An Evaluation of Process- and Performer-Based Improvement to Increase Online Giving in Churches

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An Evaluation of Process- and Performer-Based Improvement to Increase Online Giving in Churches

by

Lauren Elizabeth Rivera

A dissertation submitted to the School of Behavior Analysis of Florida Institute of Technology in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in Behavior Analysis

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Abstract

Title: An Evaluation of Process- and Performer-Based Improvement to Increase Online Giving in Churches

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The COVID-19 pandemic accelerated the adoption of electronic transactions for many churches. Churches which were more inclined to establish online giving platforms weathered the disruption of the pandemic more successfully. Electronic transactions proved to be an efficacious modality for churches to maximize tithing and offering. Behavioral Systems Analysis (BSA) is an evidence-based framework which can inform decision-making, starting with macro-level assessments of the effects of external variables on adaptive systems and systematically funneled down to focus on processes and individuals. This study examined the effects of a process and performer-based intervention, through automation, to increase the percentage of online giving occurrences within churches, as well as the selection of online giving amongst individual church members across three churches. Using a concurrent multiple baseline design across churches, results showed notable increases in procedural fidelity amongst church leadership in implementing automation into the giving portion of church services, the percentage of online giving occurrences, as well as the number of new online givers. Results also showed demographics of church membership (i.e., age, socioeconomic range, community setting) affected the magnitude of acceptance of the treatment package. Future research in Organizational Behavior Management (OBM) should consider participant demographics and culture, customizing interventions across traditional and nontraditional OBM settings.

Keywords: Behavioral Systems Analysis, Organizational Behavior Management, Process, Performance Management, Automation, Church
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Dedication

I dedicate my dissertation and years of hard work to my family, friends, and colleagues. My parents stood by my side and encouraged me when the nights were long and the light still could not be seen at the end of the tunnel. Words will never capture my love and gratitude for them. Their consummate support throughout my life has been invaluable. I am so thankful for my brother who was the first to call me when I passed my dissertation defense and celebrated as if he was in the room with me. I dedicate my dissertation to my grandparents, although they have passed, they are the shoulders I stand on. Their lives laid down the foundation for my success. I am so grateful for my aunts, uncles, and cousins, who cheered me on and let me know what I was doing was extraordinary. I also devote my dissertation to my nephews and niece as well as my little cousins and all the young people who hold a special place in my heart. The only limits that exist are the ones we place on ourselves. Age is only a number, and you are never too old to pursue a dream. Finally, thank you to my best friend Carlos. You were with me when I first came up with my idea for the study, and you have held my hand to the end. It was with the love of all the people in my life and only by the grace of God I was able to complete my dissertation that ended up being a labor of love.
Chapter 1
Introduction

The COVID-19 pandemic influenced church congregations around the world, forcing them to cease meeting physically and to find ways to adapt. Christian churches, characterized by adherence to traditions, were significantly altered by the pandemic. A Gallup report stated the most resonating result of the pandemic on religious communities was the exceedingly quick shift from in-person to online worship services. In the history of world religions, this was unprecedented (Dein et al., 2020). COVID-19 forced religious leaders to find other ways of maintaining religious communities, via communication technologies (Holleman et al., 2022) and technologies related to congregational giving and finances (Finke et al. 2006; Hoge et al. 1996). Churches that did not adapt faced major disruptions in church finances (Eagle et al., 2022). With little to no opportunity for churchgoers to bring offerings, the impact of the pandemic caused many worldwide church leaders to question whether parishioners would bring contributions to the church without pastoral liturgical interaction (Tebitendwa & Ssendege, 2020). Organizational Behavior Management (OBM) predicates an opportunity for assessment and implementation of online giving strategies that can guide the transition of churches into the automation of tithing and offering, bolstering their navigation in this “new normal.”

The purpose of this study was to examine the effects of a process- and performer-based intervention to increase online giving in churches. A review of the literature described a profile of church technological and financial capacity during the COVID-19 pandemic, then shifted to outlining concerns regarding church finances across denominations and the role of cash in the time of COVID and concluded with a constructed platform for behavioral systems analysis (BSA) as an available framework which can inform decision-making. The goal is to extend the breadth of BSA literature, especially as applied to settings outside human service organizations, which historically is where most published OBM interventions occur (Gravina et al., 2018; Reid & Parsons, 2000).
Church Technological and Financial Capacities

Although the comprehensive impact of the COVID-19 pandemic on religious life will not be known for several years, the extent to which congregations were technologically and financially equipped varied. Holleman et al. (2022) conducted a bivariate and regression analysis to identify the kinds of congregations that were vulnerable during the pandemic. Holleman and colleagues used data from the fourth wave of the National Congregations Study, gathered on the eve of the coronavirus pandemic in 2018–19, to examine the preparedness of congregations for the pandemic. Holleman et al. (2022) looked at technological infrastructure and financial stability before the pandemic. They found a universal web presence (96%) amongst most “larger” congregations, defined by researchers as 100 or more parishioners in attendance. Congregations with fewer than 100 people had an 83% online presence. Most urban and suburban congregations had a web presence (90%), whereas 75% of rural churches were online. Moreover, 90% of non-predominantly Black congregations had a web presence, compared to 76% of predominantly Black congregations. Furthermore, 93% of congregations with higher income members had an online presence, compared with 82% of congregations with a larger representation of church members described as lower income.

Interestingly, Holleman et al. (2021) found that 67% of predominantly Black churches were more likely to have streamed, recorded, or posted their worship services during 2018–19. Along the same lines, before the pandemic, a little over half (57%) of churches were already streaming, recording, or posting their services online. Nearly three-quarters (74%) of churches with over 100 adults had some sort of streaming or recording system prior to the pandemic, but only half (50%) of smaller churches had streaming systems. Many smaller churches scrambled to go online. They feared they would lose their capacity to continue worship with their congregants during this period when society had not only been shaken psychologically, socially, and physically, but religiously and spiritually as well (Holleman et al., 2022). In the undertaking of the setting up systems for recording and streaming, the question lies in the degree of preparation made for church membership to perform successfully with these “new” automated tools.
Furthermore, there were disparities in adoption of technology. Catholic congregations, typically encompassing a larger proportion of older parishioners, were less likely to have a web presence as well (Holleman et al., 2022). Only 22% of Catholic churches had streamed, recorded, or posted recordings of recent services, while 59% of non-Catholics had. Holleman and colleagues attributed this to the Catholic liturgical tradition in which receiving the sacraments requires physical presence. Therefore, Holleman et al. (2022) posited that Catholic churches were particularly ill-equipped to shift to exclusively virtual worship.

Holleman et al. (2021) also found that 36% of smaller congregations lacked any savings, compared to only 25% of larger congregations. Similarly, 39% of socioeconomically disadvantaged congregations had no savings, compared to only 25% of congregations that were considered better off. Forty-eight percent of predominantly Black congregations had no savings, in contrast with only 30% of non-predominantly Black congregations. Rural versus urban or religious denominations (i.e., Catholic, non-Catholic) did not show any difference. Moreover, congregations with older parishioners, rural congregations, and smaller congregations were significantly less likely in 2018–19 to be able to receive donations electronically. Fifty-four percent of congregations with fewer people over age 60 had systems in place to receive electronic donations, while only 42% of congregations with more people over age 60 had E-Systems in place. While small and rural churches were half as likely to be able to receive electronic contributions compared to their larger and urban or suburban counterparts. Seventy-six percent of churches with 100 or more regularly attending adult members and 55% of suburban or urban churches were engaged in online giving, only 38% of churches with fewer than 100 regularly attending adult members and only 27% of rural congregations had the capacity to collect online donations from parishioners. Within small and rural churches, only 23% were able to receive online donations.

Overall, Holleman et al. (2022) found American churches to be stratified in resources and preparedness before the pandemic. Catholic churches and congregations with older attendees were the most lacking in technological infrastructure. Yet the congregations
which were the most vulnerable were rural, small, predominantly Black, and those with more low-income parishioners. Churches that were not prepared with their technological infrastructure, that is a.) technology for streaming and b.) technology for online giving, were also not prepared with respect to their financial situations and vice versa. It requires money to develop and maintain technological infrastructure; conversely, technological capabilities, such as electronic donations, can help congregations financially if parishioners are trained to use E-Systems.

**Universal Concerns**

The effect of pandemic duress on church financial health concerned all denominations across and outside the United States (U.S.). Manion and Strandberg (2020) found before 2020 larger churches were more inclined to have established online giving platforms, and that online giving allowed churches to weather disruptions more successfully. Manion and Strandberg (2020) looked at Catholic parishes in three dioceses and found smaller declines in giving during the pandemic among churches offering online mass as well as among those with online giving in place, underscoring that church technological and financial capacities are intertwined.

Francis and Village (2021) surveyed 231 retired clergy and 748 full-time clergy in the Church of England regarding the Anglican church's response to the Coronavirus. Eighty-one percent of retired clergy and 81% of full-time clergy agreed that the lockdown helped the Church of England move into the new media age, and 66% of retired clergy and 60% of full-time clergy agreed that it was good to see clergy broadcast services from homes. However, only 11% of retired clergy praised online worship as the future for the next generation, compared with 20% of full-time clergy. Furthermore, 34% of retired clergy lauded social media as an evangelistic resource, compared with 51% of full-time clergy. Data suggested that although retired clergy embraced the church's path into the digital age as much as full-time clergy, there was lack of support from both regarding a long-term commitment to online worship services and the use of social media to
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Evangelize. These data become pertinent in the context of the relationship derived from a church's online presence and their finances and an assessment of leadership support.

Eagle et al. (2022) also examined how pandemic restrictions affected congregational finances. Qualitative interviews from 50 United Methodist Church pastors in North Carolina focused on the strategies pastors used to adapt finances amid public health restrictions. Pastors reported executing new processes for "soliciting and collecting donations." Before the pandemic, giving often occurred during weekly in-person services. Due to the lack of the weekly "nudge" to give during in-person service, pastors reported having to be more "explicit and direct" to maintain pre-COVID levels of giving. For example, adding a time during the online service for parishioners to pray specifically for the offering and tithes because parishioners no longer had the traditional cues (e.g., the plate in front of them) associated with in-person giving, prompting them to give. Thaler and Sunstein (2008) defined a “nudge,” in the context of behavioral economics, as “any aspect of choice architecture that alters people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentives” (p. 8). Just the same, some churches made extra efforts to compensate parishioners when their choice was to not adopt or adapt to automated giving.

Interestingly, Eagle and colleagues (2022) also discovered the method of giving was not related to the average age of participants, or whether the church was rural or urban; rather, it was framed by pastors as a matter of preference. One pastor reported that because parishioners of rural churches have a history of not wanting to do anything online, he decided not to increase the church's presence in that way. Another church in a comparable situation opted to have the financial committee drive around and pick up the donations throughout the community; and in another church where the financial secretary did not lock her car at night, people dropped off checks in her car. For many rural churches, online giving was perceived as a hassle, and mailing in checks and dropping off donations at the church was often a simpler solution; however, the safety and effectiveness of these methods can be questioned. That said, pastors of both small and large, rural and urban congregations reported using a broad range of methods to accept donations. Eagle et al.
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(2022) highlighted the importance of building on current research to follow the long-term impact of COVID-19 on congregational finances.

Many small churches have exceedingly small budgets, meaning small decreases in giving represent larger impacts on the church budgets (Eagle et al. 2022). Congregations are highly dependent on individual donations for revenue, with six in ten (62%) reporting that all income comes from individual donations. Concerns remain and questions linger regarding ubiquitous access to online church capabilities (i.e., online streaming of services, electronic giving) outside of the pandemic; financial adaptation across churches, specifically regarding stratified positioning to resources; and reduction of church operating budgets or even closures due to economic consequences (Holleman et al., 2022).

Those who study the effect of COVID-19 on church giving behavior say the impact has not yet ended (Boorstein, 2023). These shifts are still affecting congregational giving, which not only supports churches but also American charity. Additionally, those studying religious giving also found that though the current number of givers is down from pre-COVID numbers, those fewer givers are giving more. The shift to online giving gave way to increased dollar amounts because people can easily set up a regular donation without having to think about it: people that could afford to give were giving at higher levels during the pandemic. This was attributed to Americans having greater disposable income because their frequency of travel or eating out decreased significantly during the pandemic (Boorstein, 2023).

**Cash and Covid**

The use of cash had declined prior to the pandemic, with the ease of using a credit card on your phone as opposed to having to remember to grab your checkbook, cash, and ever so cumbersome change (Neeson, 2022). A study conducted by the Federal Reserve Bank of San Francisco found that Americans used cash 30% less in 2018 than in 2017. The United Kingdom experienced a similar decline. A 2017 study tracked one-dollar bills circulating in New York City and found that 94% of paper currency hosts infectious
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pathogens such as E. Coli, Staphylococcus, Salmonella, MRSA. While the Center for Disease Control and Prevention and the World Health Organization suggest washing your hands after handling cash, they have not advised against it. Moreover, businesses find electronic payments more attractive for tracking potential, security, and the safety of having less cash on premises. Nevertheless, cash versus electronic payment also represents a societal divide in access to resources. It is often the underbanked, the elderly, those with limited access to the Internet, individuals with mental and physical health problems, and those who struggle with technology who still rely heavily on cash (Neeson, 2022).

