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Studying Impacts of ICTs on Youth Culture: Opportunities, Issues, and Challenges in Adopting Mixed Methods

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Methodological review

Abstract
This article aims to present a comprehensive framework for researchers exploring the impacts of information and communication technologies (ICTs) on youth culture. By reviewing previous studies in this field, the research evaluates methodologies employed to understand how ICTs influence the cultural practices of contemporary youth. Through an examination of relevant literature, the study highlights the effectiveness of various research approaches, emphasizing mixed methods as the most robust strategy for investigating this area. This work serves as a valuable guide for novice researchers, offering insights into designing studies that effectively capture the dynamic interplay between ICTs and youth culture.

Introduction

Methodological reviews that concentrate on study design rather than study findings, have been used in a variety of sectors in order to enhance research practice, enlighten discussion, and uncover islands of practice (Randolph et al., 2013). Methodological reviews help a new researcher to go through an appropriate line in researching a specific area. It shows the opportunities, challenges, and issues that a specific research area may fall on. The current epoch, the contemporary one, is characterized by rapid technical advancement. Information technology has become a revolutionary force that is reshaping the social, economic, and political fabric of

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the world (Ahmed et al., 2006). One of the powerful factors altering modern society is the cultural trend that travels with the information and communication technologies (Long, 2010). The norms, beliefs, and values of youth, as well as their lifestyle choices and behaviors, are shaped by the influential worldwide media and global culture. Attachment to ICTs of young people may be due to their attractive features, such as the abundance of information they provide and the pleasures they provide. Aside from the youngsters themselves, this connection has repercussions for the larger social interactions in which they are embedded. As they go about their daily lives, they get a taste of both international and neighborhood happenings (Hossin & Mohiuddin, 2015).

Life span of youth is contextual and may be varied along with different countries while most commonly youth refer to the time when a person's body and mind are both actively developing; this represents the accumulation of all the forces necessary for the formation of a healthy adult human being (Matthew, 2007). Youth "are often 'first adopters' of new technologies, and this appears to be the case with ICTs" (Halewood & Kenny, 2008). Rashid, Amin, Arefin, & Rahaman, 2018 found that youth are attached to most used type of ICTs gadgets i.e., mobile phone and computer for more than 4 hours a day. Since young people are more likely to be influenced by ICTs in any given culture, gauging its effects on them is an important event in the present. As time goes on, many noticeable shifts may be traced back to the widespread use of ICTs across society (Amin, 2018). Several studies on the subject have been read, and a pilot study has been conducted, all in an effort to evaluate the efficacy of various approaches to this kind of study. Next, we'll provide examples of the ways other researchers have used, and then we'll discuss the benefits of combining approaches to help a new researcher evaluate the effects of ICTs on young people's cultural practices.

Conceptual framework

Youth Culture

Youth culture, shaped by the interplay of behaviors, values, and practices, is increasingly influenced by digital media and technology. Digital platforms have become central to identity formation, cultural expression, and social interaction among youth. Social media enables young people to share cultural narratives, participate in global conversations, and foster community across borders, resulting in hybrid identities shaped by both local and global influences (Rafalow, 2018; Hasson et al., 2017).

Digital tools have democratized cultural participation, empowering marginalized groups to amplify their voices and engage in cultural resilience. For example, Indigenous youth use digital storytelling to preserve their heritage and assert their identities while fostering intergenerational connections (Walker et al., 2021). Similarly, African American youth challenge stereotypes and assert their identities through digital media, reflecting its role as a tool for cultural expression and activism (Baker et al., 2011).

However, digital engagement also poses challenges. Issues such as anxiety, depression, and sleep disturbances are prevalent among youth, highlighting the need for digital literacy programs to promote safe and responsible online interactions (Good, 2021; Shroff et al., 2023). These initiatives can support mental well-being while equipping youth to navigate misinformation and digital manipulation (Literat et al., 2018).

Digital media also plays a pivotal role in youth political engagement. Social media enables decentralized, real-time activism, transforming how youth advocate for social change and participate in civic activities (Polozhentseva et al., 2021; Dobson, 2023). Additionally, educators

are incorporating digital literacy into curricula to prepare youth for the complexities of the digital age, fostering critical thinking and informed citizenship (Hagge, 2023; Chauke, 2024).
The acquisition of digital skills as cultural capital has enhanced educational and social mobility, particularly for marginalized youth who leverage these competencies to overcome barriers and challenge power structures (Rafalow, 2018; Sormin, 2023). Youth engagement with fandoms and global popular culture further illustrates the creative and collaborative potential of digital communities (Armstrong-Carter & Telzer, 2021; Wielk & Standlee, 2021).
Youth culture, navigating the tension between tradition and innovation, reflects global trends while remaining grounded in local contexts. As young people transition to adulthood, their cultural expressions redefine societal norms, shaping the future of cultural and technological landscapes.

Approaches to social research

Mixed methods research (MMR) has become a vital approach in social research, integrating qualitative and quantitative methodologies to provide a comprehensive understanding of complex phenomena. This synthesis highlights its philosophical roots, practical applications, and methodological frameworks, emphasizing its transformative role in fields such as healthcare, education, and social work.

The rationale for MMR stems from its capacity to combine the depth of qualitative insights with the breadth of quantitative data, yielding richer and more nuanced findings. Pragmatism, the dominant philosophical foundation of MMR, prioritizes practical problem-solving and flexibility, allowing researchers to transcend traditional disciplinary boundaries and adapt methodologies to suit specific research needs (Doyle et al., 2009; Shan, 2023). For example, in healthcare, O'Cathain et al. (2007) argue that mixed methods enhance the understanding of complex systems by integrating patient outcomes with qualitative narratives, enriching data interpretation.

Key MMR designs include the convergent parallel, embedded, explanatory, and exploratory frameworks, each tailored to specific research contexts. The convergent parallel design simultaneously collects qualitative and quantitative data, fostering triangulation and robust conclusions (Turner et al., 2016). Embedded designs integrate qualitative insights within quantitative studies, contextualizing findings and enriching their relevance to real-world settings (Chaumba, 2013). Explanatory designs, collecting qualitative data to interpret quantitative results, are effective in understanding underlying trends and patterns (Arnault & Fetters, 2011). Exploratory designs start with qualitative data to inform subsequent quantitative analyses, particularly valuable in novel research areas (Molina-Azorín & Fetters, 2019).

Despite its strengths, MMR faces challenges such as data integration, methodological rigor, and standardization. Researchers must skillfully synthesize qualitative and quantitative paradigms to avoid fragmented conclusions, with frameworks like triangulation enhancing validity and reliability (Mertens & Hesse-Biber, 2012). Practical hurdles, including resource demands and analytical complexity, require clear guidelines and robust designs to maintain methodological integrity (Sandelowski, 2013).

MMR's flexibility and adaptability have made it indispensable across disciplines. Its use in education enhances insights into student learning through combined assessments and feedback, while in healthcare, it evaluates interventions by linking outcomes with patient experiences (Caffery et al., 2016). As MMR continues to evolve, refining best practices and fostering interdisciplinary collaboration will be essential for leveraging its full potential in addressing multifaceted social issues.

