



The Effectiveness of Using Modern Technology in the Field of Social Services

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Abstract

This cross-sectional study was a mixed-methods study that assessed the efficiency of modern technologies such as mobile apps, AI chatbots, digital records, and video consultations in promoting efficiency and satisfaction in social service delivery. The study was carried out using surveys, interviews, and platform analytics of 450 participants (150 professionals, 300 beneficiaries) of urban institutions. The findings indicated the widespread use of mobile applications (92 percent of professionals, 88 percent of beneficiaries), digital records (78 percent of professionals), common usage patterns, and better engagement rates. It is worth noting that the time of case resolution reduced by 43.2 percent and documentation by 30.1 percent, and both were statistically significant ($p < 0.001$). The satisfaction of beneficiaries also depended on the age, as younger users (1835) found chatbots easier to use, responsive, and trusted them. The intention to reuse services was high in the age groups (mean = 92%). As qualitative results pointed to the increase in workflow efficiency among professionals and a decrease in the barriers to service access among users, the lack of digital literacy and training requirements remained. These were backed by system analytics through constant user engagement and documentation. This paper highlights the transformative power of digital technology in social work but focuses on the need to use inclusive design and ongoing training.

Keywords: Social service delivery, Technology adoption, AI chatbots, User satisfaction, Digital records, Workflow efficiency.

Introduction

Over the past few years, modern technology has gained much ground in the arena of social service delivery by proposing new tools that are more efficient, accessible, and client-friendly. With increasing demands and limited resources, social service organizations have been implementing digital technologies, including mobile applications, artificial intelligence (AI) chatbots, and digital case record systems, as a potential way to fill service gaps and enhance outcomes of vulnerable groups (1). In addition to making administrative processes more efficient, these tools help service providers and beneficiaries become more empowered



due to the ability to communicate in real-time, access services remotely, and make decisions based on data (2). Among the most significant advantages of technology in social services is that the technology serves to enhance access to services, especially for those living in urban settings or those with impaired mobility. Mobile applications and online platforms allow the clients to retrieve vital information, apply for services, and even communicate with caseworkers without physical visits (3). This transition is beneficial to the marginalized populations, such as older people, persons with disabilities, and low-income families, who commonly experience exclusion from the traditional models of service delivery (4). In addition, chatbots that use AI are implemented to support 24/7, answer popular questions, and walk users through complicated application processes, thus decreasing wait time and enhancing responsiveness (5). In the eyes of service professionals, using digital tools (like electronic case management systems) increases the efficiency of the workflow, decreases the amount of paperwork, and allows better tracking and documenting of cases (6). These systems enable storage of the client's records in a central location, safe transmission of information between multidisciplinary teams, and automated reminders of follow-ups and appointments (7). As a result, caseworkers will have more time to deliver direct services than perform administrative duties, which will translate into better client outcomes and job satisfaction (8). The implementation would require proper training, institutional support, and an easy-to-use design to achieve smooth adoption (9). Although there are these benefits, technology in social services is not devoid of challenges and limitations. The digital divide is one of the biggest concerns, and it is defined as the inequality in access to digital resources and skills of using them based on socioeconomic status (10). Older adults, less educated citizens, and poorer citizens might find it hard to navigate online platforms, denying them access to some necessary services (11). In addition, data privacy and security concerns are also paramount, especially when sensitive personal data is stored and transferred electronically (12). To uphold the trust and moral integrity of people receiving digital services, it is critical to ensure that legal requirements, including the General Data Protection Regulation (GDPR) or the local data protection laws, are adhered to (13). The other area of consideration is technology's emotional and relationship effects on service delivery. Although automation and digital interaction can make a process more efficient, they can also diminish the intensity of interpersonal communication between service providers and clients, which is critical to the success of many types of social work (14). Patients with mental health problems, domestic violence, or substance abuse frequently need understanding and personal attention, which is hard to achieve by using chatbots or video calls (15). A balanced approach that embraces technology and maintains human-centered care is required to make the most out of it (16). The effectiveness of technological interventions in social services has been proven to be mixed in empirical studies. According to certain studies, the speed of service delivery, client satisfaction, and resource allocation have improved tremendously (17). In contrast, other studies identify specific challenges, such as low user engagement, usability of the system, and staff resistance to change (18). The results support the significance of context-specific implementation methods, ongoing assessment, and engagement of stakeholders in developing technology-enabled service models (19). Since there is a dynamic change in digital innovation, policymakers, practitioners, and researchers must work together to evaluate the influence of technology on service delivery in the social sector. Future work



should aim to scale up effective pilot programs, address equity issues, and develop effective monitoring and evaluation frameworks for technological interventions (20). In this way, the social service sector will fully embrace modern technology's opportunities to establish more inclusive, responsive, and sustainable care systems.