Notwithstanding, the COVID-19 pandemic cast global accelerated the decline of cash. In the United Kingdom (U.K.), the government advised retailers to minimize contact around transactions through use of contactless payments. Upon reopening stores after the initial lockdown, a number of retailers announced that cash payments would no longer be accepted (Caswell et al., 2020). Due to the lockdowns and social distancing restrictions, there was a steep reduction of in-person purchases, leading to declines in cash transactions and ATM usage. The use of ATMs declined by 47% in April 2020 in India. Similarly, the U.K. experienced a 46% decrease per month from March to July 2020. The refusal of some merchants to accept cash "nudged" the public towards electronic processes. The pandemic hastened the move to virtual banking around the world, causing a shift in the adoption of technologies, such as real-time account-to-account payment infrastructures. All forms of electronic peer-to-peer and consumer-to-business payments have increased (Bruno et al., 2020).

Alternatively, Greene et al. (2021) found there was no change in the way consumers paid their bills from 2019 to 2020. Most bill payments (i.e., mortgage, rent, utilities, and insurance) were automated. However, the percentage of in-person transactions (i.e., store purchases, bill payments and peer-to-peer payments) made with cash in the U.S. decreased 4% from 2019 to 2020. Moreover, educated consumers of higher income were less likely to use cash for purchases in 2020. Data suggested consumers were more likely to work from home and already relied on electronic payments. Furthermore, Greene and colleagues found younger, more educated, higher-income, or white consumers were
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significantly more likely to engage in online purchasing. Also, 2020 consumers were more likely to adopt payment apps often used for peer-to-peer payments, such as Cash App, Zelle, Venmo, and PayPal. Overall, changes in consumer payment behavior were significantly larger during COVID, than in the year preceding the pandemic. The largest percentage increase in the adoption of electronic peer-to-peer payments was by middle-aged consumers, not by younger ones. Finally, Greene et al. (2021) proposed if new adopters find electronic payments safe and convenient, this may continue after the pandemic wanes.
Chapter 2
Behavior Analysis

Behavior analysis is a comprehensive, naturalistic-science approach to the study of behavior. Its primary objectives include discovering principles and laws that govern behavior, generalizing them across species, including humans, and developing behavior management technology (Pierce & Cheney, 2017). Behavior analysts encourage their brethren to think creatively on how to increase the scale of impact of the science of behavior on “the mainstream” (Leblanc et al., 2020). Behavior analysis has successfully solved a wide variety of practical problems outside of clinical application. Examples of socially significant behavior change (Baer et al., 1968) include: smoking cessation (Cole & Bonem, 2000), eating disorders (Bosch et al., 2008; Lappalainen & Tuomisto, 2005), the treatment of sleep problems in children (Jin et al., 2013; Luiselli, 2021; Piazza & Fisher, 1991), sexually risky behavior (Jarmolowicz et al., 2016), the reduction of unsafe hand-to-head behavior (Heinicke et al., 2020), hand-washing in young children amid COVID (Jess & Dozier, 2020), global sustainability (Chance & Heward, 2010; Gelino et al., 2020), marriage and intimacy (Azrin, 1973; Cordova & Scott, 2001), as well as proper pronoun use to support gender minorities (Petronelli & Ferguson, 2022). Still there are many more opportunities to potentiate socially significant changes in human behavior.
Chapter 3
Organizational Behavior Management

Organizational behavior management (OBM), a subfield of behavior analysis, is the application of behavioral principles to individuals and groups in business, industry, government, and human service settings (Wilder et al., 2009). McGee (2007) defined the primary concern of OBM as improving the value-adding behaviors of individuals within organizations (e.g., employees) and in altering the behaviors of those who support targeted behaviors (e.g., supervisors, managers), not behavior the ultimate consumer of the product or service. The priority of the OBM service provider is to implement modifications in behavior or the environment to effectuate direct or indirect effects on the organizational product and/or service (McGee, 2007).

Maguire et al. (2022) recently applied an OBM intervention in response to the COVID-19 pandemic to increase safety protocols by care providers at a residential school for children with intellectual and developmental disabilities. The intervention followed an ABA and OBM framework, focusing on health and safety concerns, risk mitigation, and intervention integrity. The competency evaluation or field study revealed the participant care providers (n = 25) acquired and maintained COVID-19 protocols at near 100% proficiency immediately following one-month post-training. A limitation was that it was conducted to facilitate the rapid and practical assessment of the safety protocols but did not conform to the most controlled research methodology; additionally, interobserver agreement was not collected (Maguire, 2022).

Goomas (2022) demonstrated how OBM can facilitate the adaptation of innovative technologies for the workforce in large industrial settings, leading to increased performance. Goomas (2022) examined the use of a voice-directed warehouse management system, using 21 participants, which selected accessories, batteries, and tires at an auto-distribution center. They were tracked for units per hour performance of products selected for store orders. The intervention involved the participant hearing personal performance productivity prompts, via a voice-directed system, and receiving immediate audio feedback.
regarding their performance. A nonconcurrent multiple baseline design across three warehouse zones (i.e., accessories, batteries, and tires) was used. Goomas (2022) found the personal performance productivity prompt in the voice application was instrumental in helping workers in all three zones meet or exceed the labor standard.

Behavioral Systems Analysis as a Comprehensive Approach to Change

Two performance improvement approaches that lie within the subfield of OBM are Performance Management (PM) and BSA (Sigurdsson & McGee, 2015). PM involves the analysis of antecedents and consequences operating on the behaviors of employees and employers and the design and implementation of interventions to affect these variables to either decrease unproductive or increase productive performance (Austin, 2000; Daniels & Bailey, 2014).

Behavioral Systems Analysis (BSA) is a subfield of OBM dedicated to improving performance, fusing ABA and general systems theory (McGee & Crowley-Koch, 2019). A behavioral system is a collection of elements described as interdependent forming an entity. Behavioral systems are formed by individuals interacting towards a common goal. Different entities can be called a behavioral system, including a family, department, institution, or country (Malott, 2003; p. 31).

BSA relies on the assumption that organizations are systems comprised of various interrelated components and that a change in one part of the system affects other parts of the system (McGee & Crowley-Koch, 2019; McGee & Crowly-Koch, 2021). At the organizational level, managers of organizations must understand the environment; determine strategies to adapt to environmental changes; and assess whether the organization's structure supports the strategies. The process level involves a series of steps. It is how work gets done, comprising input/output relationships between departments/functions of the organization. The performer
level (i.e., where the PM work occurs) is described by job characteristics. It is the relationship between antecedents, behaviors, and consequences of the individuals who work within the system (Rummler & Brache, 2013; Sigurdsson & McGee, 2015). Process and performer level goals should be derived from and always align with the organizational goals (Rummler & Brache, 2013).

### Process Level Systems Interventions

The COVID-19 pandemic required several process level changes in process or the way the services were distributed to clients. COVID-19 forced various industries to disband old processes (i.e., in-person services) and adopt new processes (i.e., automation) to meet environmental changes. Thus, process level interventions become pertinent when considering a response to an external variable such as a natural disasters, global pandemics, or other constraints (e.g., government, economy, or culture).

Process-level interventions create or adapt processes that align with an organization’s goals while more effectively managing the contingencies of the various performers who interact with that process and interlock with each other (Ludwig, 2015). Berglund and Ludwig (2009) examined the effects of a process change and feedback system intervention on the error rates of three teams of retail furniture distribution warehouse workers. The intervention involved a process change where employees who had previously specialized roles within the process were cross trained to facilitate the functions of other team members. Additionally, these teams were given performance feedback on an immediate, daily, and weekly basis. The research design was a multiple baseline across groups. Results showed two of the three teams experienced a significant error rate reduction. One team reduced mean errors from 7.47 errors per week during baseline to 3.53 errors per week during the intervention phase. A second team went from an average of 11.39 weekly errors in baseline to 3.82 errors per week during the intervention. Berglund and Ludwig (2009) noted future research should consider the addition of incentive systems (a performer level strategy) for analysis, as well as component analysis research on team process components.
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**Automation**

Rummler and Brache (2013) stated automation is usually an attempt to improve performance at the process level. They criticized the solution as usually implemented on top of an inefficient process, therefore leading to an automated inefficient process -- going on to claim that automation fails to consider the needs of the people involved in the process. However, if behavioral interventions at the performer level are taken into account, there is a potential for automation to lead to significant organizational changes.

Goomas (2010) examined the effects of an automation process change implemented in two auto parts distribution centers, where order selectors picked auto accessories for industrial plastic totes as part of store orders. The warehouse management system required accurate identification of all tote orders (i.e., plastic containers measuring 13 in. high × 23 1/2 in. long × 19 1/2 in. wide with a 2.6 cu ft capacity) via the license plate number to track each tote within the assemblage and shipping process and eventually to invoice the store. An A-B design was used. During baseline, order selectors used voice technology to pick up the order. Observations and feedback from managers showed that incorrect utterances of the string of license plate digits were causing totes to be misidentified. The intervention involved replacing the utterance of the order selector with a scanning stylus that provided auditory feedback informing the selector on the accuracy of the scan of the bar-coded license plate number, decreasing the number of misidentified totes. The savings to the company in the first year alone were approximately $220,000. The stylus intervention incorporated antecedents in the form of an auditory beep and feedback in the form of a visual indicator light informing the order selector that a license plate number was accurately scanned. Goomas (2010) showed how an inexpensive intervention within a large industrial setting can be accomplished by adapting part of the workflow, showing how OBM can leverage technology to deliver technical solutions and streamline operational issues attributed to human error.

Goomas et al. (2011) also examined the results of Business Activity Monitoring on the improvement of the delivery of timely and accurate feedback to
employees in large industrial settings. The intervention involved the implementation of an overhead scoreboard at a retailer's distribution center as an instrument to manage performance. The scoreboard displayed how team performance measured up against engineered labor standards (i.e., empirically derived goals that served as antecedents). Business Activity Monitoring is a technological tool that provides calculations and reports goals and feedback, via a scoreboard or by other means such as hand-held devices. Investigators used an A-B-C design with a comparison group, comprised of (1) a 5-week baseline; (2) the first intervention was a 2-week period where the scoreboard was mounted, connected, interfaced with a labor management system, and tested; and (3) the second intervention was an 11-week period where scoreboards showed available work, completed work, and team performance by percentage. Results revealed productivity for order selectors (n = 36) increased by an average of 10.25% after the intervention, indicating that group-based immediate feedback can have a substantial impact on performance. During the fiscal year in which the study was implemented, the company experienced a 20% growth in sales, which approximated a 4% increase in volume. Prior to this study, the feedback was too distal to the work performed. An office clerk posted data of the previous day’s performance on the break room bulletin board each morning. Goomas et al. (2011) emphasized how OBM professionals skilled in the combination of information technology, operational skills, as well as organizational behavior will be tapped to provide users with just-in-time information that affect human performance.

Goomas and Ludwig (2017) examined the effects of computerized immediate feedback on product recall efficiency at a food manufacturing plant. Tracking products for recall so that they may be removed from circulation quickly and effectively in the event of a product recall can pose a challenge for food manufacturing companies. The intervention involved an integrated solution using wireless handheld computers programmed to provide immediate visual and audio feedback to the order selectors, to prevent errors in order selection. Essential information was logged into databases in real-time, allowing the safety
manager to perform quick and accurate product recall tracking. The researchers used an A-B design. Goomas and Ludwig (2017) showed the number of errors associated with missing expiration dates decreased from an average of 9.25 during baseline to 0 during the intervention. The duration to complete a recall was an average 3.25 hours in baseline, decreasing to 0.18 hours during the intervention -- going far beyond the company's 2-hour goal. The intervention was advantageous for two reasons: (a) the visual and audio systems were able to deliver immediate feedback to the user, (b) the improvement occurred because the safety manager's job became easier regarding providing accurate product tracking within a 2-hr period. An accurate and timely product recall system put protections in place against state regulatory fines, costing $500 per violation, possibly exceeding several thousand dollars. When a company cannot generate a traceability report to an auditor within two hours, this requires another visit from the auditor at which the company must pay the auditor's hourly rate (at the time of the study it was $100). Goomas and Ludwig (2017) highlighted how an automated process level change can contribute to consumer safety, without excessive training time or costs, lowering barriers to the adoption of useful performance improvement technology. Interventions such as this demonstrate that systems that are organized around technology can substantially improve performance in targeted populations and have collateral benefits on other related work processes.

Hybza et al. (2013) examined a performance improvement package to generate additional revenue by improving the consistency of billing submitted by school psychologists in the Medicaid Tracking System. The study was conducted within a school district in Florida, participants included 74 school psychologists serving 102 schools within three district areas. Hybza et al. (2013) used a multiple baseline design across three large service areas of a county school system. A process analysis concluded that inadequate antecedent goals, informational prompts, and consequences were established within the district's Medicaid reimbursement program. It was determined that the psychologists did not receive prompts that performance goals were absent -- feedback was inconsistent and infrequent. The intervention included goal setting, weekly prompts, and feedback (i.e., group written, graphic) that were delivered electronically (i.e., via email) from the supervisor on meeting billing deadlines. The supervisor sent out electronically written
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statements of encouragement, praise, or need for improvement. The time it took for an internal consultant to provide the supervisor with the data used for bi-weekly goal setting and feedback was 30 min, and it took the supervisor 15 min to deliver the bi-weekly goals and feedback. The intervention not only increased performance regarding the timing and pacing of submitted billing, but it also increased the overall amount billed. Across the three district areas, the intervention led to an increase to $3,959.99 in dollars billed every two weeks from a baseline mean of $1,028.12, an increase of 385% over baseline. Interestingly, social validity data suggested that the school psychologists overall were happy with the intervention and were more likely than not to continue the program. The lowest acceptability ratings were obtained for the acceptability of the goals and their attainability. The district saw a seven-fold return on investment. One of the stated limitations was the inability to evaluate the effects of individual components (i.e., goal setting, prompting, or feedback) compared to the intervention package. While this may drive some future researchers to conduct a component analysis, Hybza et al. (2013) indicated that given the package procedures were easy to administer with little time and the effects were robust, a component analysis did not seem to be warranted. Going on to note that when goal setting and prompting were implemented alone before the first intervention data point, the outcomes were smaller than when the feedback component was added, supporting the finding of Alvero et al. (2001) that feedback coupled with antecedents was most effective.