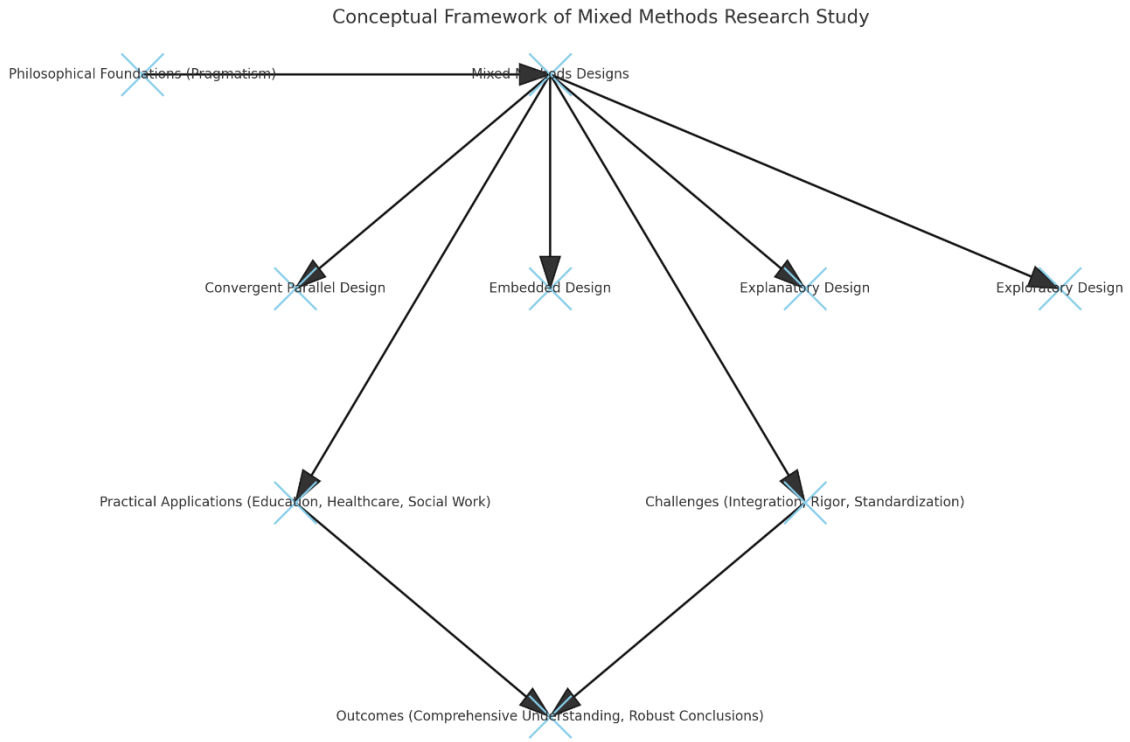


Figure 01: Conceptual framework considered in this research.

Literature Review

Methodological Debates in ICT and Youth Culture Research

The methodological debates in Information and Communication Technology (ICT) and youth culture research are diverse, reflecting the intricate interplay between technology, cultural practices, and socio-economic contexts. This synthesis examines various methodological approaches, challenges, and implications, showcasing the evolving landscape of youth and ICT research.

A significant area of focus is the necessity for culturally sensitive methodologies that address youth diversity. Wagner (2018) underscores the importance of understanding indigenous media landscapes and moving beyond traditional analyses to explore self-representation and in-group communication. Ethnographic methods emerge as pivotal for engaging deeply with the cultural contexts of youth, offering nuanced insights into their ICT interactions.

Qualitative methodologies like focus groups and participatory action research effectively capture youth perspectives and lived experiences. Lal et al. (2017) emphasize the value of such methods in uncovering barriers to ICT adoption in sensitive contexts like mental health care. Granholm

(2016) adds to this by highlighting qualitative approaches to understanding how youth navigate their digital and physical worlds, advocating for methodologies that amplify youth voices.

Socio-economic factors also play a critical role in shaping ICT usage. Tondeur et al. (2010) explore how socio-economic status impacts youth access to and engagement with ICT, influencing educational outcomes. Mixed-methods approaches combining qualitative and quantitative data provide a comprehensive lens for examining these dynamics, addressing broader implications for youth culture.

In rural and underserved areas, ICT has shown potential for youth empowerment and community development. Okon (2015) and Zaremohzzabieh et al. (2014) emphasize the importance of contextually relevant and participatory methodologies, which not only assess ICT's impact but also involve communities in co-creating solutions that address local challenges.

The dynamic and rapidly evolving nature of ICT further complicates youth research. Waugh et al. (2014) highlight the challenges of adapting methodologies to keep pace with changing digital behaviors. Innovative approaches like digital ethnography and mixed methods are crucial for capturing the complexities of youth ICT engagement.

ICT's implications for youth mental health and well-being also demand diverse methodological strategies. Craig et al. (2017) advocate for mixed methods to explore resilience and coping mechanisms, while Sage et al. (2020) stress the need for frameworks addressing the risks and benefits of ICT use.

In educational contexts, ICT integration is significantly influenced by teacher-related variables. Sang et al. (2010) demonstrate that teacher attitudes and infrastructure affect ICT implementation, necessitating research methodologies that examine the broader educational ecosystem, including teacher training and support systems.

ICT's role in shaping youth cultural identities is another critical research area. Bishop and Fisher (2015) highlight participatory design methods to uncover insights into immigrant teens' information needs, advocating for culturally relevant approaches that empower youth to shape their narratives.

Ethical considerations remain a cornerstone of youth and ICT research. Craig et al. (2022) emphasize the importance of inclusivity and respect for youth voices, particularly when working with marginalized populations. Ethical methodologies foster trust and meaningful engagement, ensuring the research process aligns with the needs and rights of participants.

Practical Opportunities of Employing Mixed Methods in youth and cultural research

The integration of mixed methods in youth and cultural research provides a robust framework for exploring the multifaceted nature of youth behaviors and cultural dynamics. By combining qualitative and quantitative approaches, this methodology enables researchers to understand both the prevalence of behaviors and the underlying motivations driving them. Qualitative methods, such as narrative research and photovoice, offer deep insights into the "why" of youth actions, capturing their voices and interpretations (Greene et al., 2018; Lapadat et al., 2020). Meanwhile, quantitative approaches provide a broader context through data on "how many" and "how often" such behaviors occur, enriching the overall understanding (Dickson et al., 2013; Lile & Richards, 2016).

The adaptability of mixed methods is particularly advantageous in responding to the rapidly evolving digital landscape that shapes youth interactions. Iterative and adaptive designs ensure methodologies remain relevant, even as technologies and social platforms evolve (Exner-Cortens et al., 2021; Woodgate, 2023). Co-designing research with youth participants enhances

engagement and ensures research reflects their lived realities (Sannigrahi, 2024; Booth et al., 2020), fostering empowerment and ownership.

