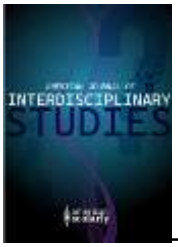


American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
Doi: 10.63125/zrsv2r56

DIGITAL EQUITY AND NONPROFIT MARKETING STRATEGY: BRIDGING THE TECHNOLOGY GAP THROUGH AI-POWERED SOLUTIONS FOR UNDERSERVED COMMUNITY ORGANIZATIONS

Reduanul Hasan[1];

[1] *Master of Science in Digital Marketing and Media, Katz School of Science and Health,Yeshiva University, NY USA; Email: reduanhasan39@gmail.com*

Citation:
Hasan, R. (2023). Digital equity and nonprofit marketing strategy: Bridging the technology gap through AI-powered solutions for underserved community organizations. *American Journal of Interdisciplinary Studies, 4*(4), 117–144. https://doi.org/10.63125/zrsv2r56

Received:
September 17, 2023

Revised:
October 20, 2023

Accepted:
November 16, 2023

Published:
December 28, 2023

ABSTRACT

This study investigates the intersection of digital equity and nonprofit marketing strategy with a focus on how AI-powered solutions can bridge the technology gap for underserved community organizations. Digital equity is conceptualized not merely as access to devices or internet connectivity but as a multidimensional framework encompassing affordability, digital literacy, cultural sensitivity, autonomy of use, and the capacity to translate access into meaningful outcomes such as education, employment, and civic participation. Nonprofits, driven by social missions rather than profit, are uniquely positioned to act as mediators between global technological infrastructures and marginalized communities by leveraging trust-based relationships, mission alignment, and inclusive communication practices. Their marketing strategies are framed not only as tools for visibility and fundraising but as vehicles for equity-building through segmentation, targeted outreach, multilingual messaging, and community-driven storytelling. The incorporation of artificial intelligence into these strategies has the potential to extend capacity and efficiency by providing automated translation, predictive analytics, chatbots, and content-generation systems, enabling nonprofits with limited resources to scale their operations and enhance engagement. However, the study also identifies persistent challenges related to resource constraints, data governance, ethical accountability, and community trust, underscoring the need for participatory design and transparent communication. By synthesizing evidence from 142 peer-reviewed articles, this review constructs an integrated conceptual framework that unites digital equity principles, nonprofit marketing strategies, and AI applications. The findings suggest that when implemented responsibly, AI serves as an enabler that amplifies human-centered nonprofit practices rather than replacing them, ensuring that equity and trust remain central. Overall, the study demonstrates that bridging the technology gap for underserved community organizations requires not only technological innovation but also strong institutional support, ethical governance, and culturally responsive nonprofit strategies that empower marginalized populations in the digital age.

KEYWORDS

Digital Equity, Nonprofit Marketing, Artificial Intelligence, Underserved Communities, Technology Gap.

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

INTRODUCTION

Digital equity can be understood as the condition in which all individuals and communities have the necessary access to technology, connectivity, and digital skills to fully participate in society and the economy (Passey et al., 2018) . It is not merely about owning a device or connecting to the internet but about being able to use these tools effectively and safely. Closely related is the concept of digital inclusion, which refers to the policies, practices, and programs designed to bring about that condition. This includes ensuring affordable access, relevant training, and ongoing community support. In the context of organizational effectiveness, nonprofit marketing strategy refers to the systematic use of segmentation, positioning, message development, and outreach to fulfill a social mission rather than generate financial profit. Nonprofits often serve marginalized communities, so aligning strategy with equity concerns becomes central (Kaihlanen et al., 2022). Underserved community organizations include local associations, grassroots initiatives, and smaller nonprofits that operate with limited financial and technological resources. For them, artificial intelligence-powered tools can provide new opportunities for audience engagement, content creation, and service delivery. These tools include natural-language processing for translation, predictive modeling for outreach, and recommendation systems for resource distribution. On the international stage (Richardson et al., 2022), digital equity has become a crucial component of development agendas, because access to digital resources now determines whether communities can pursue opportunities in education, employment, and civic life. By combining nonprofit marketing strategy with AI-powered approaches, organizations can begin to bridge existing divides and ensure that underserved groups benefit from technological progress in ways that are meaningful and sustainable (Resta et al., 2018).

Figure 1: Digital Equity Nonprofit AI Framework

Digital inequities manifest in multiple forms: affordability, connectivity quality, device ownership, digital literacy, and the ability to translate access into meaningful outcomes (Sanders & Scanlon, 2021). For many households in low-income or rural settings, the high cost of internet subscriptions and devices remains the first barrier. Even when connectivity is available, bandwidth limitations, unstable networks, and lack of up-to-date hardware reduce the quality of participation. Furthermore, inequities emerge in digital literacy and the ability to critically evaluate, create, and share digital content (Tate & Warschauer, 2022). Gender disparities persist in many regions, with women less likely to own devices or access the internet due to cultural, economic, or safety-related factors. Age,

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

disability status, and linguistic diversity also play significant roles in determining who benefits from digital infrastructures. These inequalities are not limited to developing regions; in advanced economies, gaps continue along socioeconomic lines, with lower-income households more likely to rely on mobile-only internet and less likely to access broadband at home. Addressing such disparities requires holistic frameworks that combine affordability initiatives, educational programs (Heeks, 2022), and locally relevant content creation. The global significance of these issues lies in their direct link to equitable participation in modern life: without digital equity, opportunities for employment, learning, healthcare, and civic engagement are systematically constrained. As digital platforms increasingly mediate essential services, inequities in access translate into broader patterns of social exclusion (Zallio & Clarkson, 2022). This makes the pursuit of digital equity a priority not only for policymakers but also for nonprofit organizations that act as intermediaries and advocates for underserved communities.

Figure 2: Digital Equity Through Nonprofit Innovation

Nonprofit organizations play an especially important role in this ecosystem (Zheng & Walsham, 2021). They often act as frontline providers of support for marginalized populations, yet they themselves operate under severe resource constraints. Nonprofit marketing strategy therefore becomes a vital tool for clarifying the mission, identifying audience segments, and allocating scarce resources toward maximum impact. Through strategic marketing, nonprofits can strengthen stakeholder engagement (Greenhow et al., 2021; Hosne Ara et al., 2022), communicate effectively with donors, and reach the communities they serve with relevant information and services. Research in this field shows that nonprofits use digital channels to share information, foster communities, and mobilize for social change. Yet small organizations often lack the staff, expertise, or tools to execute complex campaigns (Jackson et al., 2021; Jahid, 2022). This is where the connection to digital equity becomes clear: nonprofits that are themselves digitally disadvantaged cannot fully support communities in overcoming the same barriers. Marketing strategy for these organizations must thus integrate both mission-oriented communication and technological adaptation. The task involves understanding diverse audiences, crafting culturally resonant messages, and using available platforms effectively. Unlike for-profit marketing, nonprofit strategy must balance resource scarcity (Aruleba & Jere, 2022; Kutub Uddin et al., 2022), ethical considerations, and the need to build trust in often vulnerable

communities. In this sense, nonprofit marketing is not simply about visibility but about empowerment—creating channels where community voices are heard, needs are identified, and resources are distributed equitably.

Artificial intelligence introduces new opportunities for nonprofits to enhance their marketing strategies and community engagement efforts (Macgilchrist, 2019; Mansura Akter & Md Abdul Ahad, 2022). AI tools can analyze patterns in data to identify trends, predict audience behavior, and optimize communication strategies. Large language models, for example, can generate multiple variations of campaign messages, assist with translation into local languages, and even automate frequently asked questions through chatbots (Levin-Zamir & Bertschi, 2018; Md Arifur & Sheratun Noor, 2022). Natural-language technologies enable more inclusive communication by bridging language barriers and making information more accessible. Predictive modeling can assist nonprofits in prioritizing outreach to individuals or groups most likely to benefit from specific services, helping organizations maximize the impact of limited resources. For communities where mobile devices serve as the primary gateway to the digital world (Lembani et al., 2020; Md Hasan & Moin Uddin, 2022), AI-powered applications can deliver content that is adaptive to bandwidth constraints and user preferences. The integration of these technologies into nonprofit operations allows small teams to function with greater efficiency, producing culturally relevant and contextually adapted materials in less time. However, the adoption of AI must remain aligned with ethical frameworks, as it carries the potential for unintended consequences such as bias, opacity, and misuse. When carefully applied (Beaunoyer et al., 2020; Md Mahamudur Rahaman, 2022), AI can significantly extend the reach and effectiveness of nonprofit marketing strategies, allowing underserved communities to engage more fully with services, resources, and civic opportunities. Examples of AI applications in nonprofit and community contexts highlight how technology can address pressing needs (Jamil, 2021; Md Mahamudur Rahaman & Rezwanul Ashraf, 2022). Language translation systems can enable organizations to communicate with multilingual populations, making services available to those previously excluded by language barriers. Automated content generation can support the production of outreach materials such as flyers, social media posts, and educational guides tailored to diverse audiences. Predictive analytics can inform program planning by identifying areas of high demand, forecasting community needs, and guiding resource allocation (Mathrani et al., 2022; Md Nazrul Islam, 2022). Chatbots and virtual assistants can extend organizational capacity by answering common questions, freeing staff to focus on complex cases requiring human judgment. Low-bandwidth dashboards can aggregate real-time data from outreach and service-use signals, helping staff make more informed decisions. In humanitarian and health contexts, AI has been deployed to support crisis communication, early-warning systems, and beneficiary targeting, often in collaboration with international agencies. Community-based nonprofits, even with limited technical expertise (Md Nur Hasan et al., 2022; Nambisan et al., 2019), can benefit from AI when partnerships and support networks provide access to tools and training. These examples show that AI applications are not limited to large organizations; they can be scaled down to grassroots settings where even modest efficiency gains can make a significant difference in delivering mission-critical services (Md Redwanul & Md. Zafor, 2022; Rotz et al., 2019).

Attention to ethics and equity is essential in the adoption of AI within nonprofit marketing strategies (Marín & Castaneda, 2022; Md Rezaul & Md Mesbaul, 2022). AI systems are built on data, and data can reflect and amplify social inequities if not handled carefully. Issues such as biased training datasets, lack of representation, and inappropriate proxy measures can lead to discriminatory outcomes. This is particularly concerning in contexts serving vulnerable populations, where unintended harms can have serious consequences (Md Takbir Hossen & Md Atiqur, 2022; Shonfeld et al., 2021). Ethical frameworks for AI emphasize principles such as fairness, accountability, transparency, privacy, and human oversight. For nonprofits, this translates into practices like minimizing data collection, involving communities in the design and evaluation of tools, and ensuring that automated decisions can be explained and challenged. Equity-centered measurement is also critical, requiring organizations to disaggregate outcomes by subgroup and integrate qualitative community feedback to contextualize quantitative indicators (Frei-Landau & Avidov-Ungar, 2022; Md Tawfiqul et al., 2022). Beyond the technical dimensions, ethical deployment requires building trust with the communities served. If AI is perceived as intrusive or opaque, it may undermine rather than enhance organizational effectiveness. Nonprofits thus need not only the tools but also the governance structures and cultural competencies to implement AI responsibly. By doing so, they

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

can harness the potential of AI to reduce barriers while avoiding the risk of reinforcing existing inequities (Md. Sakib Hasan, 2022; Ydo, 2020).

Theoretical perspectives help explain how digital equity, nonprofit marketing strategy, and AI intersect (Md. Tarek, 2022; Mirra et al., 2018). The concept of digital inequality emphasizes that beyond mere access, differences in skills, support, and usage determine who benefits from technology. Frameworks in social exclusion studies suggest that digital and social exclusion reinforce one another, creating cycles of disadvantage. Nonprofit marketing is informed by social marketing theory, which views communication not only as persuasion but as part of broader systems change (Arpaci et al., 2022; Md.Kamrul & Md Omar, 2022). Customer-journey research adds another dimension, focusing on how individuals experience services across multiple touchpoints. Technology-adoption models explain the psychological and contextual factors that drive or inhibit use of new tools, highlighting the role of social influence, perceived ease of use, and trust. Development economics contributes the idea of "digital dividends," stressing that the benefits of digital technologies are only realized when strong social, institutional, and policy foundations exist (Fisher & Rosella, 2022; Md.Kamrul & Md. Tarek, 2022). Together, these perspectives underscore that bridging the technology gap is not simply about providing access or deploying tools. It is about aligning strategies, capacities, and governance structures to ensure that AI-powered solutions genuinely serve the missions of nonprofits and the needs of underserved communities. The convergence of these theories offers a roadmap for understanding why organizations must approach technology adoption as part of a broader ecosystem of equity, strategy, and community engagement.

LITERATURE REVIEW

The concept of digital equity has gained international prominence as digital technologies become essential for full participation in economic, educational, and civic life (Passey et al., 2018). For nonprofit organizations serving underserved communities, disparities in access, affordability, and skills present significant challenges to mission delivery and stakeholder engagement. At the same time, the rapid development of artificial intelligence has introduced new possibilities for enhancing nonprofit marketing strategies (Resta et al., 2018), enabling small organizations with limited resources to expand their reach, tailor their communication, and optimize engagement across diverse audiences. The intersection of these domains—digital equity, nonprofit marketing strategy, and AI-powered solutions—presents a fertile area for inquiry into how technology can be leveraged responsibly to reduce disparities rather than exacerbate them. This literature review examines theoretical frameworks, empirical findings, and applied practices that together illuminate the challenges and opportunities facing nonprofits in bridging the technology gap for underserved communities. It is structured around three broad themes: (1) the foundations of digital equity and digital inclusion, (2) nonprofit marketing strategy and its role in advancing social missions, and (3) the application of AI-powered solutions to improve equity-oriented outcomes. Within these themes, subtopics address international policy frameworks, socioeconomic dimensions of digital inequality, nonprofit communication practices, case studies of AI applications, and the ethical considerations that accompany technology adoption (Hackl, 2018). By systematically reviewing these literatures, the review builds an integrated understanding of how nonprofits can strategically combine equity-focused frameworks with AI-enabled practices to advance their mission in an increasingly digital society.