Performer Level Systems Interventions

The pandemic had a distinct effect on the performer. The creation of new protocols focusing on safety provisions as well as the broad switch to remote services engendered a new focus on training individuals to succeed in the age of COVID, but also develop procedures to maintain performance. The forced changes on the performer gave way to new opportunities to implement both antecedent- and consequence-based strategies.

Antecedents are regarded as the cheapest intervention strategy because they can be implemented with large groups and during brief time frames. They are most effective when paired with consequences. Antecedent strategies include decreasing response effort, goal setting, task clarification, checklist systems, training, as well as visual prompts, and other
informational aids. Consequence-based strategies are typically introduced following discriminative stimuli which occasion the behavior fitting the requisite for the delivery of reinforcement. Such strategies include performance feedback (i.e., verbal, written, graphic, public, private, group, and individual). Within the field of behavior analysis, reinforcement is seen as the key to behavior change (e.g., monetary incentives, and praise; Ludwig, 2015).

**Antecedent-based Strategies**

**Video Training.** Video modeling involves the use of a visual electronic device (e.g., TV or computer screen) to provide verbal and/or visual instruction by an expert fluent in the skill (Schenk & Miltenberger, 2019; Walker et al., 2020). Day-Watkins et al. (2018) used a video modeling with voiceover, embedded in behavioral skills training, to implement a video modeling intervention for the purpose of teaching social skills to adults with autism spectrum disorder (ASD). They used a series of A-B designs replicated across participants. In baseline, participants were given access to written instructions. They then role-played with two actors, who simulated a quiet conversation, and one confederate, who played the role of an adult with ASD. The intervention included participants receiving a video model with voiceover instruction demonstrating how to implement the video modeling intervention to teach social skills, repeated roleplay trials, and performance feedback. Percentage of steps correctly implemented in each session increased from an average score for all three participants of 16.2% in baseline to 97.3% in the final treatment session, and generalization was demonstrated with an actual consumer diagnosed with ASD. Of note, it took only one exposure to the training video, followed by verbal feedback, within two or three sessions to establish a generalized repertoire of instructional behavior for all participants. Participants demonstrated generalization in teaching as many as three additional novel social skills. Participants showed maintenance of skills during a treatment study that involved training adult clients with ASD to engage in the social skills. Day-Watkins et al. (2018) put forward that future research might continue to evaluate how to maximize the efficiency of video modeling with voiceover instruction, while
Vladescu et al. (2022) investigated training techniques that optimize time and do not require a trainer. They compared the asynchronous training procedures of video modeling and computer-based instruction (CBI). Vladescu and colleagues assessed the different training characteristics of active responding associated with CBI to the nonactive responding associated with video modeling. A randomized two-group pre- and posttest design was used to evaluate the effectiveness of implementing the paired stimulus preference assessment across groups. Twenty-eight participants were recruited for the study and randomly assigned to the video modeling or CBI group. The only difference between the video modeling and the CBI group was that the video modeling training module did not require trainees to answer questions about the video clips shown, and as a result they did not receive feedback. In other words, there was no active responding required from the trainee. All of trainees in both groups performed below minimally acceptable levels during pre-training, with a mean percentage of steps implemented correctly of 9.9% for the video modeling group and 7.2% for the CBI group. Performance immediately improved following training for both groups, averaging 83.4% for the VM group and 89.8% for the CBI group. Vladescu et al. (2022) demonstrated that both training procedures were effective and associated with favorable social validity outcomes; but participants in the CBI group had less errors and reported feeling more confident after the training compared with video modeling. Also of note, due to the more variable responding of the posttest group in video modeling, trainees may have benefitted from watching the video multiple times. The results of Vladescu et al. (2022) continue to support the effectiveness of self-instruction as well as the use of video modeling as a training technique and provides evidence of how video modeling can be used with comparable results when CBI is not a viable option.

**Task Clarification.** Crowell et al. (1988) defined task clarification as the “precise specification of behavioral components of a job” (p. 65). Evaluative standards of task clarification detail the expectations, responsibilities, and criteria used to evaluate
performance (Choi & Johnson, 2022). Such standards include task analyses, breaking down a complex skill into smaller teachable components, that can be captured by checklists.

Schulz and Wilder (2022) analyzed the effects of task clarification and, if necessary, self-monitoring on the 5:1 ratio of affirmative to constructive feedback statements made by three supervisors of direct care staff during supervision at an autism clinic. Schulz and Wilder used a concurrent multiple baseline design across participant dyads. Results show that two supervisors achieved the criterion for ratios of affirmative (i.e., signaling approval) to constructive (i.e., corrective) verbal statements with task clarification (i.e., 5 min meeting covering operational definition of feedback), while the third participant required self-monitoring (i.e., self-recording on a datasheet) to achieve the criterion. A social validity measure indicated that both supervisors and direct care staff members approved of the procedures and the outcomes of the study (Schulz & Wilder, 2022).

Durgin et al. (2014) used a multiple-baseline design to illustrate the effectiveness of an intervention package consisting of task clarification (i.e., task analysis, checklist) and feedback training to improve the performance of supervisors and animal trainers of a nongovernmental organization headquartered in East Africa. Participants included three supervisors and three animal trainers whose performance was considered suboptimal prior to the intervention. The researcher used a multiple baseline across participants experimental design. A task analysis was performed to find out which animal trainer behaviors were required to generate appropriate responding. The animal trainers taught rats to sniff and scratch at small, perforated aluminum containers that contained TNT, the primary explosive in most landmines. A simple 11-item checklist was created to guide supervisors both in monitoring the performance of animal trainers and in providing prompt and appropriate feedback. During baseline, the average scores for the three supervisors were 68.6%, 53.7%, and 49.7% while the average scores in the training phase were 86.4%, 100%, and 91.7%. Maintenance and generalization data suggested the intervention produced long-term and generalized effects. Social validity data also suggested that
supervisors viewed the intervention as acceptable. These findings are the first experimentally controlled demonstration of the potential value of OBM in improving performance in nongovernmental organizations working in resource-poor areas. The most compelling feature of Durgin et al. (2014) was not the intervention but the setting for the study, a nongovernmental agency working in one of the poorest countries on Earth. Innovative settings can pose great challenges; however, they have the potential to provide extensive societal impact and therefore should be a model for future research.

Response Effort. “Response effort refers to the distance, force/pressure, or number of discrete behaviors required to engage in a response” (Wilder et al., 2021, p. 740). Manipulation of response effort can make tasks less aversive and/or increase the likelihood of contacting reinforcement, increasing the likelihood of effectiveness (Felde et al., 2021).

Casella et al. (2010) assessed the effect of response effort on glove-wearing, hand sanitizing, and electrical outlet replacement amongst therapists at an autism treatment center. Participants were exposed to low, medium, and high levels of effort for each dependent variable. The investigators used a multielement design to evaluate the effects of response effort on safety performance. Casella and colleagues showed that participants exposed to high, medium, and low levels of effort, increased safe performance during the low-effort conditions. For glove wearing, safe performance corresponded inversely to the response-effort condition in place (low, $M = 59\%$; medium, $M = 47\%$; high, $M = 3\%$). The same was true for hand sanitizing where higher levels of safe performance were observed in the low-effort condition ($M = 21\%$) than in the high-effort condition ($M = 4\%$). Similarly, participants covered electrical outlets more often in the low-effort condition ($M = 26\%$) than in the high effort condition ($M = 0\%$). These data indicate that response effort is an important variable when designing interventions and procedures intended to influence individual performance within behavioral systems.

Abellon and Wilder (2014) examined the effect of equipment proximity on the safe performance of three assembly workers at a hydraulics supply company in the southern U.S. The dependent variable was the percentage of intervals in which the participants wore
their protective eyewear in the assembly area. The researchers used an A-B-C-B-C reversal design. During baseline, the protective eyewear was kept at 6.1 m from the employee workstation. Abellon and Wilder (2014) then evaluated the effect of task clarification, described as verbal and written instructions on when to wear the eyewear. After task clarification, the location of the protective eyewear changed to a waste-high table 1.5-m (5ft) from their workstations. The investigators then returned to the 6.1-m condition and then to the 1.5-m condition. No additional information was provided to the participants during the intervention. Abellon and Wilder (2014) showed that task clarification alone was not effective, however safe performance increased when eyewear was stored in proximity for all three employees. All three participants did not wear their protective eye gear in baseline. Mean performance over the three participants during the first task clarification only phase was 13.0%. During the first 1.5-m condition, performance rose to 78.16%, and decreased during the return to the 6.1-m condition to 5.4%. During the last 1.5-m condition, performance rose to 86.13%. Task clarification by itself had little to no effect on performance, while Abellon and Wilder (2014) stated a reduction in response effort could have played a role. They also proposed that eyewear in the 1.5-m condition may have served as a discriminative function. The eyewear had not been consistently kept in one location before the study. They also attributed the change in performance to the combination of the decreased response effort and the establishment of a discriminative stimulus. One of the limitations of the study was that investigators did not collect follow-up data. Abellon and Wilder (2014) suggested future research on proximity manipulation should include follow-up data collection. Also, because proximity alone was not evaluated before the task clarification condition. Future research should include such an evaluation.

Consequence-based Strategies

Feedback. In the Alvero et al. (2001) review looking at the effectiveness of essential characteristics of performance feedback, feedback is defined in a number of ways, including: (a) information regarding quantity or quality of past performance (Prue & Fairbank, 1981), (b) information given to the performer after the performance (Sulzer-Azaroff & Mayer, 1991), (c) information that tells performers what and how well they are
Lafleur and Hyten (1995) employed Gilbert's (1978) Behavioral Engineering Model (BEM) as the basis of the analysis of banquet staff performance at a north Texas hotel. Responsibilities included setting up distinct functions for conferences and meetings. Gilbert's model uses the three-term contingency (i.e., antecedent-behavior-consequence) to examine (a) antecedent conditions, (b) equipment and procedures in the setting, (c) organizational performance contingencies, (d) training and skill level of the individual workers, (e) the capacity of the workers to do the job, and (f) whether workers are sufficiently motivated to perform tasks. The analysis suggested their less than exemplary performance was a result of weak antecedents (i.e., few prompts for direction, difficulty locating needed items), inefficient work procedures (i.e., staff responsibilities were not detailed, staff often assigned to the same task), inadequate training (i.e., no formal training program, staff often observed more experienced staff member to learn), and weak performance contingencies (i.e., positive reinforcement rarely delivered, pay contingencies were deficient, quality of the performance was not related to pay). The treatment package included task checklists, feedback, goal setting, monetary bonuses for quality performance, training, and job aids designed to enhance the accuracy and timeliness of function setups. An A-B-A-B design was used. Lafleur and Hyten (1995) showed an abrupt increase from 68.8% during baseline to 100% for all but three set ups in the first treatment phase, ranging from 89% to 100%. Completion percentages decreased to an average of 82.3% during a return to baseline condition, ranging from 44% to 100%. The reintroduction of the treatment package increased completion percentages to 100% for all but a few set ups. Interestingly, the researchers attributed the decrease in performance to management no longer providing feedback and monetary incentives and related this to how rules describing indirect-acting contingencies control behavior (Malott, 1992). Based on an analysis of contingency-specifying stimuli, rules enhance the effectiveness of a variety of stimuli in
the immediate environment. That is, rules can alter the evocative function of discriminative stimuli and the reinforcing or punishing function of immediate consequent stimuli (Blakely & Schlinger, 1987).

Green and Dallery (2019) applied feedback and task clarification to address workplace inactivity and promote health and wellness. They measured physical activity in the workplace using a Fitbit physical tracker and evaluated the extent to which feedback, and feedback and task clarification increased workplace physical activity relative to a recommended guideline to move every 30-minutes. Eight office workers participated in this study (i.e., 2 men, 6 women; age range 30–64 years). The investigators used a multiple baseline across participant’s design. Green and Dallery (2019) indicated that feedback increased workplace physical activity to varying degrees for half of the participants. A limitation was that only half of the participants showed an effect during the feedback conditions. They recommended future research evaluate other dimensions of feedback (e.g., feedback density, temporal location). They also concluded it was unclear if feedback functioned as a prompt for as a reinforcer, echoing Alvero et al. (2001) calling for better understanding of feedback to enhance its effectiveness in the workplace.