Participatory Action Research (PAR) within mixed methods frameworks exemplifies its potential in youth research. PAR involves collaboration between researchers and participants, positioning youth as co-researchers and decision-makers (Dada et al., 2022; Walter, 2023). This approach enriches data collection and ensures findings are relevant and applicable to communities. Youth-led research initiatives, for instance, promote skill development and empowerment while increasing the ecological validity of outcomes (DeJonckheere et al., 2017; Zimmerman & Weible, 2019).

Mixed methods also address the diverse and marginalized experiences of youth by exploring identity, stress, and intersectionality. For instance, studies on bilingual youth use qualitative methods to capture acculturation stress while quantitative analyses identify broader trends (Peled-Laskov et al., 2020; David et al., 2020). This dual approach ensures a comprehensive understanding of youth identities in rapidly changing social contexts.

In interventions targeting youth issues like mental health or substance use, the iterative nature of mixed methods allows for program refinement based on youth feedback, ensuring cultural relevance and effectiveness (Gryglewicz et al., 2014; Maina et al., 2022). Similarly, in exploring technology's role in youth culture, mixed methods capture the complexities of online interactions and their developmental implications (Wright et al., 2020; Leff et al., 2020).

Addressing and Overcoming Common Issues in Mixed Methods Research in Youth and Cultural Research

Mixed methods research (MMR) is crucial in youth and cultural studies for its ability to integrate qualitative and quantitative approaches, offering nuanced insights into complex phenomena. However, its implementation poses significant challenges. A key issue is the integration of data, where tools like joint displays help synthesize findings and avoid fragmented conclusions (Guetterman et al., 2015; Richards et al., 2019). Philosophical alignment also creates tension, as qualitative and quantitative methods differ in their epistemological foundations, requiring a pragmatic approach to leverage their complementary strengths (Bryers et al., 2014; Osike, 2023).

Sampling strategies add complexity, especially in studies involving marginalized populations, where purposive sampling is essential to ensure representation. Larger sample sizes, often required in MMR, can strain resources (NeMoyer et al., 2020; Molina-Azorín et al., 2018). Ethical considerations further challenge researchers, particularly in obtaining consent for studies involving youth and respecting cultural sensitivities (Sherwood et al., 2023; Kiperman et al., 2022).

Data analysis in MMR demands expertise in diverse methodologies, with iterative processes enhancing the validity of findings (Smajic et al., 2022). Transparency in documenting methods bolsters credibility and reproducibility (Khrais & Alghamdi, 2021). Reconciling divergent qualitative and quantitative findings also requires critical reflection and participant engagement to ensure authenticity and coherence (Younas et al., 2021; NeMoyer et al., 2020).

Despite these challenges, addressing them systematically enhances MMR's capacity to explore youth experiences and cultural dynamics. By integrating methodologies effectively, researchers can produce impactful studies that contribute valuable insights into youth and cultural research.

Policy, Pedagogical, and Ethical Implications in Youth and Cultural Research

The intersection of policy, pedagogy, and ethics in youth and cultural research involves navigating complex educational frameworks, cultural contexts, and ethical challenges. Pedagogical practices are deeply shaped by cultural environments. For instance, the acmeological approach, as explored by Калаур and Soroka (2023), emphasizes self-development mechanisms for educators, particularly in challenging conditions such as war. This approach fosters personal growth and shapes educators' professional culture. Similarly, the resource-based model of cross-cultural literacy development highlights the need for interactive pedagogical support to enhance cross-cultural understanding, creating spaces for cultural exchange and enriching educational experiences ("Resource-based model of cross-cultural literacy development of future tourism and sports tourism inspectors", 2022).

Cultural competence is pivotal in educational frameworks. Сафин et al. (2019) underscore the importance of teacher training models that develop professional and general competencies, aligning with Riley et al.'s (2015) advocacy for embedding cultural praxis in teaching frameworks to foster inclusivity. Equipping educators with the tools to engage diverse perspectives strengthens classrooms as inclusive spaces that value cultural identities.

Ethical considerations in youth research, particularly in the digital era, are increasingly significant. Rodriguez et al. (2021) highlight ethical challenges in using social media for behavioral health research with justice-involved youth, including privacy and consent concerns. Similarly, Thompson and Joseph (2020) stress the need for ethical frameworks to guide social media use in youth justice contexts. These considerations demand a balance between innovative engagement strategies and protecting vulnerable populations.

Pedagogical approaches also intersect with ethical dimensions. Murphy et al. (2022) emphasize dialogic classroom cultures that prioritize inclusivity and equity, aligning with ethical principles of student voice and agency. Arnott and Duncan (2019) advocate for creativity and self-regulation in early childhood education, emphasizing child-centered approaches that empower students.

Policy shapes these pedagogical and ethical practices by embedding sustainability competences and cross-cultural collaboration into curricula (Lozano et al., 2019; Liu, 2024). Such policies prepare students for global challenges, fostering responsibility and ethical awareness. Kononenko et al. (2020) and Gaysina (2014) further highlight the role of professional culture in ethical decision-making, advocating for interdisciplinary approaches that integrate cultural and ethical considerations.

Research Gap

Research on ICTs and youth culture underscores the importance of context-sensitive, participatory, and mixed-methods approaches (Granholm, 2016; Lal et al., 2017; Waugh et al., 2014). However, despite evidence of the need for comprehensive frameworks that blend qualitative and quantitative strategies (Dickson et al., 2013; Lile & Richards, 2016), there is a lack of detailed, step-by-step methodological guidance tailored to novice researchers or those new to mixed methods. Key limitations include:

1. **Limited Practical Frameworks for Mixed Methods**
    - **Fragmented Methodological Guidance:** While various studies demonstrate the benefits of combining qualitative and quantitative data—for example, in exploring

socio-economic factors (Tondeur et al., 2010) or culturally grounded interventions (Okon, 2015; Zaremohzzabieh et al., 2014)—they do not consistently provide a clear operational roadmap for integrating these methods. Consequently, less experienced researchers struggle to implement these mixed-methods designs in a systematic and ethically sound manner.

2. **Challenges in Keeping Pace with Rapid ICT Changes**
   - **Dynamic Youth Tech Use:** Existing research highlights the rapid evolution of digital platforms and communication tools (Waugh et al., 2014), suggesting that iterative and flexible designs are necessary (Exner-Cortens et al., 2021). Yet, the literature often stops short of illustrating how to continuously update research approaches and analytical techniques when new ICT platforms (e.g., TikTok, Discord, emerging social VR spaces) reshape youth culture almost in real time.
3. **Need for Contextual and Cultural Nuance**
   - **Socio-cultural Disparities and Marginalized Groups:** Studies underline the importance of culturally sensitive and ethnographic methods (Wagner, 2018; Bishop & Fisher, 2015) as well as the influence of socio-economic status on youth ICT use (Tondeur et al., 2010). However, detailed guidelines on incorporating intersectional variables (e.g., gender, race, community type) within mixed-methods designs remain scarce, leaving researchers uncertain about best practices for reaching diverse youth populations ethically and inclusively.
4. **Insufficient Ethical and Participatory Strategies**
   - **Protection of Youth Voices and Data:** Ethical frameworks addressing privacy, consent, and online safety (Craig et al., 2017; Sage et al., 2020) often highlight broad principles but offer minimal direction on embedding these into a mixed-methods study design—especially critical when working with vulnerable youth or sensitive topics (Craig et al., 2022). This gap makes it difficult for novice researchers to ensure equitable and ethical participation, co-creation, and trust-building with youth.

