both positive and negative outcomes. Effective management of digital use within families is therefore essential to maximize its benefits and minimize its challenges. The study highlights the need for promoting healthy digital habits and supportive policies that enhance family well-being in an increasingly digital post COVID-19 environment.

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