Process and Performer Level Interventions

Sasson et al. (2006) examined the individual and complementary effects of a process and performer level intervention. A two (manual vs. electronic process) x two (with vs. without behavioral intervention) between-subjects design was employed with stratified random assignment. Participants were undergraduates \( n = 48 \) who performed a simulated word processing task in an analog setting, where minutes-in-possession and error rates were recorded. The process changes involved participants going from an in-person manual process of work products to an electronic process involving email delivery. The performer level intervention involved incentives (i.e., bonuses) for minimal hours in possession and errors. Sasson et al. (2006) revealed both types of intervention were effective by themselves, and that the most effective intervention was a combination of the two. The majority (40 out of 48) of participants indicated a preference for working in the
electronic process. Due to the nature of the between-subjects experimental design, some did not receive the opportunity to earn additional monetary incentives ($n = 24$). Of these, 23 reported a monetary incentive would have improved performance. Sasson et al. (2006) suggested future research should look at the testing of other human performance improvement strategies in comparison and combination with process improvement strategies. It should also be noted that this study was conducted in a laboratory setting. Studies combining process- and performer-based improvement strategies, at the time of publication, have not been attempted in applied settings. The authors recommended further exploration of these interventions to achieve optimal performance in organizations. Sasson et al. (2006) also encouraged other performer-based strategies be tested with process improvement strategies in a way that more accurately simulates organizational use.

Kelley and Gravina (2018) wrote that including behaviorally-based performance improvement interventions in process improvement could result in more consistent and higher-quality adoption of changes. The investigators applied a process- and performer-based intervention to improve the door-to-discharge time at an emergency department at a 150-bed hospital in the southeastern U.S. After a process assessment, Kelley and Gravina determined the longest delay was in the time between entering the door and the provider seeing the patient. A process map outlined how nurses were more likely to see patients at a faster rate than physicians, and that all lab orders required physician approval, leading the researchers to create a preapproved order set labs for the 10 most common reasons patients enter the ED (i.e., chest pain, nausea, etc.). This also improved efficiency by requiring one less visit to the patient. Direct observation revealed only some nurses were following the new process. Thereafter, public graphic daily feedback was provided to the nursing staff with the average door-to-order times from the previous day. Using an A-B-C design, Kelley and Gravina (2018) showed that during baseline, the average time from door-to-order was 36.2 min and the average time from door-to-discharge was 182.6 min across three months. After the implementation of the process change, the average time from door-to-order decreased by 7.5 min, and the average door-to-discharge time decreased by 20.1 min. After daily feedback was added, the average door-to-order time decreased by another 6.6 min, and the average door-to-discharge time decreased by another 2.9 min. Overall,
there was a 21% average reduction in door-to-order duration after both intervention phases from baseline, and 11% for door-to-discharge. A cost-benefit analysis estimated that $137,511.41 of excess time was saved throughout the six months of intervention. Kelley and Gravina (2018) demonstrated that although the process change was communicated, it was not fully adopted, therefore daily feedback was added. This underscores that process change interventions may require PM interventions to support implementation. A straightforward process change and feedback intervention affected hospital finances as well as patient satisfaction. Kelley and Gravina (2018) recommend future research employ a more rigorous research design to establish a functional relation.

A Comprehensive Approach to Church Adaptation and Automation

The BSA approach is typically multileveled and may include both PM interventions (e.g., video-training, task clarification, reduction in response effort, and feedback) and process interventions (e.g., automation, changes in resource deployment, and strategy development and/or realignment; Sigurdsson & McGee, 2015). Brethower (2000) encouraged a comprehensive approach to managing an organization as a system. Sasson et al (2006) wrote "few authors in the process improvement domain discuss human performance variables, whereas many authors in the OBM domain discuss systemic and process variables, albeit in a theoretical and nonempirical fashion" (p. 52). There is a dearth of experimental studies examining the combined contributions of both process- and performer-based improvement strategies. Due to the lack of research and publications on the interaction of these methods, practitioners may be combining these methods in what might be less than optimal interventions. Furthermore, there is an overall lack of empirical investigations in OBM assessments because of cost and time (Johnson et al., 2014). This is of particular concern with BSA, which can take several weeks or even months (Rummler, 2004, as cited in Johnson et al., 2014).
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The COVID-19 pandemic changed the way we grocery shop, buy our coffee from Starbucks, watch movies, bank, meet with our colleagues, and court depositions and trials. The pandemic required organizational changes such as the accelerated implementation of automation to manage public health restrictions, but with extraordinarily little instruction. Safety protocols were put in place, along with the automation of services, and created a need for system redesign. This system redesign created a need to train individuals to perform and maintain performance.

Both Sasson et al. (2006) and Kelley and Gravina (2018) demonstrated process change interventions require PM interventions. Daniels and Bailey (2014) described how all organizational results are the product of human behavior. A church constitutes a behavioral system, which lends itself to an opportunity to perform OBM studies outside of human service settings.

The significant decrease in the use of cash and the accelerated use of electronic transactions because of COVID, supporting a priori that technological infrastructure and online giving may protect the financial stability of churches. The questions then lie in how to generalize online giving beyond larger, urban churches with younger congregants, to those that are more vulnerable. This study will examine the effects of a process and performer-based intervention, through automation, to increase the percentage of online giving occurrences across church congregations.
Chapter 4
Method

Settings and Materials

The study was conducted across three medium-sized non-Catholic churches in Central Florida, reporting an average weekly attendance of between 51 and 300 people (USA Churches, 2022). Staff and church leadership in charge of finances collected data regarding the dollar amount and type of giving (i.e., online, non-automated) from the congregation and reported it to the researcher. Each church met the following inclusion criteria: (a) the online giving process was already in place; (b) a stated desire to increase online giving behavior amongst church leadership. Only those churches whose average percentage of online giving occurrences was 70% or below on initial baseline probes were included.

Each of the churches used an online giving app such as Realm Connect, Pushpay, Cash App, and SimpleGive. There were some variations between each app that the researcher attempted to control by simplifying the necessary data entry fields for processing. Financial-based applications allowed church leaders to provide data regarding “online” giving versus “in-person” or “non-automated” giving. Through the app, the churches generated a QR code to collect giving online. All the churches had online capability to watch the services, as well as a church website and social media presence. Each church was also provided with three iPads or Tablets available for use throughout the service. For the purposes of this study, the principal investigators collected demographic information on race/ethnicity, community setting (i.e., rural/suburban/urban), religious tradition, mean age, age of pastor, average weekly attendance, and income level for all churches. With regards to this investigation, to determine income level the lead researcher used the threshold of the federal poverty level for a household of six defined as $35,580 (U.S. Department of Health and Human Services, 2021). Churches who had most members living in households with an income below this number were defined as lower income. The
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lead researcher also identified what percentage of income for the church was from individual donations.

Participants

Participants were the collective group of congregants in the three churches who chose to give weekly throughout the course of the study. Since church attendance was fluid, data was represented as aggregate giving. Data was de-identified in the three churches and therefore informed consent was not collected for each congregant. However, a site agreement was obtained from the leadership of all the churches.

Church 1 and Church 2 were nondenominational, whereas Church 3 was a United Methodist Church – all three were located in the Space Coast of Florida. Churches 1 used Realm Connect as their online giving platform and Church 3 used SimpleGive. Church 2 had multiple ways to give online which included CashApp, Givelify and Pushpay. Their goal with the intervention was to streamline their giving to Pushpay. See Table 1 for a description of those demographic data collected from the three churches.

Dependent Variable

The primary dependent variable collected was the percentage correct of procedural fidelity (McGee, 2007) when implementing the treatment package by church leadership. The secondary dependent variables were: (a) the percentage of online giving occurrences per week for each church; (b) the monetary value of online weekly giving for the entire church; (c) the monetary value for weekly non-automated giving for the entire church; (e) the monetary value for weekly loose cash donations for the entire church, defined in the succeeding section; (f) total monetary value of weekly giving for the church, which included online, non-automated and loose cash giving, and (g) the number of new online givers.
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Measurement

The parameters for giving were from midnight Monday up until 11:59 pm Sunday of the same week. Church staff and leadership took a count and entered donations made by check, cash, credit card, loose cash, and online giving. To determine the percentage of online giving occurrences per week, the researcher divided the number of online giving occurrences for the week by the number of non-automated giving occurrences plus automated giving occurrences. Table 2 depicts the various sources of giving occurrences, which will be explained further in succeeding paragraphs.

A giving occurrence was defined as a discreet episode of monetary giving in the form of a tithe (i.e., a tenth of someone’s income given to the church), offering (i.e., any form of giving beyond a tithe), or donation (i.e., money given to an organization for their general use). For this study, “tithes,” “offerings,” and “donations” were used interchangeably. An online giving occurrence was described as monetary giving through the app to the church (see Figure 1). The number of online giving occurrences as well as the monetary value of the online weekly giving for the entire church was determined by summing all the occurrences as well as the monetary value of all the giving occurrences.

A non-automated monetary giving occurrence was defined as monetary giving done during worship service(s), via US mail, and dropped off at the church. Non-automated monetary giving, also included digital checks not sent through the Church appointed application. The principal investigators defined within worship giving as a monetary donation given during the worship service (i.e., passing of the plate/basket, brought to the alter, donation box). Within service giving could be given via checks, cash, or credit card. Monetary donations were identified. An identifying tool used by most churches is an envelope. Parishioners usually submitted checks and cash within the envelope or wrote their credit card information on the outside of the envelope. Checks with identifying information could be submitted without envelopes and still be sourced to the giver. Office staff counted all donations collected within the service, as well as dropped off, mailed in, or collected from a congregant’s home. Envelopes that did not have any
monetary content (i.e., check, cash, credit card information) were not counted as an occurrence. A giving occurrence could be from an individual or group (e.g., family, married couple), but it was counted as one event of giving. If a husband and wife both submitted an envelope donation during the service, this was counted as one occurrence. If for example, a parishioner mailed in a donation during the week as well as dropped a check in the plate on Sunday, this was counted as two occurrences. The number of non-automated monetary giving occurrences was determined by the sum of occurrences. The monetary value for weekly non-automated giving was determined by summing their dollar value.

In the case of non-automated occurrences, "loose cash" cash was not counted as an occurrence. Loose cash was defined as a cash donation that could not be associated with a giving source. For example, cash dollars collected in a plate/basket that could not be associated with an individual or group, or envelopes that contained cash, but lacked information identifying (e.g., name, tracking number, address, phone number). Although loose cash was not counted as non-automated giving occurrences (i.e., frequency, dollar value), the sum dollar value of loose cash collected every week was recorded.

**Interobserver Agreement**

The Interobserver Agreement (IOA) score was calculated for the primary and secondary dependent variable measures. The primary investigator served as the primary data collector for all measures. A second independent observer, trained before the start of data collection, compiled data on the dependent variables. The second observer demonstrated a fidelity measure of 100% and met criterion (which was 90% or above over two sessions). This second observer independently scored the records collected across at least 33% of the baseline, intervention, and weeks for each church (i.e., 63% for Church 1, 57% in Church 2, 62% in Church 3). The percentage of agreement was calculated by taking the smallest total score divided by the largest total score multiplied by 100. The minimum requirement of IOA for the dependent variables and treatment integrity was 80%.
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(Cooper et al., 2007, p. 120). In the present study, the overall percentage of agreement across the primary and secondary dependent variables was 100%.

Treatment Integrity

To evaluate the researcher's treatment integrity in the implementation of the process- and performer-based intervention strategies (i.e., presentation of QR code during the service, playing and posting of 2-min instruction video, training of church staff to assist during service), a second observer independently scored at least 33% of the weekly services for each church. Investigators collected data using the Researcher's Treatment Integrity Checklist (see Appendix A). Treatment integrity was calculated by dividing the number of steps implemented correctly by the total number of steps and multiplying by 100. The minimum requirement for treatment integrity for the researcher was 80%. Treatment integrity for Church 1 and Church 3 was 100%. Treatment Integrity for Church 2 was 96.30% (range across sessions 88.89%-100%).

Independent Variables

The present study assessed the effects of a treatment package consisting of both process- and performer-based interventions. The process-based intervention involved the automation of the giving process using a QR code (Rummler & Brache, 2013). The performer-based intervention was comprised of antecedent- and consequence-based strategies. The antecedent-based strategy was (a) the provision of training via a video model with voiceover (Day-Watkins et al., 2018; Schenk & Miltenberger, 2019; Vladescu et al., 2022; Walker et al., 2020), (b) task clarification with a task analysis (Crowell et al., 1988; Schultz & Wilder, 2022), and (c) lowering the response effort by making additional iPads and Tablets as well as church members trained in the online giving process available (Abello & Wilder, 2014; Casella et al., 2010 Wilder et al., 2021). The consequence-based strategy was feedback (Alvero, 2001; Sulzer-Azaroff & Mayer, 1991), intended to serve as a social reinforcer (Daniels & Bailey, 2014; Ludwig, 2015).
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Experimental Design

The present study used a single-case research design, specifically, a concurrent multiple-baseline-design-across-groups design (Cooper et al., 2007, p. 216). Baseline and intervention data for each church was collected continuously across the three tiers synchronized in real-time (Slocum et al., 2022). The decision to apply the treatment package was based on visual inspection. The process continued until all the churches completed the study. It should be noted there was a two-week gap between ending intervention in Church 1 and starting intervention in Church 2.