Why This Gap Matters

Without methodologically robust, practically oriented guidance, novice researchers risk:

- Using piecemeal or incoherent mixed-methods designs that compromise reliability and validity (Guetterman et al., 2015; Richards et al., 2019).
- Failing to adapt quickly enough to rapidly shifting digital ecosystems, thus producing outdated or contextually irrelevant findings (Waugh et al., 2014).
- Overlooking crucial cultural factors that shape how youth adopt and interpret ICTs, thereby missing contextual nuances (Wagner, 2018; Tondeur et al., 2010).
- Encountering ethical pitfalls, particularly regarding informed consent, privacy, and marginalized voices, due to insufficient guidelines (Okon, 2015; Craig et al., 2022).

Methodology

Study Design

This study employs a systematic review approach to synthesize and analyze existing research on the impact of Information and Communication Technologies (ICTs) on youth culture. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed to ensure a rigorous and transparent review process. This methodological framework

enabled the identification, screening, and inclusion of relevant studies while maintaining a focus on quality and relevance.

Data Sources and Search Strategy

Data were sourced from electronic databases including Scopus, Web of Science, PubMed, and Google Scholar. The search terms included "ICT impact on youth culture," "ICT and social behavior," "ICT and education," and "ICT in developing societies." The inclusion criteria were peer-reviewed articles published in English between 2000 and 2023. Grey literature and non-peer-reviewed articles were excluded. Titles, abstracts, and keywords were screened to identify potentially relevant studies, and the full texts of shortlisted articles were assessed against inclusion criteria.

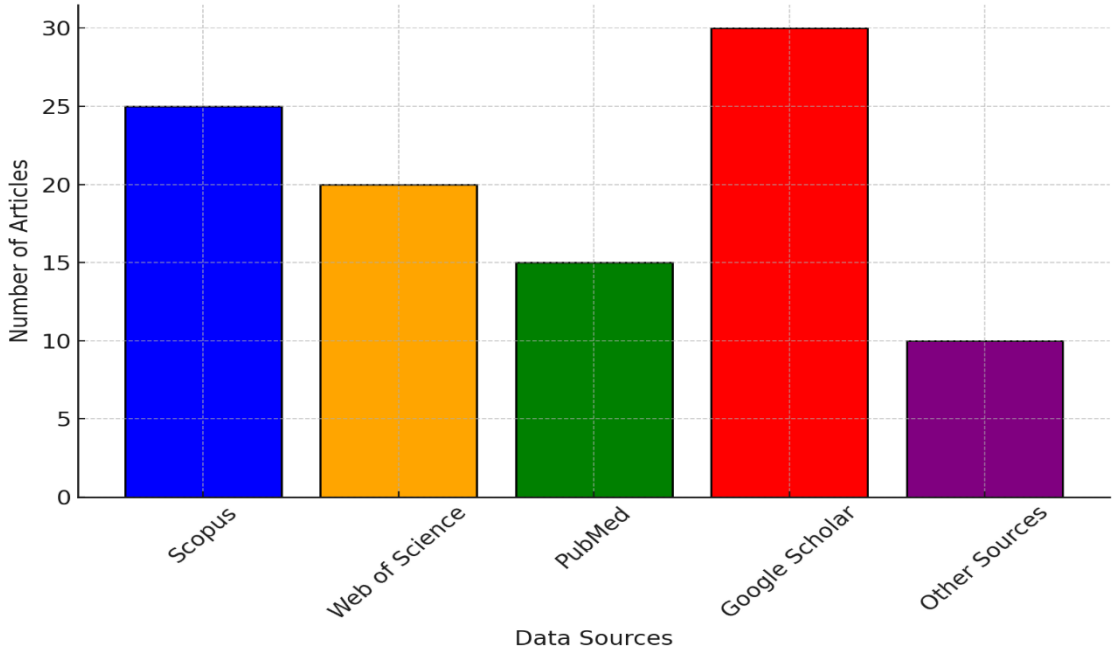


Figure 02: Data sources used in this research.

Inclusion and Exclusion Criteria

Only empirical studies focusing on the interaction of ICTs and youth culture were included. Studies that addressed the socio-economic, cultural, educational, and behavioral dimensions of ICT use among youth were prioritized. Non-empirical studies, commentaries, editorials, and case reports were excluded. Furthermore, studies with limited geographical relevance to developing countries were also excluded to maintain contextual focus.

- **Records Identified Through Initial Search (N = 380):** The initial search across databases and other sources yielded a total of 380 records. These records included studies from various electronic databases, grey literature, and relevant publications.
- **Duplicates Removed (N = 100):** After the initial identification, 100 duplicate records were removed. This step ensured that only unique studies proceeded to the screening phase.
- **Records Screened (Title/Abstract) (N = 280):** The remaining 280 records were screened based on their titles and abstracts. The screening process focused on

relevance to the research objectives, ensuring the studies addressed the role of ICT in youth culture.

- **Records Excluded After Screening (N = 150):** Out of the 280 records, 150 studies were excluded during the screening phase. These exclusions were primarily due to irrelevance, lack of empirical data, or insufficient methodological rigor.
- **Full-Text Articles Assessed (N = 130):** A total of 130 studies were shortlisted for full-text review. At this stage, studies were evaluated against the inclusion and exclusion criteria, focusing on their methodology, scope, and alignment with the study objectives.
- **Full-Text Articles Excluded (N = 45):** During the full-text review, 45 studies were excluded. The primary reasons for exclusion included:
    - Lack of empirical focus
    - Insufficient data quality
    - Geographical irrelevance
    - Methodological inconsistencies
- **Studies Included in Review (N = 85):** Finally, 85 studies were deemed eligible and included in the systematic review. These studies form the basis of the analysis and contribute to the understanding of ICT's impact on youth culture.