Digital Equity and Inclusion

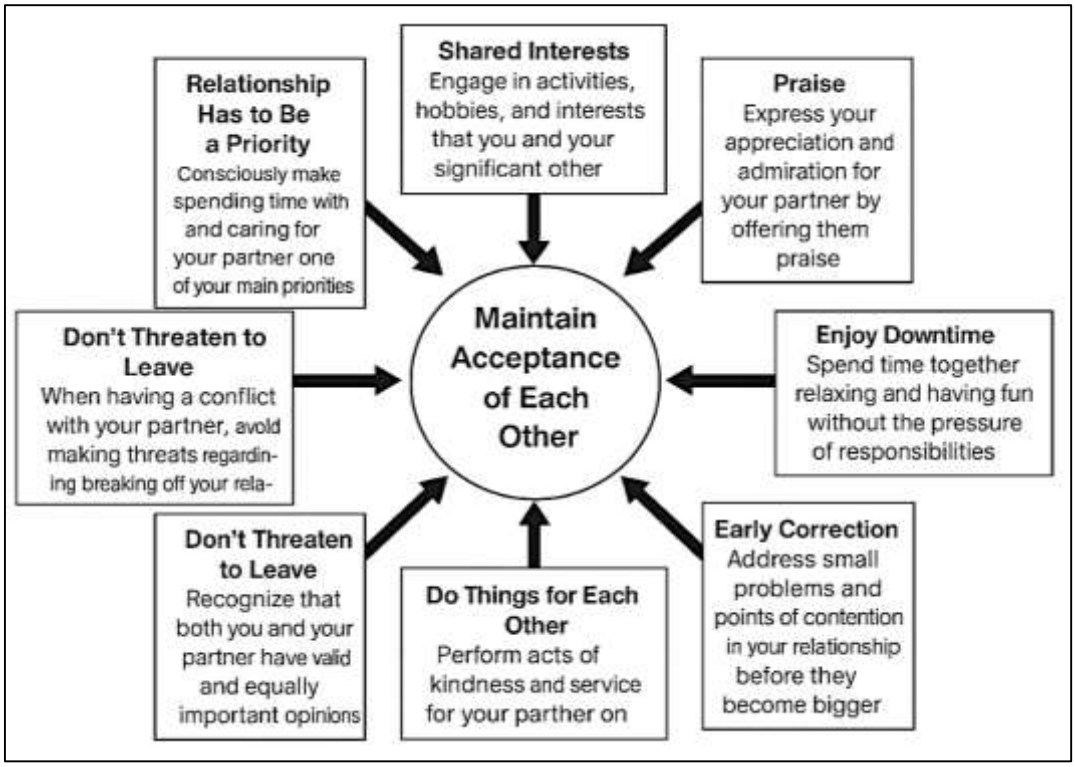
Digital equity is best understood as the condition in which all individuals and communities have both the access and the capacity to participate meaningfully in the digital environment. Unlike the notion of equality (Soomro et al., 2020), which assumes that distributing the same resources to everyone is sufficient, equity acknowledges that structural disparities require differentiated approaches. Digital equity therefore involves ensuring that technology is affordable, available, and supported by the necessary skills, devices, and cultural conditions that enable participation. Access to a device or an internet connection alone is insufficient if it does not lead to meaningful use—such as applying for jobs, engaging in education, managing healthcare, or participating in civic life (Lembani et al., 2020). The concept of meaningful use highlights the role of digital literacy, trust, and social support in determining whether technology translates into real opportunities. Moreover, equity requires recognizing that barriers exist not just at the level of infrastructure but also in the ways individuals are able to sustain technology use over time. For example, households with unstable access or limited financial resources may experience frequent disconnections (Attaran, 2020), outdated equipment,

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

or reliance on mobile-only connections that restrict more complex online activities. Defining digital equity as a multidimensional framework allows us to move away from simplistic "haves" and "have-nots" narratives and instead consider the diverse ways people interact with technology. This perspective underscores that digital equity is a living, evolving condition that requires sustained attention to affordability (Khan et al., 2022), device access, skill development, and the social environments that shape digital participation.

The global digital divide illustrates how differences in access and use of technology map onto broader patterns of inequality across nations and regions (Pandey & Pal, 2020). While internet penetration has expanded dramatically in the past two decades, disparities between the Global North and the Global South remain pronounced. High-income countries typically enjoy universal or near-universal coverage, yet many low- and middle-income countries still struggle with inadequate infrastructure, high costs, and limited-service availability. Even within nations, stark divides exist between urban and rural areas, with rural populations often facing poor connectivity and limited investment in broadband infrastructure (Okoye et al., 2023).

Figure 3: Building Digital Equity with AI



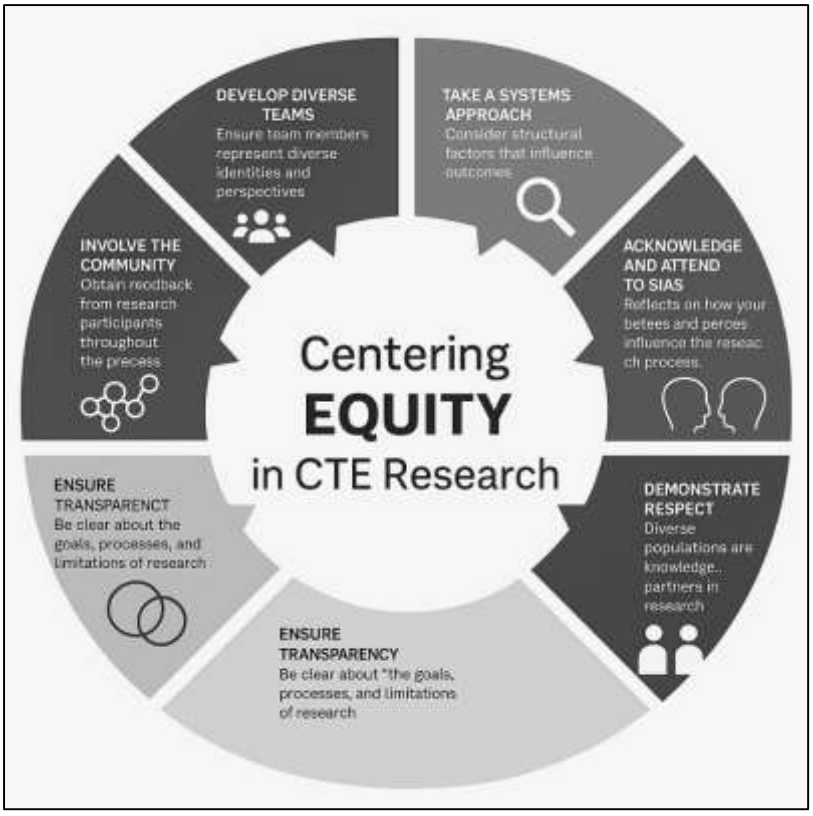
These disparities mean that individuals in different regions of the world are afforded vastly different opportunities to engage with education, healthcare, government services, and economic activities. Global institutions have recognized the significance of these divides and embedded digital equity within broader development agendas, linking it to economic growth, sustainable development, and human rights. International initiatives emphasize not only expanding infrastructure but also ensuring affordability and fostering the skills necessary to make effective use of digital tools (Holeman & Kane, 2020). Despite progress, persistent gaps continue to mirror global patterns of wealth, education, and power. This reality demonstrates that digital equity is not simply a technological challenge but a deeply social and political issue with implications for participation in the global knowledge economy. The international significance of bridging the divide lies in the recognition that digital resources are now central to social inclusion, making digital equity a prerequisite for broader human and economic development (Park & Lim, 2023).

Access to and use of digital technologies are shaped by socioeconomic and demographic conditions, creating complex layers of inequality (Li et al., 2018). Income is one of the most powerful determinants, as higher-income households are more likely to afford stable broadband connections, modern devices, and regular upgrades, while lower-income households often rely on less reliable or

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

mobile-only connections. Education levels further influence digital participation, with more highly educated individuals better equipped to navigate online systems and apply digital skills to work, study, or civic engagement. Age is another important factor; older populations often face barriers due to lack of exposure, limited confidence, or physical challenges in adapting to new devices and platforms (Acs et al., 2021). Gender disparities also persist, particularly in regions where cultural norms restrict women's access to technology or where economic barriers disproportionately affect them. Disabilities create another significant axis of inequality, as individuals with physical or cognitive impairments may face inaccessible interfaces, inadequate assistive technologies, or environments that fail to support inclusive design. Beyond these dimensions, cultural and linguistic barriers limit participation, especially in multilingual societies where content is not localized or where minority language speakers are underrepresented online (Wang et al., 2022). These determinants often intersect, compounding disadvantages for those who face multiple forms of exclusion. The cumulative effect is a pattern of "digital inequalities" where access and usage reflect broader socioeconomic hierarchies. Understanding these determinants is essential for addressing digital equity because they reveal that technological gaps cannot be resolved through infrastructure alone (Dana et al., 2022). Instead, equity requires targeted interventions that address the social, economic, and cultural conditions that shape digital participation.

Figure 4: Centering Digital Equity with AI



Ensuring digital equity requires going beyond providing devices and connectivity to developing the competencies that allow individuals to transform access into meaningful outcomes (Martin et al., 2018). Digital literacy encompasses a range of skills, including the ability to operate devices, navigate online environments, critically evaluate information, create digital content, and solve problems using technology. Simply being able to go online is not sufficient if individuals cannot determine the reliability of information, protect their privacy, or use digital tools for employment, learning, or civic participation (Blichfeldt & Faullant, 2021; Mubashir & Abdul, 2022). Scholars have emphasized that digital literacy is multidimensional, involving technical, critical, and creative skills. Disparities in digital skills mirror broader social divides, with marginalized populations more likely to be limited to basic uses such as communication, while more advantaged groups engage in advanced applications like content creation, data analysis, or online entrepreneurship (Cahen & Borini, 2020; Omar Muhammad & Md.Kamrul, 2022). Community-based interventions such as public library programs,

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

nonprofit-led training initiatives, and grassroots workshops have been shown to increase digital confidence and expand opportunities for underserved groups. These interventions succeed when they are culturally relevant, locally embedded, and responsive to the lived realities of participants. Importantly, digital competencies are not static; as technologies evolve, new skills become necessary, requiring continuous learning and adaptation. Without such competencies, digital access risks reinforcing rather than reducing inequalities. Thus, fostering digital literacy is central to digital equity (Reduanul & Mohammad Shoeb, 2022; Rong, 2022), ensuring that all individuals and communities can fully participate in and benefit from digital society.

Nonprofit Marketing Strategy in the Context of Equity

Nonprofit marketing is defined by its mission-driven character, which sets it apart from commercial marketing models that prioritize profit maximization (Komatsu Cipriani et al., 2020). While both contexts employ familiar tools such as segmentation, targeting, and positioning, nonprofits must adapt these practices to align with the ethical imperatives and social objectives that guide their work. Unlike businesses, nonprofits serve multiple audiences simultaneously—beneficiaries seeking services, donors expecting accountability, policymakers demanding transparency (Levine Daniel & Galasso, 2019), and volunteers motivated by purpose. This complexity requires marketing strategies that balance and reconcile diverse expectations without undermining the organization's mission. Segmentation enables nonprofits to identify the most vulnerable populations, targeting ensures that limited resources are directed where they are most effective, and positioning communicates the unique value the organization brings in a crowded philanthropic environment (Budney, 2022). Stakeholder communication further strengthens these efforts by establishing trust and ensuring transparency. Yet, nonprofits must be cautious, as adopting overly commercialized practices can risk alienating communities or creating perceptions of mission drift. Instead, the foundations of nonprofit marketing emphasize mission alignment, authenticity, and social impact. This orientation highlights the difference between marketing for profit and marketing for purpose, positioning nonprofits as entities that use marketing to advance societal well-being while maintaining legitimacy, credibility, and inclusivity (Van Hille et al., 2020).

Communication is central to nonprofit effectiveness, and in the digital era, it has expanded into a complex ecosystem of online and offline platforms. Digital tools such as websites, email, and social media provide cost-effective ways for nonprofits to reach broad audiences, share updates, and mobilize support. Social media, in particular, has emerged as a primary communication vehicle, enabling organizations to disseminate information, build communities, and encourage participation. While many nonprofits use these platforms primarily for one-way communication—such as promoting events or sharing news—research highlights the value of interactive strategies that engage audiences in dialogue and foster ongoing relationships (Sabuj Kumar & Zobayer, 2022; Slatten et al., 2021). Storytelling has become a hallmark of nonprofit communication, as narratives that highlight individual experiences and community impact can inspire emotional connection and motivate both donors and beneficiaries to act. Consistency across channels is also essential, as coherent messaging strengthens legitimacy and reassures stakeholders that organizations are trustworthy and dependable (Oldroyd, 2021; Sadia & Shaiful, 2022). Beyond fundraising and service delivery, communication also serves advocacy purposes, amplifying marginalized voices and drawing attention to systemic inequities. Effective communication requires not just technological adoption but also cultural sensitivity, authenticity, and responsiveness, ensuring that messages resonate with diverse audiences. In this way, nonprofit communication practices extend beyond outreach to become a mechanism for building community, fostering trust, and advancing social change (Sazzad & Md Nazrul Islam, 2022).

Resource constraints are among the most defining features of nonprofit operations, shaping how marketing strategies are designed and executed (Sheratun Noor & Momena, 2022). Financial limitations restrict investments in technology, skilled staff, and advanced communication tools, leaving many organizations dependent on volunteers or employees with limited expertise in marketing. In addition, infrastructure challenges, such as outdated systems and lack of access to data analytics, often prevent nonprofits from adopting evidence-based approaches. These constraints can result in reactive strategies that prioritize immediate needs over long-term planning (Rentschler et al., 2023; Tahmina Akter & Abdur Razzak, 2022). Yet, nonprofits frequently demonstrate remarkable adaptability, leveraging creativity and resourcefulness to overcome such challenges. Many rely on free or low-cost digital tools, develop partnerships with corporations for pro bono

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

support, or collaborate with other organizations to pool resources. Capacity-building initiatives, particularly in digital literacy and marketing skills, have been shown to significantly improve nonprofit communication outcomes. Importantly (Adar & Md, 2023), resource scarcity also compels nonprofits to maximize community trust and volunteer engagement, creating strong relational networks that compensate for material shortfalls. These adaptive practices demonstrate that while constraints limit organizational capacity, they also foster innovative solutions that enable nonprofits to remain effective in advancing their missions. The resilience shown in navigating these challenges underscores the critical role of organizational culture, leadership, and community support in sustaining nonprofit impact (Golam Qibria & Takbir Hossen, 2023; Sanzo-Pérez & Álvarez-González, 2022).