Data for the percentage of online giving occurrences per week and the monetary value for weekly loose cash donations for the entire church were graphed on the same graph to show how one set of data may change with the other. Data for the monetary value of online weekly giving for the entire church and the monetary value of non-automated giving for the entire church were graphed on the same graph for the same reason. Data for new online givers were reported on a cumulative graph to show participants’ progressive choice towards automation (Ledford & Gast, 2018).

Procedure

Pre-Experimental Procedures

Investigators gave a questionnaire to the congregation to evaluate giving behaviors prior to the start of data collection (see Appendix B). The questionnaire was used to assess whether goals and outcomes were acceptable and to assess reactivity.

Baseline

Church services were run as usual with no programmed consequences for giving behaviors. During the time of giving during the service, the pastor, worship leader, or other church leader gave a message regarding giving (i.e., read a scripture and give a brief
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explanation) and then a worship song was played for between 2-3 min. If the church did not have the above-stated message and worship song process in place before the study, it was be established during baseline. A minimum of three sessions were run in the baseline condition and continued until data were stable, meaning the pattern of responding exhibited slight variation in its measured dimensional qualities over time (Johnston & Pennypacker, 1993). Procedural fidelity data collected were based on the behavior of the pastor and church leadership, which included: 1) both verbal and visual prompts regarding the QR Code option given during the offering period; (2) the QR code displayed on the screen in the front of the sanctuary during the offering period, (3) the QR code, instructional video, and task analysis on the church’s website as well as social media.

Process and Performer-based Intervention

The process- and performer-based treatment package were as follows: (1) A QR code was generated to take church parishioners straight to the church appointed giving application. The QR code was made available on the screen in the front of the sanctuary, on the backs of seats, in handouts, on the live stream of the service as a graphic, as well as on the church website and social media pages. (2) Training in the automated process was provided to the congregants via an instructional video model with voiceover shown during the offering portion of the service. (3) Along with the video, a handout containing a task analysis was passed out to the parishioners with the steps on how to use the QR code process (see Appendix C). The video as well as the task analysis was posted on the website and social media pages. (4) Lowering the response effort was implemented by providing parishioners with iPads and Tablets who do not have a smartphone available to them. A church member trained in the online giving process (see Appendix D) was also available to individually assist the parishioners through the process while the video was being played. (5) The consequence-based strategy was an automated message generated after the online giving event, intended to serve as a social reinforcer by increasing performance (Daniels & Bailey, 2014). The message contained a short Bible scripture related to the importance of giving and/or the pastor’s message for the week, as well as an expression of gratitude for giving. The investigators used the nine steps of the Treatment Integrity Checklist to
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measure procedural fidelity. Procedural fidelity during this phase focused on the behavior of the lead researcher.

**Maintenance Probes**

Investigators collected maintenance data every week after the intervention package. During maintenance, the video was not shown. Data for procedural fidelity were collected on the behaviors of the pastor and the church leadership. This included: (1) both verbal and visual prompts regarding the QR Code option given during the offering period; (2) the QR code displayed on the screen in the front of the sanctuary during the offering period, (3) the QR code, instructional video, and task analysis remaining accessible on the church’s website as well as social media.

**Social Validity**

The researcher disseminated a social validity survey (see Appendix E) to the parishioners and church leaders. The pre-experimental procedures questionnaire was also distributed again after intervention, comparing responses before and after the intervention. Together the pre-experimental procedures questionnaire and the social validity survey assessed the acceptability of the target behavior, procedures, as well as significant outcomes in the behaviors produced (Cooper et al., 2007, p. 238).
Chapter 5
Results

Procedural Fidelity

Figure 2 displays results taken on the procedural fidelity in the implementation of the intervention. The x-axis represents the number of weeks in which the study was conducted. The y-axis represents the number of steps completed correctly by the church leadership and the lead researcher.

During the six weeks prior to baseline which included the resignation of the lead pastor, Church 1 implemented an average of 0% of the steps of the intervention package. During the four weeks of baseline, the lead researcher implemented all the necessary steps in order to prepare the church for intervention. Data for the procedural fidelity of the pastor and church leadership was reported as an average of 0%. Throughout the three weeks of intervention, the lead researcher worked with the youth and young adult pastor, and media director to implement the treatment package with an average of 100% procedural fidelity reported. Data during this phase captured the treatment integrity of the lead researcher.

In the third week of intervention, the youth and young adult pastor and media director reported that the church elders had requested the intervention package cease, specifically the playing of the training video. Therefore, the treatment package was run for three weeks. There were several parishioners that complained. For the 14 weeks (about 3 months) of maintenance, the average percentage of steps correctly implemented was 85.73%. Data for procedural fidelity was 100% for the first eight weeks of maintenance and then dropped to 66.67% for the remaining six weeks. During the last six weeks, the church removed the QR code, instructional video, and task analysis from their website. During maintenance, church leadership worked independent of the lead researcher. Procedural fidelity during this phase captured the behavior of church leadership. These same procedures for data collection held for the other two churches.
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During the nine weeks (about two months) of baseline, Church 2’s procedural fidelity data ranged from 0%-66.67%, averaging 55.52% for the percentage of steps implemented correctly. The church already had a QR code in place. A full screen graphic of the QR code was shown in the sanctuary as well as streamed online. However, this full screen also included the church’s physical address if parishioners wanted to mail in offerings or give in person as well as graphics for text-to-give, Givelify, Cash App, and the QR code for Pushpay. During intervention, the lead researcher worked with the pastor, the finance lead, and media lead to implement the treatment package. Data ranged from 88.89%-100% over four weeks, averaging 97.47% procedural fidelity. In the first week of intervention, the training video was not played; 100% procedural fidelity was reported for the other three weeks. During maintenance, data ranged from 33%-100% over eight weeks, averaging 91.63%. On week 23, there was a baptism at the end of the service. Every other week had 100% procedural fidelity data reported.

During the 13 weeks (about 3 months) of baseline, Church 3’s procedural fidelity was reported at 0%. Church 3 started passing the plate around again during week 15 of baseline. The church had stopped passing the plate after the return from the COVID-19 shutdown. Throughout the four weeks of intervention, the lead researcher worked with the pastor, financial secretary, and tech team leader to implement the treatment package. Data during this phase was 100%. Data during the four weeks of maintenance ranged from 33.33% to 100%, averaging 83.25%. During one of the weeks, they did not have a giving period due to a focus on the report back by the youth pastor on Vacation Bible School. The rest of the weeks had 100% procedural fidelity reported.

The Percentage of Online Giving Occurrences Per Week and Loose Cash

Figure 3 depicts results taken on the percentage of online giving occurrences and loose cash. The x-axis represents the number of weeks. The primary y-axis represents the
percentage of online giving occurrences amongst the church members. The secondary y-axis represents the dollar amount of loose cash giving.

During the period prior to baseline in Church 1, the mean percentage of online giving occurrences was 39.49% (range: 34.69%–42.50%). The average dollar amount of loose cash reported was $181.50 (range: $91-$371). During baseline, which included Easter, the mean percentage was 30.92% (range: 22.86%-41.18%). The average dollar amount of loose cash reported was $523.76 (range: $425-$745.03). Throughout the intervention, the mean percentage was 35.30% (range: 28.57%-44%). The average dollar amount of loose cash reported was $305.33 (range: $187-$405). During maintenance, the mean percentage was 31.85% (range: 9.09%-43.75%). The average dollar amount of loose cash reported was $209.50 (range: $70-$410).

During baseline in Church 2, the mean percentage of online giving occurrences was 68.89% (range: 64.00%-77.05%). The average dollar amount of loose cash reported was $90.22 (range: $25-$177). For intervention, the mean percentage was 65.03% (range: 58.33%-78.73%). The average dollar amount of loose cash reported was $108 (range: $63-$231). During maintenance, the mean percentage was 70.56% (range: 61.11%-80.49%). The average dollar amount of loose cash reported was $89.63 (range: $10-$195).

For Church 2, the mean percentage of online giving occurrences for Pushpay during baseline was 29.33% (range: 20.00%-47.09%). For intervention, the mean percentage was 42.09% (range: 34.78%-51.51%). During maintenance, the mean percentage was 44.42% (range: 40.00%-59.57%).

During baseline in Church 3, the mean percentage of online giving occurrences was 23.45% (range: 6.71%-43.59%). The average dollar amount of loose cash reported was $129.01 (range: $5-$315). For intervention, the mean percentage was 31.81% (range: 17.65%-46.15%). The average dollar amount of loose cash reported was $145.81 (range: $100.21-$187). During maintenance, the mean percentage was 28.13% (range: 11.36%-40.48%). The average dollar amount of loose cash reported was $143.39 (range: $82-$231.18).

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The Monetary Value for Weekly Online Giving

Figure 4 displays results taken on the monetary value of weekly online giving. The x-axis represents the number of weeks. The y-axis represents the weekly monetary amount for online giving.

During the period prior to baseline in Church 1, the mean weekly monetary amount of online giving was $4780.96 (range: $2288.88-$5894.92). During baseline, the mean monetary amount was $2807.38 (range: $630.25-$4188.07). Throughout the intervention, the mean monetary amount was $2401.86 (range: $1207.81-$4494.00). During maintenance, the mean monetary amount was $3123.74 (range: $192.50-$6093.93).

During baseline in Church 2, the mean weekly monetary amount of online giving was $4297.29 (range: $2214.00-$6075.97). For Pushpay, the mean weekly monetary amount was $2365.44 (range: $595.00-$4943). For intervention, the mean monetary amount was $3053.69 (range: $2508.00-$4364.75). For Pushpay, the mean weekly monetary amount was $2048.44 (range: $1601.00-$2739.75). Through the course of maintenance, the mean monetary amount was $3514.75 (range: $2779.00-$7018.00). For Pushpay, the mean weekly monetary amount was $2845.78 (range: $1611.00-$2774.19).

For baseline in Church 3, the mean weekly monetary amount of online giving was $1667.31 (range: $135.00-$3938.00). During intervention, the mean monetary amount was $1786.00 (range: $585.00-$2958.00). Throughout maintenance, the mean monetary amount was $1464.50 (range: $640.00-$2153.00).

The Monetary Value for Weekly Non-Automated Giving

Figure 4 displays results taken on the monetary value of weekly non-automated giving. The x-axis represents the number of weeks. The y-axis represents the weekly monetary amount for non-automated giving, excluding loose cash.
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During the period prior to baseline in Church 1, the mean weekly monetary amount of non-automated giving was $4039.04 (range: $2893.00-$6592.05). During baseline, the mean monetary amount was $3363.00 (range: $2407.00-$4377.00). Throughout the intervention, the mean monetary amount was $4881.68 (range: $4024.00-$5384.05). During maintenance, the mean monetary amount was $3894.07 (range: $2401.00-$6675.50).

During baseline in Church 2, the mean weekly monetary amount of non-automated giving was $2159.44 (range: $628.00-$5939.00). For intervention, the mean monetary amount was $1864.00 (range: $389.00-$4384.00). Through the course of maintenance, the mean monetary amount was $1663.89 (range: $157.00-$6754.00).

For baseline in Church 3, the mean weekly monetary amount of non-automated giving was $3939.01 (range: $2107.00-$12338.00). During intervention, the mean monetary amount was $2771.32 (range: $1382.00-$4994.25). Throughout maintenance, the mean monetary amount was $3163.76 (range: $2605.00-$3905.05).

Total Monetary Value of Weekly Giving for the Church

Figure 5 displays results taken on the total monetary value of weekly giving. The x-axis represents the number of weeks. The primary y-axis represents the total weekly dollar amount amongst the church members, which included online, non-automated and loose cash giving. The secondary y-axis was the number recorded for weekly attendance of adults.

During the period prior to baseline in Church 1, the mean dollar amount of total weekly giving was $9001.57 (range: $5718.88-$12472.93). Mean attendance was 95 (range: 78-114). During baseline, the mean dollar amount was $7182.62 (range: $5177.25-$7762.39). Mean attendance was 110 (range: 86-169). Throughout the intervention, the mean dollar amount was $7087.82 (range: $5418.81-$10136.14). Mean attendance was
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102 (range: 84-136). During maintenance, the mean dollar amount was $7228.27 (range: $2952.50-$10723.37). Mean attendance was 81 (range: 65-110).

During baseline in Church 2, the mean dollar amount of total weekly giving was $6538.53 (range: $3064.60-$12212.20). One data point was recorded for attendance ($n = 64$). For intervention, the mean dollar amount was $5025.69 (range: $2960.00-$5133.75). Mean attendance was 105 (range: 100-106). Through the course of maintenance, the mean dollar amount was $5268.37 (range: $3226.00-$10110.19). Mean attendance was 96 (range: 80-110).

For baseline in Church 3, the mean dollar amount of total weekly giving was $5735.33 (range: $2818.00-$12636.00). Mean attendance was 114 (range: 90-143). During intervention, the mean dollar amount was $4703.13 (range: $2964.05-$7067.25). Mean attendance was 106 (range: 97-116). Throughout maintenance, the mean dollar amount was $4771.13 (range: $4147.00-$4294.28). Mean attendance was 123 (range: 100-185).

Number of New Online Givers

Figure 6 displays results taken of new online givers in the implementation of the intervention. The x-axis represents the number of weeks. The y-axis represents the cumulative number of new online givers. Church 1 reported no new online givers ($n = 0$) during the six weeks prior to baseline. During four weeks of baseline, they had two new online givers (range: 0-1). Throughout the three weeks of intervention, they had seven new online givers (range: 1-3). For 14 weeks of maintenance, they had four new online givers (range: 0-1).