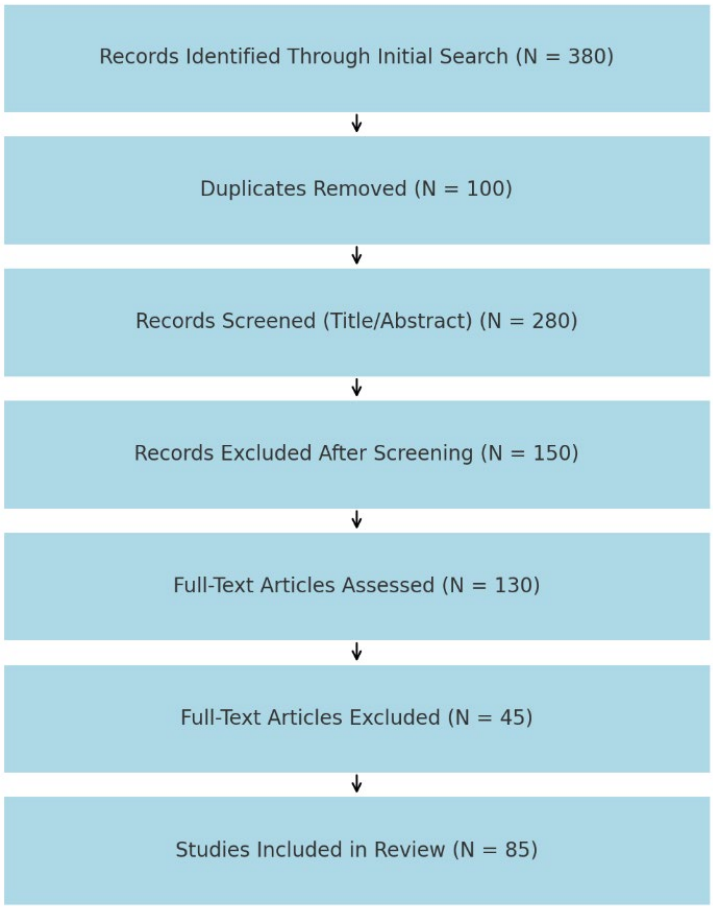


Figure 03: Search strategies and study selection model.

Data Extraction

A systematic literature review guided the collection process, with keywords such as "ICT impacts," "youth culture," "mixed methods," and "cultural analysis." Relevant studies were identified through databases like Scopus, Web of Science, and Google Scholar. The inclusion criteria encompassed peer-reviewed works published in the last two decades, with particular emphasis on interdisciplinary studies.

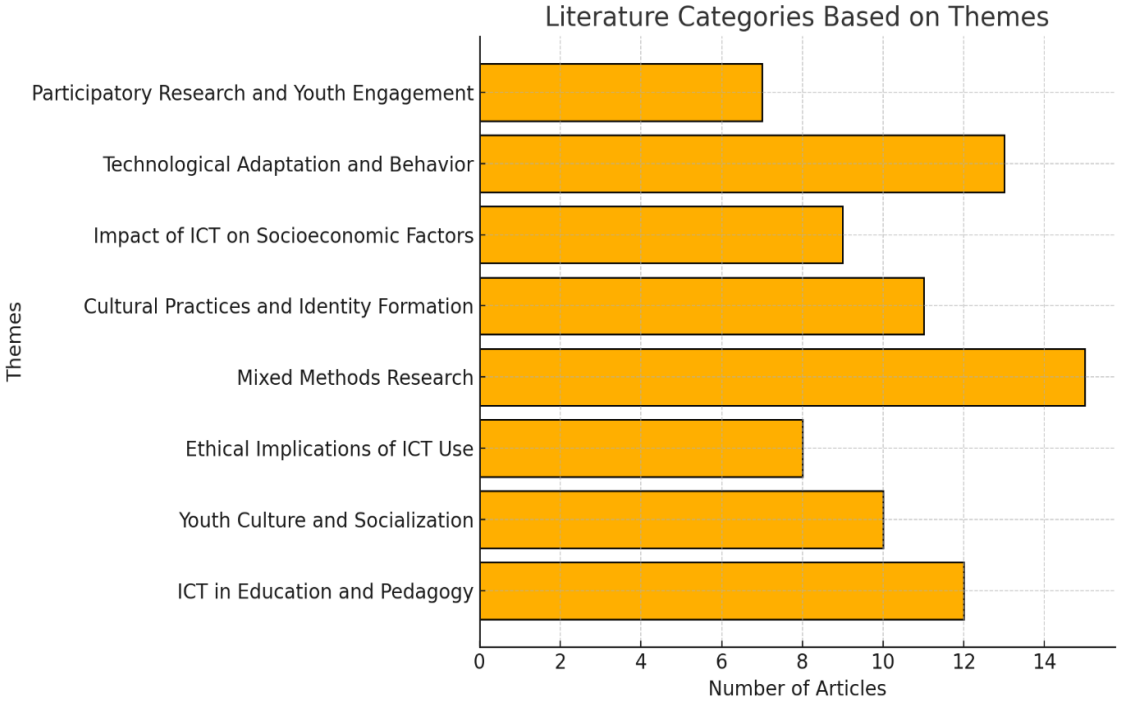


Figure 04: Categories of literature used in this research.

Data Collection Methods

Analytical Framework

The collected data were analyzed using thematic coding. NVivo software was employed to categorize and identify recurring themes, such as the benefits and challenges of ICT integration in youth culture studies. These themes were mapped to theoretical constructs from the reviewed literature to ensure alignment and contextual relevance.

Justification for Method Selection

The selection of a mixed-methods framework is rooted in its ability to capture the complexities of youth interactions with ICT. Qualitative methods, such as ethnographic studies, offer depth in understanding cultural nuances, while quantitative approaches provide statistical robustness. This dual approach has been validated in previous studies, such as by Greene et al. (1989) and Johnson et al. (2007), which emphasize its effectiveness in addressing multifaceted research questions. Alternative approaches, such as purely quantitative or qualitative methods, were deemed insufficient to capture the dynamism of ICT's role in youth culture.

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Methodological Advantages and Limitations

The mixed-methods approach facilitates triangulation, enhancing data validity and reliability. It also allows researchers to address the socio-economic, cultural, and psychological dimensions of youth interactions with ICT. However, challenges include the complexity of integrating data from diverse methodologies and the resource-intensive nature of mixed-methods studies. These limitations were mitigated by adhering to established frameworks and employing advanced data analysis tools like NVivo.

Ethical Considerations

Ethical compliance was ensured throughout the study by adhering to guidelines for secondary data use. Privacy, intellectual property, and proper acknowledgment of original works were strictly maintained. This was particularly significant given the sensitivity of topics related to youth and digital engagement.

Contribution to Literature

By synthesizing and reviewing interdisciplinary studies, this research provides a roadmap for exploring ICT impacts on youth culture. It highlights practical opportunities and methodological challenges, offering novice researchers a structured guide to designing and conducting studies in this domain.

Findings and Discussion

Methods Employed in Existing Research

Several studies have been done in this area where authors are intended to discover the specific impacts of ICTs on any attributes of youth culture. They have followed either qualitative or quantitative and some of them adopted mixed methods (both qualitative and quantitative). We have also found some research where authors reviewed several primary research materials and compiled their studies based on content analysis. Most of the studies that followed quantitative methodology employed a survey research design for collecting primary data. Some of them used questionnaires as data collection tools (see Bairagi, Rajon & Roy, 2011; Coyle & Vaughn, 2008; Hossin & Mohiuddin, 2015; Islam and Fouji, 2010; Michael & Samson, 2014; Muduli, 2014; Nisar et al., 2011) and some of them employed interview schedule (see Azam, 2007; Helal, 2014; Rahman, 2013; Zahid, 2007). Researchers who devoted to qualitative methodology mostly employed the interview method (see Helal, 2014; Laizu et al., 2010; Long, 2010) and some of them conducted FGD (see Coyle & Vaughn, 2008; Rahman, 2013).