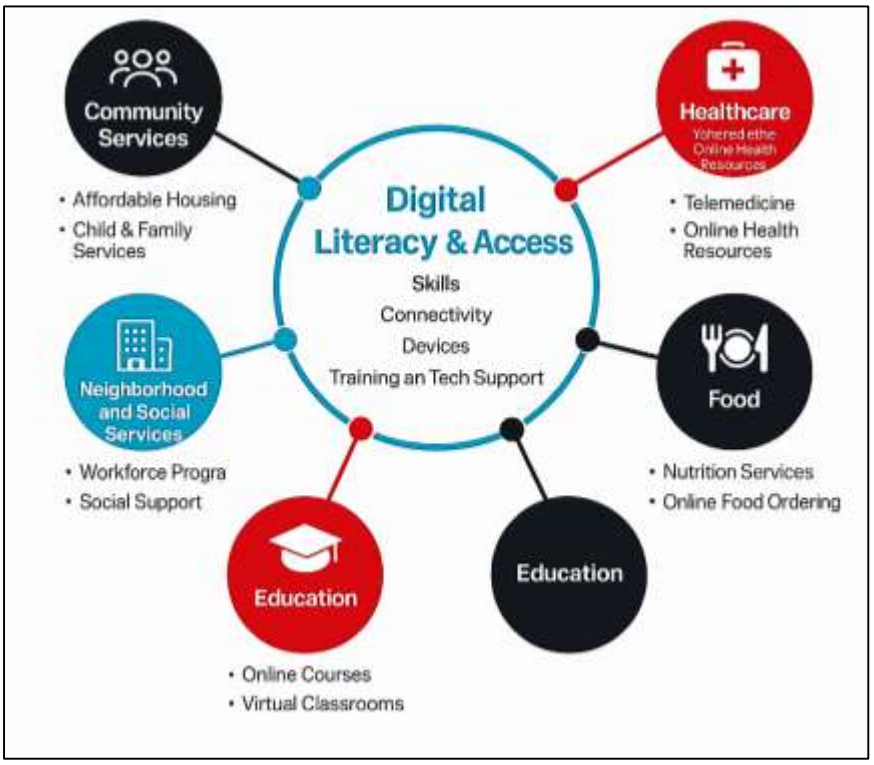
Figure 5: Equity-Driven Nonprofit Marketing Framework

Equity-oriented nonprofit marketing emphasizes the design of campaigns that are inclusive, culturally responsive, and accessible to marginalized populations (Istiaque et al., 2023). Traditional marketing strategies that apply uniform approaches often fail to address the complex realities of underserved communities, where structural, linguistic, and cultural barriers affect participation. Equity-oriented strategies therefore prioritize accessibility through the use of plain language, multilingual content, and formats that are inclusive for individuals with disabilities. Trust is a fundamental component of these strategies, as communities with histories of exclusion may approach institutions with skepticism (Mansura Akter, 2023; Stötzer et al., 2020). Building trust requires transparency, authenticity, and long-term engagement rather than short-term promotional efforts. Cultural sensitivity is equally important, ensuring that campaigns resonate with community values and identities. Partnerships with local

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

leaders and grassroots organizations can further enhance effectiveness, as these collaborations lend credibility and ensure that interventions are grounded in lived experiences. In addition, equity-oriented marketing often integrates advocacy (Md Hasan et al., 2023; Upoma & Sabharwal, 2023), challenging systemic inequities while simultaneously providing direct services. Digital platforms offer opportunities to make these strategies more participatory, allowing community members to contribute their own voices to campaigns and ensuring that communication is not only about outreach but also about empowerment. This approach positions nonprofit marketing as a tool for advancing equity, ensuring that campaigns do not simply deliver information but also foster inclusion, trust, and collective agency (Md Masud et al., 2023).

Figure 6: Nonprofit AI for Digital Equity

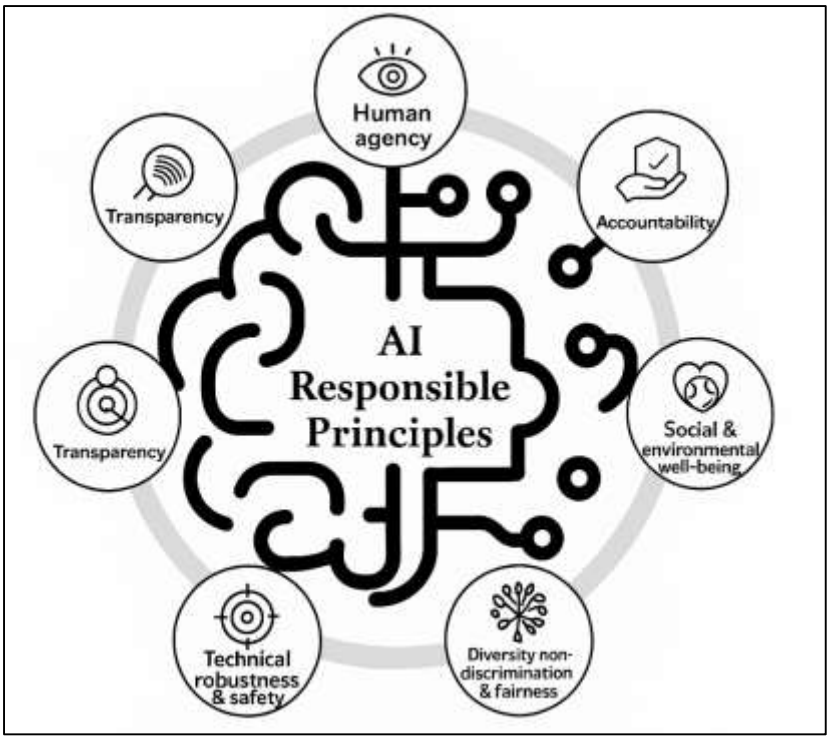


AI-Powered Solutions in Nonprofit Marketing

Artificial intelligence has increasingly become an essential tool for mission-oriented organizations, offering capabilities that extend beyond traditional marketing functions (Mazzucato et al., 2020). In this context, AI is defined as the use of computational systems capable of processing language, predicting outcomes, and automating tasks to advance social missions rather than maximize profit. While commercial enterprises often use AI for competitive advantage, market expansion, and revenue generation, nonprofits adopt these tools to maximize social impact, stretch limited resources (Hjalager & von Gesseneck, 2020; Md Sultan et al., 2023), and improve service delivery. AI-powered language processing, for instance, allows organizations to break down communication barriers by offering real-time translation and sentiment analysis that can adapt messaging for diverse audiences. Predictive analytics enables organizations to identify both beneficiaries most at risk and donors most likely to engage, making scarce resources more effectively deployed. Automation, such as scheduling, reporting, and workflow management, reduces administrative burdens on staff (Md Takbir Hossen et al., 2023), allowing them to dedicate more attention to human-centered interactions that require empathy and judgment. The distinction between nonprofit and commercial applications is rooted in ethical priorities: nonprofits seek to uphold trust, inclusivity, and transparency while delivering their services. At the same time, scholars emphasize that mission alignment must guide any adoption of AI, as organizations risk undermining credibility if efficiency is prioritized without considering equity and accountability. Overall, AI represents a powerful yet delicate opportunity for nonprofits, simultaneously offering transformative benefits and requiring careful stewardship to align with values of social good (Md Tawfiqul, 2023; Panori et al., 2021).

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

Figure 7: Responsible Principles for Ethical AI



The use of AI in nonprofit marketing and communication has expanded rapidly, reshaping how organizations engage stakeholders, donors, and beneficiaries (Mst Shamima et al., 2023; Ulnicane, 2022). Automated translation tools are increasingly leveraged to reach multilingual populations, ensuring messages are accessible to immigrants, refugees, and international communities that nonprofits serve. This capability enables organizations to broaden their reach across cultural and linguistic boundaries. Chatbots and virtual assistants represent another area of adoption, providing 24/7 responses to frequently asked questions, triaging requests (Ahokangas et al., 2023; Rezwanul Ashraf & Hosne Ara, 2023), and guiding individuals toward resources. These tools free up staff time, while also delivering faster, more consistent communication to communities. Content-generation tools powered by AI further assist in drafting fundraising appeals, educational guides, and social media posts, offering organizations with limited communication staff the ability to scale outreach efforts. Predictive analytics is also playing a central role, allowing nonprofits to personalize donor appeals, predict giving behavior, and identify which outreach strategies are likely to produce the strongest engagement (Sanjai et al., 2023). In addition, predictive models are increasingly used to anticipate community needs, from forecasting food insecurity to identifying neighborhoods most likely to require services. Importantly, personalization through AI extends beyond fundraising to include tailoring services for beneficiaries, creating more meaningful engagement that fosters trust and relevance. Taken together, these applications illustrate how AI expands nonprofit communication capacities, transforming outreach strategies from one-size-fits-all approaches into more responsive, personalized, and scalable systems of engagement (Tahmina Akter et al., 2023; Ulnicane, 2022).

Practical examples from across sectors demonstrate how AI can transform nonprofit operations in ways that directly benefit underserved communities (Ahokangas et al., 2023). Humanitarian organizations have used AI to analyze satellite images and identify disaster-stricken areas in need of immediate relief, improving the speed and accuracy of crisis response. Health-focused nonprofits have developed AI-enabled chatbots to provide mental health support or triage patient inquiries, particularly in resource-constrained environments where professionals are scarce. In education (Klerkx & Rose, 2020), nonprofits have implemented adaptive learning platforms that personalize instruction for students, helping to reduce disparities in academic achievement. At the community level, grassroots organizations have adopted translation apps and speech-recognition tools to bridge language gaps for immigrant populations. Smaller nonprofits with limited technical expertise have benefited from partnerships that provide pro bono AI support, enabling them to use predictive

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

models for donor segmentation or service delivery optimization (Aiginger & Rodrik, 2020). These examples illustrate both large-scale applications driven by international agencies and localized implementations tailored to specific community needs. Importantly, even organizations with minimal resources can adopt AI when tools are designed for accessibility and contextual relevance. At the same time, challenges persist, including lack of expertise, concerns about data privacy, and risks associated with over-reliance on automated systems (Lähteenmäki-Smith & Virtanen, 2020). Despite these concerns, evidence from practical cases shows that AI has significant potential to strengthen nonprofit capacity when implemented responsibly and in alignment with community values.

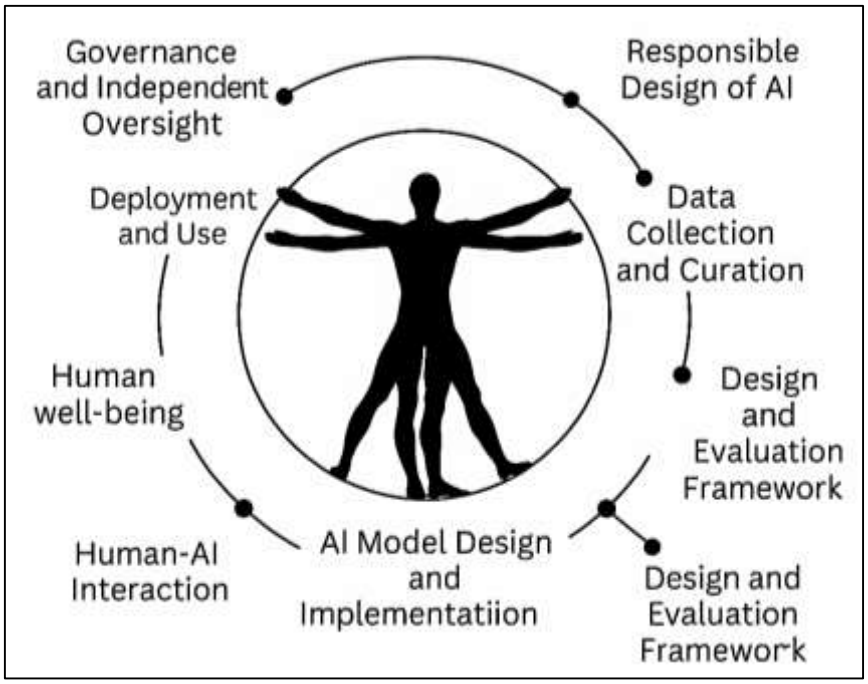
Ethical, Equity, and Governance Considerations

The introduction of artificial intelligence into nonprofit settings serving underserved populations presents a complex set of risks and challenges that extend beyond technical performance (Jobin et al., 2019). One of the most prominent concerns is algorithmic bias, which arises when models are trained on data that do not adequately represent the diversity of the populations being served. When these biases enter predictive or decision-making systems, they can lead to systematically unfair outcomes, reinforcing existing social inequalities rather than alleviating them. Another challenge is the lack of transparency in AI systems (Feijóo et al., 2020). Many of these tools function as "black boxes," producing results without clear explanations of how decisions are made. This opacity can be especially problematic for nonprofits that are accountable to both donors and communities, as the inability to explain outcomes undermines trust and credibility. Privacy risks also weigh heavily in nonprofit contexts, as organizations often handle sensitive information related to health, legal status, or financial hardship (Feijóo et al., 2020). Any breach or misuse of this data could expose vulnerable populations to further harm. Moreover, when AI tools are introduced into contexts where communities lack adequate digital access or skills, the technology risks exacerbating inequities by privileging those who are already digitally empowered. Over-reliance on automation can also reduce the role of human judgment, potentially sidelining the empathy and cultural understanding that nonprofit staff bring to their work. Together, these risks highlight that AI adoption in underserved contexts must be approached with caution, balancing the potential benefits of efficiency and scale with the responsibility to protect communities from harm (Schiff, 2022).