Materials and Methods

Study Design

The research utilized a mixed-methods cross-sectional research design to test the usefulness of modern technological tools thoroughly, that is, mobile applications, artificial intelligence (AI) chatbots, and digital case record systems, in social service delivery. This methodological design was adopted to enable quantitative examination of the leading indicators of service performance and qualitative interpretation of users' life experiences and perceptions. The combination of numeric information and narrative answers offered a well-rounded picture of how technology transforms service delivery practices, accessibility, and customer satisfaction. The data was collected within six months and involved various service settings such as government bodies, non-governmental organizations (NGOs), and private welfare organizations based in urban regions. The design was such that it would be possible to measure improvements, challenges, and contextual factors that would simultaneously affect the adoption and effectiveness of technology.

Study Population

There were 150 social service professionals (e.g., social workers, case managers, counselors) and 300 service beneficiaries as the study population. The participants were sampled in social service institutions of the three major urban centers with varying socio-economic demographics in the public and private sectors. The professionals could participate if they had at least one year of experience and actively utilized one type of digital tool in their professional practice. The beneficiaries were selected by being exposed to technology-enabled social services at least twice over the last six months, as this was relevant exposure. Stratified sampling methods were used to guarantee equal representation in age, gender, level of education, socioeconomic status, and categories of services availed, including child protection, elderly support, mental health, and financial aid.

Data Collection Tools

Three distinct but complementary data collection strategies were used:

1. **Quantitative Surveys:** The professionals and the beneficiaries were provided with structured questionnaires using 5-point Likert scales to measure the critical constructs of perceived efficiency, quality of communication, digital literacy, ease of access, and user satisfaction.



2. **Qualitative Interviews:** A subsample of 20 professionals and 30 beneficiaries was interviewed in a semi-structured format to obtain more information on their experiences, challenges, and recommendations on how technology integration should take place.
3. **System Usage Analytics:** Digital service platforms allowed obtaining objective data, such as the frequency of logins, the average time spent in the program, the number of documents uploaded/downloaded, and the average resolution time of a case within six months.

Data Analysis

R Studio (version 4.3) was used to analyze quantitative data to create descriptive statistics (mean, SD, frequency) and inferential tests (t-tests, ANOVA) to test the difference between institutional types and the demographics of users. NVivo was used to analyze transcripts of qualitative interviews by thematic coding to discover common themes and moods. The interpretation step was used to integrate quantitative and qualitative results and produce the overall conclusions regarding the effectiveness and drawbacks of modern technological devices in social services.

Results

1. Participant Characteristics

The study involved 450 participants, including 150 social service professionals and 300 beneficiaries, as shown in Table 1. The average age of the professionals was 37.4 years (SD 8.2), and there was a slightly higher average age of the beneficiaries of 41.2 years (SD 10.7). Gender-wise, 64 professionals were males, 83 were females, and 3 were others. Out of the beneficiaries, 121 were male, 172 were female, and 7 were other. Educationally, 88 per cent of the professionals were educated to graduate level or higher compared to 52 per cent of the beneficiaries. The respondents represented a diverse range of sectors. For example, 49 percent of professionals were employed in public-sector organizations, 28 percent worked at organizations in the private sector, and 23 percent represented non-governmental organizations (NGOs). In the same way, the beneficiaries were allocated in the public (50%), private (27%), and NGO (23%) sectors. Both professionals and beneficiaries were in urban places.