Table 01: Characteristics of Studies Related to the Measurement of "Impacts of ICT on Youth Culture"

Index	Reference	Title	Quantitative	Qualitative
1.	Bankole et al., 2011	Investigating the Impact of ICT Investments on Human Development	Exploratory research was conducted, using archival quantitative data	
2.	Eng, 2005	The impact of ICT on learning: A review of research	Survey	In-depth case studies
3.	Coyle & Vaughn, 2008	Social networking: Communication revolution or evolution?	Survey - questionnaire - open-ended questions	Focus groups - two focus groups

Table 01: Characteristics of Studies Related to the Measurement of "Impacts of ICT on Youth Culture"				
Index	Reference	Title	Quantitative	Qualitative
			- from 68 undergraduates, ages 18 to 22	- seven and six college students
4.	Michael & Samson, 2014.	The Impact of Information and Communication Technology on Youth and its Vocational Opportunities in Nigeria	Survey - questionnaire - structured questionnaire - sample size 107, - study group: the youth	
5.	Long, 2010.	Exploring Web 2.0: The Impact of Digital Communications Technologies on Youth Relationships and Sociability		Interview - 10 face-to-face interviews -10technology-mediated interviews through email - convenience sample
6.	Nisar, Munir & Shad, 2011.	Usage and Impact of ICT in the Education Sector; A Study of Pakistan	Survey - questionnaires -a convenient sampling: a type of non-probability sampling	
7.	Punie, Zinnbauer & Cabrera, 2006.	A Review of the Impact of ICT on Learning	It examines twenty studies and/or papers that provide empirical assessments of the importance of information and communication technologies for education	
8.	Halewood & Kenny, 2008.	Young people and ICTs in developing countries	Survey	
9.	Muduli, 2014.	Addiction to Technological Gadgets and Its Impact on Health and Lifestyle: A Study on College Students	Survey - questionnaire - structured one - purposive sampling	
10.	Zahid, 2007.	Impact of Cultural Globalization on the Upper-Classs Youth in Dhaka City: A Sample Study.	Survey - Interview schedule - purposive sampling in some cases by snowball sampling	
11.	Gebremeskel, Kebede & Chai, 2016.	The Paradigm Role of ICT for Behavioral and Educational Psychology: The Case of Developing Countries.	A secondary study. The focus of this study is on the behavioral and educational psychology of both students and teachers to better understand the paradigm function of ICT in the classroom.	
12.	Azam, 2007	Internet Adoption and Usage in Bangladesh	Survey - Interview schedule - Question are prepared based on the hypothesis - Regression model used	

Table 01: Characteristics of Studies Related to the Measurement of "Impacts of ICT on Youth Culture"				
Index	Reference	Title	Quantitative	Qualitative
			- Used six liker scale	
13.	Chowdhury and Alam, 2009	ICT-Driven Knowledge Economy In Bangladesh: Issues And Constraints.	Secondary analysis. The article indicates that the knowledge revolution, spearheaded by information and communication technology, sits at the core of the economic growth of Bangladesh.	
14.	Helal, 2014	Impacts of Indian Drama Serials on Bangladeshi Social System: An Overview of People's Perception.	Survey - Interview Schedule - one hundred (100) people were interviewed	In-depth. Interview - Snowball Sampling - Twenty (20) respondents
15.	Hossin and Mohiuddin, 2015	Urban Youth Culture in Bangladesh under the Sway of Cultural Globalization: A Descriptive Analysis.	Survey (123 respondents) - questionnaire - semi-structured questionnaire - non-probability sampling - purposive sampling	
16.	Islam and Fouji, 2010	The Impact of ICT on Students' Performance: A Case Study of ASA University Bangladesh.	Survey - questionnaire	
17.	Bairagi, Rajon and Roy, 2011	Status and Role of ICT in Educational Institution to Build Digital Society in Bangladesh: Perspective of a Divisional City, Khulna.	Survey - questionnaire - Structured questionnaire - random sampling	
18.	Laizu, Armarego and Sudweeks, 2010	The Role of ICT in Women's Empowerment in Rural Bangladesh.		Interviews
19.	Rahman, 2013	ICT Impact on Socio-economic Conditions of Rural Bangladesh.	Survey - Interview Schedule	Focused group discussion Observation
20.	Eluwole, Udoh and Ojo, 2014	The Impact of the Internet on African Education and Culture.	Theoretical justification with existing literature.	
21.	Samsuddin et al., 2018	Potential Benefits of ICT towards Rural Positive Youth Development in Malaysia.	The purpose of this research is to determine how the use of ICT may help rural adolescents grow and thrive. Document analyses and review of the literature	
22.	Ashrafi & Murtaza, 2008	Use and Impact of ICT on SMEs in Oman	Questionnaire survey - questionnaire contained 22 questions - 51 completed survey questionnaires	

Table 01: Characteristics of Studies Related to the Measurement of "Impacts of ICT on Youth Culture"				
Index	Reference	Title	Quantitative	Qualitative
23.	Biagi & Falk, 2017	The impact of ICT and e-commerce on employment in Europe	This research combines a specification in first-differences and dynamic panel data techniques to examine the effects of ICT on 10 European nations using representative and globally comparable data.	

Researchers who employed survey research design took a large sample size ranging from 70 to more than 4000 considering the composition of the population. Most of them used structured questionnaires except some of them used an open-ended questionnaire (see Coyle & Vaughn, 2008) and; semi-structured questionnaire (see Hossin and Mohiuddin, 2015). Sampling selection methods were mostly non-probability based. Researchers who devoted themselves to the qualitative methodology employed the interview method where sample sizes were up to 20. Respondents were selected through a convenient and snowball sampling method (see Helal, 2014; Long, 2010; Laizu, Arma, rego, and Sudweeks, 2010). One of them employed computer mediated interviewing while supplementing it with direct interviewing (see Long, 2010). It is observed that these studies try to maintain gender balance among the respondents. Most of the studies tend to define youth as average as those who belong to the age group between 15 to 30 or 35.

Long (2010) employed qualitative methods of interviews to investigate the effects of digital socialization and Internet culture on youth's interpersonal skills and sociability (p. 1). He mentioned that was intended to reach a relationship conclusion where previous researches suggest a contradictive relations between on the statement "internet strengthen individual social network" and "internet decrease individual face-to-face attachment".

Researchers who only used quantitative methods i.e., the survey method prepared their survey questionnaire based on 'yes' or 'no' option, a group of fixed variables determined through pilot testing or reviewing previous research, or five Likert scales regarding some specific issues. Azam (2007) use six-point Likert scale "in gaining the respondent's perception on a different statement about the adoption of Internet in Bangladesh" (p. 47). His studies usually based on testing the hypothesis that is drawn from Rogers' (see Rogers, 1983) theoretical postulation.