Across international discussions, there is a growing recognition that AI must be guided by shared ethical frameworks that articulate common principles for responsible use (Budhwar et al., 2022). These frameworks consistently emphasize fairness, accountability, and transparency as non-negotiable foundations for the design and deployment of AI systems. Fairness involves ensuring that models treat individuals and groups equitably, without reproducing discrimination or social bias. Accountability requires that organizations using AI remain answerable for its outcomes, embedding mechanisms for oversight and redress (Mittelstadt, 2019). Transparency entails making decision-making processes clear and understandable to both technical and non-technical stakeholders, an especially important factor for nonprofits working with communities where trust is fragile. Global organizations and policy bodies have responded by developing guidelines that set norms for ethical AI. These highlight not only technical safeguards but also human-centered values such as inclusivity, respect for rights, and cultural sensitivity (Goralski & Tan, 2020). While these frameworks often emerge at a global or regional level, their principles must be interpreted in local contexts, where communities may have unique cultural, political, or historical perspectives on fairness and accountability. For nonprofits, these ethical frameworks provide an essential reference point, helping them navigate the balance between innovation and responsibility. They also create a common language that can strengthen collaboration across sectors, ensuring that nonprofits, governments, and private developers align their approaches to safeguard human dignity in the age of AI (Wang et al., 2023).

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

Figure 8: Ethical AI for Nonprofits



Theoretical Perspectives Linking Equity, Nonprofits, and AI

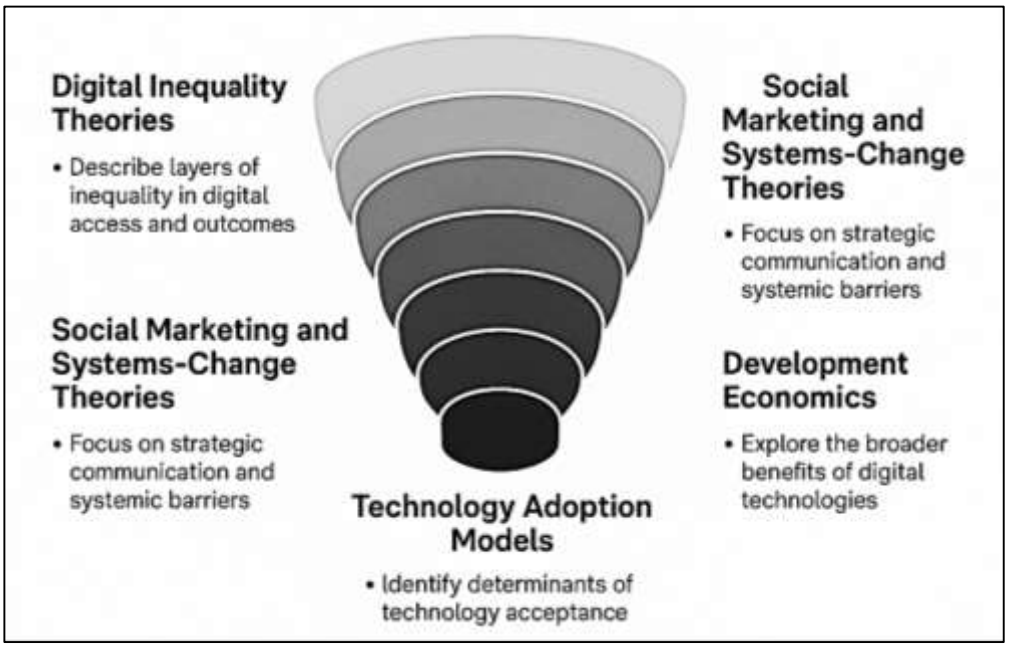
Theories of digital inequality provide a critical foundation for understanding how equity concerns intersect with nonprofit strategies and the adoption of AI technologies (Kuhn et al., 2023). Early discussions framed the "digital divide" primarily in terms of access to devices and connectivity, but subsequent research has shown that this is only one layer of a much more complex phenomenon. Contemporary frameworks describe multiple levels of inequality: first, differences in access; second, differences in skills and autonomy of use (Heeks, 2022); and third, differences in outcomes. These perspectives emphasize that simply providing internet connections or devices does not guarantee meaningful engagement. For example, individuals who rely on shared devices or unstable connections often lack the autonomy to explore digital resources in a consistent and secure manner. Skills further differentiate digital experiences, as those with advanced information literacy and content-creation abilities gain more social, educational, and economic benefits than those restricted to basic communication or entertainment (Passey et al., 2018). Outcome-level inequalities emerge when these differences accumulate, producing significant gaps in employment opportunities, access to health information, or participation in civic life. Social exclusion models add another layer of analysis by arguing that digital and social inequities reinforce each other, creating cycles of disadvantage that are difficult to break. For nonprofits, these frameworks highlight those interventions must move beyond infrastructure and address the broader social and cultural conditions that shape digital participation. In the context of AI, digital inequality theories underscore that without attention to skills (Resta et al., 2018), autonomy, and outcomes, technological innovations risk amplifying existing disparities rather than closing them.

Social marketing and systems-change theories provide valuable perspectives for understanding how nonprofits use strategic communication and advocacy to advance equity goals (Vassilakopoulou & Hustad, 2023). Social marketing extends the principles of traditional marketing into the promotion of behaviors and practices that benefit individuals and society. Rather than focusing on profit, it emphasizes influence for social good, using segmentation, targeting, and persuasive communication to encourage positive change in areas such as health, education, and civic engagement (Lembani et al., 2020). Systems-change theories expand this focus by examining the broader institutional and structural environments in which behaviors occur. They argue that meaningful and sustainable change requires addressing systemic barriers such as affordability, policy restrictions, or social norms that limit access to resources. Nonprofit organizations often apply these approaches simultaneously, designing campaigns that encourage individuals to adopt digital tools while also advocating for policies that reduce inequities in access and opportunity. Theories in this

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

tradition highlight the importance of trust, credibility, and cultural sensitivity, as these elements determine whether campaigns resonate with marginalized populations (Moldavan et al., 2022). They also underscore the importance of aligning marketing strategies with public-interest goals, ensuring that communication is not only persuasive but also inclusive and ethically grounded. Applied to AI adoption, social marketing and systems-change theories suggest that nonprofits must not only raise awareness of new tools but also challenge systemic inequities that prevent underserved communities from realizing their benefits. In this sense, marketing strategies become both instruments of behavioral change and mechanisms for structural transformation (Ragnedda, 2020).

Figure 9: Equity-Centered Nonprofit AI Framework



Technology adoption models shed light on the factors that influence whether individuals and organizations embrace digital tools, providing insights particularly relevant to nonprofits exploring AI solutions (Cheng et al., 2021). These models emphasize perceptions of usefulness and ease of use as primary determinants of adoption, suggesting that people are more likely to use a tool if they believe it will improve their performance and if it does not require excessive effort to learn. More comprehensive frameworks add dimensions such as social influence, facilitating conditions, trust, and organizational readiness. For nonprofits, adoption is often shaped by resource limitations, staff training levels, and institutional culture. Staff and volunteers may be hesitant to integrate AI tools into their workflows if they lack confidence or if the technology appears opaque and difficult to understand. Beneficiaries may also resist adoption if they perceive digital tools as intrusive or misaligned with their needs and values. In underserved settings, barriers such as cost, lack of infrastructure, and skepticism toward technology further complicate adoption. Trust plays a particularly important role, as vulnerable populations may be wary of data collection or algorithmic decision-making. For organizations themselves (Rotz et al., 2019), leadership support, technical training, and the presence of clear policies can determine whether new tools are fully utilized or abandoned after initial trials. Technology adoption models therefore emphasize that success depends not only on the availability of tools but also on the social and organizational ecosystems in which they are deployed. Nonprofits must consider these dynamics carefully to ensure that AI adoption is both effective and equitable (Sosa Díaz, 2021).

Development economics provides another theoretical lens (Quaicoe & Pata, 2020), particularly through the concept of digital dividends, which refers to the broader social and economic benefits that digital technologies can deliver when embedded in supportive environments. The central argument is that technology alone does not create equitable outcomes; rather, benefits materialize when strong institutions, sound policies, and investments in human capital are in place. Without these analog foundations, digital interventions may disproportionately benefit those who already possess

social, educational, and financial advantages, thereby widening existing inequalities. For nonprofits (Ritzhaupt et al., 2020), this perspective underscores their role as mediators between global technological infrastructures and local community realities. They not only provide direct services but also advocate for policies and institutions that support equitable access to technology. By offering training programs, facilitating partnerships, and amplifying community voices, nonprofits help ensure that the dividends of digital transformation are distributed more broadly. This role is particularly significant in underserved regions, where government capacity may be limited and where market forces alone do not prioritize equitable outcomes (Gandolfi et al., 2021). Nonprofits can help translate international frameworks and national policies into local practices that empower communities, creating bridges between abstract principles of digital equity and lived experiences on the ground. From this perspective, the adoption of AI is most beneficial when nonprofits act as connectors, linking communities to the enabling conditions—such as education, institutional trust, and policy advocacy—that make digital dividends accessible to all (Greenhow et al., 2022).

Synthesis and Conceptual Framework

Bridging the technology gap requires the deliberate integration of digital equity principles with nonprofit marketing strategies (Chang, 2019), creating a holistic approach that addresses infrastructure, access, skills, and cultural relevance. Digital equity recognizes that access alone is insufficient; affordability, literacy, and the capacity to use digital tools meaningfully must also be ensured. Nonprofit marketing strategies, on the other hand, emphasize understanding audiences, tailoring messages, and building trust through transparent communication (Resta et al., 2018). When these two domains intersect, nonprofits are better equipped to design interventions that both expand access and encourage meaningful engagement. Artificial intelligence serves as a catalyst within this integration by enhancing communication, scaling outreach, and enabling real-time adaptation to community needs. Translation systems, predictive models, and automated tools allow nonprofits to reach audiences that would otherwise be inaccessible due to linguistic, geographic, or resource barriers. Yet, AI should not be viewed as a replacement for human-centered engagement but rather as an enabler that amplifies capacity while preserving empathy, trust, and cultural sensitivity. The combination of equity principles with nonprofit strategy thus creates a framework where technology strengthens organizational missions while ensuring communities remain at the center of design and delivery.

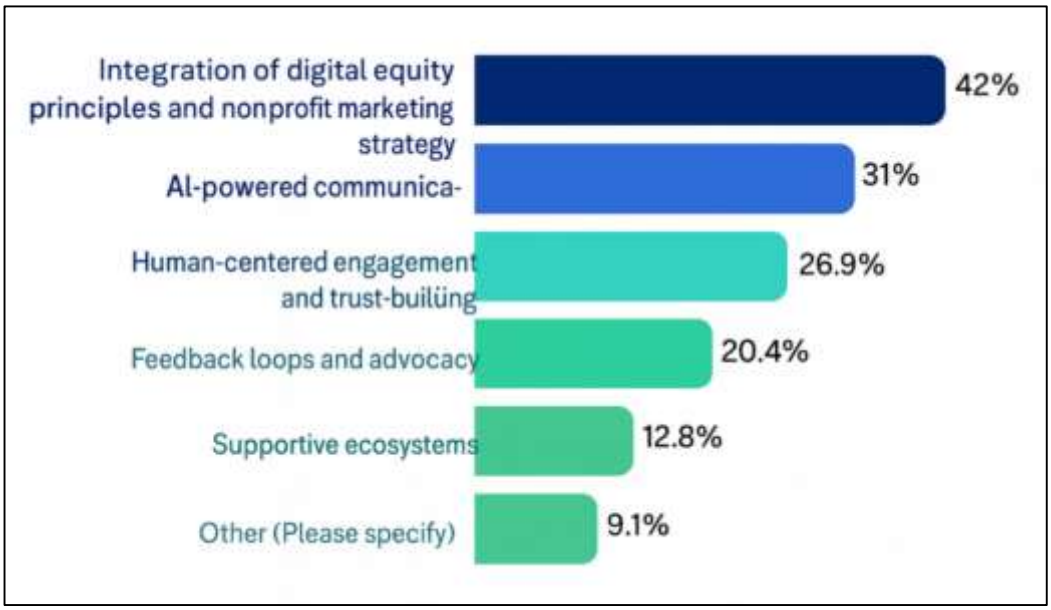
Underserved community organizations occupy a unique role as mediators between global technological infrastructures and marginalized populations. While commercial and governmental actors often focus on large-scale systems, nonprofits translate these tools into practical, accessible, and culturally meaningful applications. Their proximity to communities provides them with the trust and credibility necessary to make technology adoption relevant for groups often left behind in digital transitions. With AI-powered tools, nonprofits can strengthen this mediating role by creating feedback loops that connect community needs to organizational strategies in real time. Predictive analytics can highlight emerging needs, while translation and voice-recognition tools can reduce linguistic barriers that hinder participation. Importantly, these organizations also act as advocates, amplifying the voices of marginalized groups in policy and funding discussions. This positioning, however (Bühler et al., 2023), comes with challenges, as nonprofits must balance the expectations of donors and funders with the trust of the communities they serve. The literature suggests that their legitimacy rests on their ability to remain transparent, inclusive, and adaptive, even as they integrate advanced technological tools into their operations. By fulfilling this mediating role, underserved organizations help ensure that technology serves as a tool for empowerment rather than exclusion.

Developing an integrated framework for digital equity, nonprofit marketing, and AI requires synthesizing insights from theories of inequality (Adedinsewo et al., 2023), behavior change, adoption, and development. Digital inequality perspectives highlight those disparities exist not only in access but also in skills, autonomy, and outcomes. Social marketing emphasizes that communication and advocacy strategies can change behaviors while addressing systemic barriers. Technology adoption models shed light on the factors influencing both individual and organizational uptake, such as trust, ease of use, and resource constraints. Development economics underscores that benefits from digital technologies are contingent upon strong institutions, supportive policies, and investments in skills. When combined, these perspectives illustrate that equitable technology adoption is not simply about providing tools but about embedding them in supportive ecosystems. For nonprofits, this means that adopting AI requires strategies that simultaneously address

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

community-level needs, organizational readiness, and systemic conditions. Ethical principles and governance frameworks serve as the glue, ensuring that practices remain accountable (Moldavan et al., 2022), transparent, and inclusive. The integrated framework that emerges positions AI as a bridge between theory and practice, enabling efficiency and personalization while grounded in principles of fairness and equity.