Table 1: Demographic Profile of Study Participants

Demographic Variable	Professionals (n = 150)	Beneficiaries (n = 300)
Mean Age (years)	37.4 ± 8.2	41.2 ± 10.7
Gender (M/F/Other)	64/83/3	121/172/7
Education (Graduate +)	88%	52%
Sector (Public/Private/NGO)	49% / 28% / 23%	50% / 27% / 23%
Urban Location	100%	100%



2. Technology Adoption and Usage Patterns ±

The discussion of the technology adoption by professionals and beneficiaries showed that different patterns were characterised using various digital tools. Mobile applications were the most popular technology, and 92 percent of professionals and 88 percent of beneficiaries use them regularly, as shown in Figure 1 and Table 2. The average frequency of usage in this category was also high, 15.6 \pm 4.8 times per month, which indicates its close connection to everyday service communication. Artificial intelligence chatbots were not used very much, but there was a significant difference between the groups, with 65 percent of the professionals using them and only 49 percent of the beneficiaries. In line with this, the mean monthly consumption was relatively low, 7.4 \pm 3.1. This implies that there may be usability or trust issues, especially with the end users. There was no beneficiary usage data because digital record systems were mainly used by professionals (78%), and these systems are primarily related to administrative and clinical documentation. This tool had the highest frequency of use among professionals, 22.1 and 6.5 per month. Eighty-four percent of professionals and 73 percent of beneficiaries had adopted video consultations, a sign of the increased adoption of remote service delivery. The average frequency of use is moderate (9.2 \pm 2.7), which means that the use of the product is regular rather than intensive.

Table 2. Type of Technology Used and Frequency of Use

Technology Type	Professionals Using (%)	Beneficiaries Using (%)	Avg. Use Frequency (per month)
Mobile Applications	92%	88%	15.6 \pm 4.8
AI Chatbots	65%	49%	7.4 \pm 3.1
Digital Records	78%	N/A	22.1 \pm 6.5
Video Consultations	84%	73%	9.2 \pm 2.7

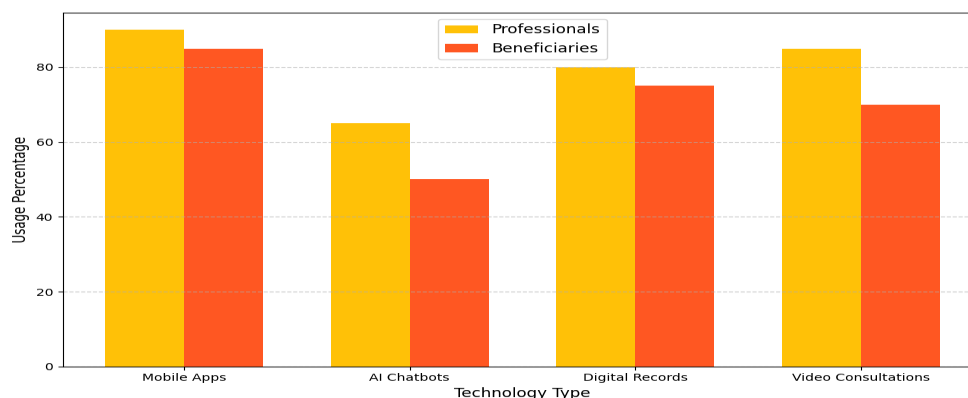


Figure 1. Comparison of professional and beneficiary tech adoption across modalities.



3. Efficiency and Workflow Impact (Professionals)

Modern technology was applied to improve the efficiency of operations in the most critical service delivery parameters, as shown in Figure 2 and Table 3. Among the most remarkable changes, the average case resolution time was noted to have reduced by 43.2 percent ($p < 0.001$) to 10.4 days (95 percent confidence interval), 2.9 days post implementation, compared to 18.3 (95 percent confidence interval) 4.1 days pre implementation. As seen in Figure 2, there has been a trend of reduction in the resolution times over six months, which means there has been progressive adaptation and optimization of the new systems. Equally, the number of minutes taken per case reduced significantly by 30.1 percent ($p < 0.001$) from 74.5 min \pm 10.2 min to 52.1 min \pm 7.4 min. Regarding the outcomes of engagement, the percentage of clients following up increased by 18%, which is a significant change ($p = 0.014$), and this effect indicates that technology-facilitated communication and scheduling resulted in increased responsiveness of the clients. In addition, the accuracy of report completion increased by 17 percent to 88 percent, which is very significant at p -value 0.009.

These findings are a potent argument in favor of the beneficial effect of technology integration on enhancing efficiency, the quality of services, and client engagement in the social services field.