Researchers used mixed methodology to supplement/ complement both data each other. One method that either supply quantitative data or descriptive data can modify or supplies the others. Coyle & Vaughn (2008) adopted mixed methodology where survey method was adopted at the first phase of the research for knowing the recurrence of the variables and its extend. Finally, they conducted two focus group discussion to "probe for detailed information about college students' communication habits" (p. 14). Helal (2014) conducted in-dept interview along with survey design mentioning that the quantitative technique was utilized to identify personal information, particularly democratic characteristics, the qualitative approach was used to know the depths of information on Indian drama serials via an introspective lens. Similarly, Rahman (2013) employed mixed methods where FGD and observation were used to "make the result

of the study interpretive" (p.3). In these cases, researchers applied mixed methods to enrich their obtained data and to validate data obtained from one methodological paradigm by the other. Research outcome that are based on only one methodological approach often unable to demonstrate cross-sectional validity of the information and as for as they intentionally adopted mixed methods to assess the impact of ICTs on cultural aspects of the youth.

Opportunities in Adopting Mixed Methods

The adoption of mixed methods research in the study of Information and Communication Technology (ICT) and its impact on youth culture presents numerous opportunities that enhance the richness and applicability of research findings. This approach, which integrates both qualitative and quantitative methodologies, allows for a comprehensive understanding of complex phenomena, such as the multifaceted influences of ICT on youth. By employing mixed methods, researchers can explore the subjective experiences of youth while simultaneously validating these insights with quantitative data, thus ensuring a more holistic perspective on the research topic.

Comprehensive Understanding: One of the primary advantages of mixed methods research is its capacity for comprehensive understanding. This methodology combines qualitative techniques, such as interviews and focus groups, with quantitative approaches, like surveys and statistical analyses, to address intricate research questions effectively. For instance, qualitative data can reveal youth perceptions and attitudes towards ICT, while quantitative data can substantiate these findings with measurable evidence. This dual approach not only enriches the data but also enhances the overall validity of the research outcomes, as noted by Smajic et al. Smajic et al. (2022) and Sandelowski (Sandelowski, 2013). The integration of diverse data sources allows researchers to capture a more nuanced picture of how ICT shapes youth culture, thereby facilitating a deeper understanding of the subject matter.

Triangulation: The concept of triangulation is pivotal in mixed methods research, as it enhances the validity and reliability of findings. By integrating data from multiple sources, researchers can mitigate biases and present a more balanced perspective on the research topic. This is particularly crucial in interdisciplinary fields like ICT and youth culture, where the interplay of various factors can significantly influence outcomes. As highlighted by Harrison and Reilly (Harrison & Reilly, 2011), triangulation not only strengthens the credibility of the research but also provides a more comprehensive view of the phenomena under investigation. The ability to cross-validate findings through different methodologies ensures that the conclusions drawn are robust and well-founded.

Exploration of Complex Phenomena: Mixed methods research also allows for the exploration of complex phenomena that encompass cultural, social, psychological, and technological dimensions. The influence of ICT on youth is not a singular narrative; rather, it is a tapestry woven from various threads of experience and context. By employing mixed methods, researchers can analyze these interrelated aspects simultaneously, capturing both the subjective experiences of youth and the objective impacts of ICT. This multifaceted approach is supported by the work of Smith et al. (Smith et al., 2016), who emphasize the complementarity of findings derived from different modalities and methods. The integration of qualitative and quantitative

data enables researchers to paint a more comprehensive picture of the ICT landscape as it pertains to youth culture.

Flexibility and Adaptability: In addition to providing a comprehensive understanding, mixed methods research is characterized by its flexibility and adaptability. This versatility allows researchers to tailor their methodologies to the specific needs of their studies, accommodating diverse research designs. For exploratory studies, where ICT usage patterns and their cultural impacts may vary across regions and demographics, mixed methods are particularly advantageous. As noted by Molina-Azorín (Molina-Azorín, 2010), the inclusive nature of mixed methods research allows for the incorporation of various perspectives, thereby enriching the research process. This adaptability is essential in a rapidly evolving field like ICT, where new trends and technologies continuously emerge.

Policy and Practice Implications: The implications of mixed methods research extend beyond academic inquiry; they also hold significant relevance for policy and practice. By combining qualitative insights with quantitative data, researchers can provide robust evidence for policymakers and practitioners. For example, understanding how ICT facilitates education and socialization among youth can inform targeted interventions and policy frameworks. The integration of diverse data sources allows for a more nuanced understanding of the challenges and opportunities presented by ICT, thereby enabling stakeholders to make informed decisions. This is particularly relevant in the context of youth culture, where the implications of ICT usage can have far-reaching effects on social dynamics and educational outcomes.

Enhanced Engagement: Mixed methods research enhances engagement by encouraging the inclusion of diverse stakeholders in the research process. By involving youth, educators, and community leaders, researchers can ensure that their studies remain relevant and grounded in real-world experiences. Participatory approaches, such as community-based participatory research, further enrich the study's practical relevance, as they empower participants to contribute their insights and experiences. This collaborative approach aligns with the findings of Guetterman and Perez (Guetterman & Perez, 2023), who emphasize the importance of stakeholder engagement in mixed methods research. By fostering a sense of ownership among participants, researchers can enhance the credibility and applicability of their findings.

Innovation in Methodology: The methodological innovation fostered by mixed methods research is another significant advantage. This approach encourages the integration of emerging techniques, such as sentiment analysis of social media data alongside narrative analyses of youth testimonials. The combination of quantitative and qualitative methods allows researchers to explore new avenues of inquiry and generate insights that may not be attainable through a singular methodological lens. As noted by Alavi and Hąbek (Alavi & Hąbek, 2016), the integration of diverse methodologies can lead to innovative research designs that push the boundaries of traditional inquiry.

Richness in Data Interpretation: The richness in data interpretation afforded by mixed methods research is another compelling reason for its adoption. The integration of narrative depth with statistical precision enables researchers to produce nuanced interpretations of their findings. This dual perspective ensures that research outcomes resonate both academically and

practically, as they reflect the complexities of real-world experiences. The ability to synthesize qualitative and quantitative data allows researchers to draw more comprehensive conclusions, as highlighted by the work of Padli (Padli, 2023). This richness in interpretation is particularly valuable in the context of ICT and youth culture, where the interplay of various factors can significantly influence outcomes.

In conclusion, the adoption of mixed methods research in studying the impact of ICT on youth culture offers a plethora of opportunities that enhance the depth, breadth, and applicability of research findings. By combining qualitative and quantitative approaches, researchers can achieve a comprehensive understanding of complex phenomena, enhance the validity and reliability of their findings through triangulation, and explore the intricate interplay of cultural, social, psychological, and technological dimensions. The flexibility and adaptability of mixed methods allow for tailored research designs that accommodate diverse contexts, while the implications for policy and practice underscore the relevance of this approach in addressing real-world challenges. Furthermore, mixed methods foster engagement with diverse stakeholders, encourage methodological innovation, and provide richness in data interpretation, ultimately leading to more meaningful and impactful research outcomes.