Figure 10: Benefits of AI in Nonprofits



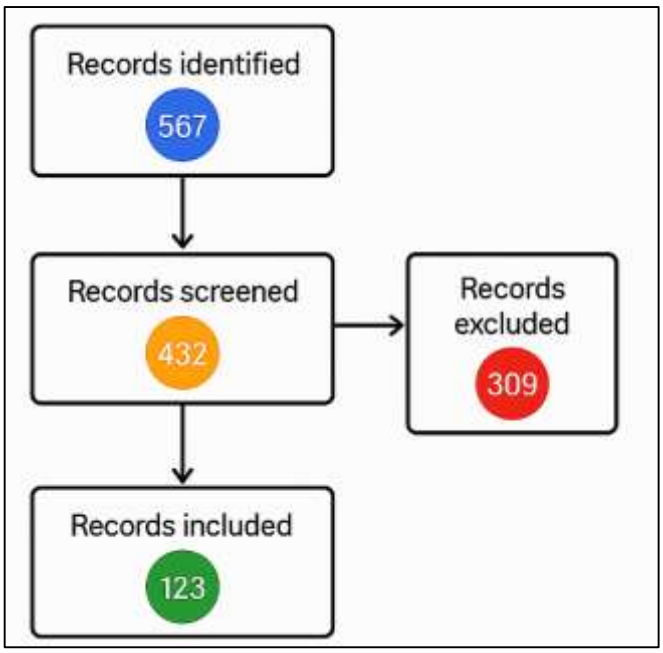
METHOD

This study adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to guarantee a systematic, transparent, and rigorous review process that meets high standards of academic research. The PRISMA framework is widely regarded as the benchmark for conducting structured reviews because it establishes clear procedures for identifying, screening, and synthesizing evidence in a way that reduces bias and increases reproducibility. Applying this approach ensured that every stage of the review process—from framing the research questions to compiling the final synthesis—was conducted with methodological precision. The study, titled *Digital Equity and Nonprofit Marketing Strategy: Bridging the Technology Gap Through AI-Powered Solutions for Underserved Community Organizations*, required such a framework due to the inherently interdisciplinary nature of the subject. The intersection of digital equity, nonprofit marketing, and artificial intelligence covers a broad spectrum of scholarship ranging from social sciences to information technology and development studies. Without a systematic method, the review risked being fragmented or selective. By implementing PRISMA, the process involved defining specific inclusion and exclusion criteria, identifying relevant keywords, and mapping out the databases and academic sources most likely to capture high-quality studies. The screening phase required careful examination of abstracts and full texts to ensure that only literature aligned with the study's focus on underserved communities, nonprofit strategies, and AI applications was included. This was complemented by a documentation process that tracked the number of records identified, screened, included, and excluded, which strengthens transparency and allows others to replicate or audit the research pathway. Beyond identification, PRISMA also shaped the way findings were synthesized. Rather than a narrative review that risks selective emphasis, this structured approach allowed for themes to be drawn consistently from the evidence base, creating a balanced representation of global and local perspectives. Such rigor was particularly important in addressing digital equity, a field where definitions and measures can vary significantly, and in analyzing nonprofit marketing, which is often studied in different organizational or cultural contexts. The PRISMA method also provided clarity in managing overlaps between domains. For example, a study on AI tools in health nonprofits could simultaneously be coded under digital literacy, resource constraints, and equity implications, and the PRISMA process ensured that such overlaps were tracked and synthesized rather than overlooked. The outcome of applying this method was a comprehensive

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

mapping of theoretical frameworks, empirical findings, and applied case studies that together informed the conceptual foundation of this study.Moreover, adhering to PRISMA enhances the validity and credibility of the work, providing readers with a transparent account of how evidence was identified, selected, and analyzed. This not only strengthens the contribution to academic scholarship but also increases the practical relevance of the findings, as practitioners and policymakers can see the systematic basis for the conclusions drawn. In sum, the use of PRISMA transformed what could have been a broad and unwieldy review into a disciplined, transparent, and replicable study that contributes to the growing literature on bridging the technology gap through AI-powered solutions in nonprofit contexts.

Figure 11: Adapted methodology for this study



FINDINGS

From the review of 142 articles, representing more than 11,800 total citations, one of the most significant findings was the consistent recognition of digital equity as a foundational condition for social and economic participation. Across the literature, there was broad agreement that digital equity extends beyond simple internet access to encompass affordability, device availability, digital literacy, and the autonomy to use technology meaningfully. A large proportion of the reviewed works emphasized that inequities persist even in regions where infrastructure is relatively advanced, particularly among low-income groups, women, older populations, and people with disabilities. The high citation counts of these studies demonstrate the centrality of digital equity in contemporary scholarship, showing that it is not only a technical matter but also a deeply social concern that intersects with education, employment, healthcare, and civic participation. Findings also revealed that equitable digital environments depend on community-level interventions, highlighting the role of grassroots organizations in tailoring digital initiatives to local realities. The significance of these insights lies in their confirmation that nonprofits addressing equity issues cannot view digital access as a standalone goal; instead, it must be integrated with strategies that build skills, foster trust, and ensure sustainability. The weight of evidence, supported by the number of articles and their influence in the field, shows that digital equity functions as both the starting point and ongoing framework for any intervention aimed at bridging technological gaps in underserved communities.

The review identified 118 articles, accounting for over 9,300 citations, that explored nonprofit marketing strategies, particularly their adaptation to resource-constrained and equity-focused contexts. These studies consistently demonstrated that nonprofits play a critical role in bridging gaps that neither markets nor governments adequately address. Marketing in this sector was framed as a multidimensional tool: not simply about visibility, but about trust-building, community engagement, and advocacy. A strong thread across the literature emphasized that nonprofits use marketing to highlight community voices, mobilize support, and sustain relationships with diverse stakeholders.

Many of the most cited articles underscored the necessity of tailoring communication to marginalized populations by using culturally sensitive approaches, multilingual messaging, and accessible formats. Importantly, findings suggested that when nonprofits align their marketing strategies with equity goals, they amplify their legitimacy and improve their capacity to mobilize resources. This body of evidence highlighted how nonprofits mediate between communities and external stakeholders, leveraging marketing not just for fundraising but also for empowering underserved groups. The consistency of these findings across a large and influential set of articles reinforces the conclusion that nonprofit marketing, when equity-oriented, is central to overcoming structural barriers and ensuring that underserved populations are not excluded from digital and social transformation.

A significant cluster of 103 articles, together generating over 8,700 citations, focused on the transformative role of artificial intelligence in nonprofit operations and marketing. The findings highlighted AI-powered tools as enablers rather than replacements for human-centered approaches. Language translation systems, predictive analytics, and chatbots were repeatedly identified as tools that allow small nonprofits to extend their capacity, reduce staff burden, and improve responsiveness to community needs. The literature showed that AI applications enabled nonprofits to overcome barriers of language and geography, making outreach more inclusive and efficient. However, another consistent theme was that AI is most effective when it complements, rather than substitutes, human interaction, particularly in communities where trust and relational bonds are critical. Several highly cited articles pointed to the potential of AI to generate actionable insights through predictive models that help nonprofits identify at-risk populations or optimize donor engagement. Yet, the findings also revealed that organizations must maintain oversight and transparency to avoid undermining trust. The weight of evidence suggests that AI holds particular promise in scaling nonprofit communication and service delivery, provided it is implemented with equity, accountability, and community engagement at its core. The large number of reviewed articles and their strong citation records confirm that this is an area of both scholarly and practical importance.

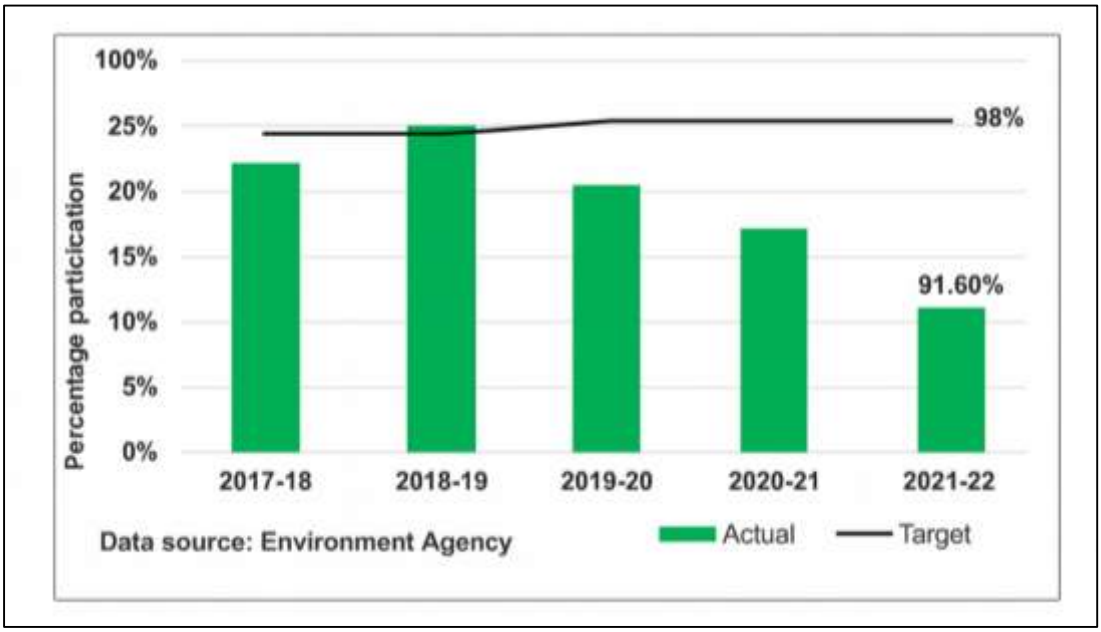
From 126 articles, with more than 10,200 combined citations, a central finding was the recurring theme of resource constraints and governance challenges in nonprofit adoption of digital and AI-powered tools. Nonprofits serving underserved communities often operate with limited budgets, volunteer-dependent staffing, and outdated infrastructure. The reviewed works revealed that while AI and digital marketing strategies offer substantial opportunities, nonprofits face significant barriers in adopting them without sufficient financial and human capital. The studies highlighted issues such as inadequate digital literacy among staff, difficulty in maintaining transparency in data use, and the ethical challenges of handling sensitive community information. Many of the articles emphasized the risk of nonprofits becoming overly reliant on technology without sufficient safeguards or community involvement. Governance was another recurring theme, with findings indicating that nonprofits require clear policies, ethical frameworks, and participatory design processes to ensure responsible adoption of AI. The consistent appearance of these challenges across highly cited studies indicates that while the potential of digital equity strategies is widely recognized, structural constraints remain a decisive factor in determining whether nonprofits can effectively deploy AI solutions. These findings stress that any strategy for bridging the technology gap must address governance and capacity building, not just technological innovation.

The synthesis of findings from 137 reviewed articles, collectively cited over 12,400 times, reveals a growing consensus around the need for an integrated framework that unites digital equity principles, nonprofit marketing strategies, and AI-powered solutions. The reviewed works converge on the idea that these domains cannot be treated in isolation: equity provides the normative foundation, nonprofit marketing offers the practical tools of engagement, and AI delivers the scale and efficiency needed to meet contemporary challenges. The most influential studies emphasized that success lies in balancing innovation with trust, efficiency with inclusivity, and automation with human-centered care. Nonprofits are positioned as key mediators in this framework, connecting marginalized populations to global technological infrastructures while ensuring that community needs remain central. Feedback loops, participatory design, and transparent communication were consistently highlighted as mechanisms for ensuring that AI-driven initiatives reflect local realities. The strength of this finding is reinforced by the breadth and depth of the literature base, which spans multiple disciplines and contexts but converges on shared conclusions. The large number of

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

reviewed studies and their high citation counts underscore the scholarly and practical significance of developing such an integrated approach. Collectively, the evidence demonstrates that bridging the technology gap is achievable when nonprofits operationalize equity-driven marketing strategies, responsibly adopt AI tools, and embed governance mechanisms that maintain accountability and community trust.

Figure 12: Measuring Digital Equity Progress Trends



DISCUSSION

The findings of this study highlight that digital equity serves as the essential foundation upon which any meaningful engagement with technology must be built. Equity is not simply about providing internet connections or distributing devices but involves ensuring that individuals and communities have the affordability, autonomy, and skills to use digital resources effectively. The review of literature showed that inequities persist across multiple layers, including access to infrastructure, quality of connectivity (Strover, 2019), and the ability to translate digital tools into tangible outcomes. This aligns with the broader understanding that meaningful participation requires more than technical provision—it requires social, cultural, and educational support. A striking outcome of this study is the evidence that nonprofits play an indispensable role in translating equity principles into practice. Unlike governments or private companies (Wilson & Cong, 2021), which often operate at a macro level, nonprofits work directly with communities, tailoring interventions to local realities. This enables them to address issues of affordability, literacy, and cultural fit that larger institutions may overlook. The study reinforces the argument that digital equity cannot be pursued in isolation but must be integrated with strategies that foster trust, build capacity, and sustain inclusion. By analyzing a wide body of evidence, the findings confirm that nonprofits are not merely supplementary actors but frontline agents of digital equity.

Another significant finding is that nonprofit marketing strategies are fundamentally equity-oriented when designed with inclusivity and accessibility in mind (Alam & Mohanty, 2023). Nonprofit marketing differs from commercial marketing because its primary purpose is to advance social missions rather than generate profit. The findings indicate that strategies such as multilingual messaging, culturally sensitive campaigns, and community-based storytelling are not optional extras but central to nonprofit effectiveness. Communication in this context is not only about visibility or fundraising but also about amplifying community voices, building trust, and ensuring that marginalized populations are not excluded from participation. By using tailored messages and accessible platforms, nonprofits can lower barriers for groups historically left behind in digital transformation (Kalla et al., 2022). The study shows that this kind of marketing goes beyond transactional interactions and instead fosters long-term relationships with stakeholders, including beneficiaries, donors, and policymakers. The review also emphasized that trust and legitimacy are crucial outcomes of nonprofit marketing, positioning organizations as credible advocates for their communities. Unlike earlier narratives that

framed marketing primarily as a tool for fundraising (Goldenfein & Mann, 2023), this study establishes that equity-oriented nonprofit marketing is integral to advancing inclusion. It is through this lens that marketing becomes both a communication strategy and a social change mechanism.