Church 2 reported 11 new online givers during the nine weeks of baseline (range: 0-3). Throughout the four weeks of intervention, 13 new online givers were reported (range: 2-5). During the eight weeks of maintenance, 13 new online givers were reported (range: 0-3).
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There was a significantly steeper slope in the intervention phase for both churches during intervention, as compared to baseline and maintenance.

Social Validity

The sample sizes for the pre- and post-experimental questionnaires and social validity survey varied across churches (see Table 3).

Pre- and Post-experimental Questionnaires

The eight-item pre- and post-experimental questionnaire was distributed prior to and after intervention. There was an increase in members in Church 1 (pre-experimental = 24%; post-experimental = 29%) and Church 3 (pre-experimental = 14%; post-experimental = 33%) self-reporting giving online through the app before and after intervention. While Church 2’s self-reporting declined (pre-experimental = 54%; post-experimental = 43%). All three churches self-reported a decrease in cash as the preferred method for non-automated giving: (Church 1: pre-experimental = 19%; post-experimental = 17%; Church 2: pre-experimental = 47%; post-experimental = 43%; Church 3: pre-experimental = 24%; post-experimental = 11%). Using a 5-point Likert scale with “1” described as “never” and “5” as “very open,” when asked how open they were to learning how to give online, Churches 1 and 3 members self-reported an increased openness in learning how to give online (Church 1: pre-experimental = 0%; post-experimental = 17%; Church 3: pre-experimental = 22%; post-experimental = 33%). Whereas Church 2 members self-reported a decline (pre-experimental = 42%; post-experimental = 36%). Table 4 in the supplemental materials provides the complete results of the pre- and post-experimental questionnaires.

Although written responses were not solicited, several respondents wrote comments on their surveys. For Church 1 in the pre-experimental questionnaire, for question #5 asking if they gave by envelope, a respondent wrote: “It would work to just put a folded check in plate or donation box.” For question # 8, asking how open they were to learn how to give online, the same respondent wrote: “I prefer that my giving be as private
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as possible. Not sure how it works with the volunteer counters." For question # 2, asking why they do not give online, the following comments were written by several church members: “no computer,” “I chose to,” “prefer check,” and “very complicated.” For Church 2, during the pre-experimental questionnaire, one respondent wrote: "I don't like the name on what you gave God. He blesses you 10-fold. I like to give without knowledge,” which may have implied this giver prefers to remain anonymous. Two givers were sure to point out question #8, regarding openness to learn how to give online, did not apply to them because they only gave online. In Church 3, three respondents went a step further and circled “donation box” in the second-choice option when asked which type of giving they preferred in question #1. One giver wrote in “we forget” when asked in question #2 why they do not give online. For the same question, another person wrote next choice-option C (too complicated) that they ”Don't set it up regularly.” While another for the same question, wrote: "It joins the congregation together passing the plate.” Two respondents pointed out that they use automatic bill pay to make their donations. One person wrote, “I don’t have electronics.” While two people wrote that they “already do” for question # 8 regarding willingness to learn how to give online.

Written feedback was also received in the post-experimental questionnaire. In Church 1, for question # 2 regarding why they do not give online, the following was written in: "It is just easier," “50% online," and "I like doing the way I do it." For question # 6 regarding how they give within the service, one-person selected choice B (passing the plate) and next to it wrote; "when I give during the service - but mainly give online @ set times, not during service." While another underscored question # 8 (regarding openness to learn how to give online) did not apply to them because they gave online. For Church 2, one person wrote for question #4 regarding why they prefer non-automated giving, “Easter,” suggesting non-automated giving is preferred during the religious holidays. While others wrote “on the wall,” “I give both ways,” “box,” and “already give online” on their submissions. Moreover, in Church 3 for question # 2 asking why they do not give online, the following was written: "Just don't think about it" and "not my thing." While another wrote for question # 4 regarding why they prefer non-automated giving, "I have trouble with people getting my info." It should be noted across all three churches, 50% of
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respondents did not answer question # 7 regarding giving in between services and 14 people wrote in next to the question: “N/A,” “don’t apply,” a slash or a X.

Social Validity Survey

There was also a small sample size of respondents for the social validity survey in contrast to church attendance. However, across all three churches, the respondents thought all the components of the intervention were valuable. On a 5-point Likert scale, where “1” was described as “not satisfied and “5” as “very satisfied, 64% of respondents in Church 1 chose “4” or “5” for the QR Code, whereas in Church 2, the percentage was 78%, and in Church 3 it was 51%. The same analysis was applied to the other components. The instructional video was supported by 70% of the respondents in Church 1, 89% in Church 2 and 56% in Church 3. The instructional handout was supported by 64% of respondents in Church 1, 81% in Church 2, and 51% in Church 3. Having iPads and Tablets available was supported by 42% of respondents in Church 1, 81% in Church 2, and 63% in Church 3. Having someone to assist in accessing the giving app and processing the offering was supported by 79% of respondents in Church 1, 74% in Church 2, and 63% in Church 3. It should be noted that only in Church 2 did the members engage in this portion of the intervention (five people over four weeks of the intervention). No one in Church 1 or 3 interacted with the decreased response effort portion of the intervention. The scripture messages thanking them for their donation were supported by 53% of respondents in Church 1, 81% in Church 2, and 63% in Church 3. When asked whether there was a portion of the treatment package they could have done without, Church 1 responded with 12% for QR code, 24% for iPads and Tablets, and 18% for someone to assist. Church 2 responded with 7% for the QR code, 11% for the instructional video, 7% for the instructional handout, 19% for the iPads and Tablets and 19% for someone to assist. When asked if they thought the instructional video should be played once, 47% of respondents in Church 1 answered “yes” and 35% answered “no.” Whereas in Church 2, 59% answered “yes” and 30% answered “no.” While in Church 3, 63% answered “yes” and there were zero responses for “no.” See Table 5 in the supplemental materials for the results of the social validity questionnaire.
Although they were not directed, respondents also gave written feedback on their social validity surveys. In Church 1, one person wrote "Too much emphasis. Loved JB’s message!" JB is one of the church leaders who during maintenance was asked to lead the giving portion and gave a testimonial on how he gave to person in need, and it transformed his life. Another wrote: "None of these components alone were problematic. It was the repetitiveness of all these together, week after week, many didn't like. Once or twice would have been sufficient." While others wrote: "I just want to write a check" and "Too many times in a row." Regarding the number of times the instructional video should be played, respondents wrote: “What if someone missed the service" and “new people," validating playing it more than once. For Church 2, one respondent wrote "Very, Very, Very" regarding satisfaction with the scripture message thanking them for their donation. While another wrote regarding whether the instructional video should be played once: "During service probably not so it won't take up the service, but maybe once a week it can get sent through text to watch on our own time." And another wrote when asked if there was a component of the intervention they could have done without, "None of above - all helpful." While for Church 3, the following feedback was given, "I would say give via Venmo. That is easy for me”; "I don't remember receiving a handout;" and "N/A I will never donate online." And in response to the question asking if the instructional video should be played once, another wrote "maybe twice."
Chapter 6
Discussion

Overall, the intervention package showed an appreciable effect on church leadership behavior in the implementation of the QR Code to enhance online giving (i.e., procedural fidelity) as well as the percentage of online giving occurrences across the three churches and the number of new online givers across the two churches who provided data on the novel online givers. Further elaboration in relation to each church will be provided.

The increased performance of the implementation of the treatment package in maintenance by leadership, without the oversight of the primary researcher, proved the utility of BSA interventions in nontraditional OBM settings. Historically, most published OBM interventions took place in human service settings (Reid & Parsons, 2000; Gravina et al., 2018). Two out of the three churches did not have a QR code prior to the intervention. Presently, all three churches are still using the QR code developed during the study for giving during their services.

Moreover, the effects of the process- and performer-based intervention package can be analyzed in terms of availability and utilization. The intervention was designed with the intention of making online giving available for the churches involved addressing the process component, but whether the membership utilized the technology was dependent on the demographics of the church. Systems were put in place to promote online giving behavior; however, the degree of utilization was performer-based. The most fascinating lesson learned from the study was the churches’ demographic characteristics influenced the memberships’ reception of the process of online giving as a method to tithe.

Church 1

Church 1 did not use a QR code for giving prior to this study. Fifty-two percent of the congregation was over the age of 60. Furthermore, the youth and young adult pastor described the older congregants as coming to church with “more consistency.”
Church 1 had also lost their lead pastor who had been asked to resign on February 27, 2023, and he tenured his resignation on February 28, 2023. Due to the resignation of the lead pastor in Church 1 two weeks before the start of baseline, the primary investigator collected historical data on the primary and secondary dependent variables for the six weeks leading to the start of baseline in Church 1 to establish control for the unexpected environmental variable.

The lead pastor (in his late fifties) had been with the church just under 16 years, and he formally departed the church two weeks prior to the beginning of baseline. The lead pastor had two adult daughters who were active in the church, which included leading the worship team, the after-school program, Sunday school, connect group for young adults in the twenties and thirties, and a monthly respite program for families with children with special needs. When the lead pastor left, many of the younger church members left as well. Since his departure, the lead pastor has not been replaced.

In the interim, the church has been run by the church elders (most of which are over the age of 60), the youth and young adult pastor and his wife, who is the media director. The youth and young adult pastor and media director are both in their forties. The youth and young adult pastor as well as the media director were extremely supportive of the treatment package; however, with the departure of the lead pastor (who was the original contact for the primary researcher), communication of the intervention to the elders had fallen through the cracks.

The primary dependent variable, defined as procedural fidelity, was where the most substantial effect of the treatment package was seen across the three churches from baseline, through intervention and into maintenance, specifically in Churches 1 and 3. The primary investigators took note that on week 22 of the 27 weeks (about 6 months) into the study, the media director for Church 1 took the QR code for giving, instructional video, and task analysis off the church’s website in a redesign, which included the generation of another QR code. This new QR code took members to a menu which included online giving and upcoming events. Also of particular interest was that she used behavioral skills training (BST; Shayne & Miltenberger, 2013) to implement the new QR code. During the
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service, she displayed the QR code in the monitors in the sanctuary, just as it was done
during intervention, and explained the purpose. She then modeled use of the QR code for
online giving in vivo and asked the church members to take out their phones and practice
engaging in the QR code.

Anecdotally, the BST of the QR code was received much like the instructional
video. The media director texted the lead researcher the following about the response to her
training by the church membership: “still nobody took their phone out who didn't already
know how to do it. I don’t know why this triggers people so much.” During intervention,
church elders and other members requested they stop playing the instructional video.

Interestingly, during baseline, there was a close to ten percent drop in online giving
from the weeks when the pastor was the primary leader. While within the three weeks of
intervention, there was a recovery of almost half that loss. However, there was a decrease
in the average percentage of online giving during maintenance from intervention, and no
real difference between baseline and maintenance. The church’s online giving behavior
matches the literature. According to pandemic-related research done on church finances,
older populations were less likely to embrace online giving because they were not
accessing systems already in place in 2018–19 (Holleman et al., 2022). Although Church 1
had an online system in place prior to the study, the church membership was not fluent in
the process. Technology was made available, but the specifics of the users were not
addressed such as the short-term memory challenges that come with aging or the level of
technology available (e.g., the necessity for a QR code reader; smart phone versus flip
phone). Even the privacy involved in tithing. Scripture writes “But when you give to the
needy, do not let your left hand know what your right hand is doing so that your giving
may be in secret. Then your father, who sees what is done in secret, will reward you” (The
Holy Bible, New International Version, 1973/2011). The culture of tithing should also be
taken into account when assessing why no one engaged with the iPads available to
decrease the response effort – even if they did not have the technology available or know
how to use it.
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With the decline of the use of cash associated with the heightened use of E-systems for peer-to-peer transactions (Caswell et al., 2020; Greene et al., 2020; Neesom, 2022), the lead researcher anticipated that there would be a decrease in the amount of loose cash collected with the increase of online giving behaviors. Of note, the last week of baseline was Easter where $745 was collected in loose cash, affecting the average during this phase. There was a decrease in the average dollar amount of loose cash collected from baseline to intervention, and a decrease from intervention to maintenance. Overall, there was a decrease in loose cash between baseline and maintenance. This warrants further investigation. Along with the hypothesis of a decreased use of cash when online giving increases as well as the increased number new online givers, other possibilities include the state of the economy, the fact that most of the members live on fixed incomes (according to their pastor), and the decrease in attendance.

Interestingly, the monetary patterns for online and non-automated giving were affected by increases with the treatment package. Baseline showed a decrease in the average monetary amount of online giving as well as non-automated giving from the period which included the lead pastor. During intervention, there was a continued decrease in average online giving, but an increase for the average non-automated giving. From intervention, maintenance showed increases for average online giving as well as non-automated giving. Between the period prior to the pastor leaving and maintenance there was a close to two-thousand-dollar drop in the average amount of online giving. This can be attributed to the drop of close to ten percent in the percentage of online giving occurrences as well as the drop in attendance. Alternatively, the increases in the monetary amount of non-automated giving during intervention show the intervention, although it did not increase monetary amounts of online giving, may have generalized to non-automated. This could be attributed to the state of crisis of the church and the intervention provided a systematic process to requesting tithes from the congregation, whether through automated or non-automated means. Throughout the study, there was a substantial increase of new online givers, but a decrease in attendance, showing a decrease of an average of 14 people from the start to the end of the study, and a 30-person fluctuation between the baseline,
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intervention, and maintenance phases. The increased number of new online givers may have stabilized total giving within the midst of the shrinking attendance numbers.