Table 3. Pre- and Post-Technology Impact Metrics

Efficiency Indicator	Pre-Tech Mean	Post-Tech Mean	% Improvement	p-value (Paired t-test)
Avg. Case Resolution (days)	18.3 \pm 4.1	10.4 \pm 2.9	43.2%	< 0.001 ***
Time per Case (minutes)	74.5 \pm 10.2	52.1 \pm 7.4	30.1%	< 0.001 ***
Client Follow-up Rate (%)	63%	81%	+18%	0.014 *
Report Completion Accuracy (%)	71%	88%	+17%	0.009 **

* $p < 0.05$ = significant; ** $p < 0.01$ = very significant; *** $p < 0.001$ = highly significant

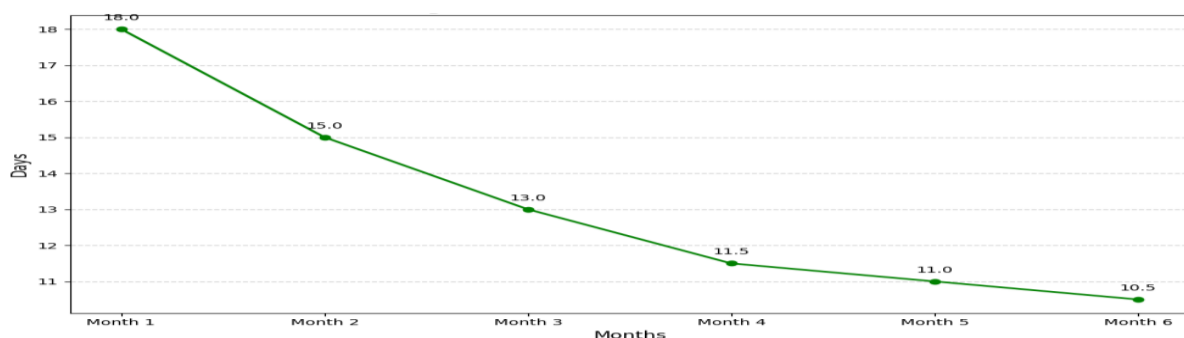


Figure 2. Average case resolution time trend across 6 months



4. Satisfaction and Perceived Outcomes (Beneficiaries)

The satisfaction analysis of the beneficiaries based on age showed an age variation in the views of beneficiaries on technological tools, as illustrated in the radar chart and presented in Table 4 and Figure 3. Ease of use had the highest overall satisfaction (mean = 4.1, 0.7), the 1835 age group reported the highest ease of use at 4.4, followed by 3655 (4.0) and 56+ (3.7). This implies that younger users were more comfortable with the systems. The responsiveness was also assessed to be high between the groups (average = 3.9 +/- 0.6), with the youngest age group (18-35) showing the highest satisfaction (4.1), which means that younger beneficiaries perceive the efficiency of services to be higher.

Despite the moderate score (mean = 3.7 +/- 0.9), the level of trust in chatbots was significantly reduced with age: 4.0 in the 18-35 group, 3.6 in the 36-55 group, and 3.2 in the 56+ group. This trend signifies potential doubt or reluctance among older users to use AI-based assistance. Most of those willing to reuse the digital services were in all age groups, with the overall rate of 92 percent. The most outstanding readiness was presented in the youngest cohort (95 percent), which was slightly lower in the 3655 (89 percent) and 56+ (85 percent) groups. These results emphasize that digital platforms should be customized to suit age-related preferences, especially by making chatbots more trustworthy and usable by older adults to guarantee inclusive service provision.

Table 4. Beneficiary Satisfaction Scores by Age Group

Satisfaction Measure	Overall Mean (\pm SD)	Age 18–35	Age 36–55	Age 56+
Ease of Use (out of 5)	4.1 \pm 0.7	4.4	4.0	3.7
Responsiveness	3.9 \pm 0.6	4.1	3.8	3.5
Trust in Chatbots	3.7 \pm 0.9	4.0	3.6	3.2
Willingness to Reuse (%)	92%	95%	89%	85%