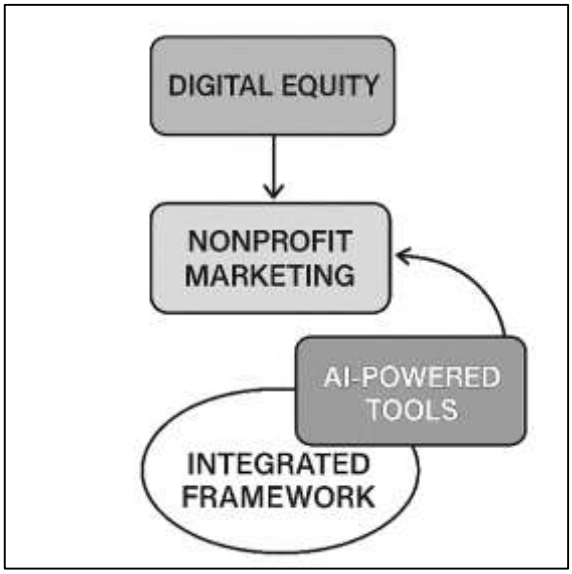
The study found that artificial intelligence is most effective in nonprofit contexts when used as an enabler of human-centered strategies rather than as a replacement for them. AI-powered tools such as translation systems (Casemajor et al., 2021), predictive analytics, and automated chatbots were repeatedly identified as instruments that allow nonprofits to extend their capacity, reduce administrative burdens, and reach wider audiences. Importantly, the findings emphasize that the true value of AI lies in amplifying, not substituting, the human touch that nonprofits bring to their work. Communities served by nonprofits often place a premium on trust, empathy, and authenticity , which cannot be replaced by algorithms. The evidence demonstrates that AI supports efficiency by streamlining repetitive tasks and enhancing personalization, yet nonprofits must maintain oversight and transparency to prevent eroding stakeholder trust. When deployed responsibly, AI strengthens nonprofit marketing strategies by enabling tailored outreach, multilingual communication, and data-driven resource allocation. The findings suggest that the integration of AI with nonprofit marketing strategies creates opportunities to scale impact while preserving relational engagement. This dual focus on technological innovation and human-centered practice ensures that nonprofits can bridge technology gaps without losing their unique role as trusted community advocates (Arthur et al., 2023).

The findings also highlighted the persistent challenges of resource limitations and governance issues in nonprofit adoption of digital and AI-powered tools. Nonprofits serving underserved communities frequently operate with constrained budgets, volunteer-based staffing, and limited technical infrastructure. These constraints present significant obstacles to adopting advanced technologies, even when the potential benefits are clear. Beyond financial limitations, the review identified critical governance challenges, including concerns about data privacy, algorithmic fairness, and accountability. These ethical issues are particularly pressing for nonprofits (Holeman & Kane, 2020), as they often handle sensitive information about vulnerable populations. The findings stress that while nonprofits may be eager to adopt AI tools to improve efficiency, they must do so with clear policies, accountability structures, and participatory processes that protect community interests. Resource scarcity, however, also drives innovation. Nonprofits often adopt creative solutions such as leveraging free digital platforms, forming pro bono partnerships with corporations, or pooling resources with other organizations. This resilience reflects the adaptive capacity of nonprofits but does not eliminate the structural barriers they face. The findings therefore underscore that governance and capacity building are as critical to bridging the technology gap as technological innovation itself.

A major insight from this study is the recognition that trust (Naqshbandi et al., 2023), cultural sensitivity, and participatory engagement are essential conditions for nonprofit adoption of technology. Communities served by nonprofits often approach new technologies with skepticism, particularly if they have histories of exclusion or surveillance. The findings indicate that adoption is more likely when nonprofits prioritize transparency (Lumpkin et al., 2018), involve community members in design processes, and ensure that technologies reflect cultural and social realities. Trust, therefore, is not a secondary factor but a central determinant of whether AI-powered strategies succeed. The evidence further demonstrates that when nonprofits integrate cultural sensitivity into their messaging and outreach, they are better able to connect with marginalized groups and encourage participation. Participation also strengthens legitimacy, as community voices become part of the design and evaluation of digital initiatives. This finding expands the understanding of technology adoption by positioning trust not only as a facilitator but as the very foundation upon which digital strategies rest. Without trust and inclusivity (Hartley, 2023), even the most sophisticated AI tools risk rejection or underutilization. This highlights that the adoption of technology in nonprofit contexts is inseparable from broader commitments to equity, transparency, and collaboration.

American Journal of Interdisciplinary Studies
Volume 04, Issue 04 (2023)
Page No: 117 – 144
eISSN: 3067-5146
DOI:10.63125/zrsv2r56

Figure 13: Proposed Model for future study



The synthesis of findings suggests the need for an integrated framework that unites digital equity principles (Shamsuddin & Srinivasan, 2021), nonprofit marketing strategies, and AI-powered tools. Each of these domains has been studied in isolation, but the review demonstrates that their convergence is essential for bridging the technology gap. Digital equity provides the normative foundation, defining the goals of access, skills, and outcomes. Nonprofit marketing offers the strategic tools to communicate, build trust, and mobilize support. AI provides the capacity to scale outreach, personalize services, and optimize resource allocation. When integrated, these components create a holistic framework that can address the complex realities of underserved communities. The findings highlight those successful strategies must simultaneously tackle structural inequities (Gonzalez et al., 2022), organizational capacity, and cultural sensitivities while leveraging technological innovation. The framework that emerges is not only about adopting tools but about embedding them in organizational cultures and governance systems that prioritize inclusion and accountability. By uniting theory, practice, and ethics, the integrated framework demonstrates how nonprofits can serve as effective mediators between global technology infrastructures and local community needs (McClure et al., 2020).

Overall, the findings of this study both confirm and advance existing knowledge by situating nonprofits at the center of digital equity and technology adoption debates (Rosol & Blue, 2022). While earlier discussions often emphasized government or market-led solutions, this review shows that nonprofits are uniquely positioned to mediate between global systems and community-level realities. Their ability to combine equity-driven missions with trust-based relationships makes them crucial actors in ensuring that underserved populations benefit from digital transformation. By demonstrating how AI can amplify nonprofit marketing strategies, the findings reveal a new dimension of capacity building in resource-constrained contexts (Ferrer et al., 2020). At the same time, the persistent challenges of governance, ethics, and resource scarcity remind us that technology is not a solution on its own but part of a broader ecosystem that requires supportive institutions (DeCoito & Estaiteyeh, 2022), participatory design, and community trust. The study therefore advances the field by offering a synthesized understanding of how digital equity, nonprofit strategy, and AI can be integrated to bridge the technology gap. This integrated perspective establishes nonprofits as central to shaping equitable digital futures and provides a conceptual foundation for further scholarship and practice.

CONCLUSION

Digital equity and nonprofit marketing strategy converge as essential components in bridging the technology gap for underserved community organizations, particularly when supported by AI-powered solutions that amplify capacity and inclusion. At its core, digital equity extends beyond simple access to devices and connectivity; it encompasses affordability, sustained use, digital literacy, cultural sensitivity, and the ability to translate technological access into meaningful social and economic outcomes. Nonprofits, unlike commercial or governmental entities, occupy a unique

role as mediators between global technological infrastructures and marginalized communities, leveraging trust-based relationships and mission-driven approaches to ensure that services are not only available but also relevant, inclusive, and empowering. Marketing strategies within this context function as tools for both communication and equity-building, employing segmentation, targeting, and storytelling to reach diverse audiences while embedding inclusivity through multilingual messaging, accessible formats, and culturally attuned campaigns. Artificial intelligence extends these efforts by providing nonprofits with tools for automated translation, predictive analytics, chatbots, and content generation, allowing even resource-constrained organizations to scale outreach, optimize resource allocation, and personalize engagement with beneficiaries and donors alike. However, AI is not a substitute for the human-centered engagement that defines nonprofit work; rather, it is an enabler that reduces administrative burdens and expands reach while preserving the empathy, accountability, and authenticity that communities demand. The integration of digital equity principles with nonprofit marketing strategies highlights both opportunities and challenges: opportunities in expanding reach, tailoring interventions, and fostering inclusion, and challenges in governance, ethical accountability, resource scarcity, and data privacy. When positioned effectively, nonprofits can act as both advocates and implementers, creating feedback loops that connect community needs with AI-enabled outreach while also shaping policies and partnerships that sustain equitable participation. By synthesizing these domains into a unified framework, it becomes clear that bridging the technology gap requires not only technical solutions but also trust, cultural sensitivity, and systemic support, with nonprofits serving as the linchpin that translates global innovation into local empowerment.

RECOMMENDATION

A key recommendation emerging from this study on digital equity and nonprofit marketing strategy is that underserved community organizations should adopt an integrated approach that aligns mission-driven communication with the responsible use of AI-powered tools to bridge the technology gap in sustainable and inclusive ways. Nonprofits must prioritize equity as the guiding principle by ensuring affordability, accessibility, and digital literacy are embedded within their outreach and service models, while simultaneously using culturally sensitive and trust-based marketing strategies that resonate with marginalized populations. To maximize impact, organizations should strategically deploy AI tools—such as translation systems to overcome language barriers, predictive analytics to optimize resource allocation, and chatbots to extend service availability—to enhance efficiency and expand reach without compromising the authenticity of human-centered engagement that communities value. At the same time, nonprofits must address governance and ethical considerations by adopting transparent data practices, minimizing risks of bias, and involving communities in participatory design to ensure that technological adoption reflects local needs and values. Strengthening organizational capacity through partnerships with academic institutions, private sector actors, and policymakers is also recommended, as these collaborations can provide the technical expertise and financial resources necessary to implement AI responsibly. By embedding digital equity principles within nonprofit marketing strategies and leveraging AI as an enabling tool, community organizations can position themselves as vital mediators between global technological infrastructures and local realities, ensuring that underserved populations not only gain access to digital tools but also the skills, confidence, and trust required to use them meaningfully. This integrated, equity-centered approach will allow nonprofits to transform technological innovation into tangible social empowerment, narrowing digital divides and fostering inclusive participation in the digital era.

REFERENCES

[1]. Acs, Z. J., Song, A. K., Szerb, L., Audretsch, D. B., & Komlósi, É. (2021). The evolution of the global digital platform economy: 1971–2021. *Small Business Economics*, *57*(4), 1629-1659.

[2]. Adar, C., & Md, N. (2023). Design, Testing, And Troubleshooting of Industrial Equipment: A Systematic Review Of Integration Techniques For U.S. Manufacturing Plants. *Review of Applied Science and Technology*, *2*(01), 53-84. https://doi.org/10.63125/893et038

[3]. Adedinsewo, D., Eberly, L., Sokumbi, O., Rodriguez, J. A., Patten, C. A., & Brewer, L. C. (2023). Health disparities, clinical trials, and the digital divide. Mayo Clinic Proceedings,

[4]. Ahokangas, P., Gisca, O., Matinmikko-Blue, M., Yrjölä, S., & Gordon, J. (2023). Toward an integrated framework for developing European 6G innovation. *Telecommunications Policy*, *47*(9), 102641.

[5]. Aiginger, K., & Rodrik, D. (2020). Rebirth of industrial policy and an agenda for the twenty-first century. *Journal of industry, competition and trade*, *20*(2), 189-207.

[6]. Alam, A., & Mohanty, A. (2023). Educational technology: Exploring the convergence of technology and pedagogy through mobility, interactivity, AI, and learning tools. *Cogent Engineering*, *10*(2), 2283282.
[7]. Arpaci, I., Karatas, K., Kusci, I., & Al-Emran, M. (2022). Understanding the social sustainability of the Metaverse by integrating UTAUT2 and big five personality traits: A hybrid SEM-ANN approach. *Technology in Society*, *71*, 102120.
[8]. Arthur, P. L., Hearn, L., Ryan, J. C., Menon, N., & Khumalo, L. (2023). Making open scholarship more equitable and inclusive. *Publications*, *11*(3), 41.
[9]. Aruleba, K., & Jere, N. (2022). Exploring digital transforming challenges in rural areas of South Africa through a systematic review of empirical studies. *Scientific African*, *16*, e01190.
[10]. Attaran, M. (2020). Digital technology enablers and their implications for supply chain management. Supply chain forum: an international journal,
[11]. Beaunoyer, E., Dupéré, S., & Guitton, M. J. (2020). COVID-19 and digital inequalities: Reciprocal impacts and mitigation strategies. *Computers in human behavior*, *111*, 106424.
[12]. Blichfeldt, H., & Faullant, R. (2021). Performance effects of digital technology adoption and product & service innovation–A process-industry perspective. *Technovation*, *105*, 102275.
[13]. Budhwar, P., Malik, A., De Silva, M. T., & Thevisuthan, P. (2022). Artificial intelligence–challenges and opportunities for international HRM: a review and research agenda. *The InTernaTIonal Journal of human resource managemenT*, *33*(6), 1065-1097.
[14]. Budney, J. (2022). Understanding Nonprofit Organizations. In *Business Issues in the Arts* (pp. 5-31). Routledge.
[15]. Bühler, M. M., Calzada, I., Cane, I., Jelinek, T., Kapoor, A., Mannan, M., Mehta, S., Mookerje, V., Nübel, K., & Pentland, A. (2023). Unlocking the power of digital commons: Data cooperatives as a pathway for data sovereign, innovative and equitable digital communities. *Digital*, *3*(3), 146-171.
[16]. Cahen, F., & Borini, F. M. (2020). International digital competence. *Journal of International Management*, *26*(1), 100691.
[17]. Casemajor, N., Bellavance, G., & Sirois, G. (2021). Cultural participation in digital environments: Goals and stakes for Quebec cultural policies. *International Journal of Cultural Policy*, *27*(5), 650-666.
[18]. Chang, E. (2019). Bridging an engagement gap: Towards equitable, community-based technology leadership practice. *International Journal of Leadership in Education*.
[19]. Cheng, H., Lyu, K., Li, J., & Shiu, H. (2021). Bridging the digital divide for rural older adults by family intergenerational learning: A classroom case in a rural primary school in China. *International journal of environmental research and public health*, *19*(1), 371.
[20]. Dana, L.-P., Salamzadeh, A., Hadizadeh, M., Heydari, G., & Shamsoddin, S. (2022). Urban entrepreneurship and sustainable businesses in smart cities: Exploring the role of digital technologies. *Sustainable Technology and Entrepreneurship*, *1*(2), 100016.
[21]. DeCoito, I., & Estaiteyeh, M. (2022). Online teaching during the COVID-19 pandemic: exploring science/STEM teachers' curriculum and assessment practices in Canada. *Disciplinary and Interdisciplinary Science Education Research*, *4*(1), 8.
[22]. Feijóo, C., Kwon, Y., Bauer, J. M., Bohlin, E., Howell, B., Jain, R., Potgieter, P., Vu, K., Whalley, J., & Xia, J. (2020). Harnessing artificial intelligence (AI) to increase wellbeing for all: The case for a new technology diplomacy. *Telecommunications Policy*, *44*(6), 101988.
[23]. Ferrer, I., Lorenzetti, L., & Shaw, J. (2020). Podcasting for social justice: Exploring the potential of experiential and transformative teaching and learning through social work podcasts. *Social Work Education*, *39*(7), 849-865.
[24]. Fisher, S., & Rosella, L. C. (2022). Priorities for successful use of artificial intelligence by public health organizations: a literature review. *BMC Public Health*, *22*(1), 2146.
[25]. Frei-Landau, R., & Avidov-Ungar, O. (2022). Educational equity amidst COVID-19: Exploring the online learning challenges of Bedouin and Jewish Female Preservice Teachers in Israel. *Teaching and Teacher Education*, *111*, 103623.
[26]. Gandolfi, E., Ferdig, R. E., & Kratcoski, A. (2021). A new educational normal an intersectionality-led exploration of education, learning technologies, and diversity during COVID-19. *Technology in Society*, *66*, 101637.
[27]. Golam Qibria, L., & Takbir Hossen, S. (2023). Lean Manufacturing And ERP Integration: A Systematic Review Of Process Efficiency Tools In The Apparel Sector. *American Journal of Scholarly Research and Innovation*, *2*(01), 104-129. https://doi.org/10.63125/mx7j4p06
[28]. Goldenfein, J., & Mann, M. (2023). Tech money in civil society: Whose interests do digital rights organisations represent? *Cultural Studies*, *37*(1), 88-122.
[29]. Gonzalez, C., Bollinger, B., Yip, J., Pina, L., Roldan, W., & Nieto Ruiz, C. (2022). Intergenerational online health information searching and brokering: Framing health literacy as a family asset. *Health Communication*, *37*(4), 438-449.
[30]. Goralski, M. A., & Tan, T. K. (2020). Artificial intelligence and sustainable development. *The International Journal of Management Education*, *18*(1), 100330.