In the middle of the maintenance phase, the lead researcher did meet with the church elders as well as the youth and you and adult pastor and presented those data. The elders did say they were pleased with the intervention and would run the full intervention in September (two months later) when the snowbirds returned. The BCBA shared with them the feedback from the social validity and pre-and post-experimental questionnaires. One elder said he thought the video should be shown for several weeks because of the people who might not be there. The BCBA indicated that they could show variations of the video or even present a PowerPoint on how to use the QR code. Her focus of the presentation was how the average percentage of online giving increased during the intervention towards the levels prior to the departure of the lead pastor.

Given the transition in leadership, the declining attendance, and the shift in demographics to a more senior population, the present study was applied when the church needed assistance stabilizing its finances. With regard to future interventions which focus on older populations, the performance of Church 1 showed culture and performer characteristics should be considered.

Church 2

Church 2 differed from Churches 1 and 3 in that they self-described as predominantly Black, lower-income, urban, and heterogenous in the age of their membership. Church 2 did not pass a plate during the service but invited members to submit envelopes and paper currency in drop boxes located at the back of the church. This was because the pastor did not want the giving portion of the service to take time away from worship and the sermon. Also, due to the Biblical mention earlier of the belief that charitable giving should be done in private.

Church 2 already had strong online giving behaviors in place prior to the study which is evident in their procedural fidelity performance compared to Churches 1 and 3.
ONLINE GIVING IN CHURCHES

However, the lead pastor and the finance lead desired to streamline online giving to Pushpay from Givelify and CashApp. They had implemented a QR code for Pushpay a few weeks before the start of baseline, but the average percentage of online giving behavior for Pushpay was below desired levels. There was little training provided on how to use PushPay. Although the members were engaging in online giving prior to the intervention, multiple systems of giving without effective instruction might have caused frustration within the congregation. After intervention, there was an over ten percent bump which extended into maintenance.

Throughout the study, there were close to forty new online givers. As stated earlier, Church 2 was the only church where members approached the assigned helpers with iPads for assistance. Out of the four weeks of intervention, five people engaged with this component of the treatment package. Church 2 differed from the other two churches in the culture they had established, embracing technology and social media -- they posted on Facebook about 14 times a week compared to an average eight times a week for Church 1 and two times a week for Church 3. Church 2 also pinned the instructional video to the top of their Facebook page, while the other two churches only posted the instructional video at the beginning of the intervention forcing churchgoers to scroll the newsfeed to find the instructional video. Church 2 also had a strong texting communication system in place for the entire church. The lead pastor for Church 2 (age 46) also fully supported the intervention and allowed the lead researcher to address the congregation for the last two weeks of the intervention. Church 2 membership applauded every time after the instructional video was played. Church 2 performers demonstrated a considerable increase in the percentage of online giving occurrences for Pushpay from the beginning to the end of the study. This can be attributed to the online giving culture that was already in place prior to giving, as well as the broader range of age of the church members involved in the intervention (range: 40-60).
ONLINE GIVING IN CHURCHES

Church 3

Church 3 differed from Church 1 in that although they also had an older, White, suburban population, they had a lead pastor (age 49) in place that supported online giving and wanted to move the church in this direction. Church 3 had a 100% increase in the average percentage correct performance of procedural fidelity between baseline and intervention, and only dropped during four weeks of maintenance because one week they excluded the giving portion of the service due to discussing Vacation Bible School.

The church had a close to ten percent increase between baseline and intervention in the average percentage of online giving behavior. The increase between baseline and maintenance was close to five percent. Church 3 did not have a strong reliance on loose cash. Prior to the study, they relied on donation boxes in the church and only started passing the plate around again in the ninth week of baseline (out of 13). The average amount of loose cash increased by $16.78 between baseline and intervention. While the average monetary amount of non-automated giving saw a decline with the implementation of the treatment package from baseline to intervention, there was a slight increase during maintenance from intervention. Overall, there was a close to one-thousand dollar decrease between baseline and maintenance, supporting the analysis that with the increase of E-Systems we see a decrease in more traditional currency (i.e., cash, checks). However, although there were increases in the percentage of online giving behavior there were no considerable changes in the average monetary amount of online giving. Also, the number of new online givers through the course of the study was unavailable.

Like Church 2, the lead pastor for Church 3 fully supported the intervention. He created a culture of inclusion and acceptance giving the lead researcher 5 to 10 min to address the congregation during the service every week of the intervention. Also of note, the feedback critiquing online giving written into the pre-experimental questionnaire could be interpreted as more neutral in tone in the post-experimental questionnaire and social validity survey.
ONLINE GIVING IN CHURCHES

Limitations

An important limitation of the study was that the intervention was cut short in Church 1. The move to maintenance was not a data-based decision, but rather a management decision of the congregation and church elders offended by the instructional video and an ongoing strain in the relationship between church representatives and researchers. This caused a two-week gap between the end of intervention in Church 1 and start of intervention in Church 2, affecting the integrity of the concurrent multiple baseline design. The lead researcher was not able to start intervention immediately in Church 2 because their instructional video was not yet completed and the individual who was heading that aspect of the project was unavailable due to personal reasons.

Furthermore, from the start to the end of the study, the profile of Church 1 changed dramatically, with the loss of many of their 20- and 30-year-old church members (moving from a more heterogenous to homogenous population).

Another limitation was the length of the entire study. The study began in the middle of March and extended into the first week of August. Much of the study was run through the summer months of May, June, and July when church attendance is historically low in the U.S. due to vacationing (Rainer, 2019). Future research should be run for at least a calendar year across all churches to capture patterns of giving though attendance highs and lows.

Moreover, the parameter for data collection for the present study was midnight Monday up until 11:59 pm Sunday, which was based off Church 1’s method of reporting the financial data. It would have been more accurate to collect data from midnight Sunday to 11:59 pm Saturday, capturing the day of giving on which the intervention was implemented at Sunday service. Other limitations were the instructional video was not run in the first week of the intervention for Church 2 and new online giver data was not collected in Church 3 due to time constraints and the lack of training of church leadership to provide those data from the data base.
Future Research

Future research should employ a component analysis to identify and isolate essential variables. Much of the feedback from the pre- and post-experiential questionnaire as well as the social validity survey critiqued the playing of the video every week for four weeks. An alternating treatments design implementing pieces of the present treatment package may capture the magnitude of the effect of each component. One lesson learned was churches are very protective of the time allocated during the service. Discomfort was expressed in the questionnaires across churches regarding too much focus on giving, repetitiveness, as well as time taken away from the service. An alternating treatment design would lend itself easily to diversity as well as an opportunity to analyze the effect of each component on behavior with more efficiency. Future research should also explore the selection of online giving amongst individual church members with a concurrent multiple-baseline-design-across-participants.

Future research should also consider BST (Cochrane et al., 2022; Gavoni & Weatherly, 2019; Novotny et al., 2023; Shayne & Miltenberger, 2013) implemented by the pastor in smaller breakout groups, and perhaps using a pyramidal model (Mery et al., 2022), having church members pair with other members and teach the skill of giving online through the application. This may alleviate some of the discomfort associated with the discussion of tithing within the service expressed in the pre- and post-experimental questionnaires and social validity survey.

Churches 1 and 3 were remarkably similar in demographics. Future research should attempt to run the intervention in churches with more heterogenous and or diverse racial/ethnicity and ages. Rural church settings should also be considered. Churches 1 and 2 were also comparable in religious traditions. Future research should look at other denominations including the Catholic tradition.

The Catholic diocese across the U.S. run aggressive giving campaigns throughout the year, such as the Annual Bishop’s Appeal to Catholic Ministries, which may welcome
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such an endeavor. Again, availability versus utilization would have to be addressed. The corporate structure of the catholic church might not lend itself to the individualization of interventions for each church population.

Future research should drop total weekly dollar amounts as a dependent variable. The U.S. is experiencing the highest inflation rate in four decades. According to a Gallup poll, 61% of lower-income people feel their financial situations slumped over the past decade and 43% of higher earners said they feel strapped (Wile, 2023). The present study showed total weekly dollar amounts varied from week to week and were not related to attendance. However, the inverse relationship between monetary amounts of online giving and non-automated giving still warrants further exploration, as demonstrated in the trend of loose cash across Churches 1 (where the passing of the plate was a big part of giving). Such an analysis should look at the same group of givers from week to week.

Finally, the lead researcher made the mistake of applying the same intervention across the three churches who were distinct in denomination and demographics, not addressing the cultures of the churches. Performance and social validity variation were related to demographics. Future research in churches should take this into account and individualize interventions according to denomination and demographics, but more importantly culture. Moreover, this approach should be tested for external validity in other traditional and nontraditional OBM settings.

Also, the complaints from the elders in Church 1 confirm that success of an intervention in OBM requires buy-in from leadership (Daniels & Bailey, 2014). Organization effectiveness comes about only when the organization, process and performer levels align (Rummler & Brache, 2013).
Chapter 7
Conclusion

Church 1’s patterns of giving and acceptance of the intervention demonstrated in the pre-and post-experimental questionnaires as well as the social validity survey trended towards the findings of Holleman et al. 2022. Their aging, White church membership tended not to embrace online giving, whereas Church 2 with a Black, low-income congregation and Church 3 also with older, White churchgoers, contradicted their findings. The results across the three churches showed that a more comprehensive approach with BSA interventions (Brethower, 2000; Kelley & Gravina, 2018; Rummler & Brache, 2013; Sasson et al., 2006; Sigurdsson & McGee, 2015) can help generalize online giving beyond churches with greater resources to those with more vulnerable populations.

Furthermore, BSA can further assist churches as they undergo continued change. Church attendance has decreased dramatically, with a 10-point drop in the last decade, 45% of adults said they attend a service once or more a month, whereas 54% said they attend a few times a year. Churches continue to suffer the aftermath of the COVID-19 pandemic. The number of those in attendance once or twice a month fell from 34% in 2019 to 28% in 2021. The typical wave of a return to church as populations age is not expected for those born after 1970 (Earls, 2019). This coupled with the decreased use of cash (Bruno et al., 2020; Caswell et al., 2020; Greene et al., 2021; Neeson, 2022) and charitable giving (Boorstein, 2023) puts churches in a precarious position financially. This downturn is further magnified when we consider individual giving was 100% of the income for Church 1, 73% for Church 2, and 80% for Church 3.

Finally, within the behavior analytic framework, Skinner described culture as a set of contingencies of social reinforcement (Skinner, 1969). He defined culture as a set of customs, a network of communication, or a system of values and ideas (Skinner, 1974). This study provided the foundation for the individualization of OBM interventions according to the demographic and culture of organizations. Much like clinical work in ABA has explored the concept of embracing cultural humility to address disparities and
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improve outcomes (Wright, 2019), so should OBM. BSA is an evidence-based framework which can inform decision-making, starting with macro-level assessments of the effects of external variables (i.e., pandemics, economy, culture) on adaptive systems (i.e., churches), and systematically funneling down to focus on processes (i.e., tithing, giving, charitable donation) and individuals (i.e., church members). Contemporary churches provide OBM practitioners and researchers with an opportunity to deliver behavior analytic services that effectuate socially meaningful change.
References


Balcazar, F. E., Shupert, M. K., Daniels, A. C., Mawhinney, T. C., & Hopkins, B. L. (1989). An objective review and analysis of ten years of publication in the Journal of Organizational Behavior Management.. *Journal of Organizational Behavior Management, 10*(1), 7–37. [https://doi.org/10.1300/J075v10n01_02](https://doi.org/10.1300/J075v10n01_02)

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Wile, R. (2023, March 8). The U.S. economy in 2023: Most people have jobs but many are unhappy about their money. NBC News: https://www.nbcnews.com/business/economy/how-is-the-economy-doing-right-now-inflation-interest-rate-hikes-rcna73613

**Table 1.** Demographic Data for the Majority of Church Membership

<table>
<thead>
<tr>
<th>Majority Race/Ethnicity</th>
<th>Church 1</th>
<th>Church 2</th>
<th>Church 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predominantly White</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Predominantly Black</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Majority Makes Over $35,000</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Suburban</td>
<td>Suburban</td>
<td>Urban</td>
<td>Suburban</td>
</tr>
<tr>
<td>Nondenominationa (Originally Baptist)</td>
<td>Yes (40)</td>
<td>Yes (46)</td>
<td>Yes (49)</td>
</tr>
<tr>
<td>United Methodist</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Established Congregation</td>
<td>44 years</td>
<td>12 years</td>
<td>57 years</td>
</tr>
<tr>
<td>Mean Attendance</td>
<td>91</td>
<td>96</td>
<td>115</td>
</tr>
<tr>
<td>Income comes 100% from Individual(s)</td>
<td>Yes</td>
<td>No (27% from Business Donors)</td>
<td>No (20% Rent, Warehouse)</td>
</tr>
<tr>
<td>Majority over the age of 60</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Pastor Under the Age of 50</td>
<td>Yes (40)</td>
<td>Yes (46)</td>
<td>Yes (49)</td>
</tr>
<tr>
<td>Average % Online Giving During Baseline</td>
<td>30.92%</td>
<td>68.89%</td>
<td>23.45%</td>
</tr>
</tbody>
</table>