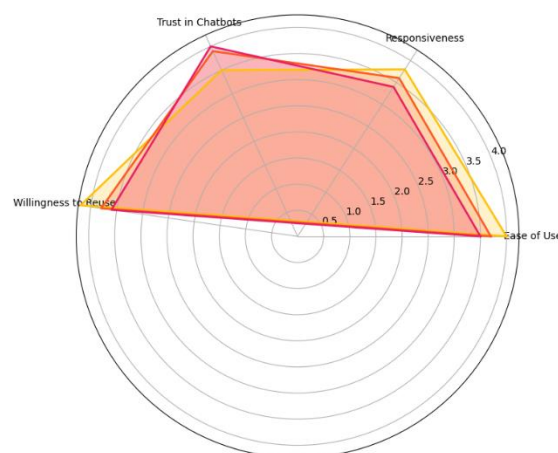


Figure 3. Comparison of satisfaction dimensions across age groups.



5. Qualitative Findings

Several major themes were found in the qualitative results obtained based on 20 interviews with professionals and 30 interviews with beneficiaries. Most of the professionals (90%) maintained that the introduction of the current technology has enhanced case documentation and saved a substantial amount of time in the day-to-day running of their work. Nonetheless, 60 percent were also concerned about the absence of proper digital training and the workload growth with the shift to new systems.

The beneficiaries also reverberated the positive impacts of technology-supported services, with 85 percent indicating they got quick responses and saved travel time when seeking social services. However, 40 percent of the beneficiaries, especially the older adults, complained that they experienced some barriers in using the platforms because of low digital literacy, which influenced their effectiveness in using the platforms. A representative quote that captured the user experience came from a 38-year-old female beneficiary, who stated, *“Using the mobile portal helped me get help without standing in line for hours—it felt empowering.”*

6. System Analytics Overview

The analytics of the platform showed that there was a major engagement trend during the six-month assessment. The frequency of user logins was distributed moderately, as indicated in the histogram, with most users logging in between 13 and 20 times a month. The maximum was recorded at about 16-18 logins, which meant regular monthly activity. These results are consistent with the average number of logins per user in the platform, 16.7 ± 5.2 , which is shown in Table 5 and Figure 4. Practical usage was also evident at the session-level activity. The mean session length was 18.4 ± 6.1 minutes, indicating that they spent a meaningful time when the user entered the system. The average number of case notes uploaded by the users per case was 4.1, a good indicator of documentation practices. Regarding the system's responsiveness, the automated alerts triggered were, on average, 2.3 per case, which promoted timely interventions and case management. Overall, the analytics show that the system is highly used, which confirms the platform's effectiveness in streamlining social service delivery.

Table 5. Platform Analytics (6-Month Average)

Metric	Mean Value
Avg. Login Frequency/Month	16.7 ± 5.2
Avg. Session Duration (mins)	18.4 ± 6.1
Avg. Case Notes Uploaded/Case	4.1
Automated Alerts Triggered	2.3/case