Issues in Adopting Mixed Methods

Researchers who want to explore the attachment and user opinion of ICTs employed quantitative methods while survey research design is best practices for most of the researchers (see Azam, 2007; Bairagi, Rajon & Roy, 2011; Hossin & Mohiuddin, 2015; Islam and Fouji, 2010; Michael & Samson, 2014; Muduli, 2014; Nisar et al., 2011; Zahid, 2007). Survey will help to know the technological attachment that youth possesses, their usual life style and opinion regarding technologies and its effects on them. Groves (1996) argued that the results of surveys are always statistical in character. Surveys are the harsh, numerical kind. The essence of survey method can be explained as "questioning individuals on a topic or topics and then describing their responses" (Jackson, 2015, p. 20). Quantitative presentation of youths' behavior will produce generalization ability of the study. Surveys are the most common method of collecting quantitative data in the social sciences. Data collected via surveys has the potential to be accurate, trustworthy, and valid. It's convenient to gather information this way, but careless surveying might lead to inaccurate conclusions. A wide sample of the population is polled to learn more about their attitudes, personalities, and actions. This is why the survey approach is so useful for characterizing the size of a large population. By evaluating a large number of samples, it stimulates in hypothesis testing (Neuman, 2014, pp. 316-317).

Researchers who want to disclose the inner experience of using ICTs employed qualitative methods. For qualitative data, interview research design has been widely used method in this case (see Helal, 2014; Laizu et al., 2010; Long, 2010; Muduli, 2014). It will assist to understand individual inner experiences of youth. Interviews are a great way to learn about events, perspectives, and experiences since they are so different from person to person (Dunn, 2010, p. 102). Further, for gaining 'collective experiences' FGD can be best suited (see Coyle & Vaughn, 2008; Rahman, 2013). It can supplement quantitative (survey) data and add extra beauty of interview data (Cameron, 2010, p. 156). FGD is a highly efficient data collecting technique that is also appropriate in 'more critical, politicized, and more theoretically driven research contexts' (Lunt & Livingstone, 1996, p. 80), provides an opportunity for the people to share

different point of view, formulate and moderate their own idea by open mind discussion environment where every person has chance to agree or disagree to a given topic (Cameron, 2010).

A tendency has also been observed among the researchers who employed both qualitative and quantitative methods (see Eng, 2005; Coyle & Vaughn, 2008; Helal, 2014; Rahman, 2013) to give shape to the actual scenario- quantitative strength (frequency) and qualitative experiences (user-specific). Mixed methods, in its recent history, has become a widely accepted research design among the researchers within the field of social science who believe that mixed methods are useful to address their research question (Johnson, Onwuegbuzie & Turner, 2007, p. 112).

Now, there appears a question: what is the rationale of combining the mixed methods? To find out the answer of this question we have focused on several books and articles. An article (Campbell & Fiske, 1959) introduce the idea of triangulation where the validation process employs many techniques to check that the phenomena or characteristic under investigation is indeed responsible for the observed variation in results and not the techniques themselves (e.g., quantitative or qualitative) (as cited in Johnson et al., 2007). The idea of multiple operationalism or using multiple methods is a 'measurement and construct validation' technique rather than a full research methodology. This idea of multiple operationalism of early researchers' is more closely related to what is today referred as multimethod research or mixed methods research. Bouchard (1976) argued that using two or more methods "enhances our beliefs that the results are valid and not a methodological artifact" (p. 268).

After examining several studies, Greene, Caracelli, and Graham (1989) compiled the following five broad purposes or rationales of mixed methodological studies: (a) triangulation, wherein findings from different methods investigating the same phenomenon are sought to converge and corroborate one another; (b) complementarity, wherein findings from one method are sought to elaborate upon, illustrate, and clarify findings from the other; (c) development, wherein findings from one method are used to inform findings from the other; (d) initiation, wherein findings of paradoxes and contradictions prompt a rethinking of the research; and (e) expansion, aiming to broaden the scope and depth of the investigation by using a variety of approaches for the various aspects of the investigation.

Mixed methods can produce research questions and are committed to answering those questions. When a confluence of factors relevant to your research question(s) implies that a mixed-methods approach would provide the most fruitful results, you should conduct a study using this design (Johnson et al., 2007). For these strengths and literary support, we suggest to devote on mixed methodology and triangulate between methods rather within method to conduct research on measuring impact of ICTs on cultural aspect of youths.

Challenges in Adopting Mixed Methods

1. **Methodological Rigor** Ensuring rigor in both qualitative and quantitative components is crucial. Researchers must design and execute these components with equal attention to detail. As highlighted by Craig et al. (2017), robust mixed methods designs are necessary to capture the complexities of youth experiences with ICTs. However,

aligning qualitative insights with quantitative data can be challenging, particularly when one type of data appears to dominate the findings.

2. **Participant Engagement** Engaging youth participants, especially marginalized groups, poses significant challenges due to issues such as digital divides, cultural barriers, and resource limitations. Smaldone et al. (2015) emphasize that technology access disparities in underserved communities can hinder participation. Strategies like community-based participatory research, as suggested by Katz-Wise et al. (2018), can enhance engagement and foster trust among participants.
3. **Data Integration and Interpretation** Synthesizing qualitative and quantitative data to draw coherent conclusions is inherently complex. Researchers must navigate potential discrepancies between datasets and triangulate findings to provide a holistic understanding. Peppler (2010) demonstrates how qualitative narratives can complement quantitative trends, but this requires careful contextual analysis to avoid conflicting interpretations.
4. **Ethical Considerations** Research involving youth, particularly from vulnerable populations, demands careful attention to ethical issues such as consent, confidentiality, and cultural sensitivity. Rouner et al. (2015) highlight the importance of culturally appropriate communication strategies to ensure ethical compliance and respect for participant rights.
5. **Dynamic Nature of Youth Culture** The rapid evolution of ICTs and their influence on youth behavior and cultural practices necessitate ongoing adaptation of research methodologies. Shava and Chinyamurindi (2018) note how emerging technologies, such as social media platforms, continuously reshape youth interactions, requiring updated frameworks to remain relevant.
6. **Resource and Skill Requirements** Mixed methods research is resource-intensive and demands multidisciplinary expertise. Researchers must possess or acquire skills in qualitative and quantitative methodologies, as well as tools like NVivo for coding and SPSS for statistical analysis.

Conclusion

Since the establishment of the United Nations Convention on the Rights of the Child in 1989, there has been growing acknowledgement of the need to provide youth a "voice" in problems impacting their life. However, there is still debate regarding how much say young people should have in these conversations, how much they should be able to learn about the problems at hand, how they should share their perspectives, and how they should be involved in making choices (Jardine & James, 2012). Methodological review guide a novice toward systematic study as if tt is impactful when research problem generates different results along with the variation of applicable method/s. It became crucial when novice get confused in assessing tentative result of certain method/s for a given research problem. For researcher/s, employing mixed methods for a study is a challenging issue. Despite the difficulties and challenges "mixed methods researchers must remain confident that our research can make a difference" (Molina-Azorin & Fetters, 2019). We hope this methodological article will guide them to decide application of appropriate methods for 'ICT and its impact on youth'.

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