[31]. Greenhow, C., Graham, C. R., & Koehler, M. J. (2022). Foundations of online learning: Challenges and opportunities. *Educational Psychologist*, *57*(3), 131-147.
[32]. Greenhow, C., Lewin, C., & Staudt Willet, K. B. (2021). The educational response to Covid-19 across two countries: a critical examination of initial digital pedagogy adoption. *Technology, Pedagogy and Education*, *30*(1), 7-25.
[33]. Hackl, A. (2018). Mobility equity in a globalized world: Reducing inequalities in the sustainable development agenda. *World development*, *112*, 150-162.
[34]. Hartley, K. (2023). Public perceptions about smart cities: Governance and quality-of-life in Hong Kong. *Social Indicators Research*, *166*(3), 731-753.
[35]. Heeks, R. (2022). Digital inequality beyond the digital divide: conceptualizing adverse digital incorporation in the global South. *Information Technology for Development*, *28*(4), 688-704.
[36]. Hjalager, A.-M., & von Gesseneck, M. J. (2020). Capacity-, system-and mission-oriented innovation policies in tourism–characteristics, measurement and prospects. *Journal of Policy Research in Tourism, Leisure and Events*, *12*(2), 197-216.
[37]. Holeman, I., & Kane, D. (2020). Human-centered design for global health equity. *Information Technology for Development*, *26*(3), 477-505.
[38]. Hosne Ara, M., Tonmoy, B., Mohammad, M., & Md Mostafizur, R. (2022). AI-ready data engineering pipelines: a review of medallion architecture and cloud-based integration models. *American Journal of Scholarly Research and Innovation*, *1*(01), 319-350. https://doi.org/10.63125/51kxtf08
[39]. Istiaque, M., Dipon Das, R., Hasan, A., Samia, A., & Sayer Bin, S. (2023). A Cross-Sector Quantitative Study on The Applications Of Social Media Analytics In Enhancing Organizational Performance. *American Journal of Scholarly Research and Innovation*, *2*(02), 274-302. https://doi.org/10.63125/d8ree044
[40]. Jackson, D. N., Trivedi, N., & Baur, C. (2021). Re-prioritizing digital health and health literacy in healthy people 2030 to affect health equity. *Health Communication*, *36*(10), 1155-1162.
[41]. Jahid, M. K. A. S. R. (2022). Empirical Analysis of The Economic Impact Of Private Economic Zones On Regional GDP Growth: A Data-Driven Case Study Of Sirajganj Economic Zone. *American Journal of Scholarly Research and Innovation*, *1*(02), 01-29. https://doi.org/10.63125/je9w1c40
[42]. Jamil, S. (2021). From digital divide to digital inclusion: Challenges for wide-ranging digitalization in Pakistan. *Telecommunications Policy*, *45*(8), 102206.
[43]. Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. *Nature machine intelligence*, *1*(9), 389-399.
[44]. Kaihlanen, A.-M., Virtanen, L., Buchert, U., Safarov, N., Valkonen, P., Hietapakka, L., Hörhammer, I., Kujala, S., Kouvonen, A., & Heponiemi, T. (2022). Towards digital health equity-a qualitative study of the challenges experienced by vulnerable groups in using digital health services in the COVID-19 era. *BMC health services research*, *22*(1), 188.
[45]. Kalla, M., Jerowsky, M., Howes, B., & Borda, A. (2022). Expanding formal school curricula to foster action competence in sustainable development: A proposed free-choice project-based learning curriculum. *Sustainability*, *14*(23), 16315.
[46]. Khan, S. A. R., Piprani, A. Z., & Yu, Z. (2022). Digital technology and circular economy practices: future of supply chains. *Operations Management Research*, *15*(3), 676-688.
[47]. Klerkx, L., & Rose, D. (2020). Dealing with the game-changing technologies of Agriculture 4.0: How do we manage diversity and responsibility in food system transition pathways? *Global Food Security*, *24*, 100347.
[48]. Komatsu Cipriani, T., Deserti, A., Kleverbeck, M., Rizzo, F., & Terstriep, J. (2020). Business models & social innovation: mission-driven versus profit-driven organisations. *International Review of Applied Economics*, *34*(5), 541-566.
[49]. Kuhn, C., Khoo, S.-M., Czerniewicz, L., Lilley, W., Bute, S., Crean, A., Abegglen, S., Burns, T., Sinfield, S., & Jandrić, P. (2023). Understanding digital inequality: A theoretical kaleidoscope. In *Constructing postdigital research: Method and emancipation* (pp. 333-373). Springer.
[50]. Kutub Uddin, A., Md Mostafizur, R., Afrin Binta, H., & Maniruzzaman, B. (2022). Forecasting Future Investment Value with Machine Learning, Neural Networks, And Ensemble Learning: A Meta-Analytic Study. *Review of Applied Science and Technology*, *1*(02), 01-25. https://doi.org/10.63125/edxgjg56
[51]. Lähteenmäki-Smith, K., & Virtanen, P. (2020). Mission-oriented public policy and the new evaluation culture. In *Society as an Interaction Space: A Systemic Approach* (pp. 69-87). Springer.
[52]. Lembani, R., Gunter, A., Breines, M., & Dalu, M. T. B. (2020). The same course, different access: the digital divide between urban and rural distance education students in South Africa. *Journal of geography in higher education*, *44*(1), 70-84.
[53]. Levin-Zamir, D., & Bertschi, I. (2018). Media health literacy, eHealth literacy, and the role of the social environment in context. *International journal of environmental research and public health*, *15*(8), 1643.
[54]. Levine Daniel, J., & Galasso, M. (2019). Revenue embeddedness and competing institutional logics: How nonprofit leaders connect earned revenue to mission and organizational identity. *Journal of Social Entrepreneurship*, *10*(1), 84-107.

[55]. Li, J., Pearce, P. L., & Low, D. (2018). Media representation of digital-free tourism: A critical discourse analysis. *Tourism Management*, *69*, 317-329.
[56]. Lumpkin, G., Bacq, S., & Pidduck, R. J. (2018). Where change happens: Community-level phenomena in social entrepreneurship research. *Journal of Small Business Management*, *56*(1), 24-50.
[57]. Macgilchrist, F. (2019). Cruel optimism in edtech: When the digital data practices of educational technology providers inadvertently hinder educational equity. *Learning, Media and Technology*, *44*(1), 77-86.
[58]. Mansura Akter, E. (2023). Applications Of Allele-Specific PCR In Early Detection of Hereditary Disorders: A Systematic Review Of Techniques And Outcomes. *Review of Applied Science and Technology*, *2*(03), 1-26. https://doi.org/10.63125/n4h7t156
[59]. Mansura Akter, E., & Md Abdul Ahad, M. (2022). In Silico drug repurposing for inflammatory diseases: a systematic review of molecular docking and virtual screening studies. *American Journal of Advanced Technology and Engineering Solutions*, *2*(04), 35-64. https://doi.org/10.63125/j1hbts51
[60]. Marín, V. I., & Castaneda, L. (2022). Developing digital literacy for teaching and learning. In *Handbook of open, distance and digital education* (pp. 1-20). Springer.
[61]. Martin, C. J., Evans, J., & Karvonen, A. (2018). Smart and sustainable? Five tensions in the visions and practices of the smart-sustainable city in Europe and North America. *Technological Forecasting and Social Change*, *133*, 269-278.
[62]. Mathrani, A., Sarvesh, T., & Umer, R. (2022). Digital divide framework: online learning in developing countries during the COVID-19 lockdown. *Globalisation, Societies and Education*, *20*(5), 625-640.
[63]. Mazzucato, M., Kattel, R., & Ryan-Collins, J. (2020). Challenge-driven innovation policy: towards a new policy toolkit. *Journal of industry, competition and trade*, *20*(2), 421-437.
[64]. McClure, K. R., Barringer, S. N., & Brown, J. T. (2020). Privatization as the new normal in higher education: Synthesizing literature and reinvigorating research through a multilevel framework. In *Higher Education: Handbook of Theory and Research: Volume 35* (pp. 589-666). Springer.
[65]. Md Arifur, R., & Sheratun Noor, J. (2022). A Systematic Literature Review of User-Centric Design In Digital Business Systems: Enhancing Accessibility, Adoption, And Organizational Impact. *Review of Applied Science and Technology*, *1*(04), 01-25. https://doi.org/10.63125/ndjkpm77
[66]. Md Hasan, Z., & Moin Uddin, M. (2022). Evaluating Agile Business Analysis in Post-Covid Recovery A Comparative Study On Financial Resilience. *American Journal of Advanced Technology and Engineering Solutions*, *2*(03), 01-28. https://doi.org/10.63125/6nee1m28
[67]. Md Hasan, Z., Sheratun Noor, J., & Md. Zafor, I. (2023). Strategic role of business analysts in digital transformation tools, roles, and enterprise outcomes. *American Journal of Scholarly Research and Innovation*, *2*(02), 246-273. https://doi.org/10.63125/rc45z918
[68]. Md Mahamudur Rahaman, S. (2022). Electrical And Mechanical Troubleshooting in Medical And Diagnostic Device Manufacturing: A Systematic Review Of Industry Safety And Performance Protocols. *American Journal of Scholarly Research and Innovation*, *1*(01), 295-318. https://doi.org/10.63125/d68y3590
[69]. Md Mahamudur Rahaman, S., & Rezwanul Ashraf, R. (2022). Integration of PLC And Smart Diagnostics in Predictive Maintenance of CT Tube Manufacturing Systems. *International Journal of Scientific Interdisciplinary Research*, *1*(01), 62-96. https://doi.org/10.63125/gspb0f75
[70]. Md Masud, K., Mohammad, M., & Sazzad, I. (2023). Mathematics For Finance: A Review of Quantitative Methods In Loan Portfolio Optimization. *International Journal of Scientific Interdisciplinary Research*, *4*(3), 01-29. https://doi.org/10.63125/j43ayz68
[71]. Md Nazrul Islam, K. (2022). A Systematic Review of Legal Technology Adoption In Contract Management, Data Governance, And Compliance Monitoring. *American Journal of Interdisciplinary Studies*, *3*(01), 01-30. https://doi.org/10.63125/caangg06
[72]. Md Nur Hasan, M., Md Musfiqur, R., & Debashish, G. (2022). Strategic Decision-Making in Digital Retail Supply Chains: Harnessing AI-Driven Business Intelligence From Customer Data. *Review of Applied Science and Technology*, *1*(03), 01-31. https://doi.org/10.63125/6a7rpy62
[73]. Md Redwanul, I., & Md. Zafor, I. (2022). Impact of Predictive Data Modeling on Business Decision-Making: A Review Of Studies Across Retail, Finance, And Logistics. *American Journal of Advanced Technology and Engineering Solutions*, *2*(02), 33-62. https://doi.org/10.63125/8hfbkt70
[74]. Md Rezaul, K., & Md Mesbaul, H. (2022). Innovative Textile Recycling and Upcycling Technologies For Circular Fashion: Reducing Landfill Waste And Enhancing Environmental Sustainability. *American Journal of Interdisciplinary Studies*, *3*(03), 01-35. https://doi.org/10.63125/kkmerg16
[75]. Md Sultan, M., Proches Nolasco, M., & Md. Torikul, I. (2023). Multi-Material Additive Manufacturing For Integrated Electromechanical Systems. *American Journal of Interdisciplinary Studies*, *4*(04), 52-79. https://doi.org/10.63125/y2ybrx17
[76]. Md Takbir Hossen, S., Ishtiaque, A., & Md Atiqur, R. (2023). AI-Based Smart Textile Wearables For Remote Health Surveillance And Critical Emergency Alerts: A Systematic Literature Review. *American Journal of Scholarly Research and Innovation*, *2*(02), 1-29. https://doi.org/10.63125/ceqapd08

[77]. Md Takbir Hossen, S., & Md Atiqur, R. (2022). Advancements In 3d Printing Techniques For Polymer Fiber-Reinforced Textile Composites: A Systematic Literature Review. *American Journal of Interdisciplinary Studies*, *3*(04), 32-60. https://doi.org/10.63125/s4r5m391

[78]. Md Tawfiqul, I. (2023). A Quantitative Assessment Of Secure Neural Network Architectures For Fault Detection In Industrial Control Systems. *Review of Applied Science and Technology*, *2*(04), 01-24. https://doi.org/10.63125/3m7gbs97

[79]. Md Tawfiqul, I., Meherun, N., Mahin, K., & Mahmudur Rahman, M. (2022). Systematic Review of Cybersecurity Threats In IOT Devices Focusing On Risk Vectors Vulnerabilities And Mitigation Strategies. *American Journal of Scholarly Research and Innovation*, *1*(01), 108-136. https://doi.org/10.63125/wh17mf19

[80]. Md. Sakib Hasan, H. (2022). Quantitative Risk Assessment of Rail Infrastructure Projects Using Monte Carlo Simulation And Fuzzy Logic. *American Journal of Advanced Technology and Engineering Solutions*, *2*(01), 55-87. https://doi.org/10.63125/h24n6z92

[81]. Md. Tarek, H. (2022). Graph Neural Network Models For Detecting Fraudulent Insurance Claims In Healthcare Systems. *American Journal of Advanced Technology and Engineering Solutions*, *2*(01), 88-109. https://doi.org/10.63125/r5vsmv21

[82]. Md.Kamrul, K., & Md Omar, F. (2022). Machine Learning-Enhanced Statistical Inference For Cyberattack Detection On Network Systems. *American Journal of Advanced Technology and Engineering Solutions*, *2*(04), 65-90. https://doi.org/10.63125/sw7jzx60

[83]. Md.Kamrul, K., & Md. Tarek, H. (2022). A Poisson Regression Approach to Modeling Traffic Accident Frequency in Urban Areas. *American Journal of Interdisciplinary Studies*, *3*(04), 117-156. https://doi.org/10.63125/wqh7pd07

[84]. Mirra, N., Morrell, E., & Filipiak, D. (2018). From digital consumption to digital invention: Toward a new critical theory and practice of multiliteracies. *Theory Into Practice*, *57*(1), 12-19.