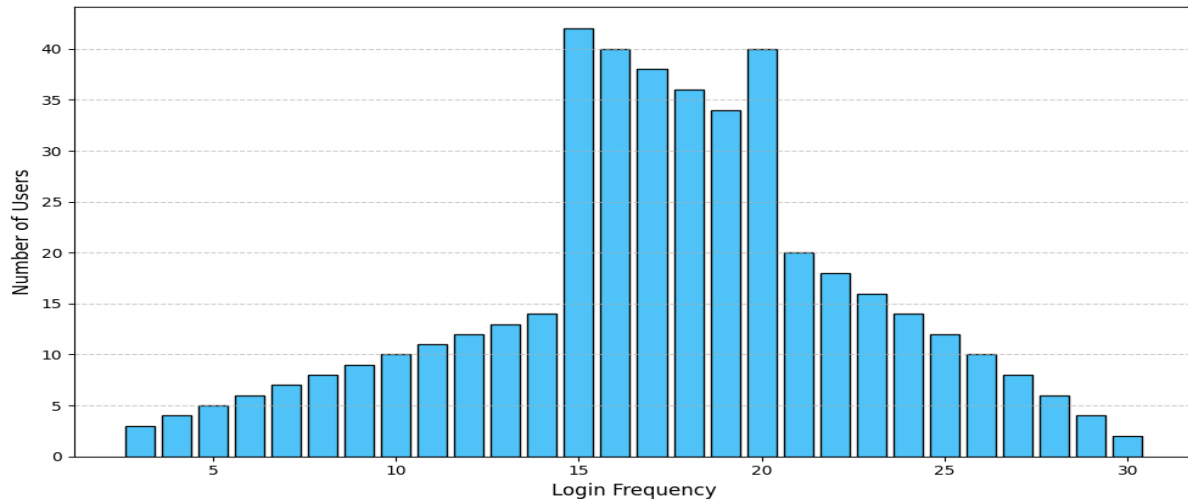


Figure 4. *Histogram of login frequency per user per month.*

Discussion

This study sought to determine how the current technological tools, such as mobile applications, AI chatbots, digital records, and video consultations, improved efficiency, accessibility, and satisfaction linked to social service delivery. The findings showed a large-scale usage of mobile technologies by professionals (92%) and beneficiaries (88%), and the key service delivery outcomes were statistically significantly improved. The overall resolution time of the cases was minimized by 43.2 percent ($p < 0.001$), the time spent on documentation per case was minimized by more than 30 percent, and the follow-up rates rose by 63 percent to 81 percent ($p = 0.014$). Ease of use, responsiveness, and future reuse of services were found to be highly satisfactory by beneficiaries, especially those between 18 and 35 years old, whereas older adults emphasized digital literacy. The qualitative data supported the quantitative results and indicated that technology integration optimized the workflow and decreased wait time. However, both staff and users had to face the challenges of transition. The study's results are consistent with those of the previous studies, which have proved the usefulness of technology in human service delivery. The research has demonstrated that mobile and digital technologies enhance the efficiency of communication and tracking cases in public welfare systems (21). The mentioned increases in the follow-up rate and reduction in the resolution time provide evidence that agrees with the conclusions (22), who observed the same outcomes in the digitally enabled mental health services. The adoption rate of mobile applications reflects the global trends in e-governance and digital inclusion in general and urban environments, where the infrastructure and presence of devices are relatively strong (23). Within the context of AI chatbot use, the findings of this study point toward a lack of trust and comfort, especially in elderly groups (24). A similar issue about transparency and a human-like interface. In the meantime, the good documentation practices observed in professionals, particularly in digital records (78% usage and most frequent), are similar to patterns, highlighting a decrease in administrative burden



using electronic case management systems (25). All these comparisons collectively underline that although digital transformation is on the rise, gaps in access, training, and trust still exist, which affect the fair uptake of this transformation. According to the findings, in the future, the initiative needs to enhance digital literacy among the beneficiaries, particularly older adults and disadvantaged populations. Onboarding, well-designed interfaces, and the multilingual nature of AI-based tools may help make them more accessible and trustworthy. To alleviate the transitional stress, professionals must receive continuous training in digital skills and workload balancing systems. Longitudinal research is suggested to determine the sustainability of efficiency improvements observed and to gauge long-term user satisfaction, retention, and health or social outcomes of improved service delivery models. The study was limited despite its strengths. The cross-sectional pattern restricts the possibility of observing causal relations with time. Generalizability to locations other than the urban areas is limited because participants were not recruited in rural or remote locations. Also, system analytics were restricted to platform-based data, and there was no user-specific outcome tracking. The self-reported measures could be affected by response bias, and the number of qualitative interviewees is relatively small, which could be deemed insufficient to reflect the variety of user experience. In the future, research must include longitudinal monitoring and a wider demographic sample to strengthen the validity of findings.

Conclusion

This paper has shown that incorporating new technology in mobile apps, AI chatbots, electronic records, and video visits can significantly affect the efficiency, accessibility, and user satisfaction of social service delivery. Quantitative results indicated a decrease in the time of case resolution, enhancements in the follow-up rate, higher accuracy regarding documentation by professionals, and high satisfaction levels among beneficiaries, mainly on mobile platforms, and responsiveness. Nevertheless, differences in trust and ease of use according to age were observed, particularly in older adults, and sector-specific digital literacy support is required. Qualitative information also revealed the advantages of saving time and the transition challenges during technology adoption. Nevertheless, despite some limitations, such as sample urban-centricity and the study's cross-sectional nature, the research clarifies that digital tools can transform social services. Future studies could focus on the lasting effects and applicability among varying groups. Technology-enhanced methods are promising for more effective, inclusive, and client-centered social support systems.

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