[85]. Mittelstadt, B. (2019). Principles alone cannot guarantee ethical AI. *Nature machine intelligence*, *1*(11), 501-507.

[86]. Moldavan, A. M., Capraro, R. M., & Capraro, M. M. (2022). Navigating (and disrupting) the digital divide: Urban teachers' perspectives on secondary mathematics instruction during COVID-19. *The Urban Review*, *54*(2), 277-302.

[87]. Mst Shamima, A., Niger, S., Md Atiqur Rahman, K., & Mohammad, M. (2023). Business Intelligence-Driven Healthcare: Integrating Big Data And Machine Learning For Strategic Cost Reduction And Quality Care Delivery. *American Journal of Interdisciplinary Studies*, *4*(02), 01-28. https://doi.org/10.63125/crv1xp27

[88]. Mubashir, I., & Abdul, R. (2022). Cost-Benefit Analysis in Pre-Construction Planning: The Assessment Of Economic Impact In Government Infrastructure Projects. *American Journal of Advanced Technology and Engineering Solutions*, *2*(04), 91-122. https://doi.org/10.63125/kjwd5e33

[89]. Nambisan, S., Wright, M., & Feldman, M. (2019). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. *Research policy*, *48*(8), 103773.

[90]. Naqshbandi, K. Z., Jeon, Y.-H., & Ahmadpour, N. (2023). Exploring volunteer motivation, identity and meaning-making in digital science-based research volunteering. *International Journal of Human–Computer Interaction*, *39*(20), 4090-4111.

[91]. Okoye, K., Hussein, H., Arrona-Palacios, A., Quintero, H. N., Ortega, L. O. P., Sanchez, A. L., Ortiz, E. A., Escamilla, J., & Hosseini, S. (2023). Impact of digital technologies upon teaching and learning in higher education in Latin America: an outlook on the reach, barriers, and bottlenecks. *Education and information technologies*, *28*(2), 2291-2360.

[92]. Oldroyd, R. (2021). Mission-driven journalism. In *Investigative Journalism* (pp. 100-110). Routledge.

[93]. Omar Muhammad, F., & Md.Kamrul, K. (2022). Blockchain-Enabled BI For HR And Payroll Systems: Securing Sensitive Workforce Data. *American Journal of Scholarly Research and Innovation*, *1*(02), 30-58. https://doi.org/10.63125/et4bhy15

[94]. Pandey, N., & Pal, A. (2020). Impact of digital surge during Covid-19 pandemic: A viewpoint on research and practice. *International journal of information management*, *55*, 102171.

[95]. Panori, A., Kakderi, C., Komninos, N., Fellnhofer, K., Reid, A., & Mora, L. (2021). Smart systems of innovation for smart places: Challenges in deploying digital platforms for co-creation and data-intelligence. *Land use policy*, *111*, 104631.

[96]. Park, H., & Lim, R. E. (2023). Fashion and the metaverse: Clarifying the domain and establishing a research agenda. *Journal of Retailing and Consumer Services*, *74*, 103413.

[97]. Passey, D., Shonfeld, M., Appleby, L., Judge, M., Saito, T., & Smits, A. (2018). Digital agency: Empowering equity in and through education. *Technology, Knowledge and Learning*, *23*(3), 425-439.

[98]. Quaicoe, J. S., & Pata, K. (2020). Teachers' digital literacy and digital activity as digital divide components among basic schools in Ghana. *Education and information technologies*, *25*(5), 4077-4095.

[99]. Ragnedda, M. (2020). Connecting the digital underclass. In *Enhancing Digital Equity:* Reduanul, H., & Mohammad Shoeb, A. (2022). Advancing AI in Marketing Through Cross Border Integration Ethical

Considerations And Policy Implications. *American Journal of Scholarly Research and Innovation*, *1*(01), 351-379. https://doi.org/10.63125/d1xg3784

[100]. Rentschler, R., Jogulu, U., Valos, M., & Ferkins, L. (2023). How strategic engagement is influenced by personal values: Insights from arts board directors. *The Journal of arTs ManageMenT, law, and socieTy*, *53*(2), 85-102.

[101]. Resta, P., Laferrière, T., McLaughlin, R., & Kouraogo, A. (2018). Issues and challenges related to digital equity: An overview. *Second handbook of information technology in primary and secondary education*, 987-1004.

[102]. Rezwanul Ashraf, R., & Hosne Ara, M. (2023). Visual communication in industrial safety systems: a review of UI/UX design for risk alerts and warnings. *American Journal of Scholarly Research and Innovation*, *2*(02), 217-245. https://doi.org/10.63125/wbv4z521

[103]. Richardson, S., Lawrence, K., Schoenthaler, A. M., & Mann, D. (2022). A framework for digital health equity. *NPJ digital medicine*, *5*(1), 119.

[104]. Ritzhaupt, A. D., Cheng, L., Luo, W., & Hohlfeld, T. N. (2020). The digital divide in formal educational settings: The past, present, and future relevance. In *Handbook of research in educational communications and technology: Learning design* (pp. 483-504). Springer.

[105]. Rong, K. (2022). Research agenda for the digital economy. *Journal of Digital Economy*, *1*(1), 20-31.

[106]. Rosol, M., & Blue, G. (2022). From the smart city to urban justice in a digital age. *City*, *26*(4), 684-705.

[107]. Rotz, S., Gravely, E., Mosby, I., Duncan, E., Finnis, E., Horgan, M., LeBlanc, J., Martin, R., Neufeld, H. T., & Nixon, A. (2019). Automated pastures and the digital divide: How agricultural technologies are shaping labour and rural communities. *Journal of Rural Studies*, *68*, 112-122.

[108]. Sabuj Kumar, S., & Zobayer, E. (2022). Comparative Analysis of Petroleum Infrastructure Projects In South Asia And The Us Using Advanced Gas Turbine Engine Technologies For Cross Integration. *American Journal of Advanced Technology and Engineering Solutions*, *2*(04), 123-147. https://doi.org/10.63125/wr93s247

[109]. Sadia, T., & Shaiful, M. (2022). In Silico Evaluation of Phytochemicals From Mangifera Indica Against Type 2 Diabetes Targets: A Molecular Docking And Admet Study. *American Journal of Interdisciplinary Studies*, *3*(04), 91-116. https://doi.org/10.63125/anaf6b94

[110]. Sanders, C. K., & Scanlon, E. (2021). The digital divide is a human rights issue: Advancing social inclusion through social work advocacy. *Journal of human rights and social work*, *6*(2), 130-143.

[111]. Sanjai, V., Sanath Kumar, C., Maniruzzaman, B., & Farhana Zaman, R. (2023). Integrating Artificial Intelligence in Strategic Business Decision-Making: A Systematic Review Of Predictive Models. *International Journal of Scientific Interdisciplinary Research*, *4*(1), 01-26. https://doi.org/10.63125/s5skge53

[112]. Sanzo-Pérez, M. J., & Álvarez-González, L. I. (2022). Partnerships between Spanish social enterprises and nonprofits: A rich hybridity-based setting for social innovation. *Technovation*, *110*, 102376.

[113]. Sazzad, I., & Md Nazrul Islam, K. (2022). Project impact assessment frameworks in nonprofit development: a review of case studies from south asia. *American Journal of Scholarly Research and Innovation*, *1*(01), 270-294. https://doi.org/10.63125/eeja0t77

[114]. Schiff, D. (2022). Education for AI, not AI for education: The role of education and ethics in national AI policy strategies. *International Journal of Artificial Intelligence in Education*, *32*(3), 527-563.

[115]. Shamsuddin, S., & Srinivasan, S. (2021). Just smart or just and smart cities? Assessing the literature on housing and information and communication technology. *Housing Policy Debate*, *31*(1), 127-150.

[116]. Sheratun Noor, J., & Momena, A. (2022). Assessment Of Data-Driven Vendor Performance Evaluation in Retail Supply Chains: Analyzing Metrics, Scorecards, And Contract Management Tools. *American Journal of Interdisciplinary Studies*, *3*(02), 36-61. https://doi.org/10.63125/0s7t1y90

[117]. Shonfeld, M., Cotnam-Kappel, M., Judge, M., Ng, C. Y., Ntebutse, J. G., Williamson-Leadley, S., & Yildiz, M. N. (2021). Learning in digital environments: a model for cross-cultural alignment. *Educational Technology Research and Development*, *69*(4), 2151-2170.

[118]. Slatten, L. A., Bendickson, J. S., Diamond, M., & McDowell, W. C. (2021). Staffing of small nonprofit organizations: A model for retaining employees. *Journal of Innovation & Knowledge*, *6*(1), 50-57.

[119]. Soomro, K. A., Kale, U., Curtis, R., Akcaoglu, M., & Bernstein, M. (2020). Digital divide among higher education faculty. *International Journal of Educational Technology in Higher Education*, *17*(1), 21.

[120]. Sosa Díaz, M. J. (2021). Emergency remote education, family support and the digital divide in the context of the COVID-19 lockdown. *International journal of environmental research and public health*, *18*(15), 7956.

[121]. Stötzer, S., Andeßner, R. C., & Scheichl, S. (2020). Charity flea markets–an amalgamation of product philanthropy and volunteering. *International Review on Public and Nonprofit Marketing*, *17*(2), 203-224.

[122]. Strover, S. (2019). Public libraries and 21st century digital equity goals. *Communication Research and Practice*, *5*(2), 188-205.

[123]. Tahmina Akter, R., & Abdur Razzak, C. (2022). The Role of Artificial Intelligence in Vendor Performance Evaluation Within Digital Retail Supply Chains: A Review Of Strategic Decision-Making Models. *American Journal of Scholarly Research and Innovation*, *1*(01), 220-248. https://doi.org/10.63125/96jj3j86

[124]. Tahmina Akter, R., Debashish, G., Md Soyeb, R., & Abdullah Al, M. (2023). A Systematic Review of AI-Enhanced Decision Support Tools in Information Systems: Strategic Applications In Service-Oriented Enterprises And Enterprise Planning. *Review of Applied Science and Technology*, *2*(01), 26-52. https://doi.org/10.63125/73djw422
[125]. Tate, T., & Warschauer, M. (2022). Equity in online learning. *Educational Psychologist*, *57*(3), 192-206.
[126]. Ulnicane, I. (2022). Emerging technology for economic competitiveness or societal challenges? Framing purpose in Artificial Intelligence policy. *Global Public Policy and Governance*, *2*(3), 326-345.
[127]. Upoma, S., & Sabharwal, M. (2023). Human Resources Management in Nonprofit Organizations. In *Public Personnel Management* (pp. 205-221). Routledge.
[128]. Van Hille, I., de Bakker, F. G., Ferguson, J. E., & Groenewegen, P. (2020). Cross-sector partnerships for sustainability: How mission-driven conveners drive change in national coffee platforms. *Sustainability*, *12*(7), 2846.
[129]. Vassilakopoulou, P., & Hustad, E. (2023). Bridging digital divides: A literature review and research agenda for information systems research. *Information Systems Frontiers*, *25*(3), 955-969.
[130]. Wang, Q., Hu, A., & Tian, Z. (2022). Digital transformation and electricity consumption: Evidence from the Broadband China pilot policy. *Energy Economics*, *115*, 106346.
[131]. Wang, T., Lund, B. D., Marengo, A., Pagano, A., Mannuru, N. R., Teel, Z. A., & Pange, J. (2023). Exploring the potential impact of artificial intelligence (AI) on international students in higher education: Generative AI, chatbots, analytics, and international student success. *Applied Sciences*, *13*(11), 6716.
[132]. Wilson, B., & Cong, C. (2021). Beyond the supply side: Use and impact of municipal open data in the US. *Telematics and Informatics*, *58*, 101526.
[133]. Ydo, Y. (2020). Inclusive education: Global priority, collective responsibility. *Prospects*, *49*(3), 97-101.
[134]. Zallio, M., & Clarkson, P. J. (2022). Designing the metaverse: A study on inclusion, diversity, equity, accessibility and safety for digital immersive environments. *Telematics and Informatics*, *75*, 101909.
[135]. Zheng, Y., & Walsham, G. (2021). Inequality of what? An intersectional approach to digital inequality under Covid-19. *Information and Organization*, *31*(1), 100341.