*Note:* Church 2’s average percentage of online giving for Pushpay was 29.33% during baseline.
## ONLINE GIVING IN CHURCHES

*Table 2. Measure of Online and Non-Automated Giving*

<table>
<thead>
<tr>
<th>Type of Giving</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online</td>
<td>Sum of occurrences of giving – count app event</td>
</tr>
<tr>
<td></td>
<td>Sum dollar value of all occurrences</td>
</tr>
<tr>
<td>Non-automated</td>
<td>Sum of occurrences of giving</td>
</tr>
<tr>
<td>Within Service</td>
<td></td>
</tr>
<tr>
<td>Passing of the Plate</td>
<td>Mail</td>
</tr>
<tr>
<td>Basket</td>
<td>Drop off</td>
</tr>
<tr>
<td>Alter</td>
<td>Pick up</td>
</tr>
<tr>
<td>Donation Box</td>
<td>Digital Check</td>
</tr>
<tr>
<td></td>
<td>Sum dollar value of all occurrences</td>
</tr>
<tr>
<td></td>
<td>Sum of all loose cash offerings (i.e., donations that cannot be</td>
</tr>
<tr>
<td></td>
<td>associated with an individual or group</td>
</tr>
</tbody>
</table>
Table 3. Number of Respondents across Churches for the Pre- and Post-Experimental Questionnaires and Social Validity Survey

<table>
<thead>
<tr>
<th></th>
<th>Pre-Experimental</th>
<th>Post-Experimental</th>
<th>Social Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>$N$</td>
<td>$N$</td>
</tr>
<tr>
<td>Church 1</td>
<td>37</td>
<td>23</td>
<td>17</td>
</tr>
<tr>
<td>Church 2</td>
<td>57</td>
<td>28</td>
<td>27</td>
</tr>
<tr>
<td>Church 3</td>
<td>50</td>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>
Online Giving in Churches

Table 4. Results for Pre- and Post-Experimental Questionnaires

<table>
<thead>
<tr>
<th></th>
<th>Church 1</th>
<th></th>
<th>Church 2</th>
<th></th>
<th>Church 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
<td></td>
<td>n (%)</td>
<td></td>
<td>n (%)</td>
</tr>
<tr>
<td>Pre</td>
<td></td>
<td></td>
<td>Post</td>
<td></td>
<td>Pre</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Which type of giving do you prefer?

A. Give online though the app
   - Church 1: 9 (24%) Pre, 7 (29%) Post
   - Church 2: 31 (54%) Pre, 12 (43%) Post, 7 (14%) Post
   - Church 3: 3 (33%) Pre, 7 (14%) Post
   - No response: 1 (2%)

B. Non-automated giving (passing of the plate, basket, alter, donation box, mail drop off, digital check)
   - Church 1: 26 (70%) Pre, 16 (44%) Post
   - Church 2: 25 (44%) Pre, 10 (36%) Post, 41 (82%) Post
   - Church 3: 15 (26%) Pre, 6 (11%) Post
   - No response: 1 (2%)

2. If you don’t give online, why?

A. I don’t know how
   - Church 1: 3 (8%) Pre, 1 (4%) Post
   - Church 2: 3 (5%) Pre, 1 (4%) Post, 2 (4%) Post
   - Church 3: 3 (5%) Pre, 1 (2%) Post, 2 (4%) Post
   - No response: 1 (2%)

B. I don’t like taking out my personal information during service
   - Church 1: 2 (5%) Pre, 2 (7%) Post
   - Church 2: 4 (7%) Pre, 2 (7%) Post, 41 (82%) Post
   - Church 3: 2 (5%) Pre, 4 (17%) Post
   - No response: 1 (2%)

C. Too complicated
   - Church 1: 2 (5%) Pre, 1 (4%) Post
   - Church 2: 2 (4%) Pre, 1 (4%) Post, 7 (14%) Post
   - Church 3: 2 (5%) Pre, 1 (2%) Post, 2 (4%) Post
   - No response: 1 (11%)

D. For spiritual reasons
   - Church 1: 2 (5%) Pre, 4 (17%) Post
   - Church 2: 1 (2%) Pre, 1 (4%) Post, 2 (4%) Post
   - Church 3: 1 (2%) Pre, 7 (14%) Post
   - No response: 1 (11%)

E. Other
   - Church 1: 16 (43%) Pre, 6 (23%) Post
   - Church 2: 15 (26%) Pre, 7 (25%) Post, 26 (52%) Post
   - Church 3: 15 (26%) Pre, 6 (11%) Post, 15 (26%) Post
   - No response: 1 (11%)

F. This doesn’t apply to me, I give online
   - Church 1: 6 (16%) Pre, 7 (30%) Post
   - Church 2: 25 (44%) Pre, 9 (32%) Post, 9 (18%) Post
   - Church 3: 9 (18%) Pre, 1 (2%) Post, 25 (44%) Post
   - No response: 1 (11%)

3. If you prefer non-automated giving, which form do you prefer?

A. Cash
   - Church 1: 7 (19%) Pre, 4 (17%) Post
   - Church 2: 26 (47%) Pre, 12 (43%) Post, 12 (24%) Post
   - Church 3: 1 (11%)

B. I would prefer not to learn a new method
   - Church 1: 18 (49%) Pre, 12 (52%) Post
   - Church 2: 4 (7%) Pre, 26 (52%) Post, 4 (44%) Post

C. For spiritual reasons
   - Church 1: 1 (3%)
   - Church 2: 2 (4%)
   - Church 3: 1 (2%)
### ONLINE GIVING IN CHURCHES

<table>
<thead>
<tr>
<th>D. Other</th>
<th>1 (3%)</th>
<th>1 (2%)</th>
<th>1 (11%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. This doesn’t apply to me; I give online</td>
<td>6 (16%)</td>
<td>6 (26%)</td>
<td>18 (32%)</td>
</tr>
<tr>
<td>No response</td>
<td>2 (5%)</td>
<td>1 (4%)</td>
<td>5 (9%)</td>
</tr>
</tbody>
</table>

#### 4. If you prefer non-automated giving, why?

<table>
<thead>
<tr>
<th>A. It’s the way I have always done it</th>
<th>8 (22%)</th>
<th>5 (22%)</th>
<th>11 (19%)</th>
<th>3 (11%)</th>
<th>21 (40%)</th>
<th>3 (33%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. I would prefer not to learn a new method</td>
<td>1 (3%)</td>
<td>1 (4%)</td>
<td>1 (2%)</td>
<td>2 (7%)</td>
<td>3 (6%)</td>
<td></td>
</tr>
<tr>
<td>C. For spiritual reasons</td>
<td>2 (5%)</td>
<td>3 (13%)</td>
<td>3 (5%)</td>
<td>1 (2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Other</td>
<td>1 (3%)</td>
<td>5 (22%)</td>
<td>6 (11%)</td>
<td>6 (21%)</td>
<td>8 (16%)</td>
<td>3 (33%)</td>
</tr>
<tr>
<td>E. This doesn’t apply to me; I give online</td>
<td>7 (19%)</td>
<td>7 (30%)</td>
<td>24 (42%)</td>
<td>10 (36%)</td>
<td>9 (18%)</td>
<td>1 (11%)</td>
</tr>
<tr>
<td>No response</td>
<td>8 (22%)</td>
<td>2 (9%)</td>
<td>12 (21%)</td>
<td>6 (21%)</td>
<td>7 (14%)</td>
<td>2 (22%)</td>
</tr>
</tbody>
</table>

#### 5. Do you give by envelope?

<table>
<thead>
<tr>
<th>Never</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>All the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5 (14%)</td>
<td>7 (30%)</td>
<td>16 (28%)</td>
<td>10 (36%)</td>
<td>20 (40%)</td>
<td>3 (33%)</td>
</tr>
<tr>
<td>2</td>
<td>2 (5%)</td>
<td>2 (9%)</td>
<td>4 (7%)</td>
<td>3 (11%)</td>
<td>2 (2%)</td>
<td>1 (11%)</td>
</tr>
<tr>
<td>3</td>
<td>3 (13%)</td>
<td>8 (14%)</td>
<td>3 (11%)</td>
<td>1 (2%)</td>
<td>1 (11%)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1 (3%)</td>
<td>3 (5%)</td>
<td>4 (14%)</td>
<td>1 (2%)</td>
<td>1 (11%)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>16 (43%)</td>
<td>9 (39%)</td>
<td>12 (21%)</td>
<td>7 (28%)</td>
<td>5 (56%)</td>
<td></td>
</tr>
<tr>
<td>No response</td>
<td>13 (35%)</td>
<td>2 (9%)</td>
<td>14 (25%)</td>
<td>4 (14%)</td>
<td>7 (14%)</td>
<td></td>
</tr>
</tbody>
</table>

#### 6. If you give within the service, how do you give?

<table>
<thead>
<tr>
<th>A. Online</th>
<th>4 (11%)</th>
<th>3 (13%)</th>
<th>23 (40%)</th>
<th>12 (43%)</th>
<th>6 (12%)</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Passing of the plate</td>
<td>14 (38%)</td>
<td>15 (65%)</td>
<td>4 (7%)</td>
<td>9 (18%)</td>
<td>4 (44%)</td>
<td></td>
</tr>
<tr>
<td>C. Basket</td>
<td>2 (5%)</td>
<td>1 (4%)</td>
<td>1 (2%)</td>
<td>6 (21%)</td>
<td>5 (10%)</td>
<td>1 (11%)</td>
</tr>
<tr>
<td>D. Alter</td>
<td>1 (2%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Donation Box</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Online Giving in Churches

<table>
<thead>
<tr>
<th></th>
<th>Church 1 Pre-Experimental, N = 37</th>
<th>Church 1 Post-Experimental, N = 23</th>
<th>Church 2 Pre-Experimental, N = 57</th>
<th>Church 2 Post-Experimental, N = 28</th>
<th>Church 3 Pre-Experimental, N = 50</th>
<th>Church 3 Post-Experimental, N = 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>No response</td>
<td>8 (22%)</td>
<td>3 (13%)</td>
<td>8 (14%)</td>
<td>3 (11%)</td>
<td>6 (12%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 (35%)</td>
<td>2 (7%)</td>
<td>18 (36%)</td>
<td>1 (11%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. If you give between the services, how do you give</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Online</td>
<td>8 (22%)</td>
<td>7 (30%)</td>
<td>27 (47%)</td>
<td>9 (32%)</td>
<td>8 (16%)</td>
<td>2 (22%)</td>
</tr>
<tr>
<td>B. Mail</td>
<td>4 (11%)</td>
<td>1 (4%)</td>
<td>1 (2%)</td>
<td>1 (11%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Drop off at the office</td>
<td>6 (16%)</td>
<td>1 (4%)</td>
<td>8 (14%)</td>
<td>2 (7%)</td>
<td>4 (8%)</td>
<td></td>
</tr>
<tr>
<td>D. Someone picks up my offering from my home</td>
<td>1 (2%)</td>
<td>1 (4%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Digital Check</td>
<td>1 (4%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 (11%)</td>
</tr>
<tr>
<td>No response</td>
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<td>11 (48%)</td>
<td>20 (35%)</td>
<td>15 (54%)</td>
<td>30 (60%)</td>
<td>5 (56%)</td>
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</tbody>
</table>

### How open are you to learning how to give online?

- Never 1
- Slightly open 2
- Open 3
- Very open 4
- Very open 5

<table>
<thead>
<tr>
<th></th>
<th>1 (27%)</th>
<th>9 (16%)</th>
<th>1 (4%)</th>
<th>20 (40%)</th>
<th>3 (33%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 (5%)</td>
<td>1 (4%)</td>
<td>1 (2%)</td>
<td>3 (6%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (11%)</td>
<td>3 (23%)</td>
<td>3 (5%)</td>
<td>1 (4%)</td>
<td>5 (10%)</td>
</tr>
<tr>
<td></td>
<td>2 (5%)</td>
<td>1 (4%)</td>
<td>5 (9%)</td>
<td>3 (11%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td></td>
<td>4 (17%)</td>
<td>24 (42%)</td>
<td>10 (36%)</td>
<td>11 (22%)</td>
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<td>8 (35%)</td>
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<td>10 (20%)</td>
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</table>

Note: Church 1 Pre-Experimental, N = 37; Church 1 Post-Experimental, N = 23; Church 2 Pre-Experimental, N = 57; Church 2 Post-Experimental, N = 28; Church 3 Pre-Experimental, N = 50; Church 3 Pre-Experimental, N = 50; Church 3 Post-Experimental, N = 9.
## ONLINE GIVING IN CHURCHES

### Table 5. Results for the Social Validity Survey

<table>
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<tr>
<th></th>
<th>Not Satisfied</th>
<th>1 (6%)</th>
<th>2</th>
<th>3 (18%)</th>
<th>4 (29%)</th>
<th>5 (35%)</th>
<th>Very satisfied</th>
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<tbody>
<tr>
<td><strong>QR Code</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church 1</td>
<td></td>
<td>1 (6%)</td>
<td></td>
<td>3 (18%)</td>
<td>5 (29%)</td>
<td>6 (35%)</td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church 2</td>
<td></td>
<td></td>
<td></td>
<td>4 (15%)</td>
<td></td>
<td>21 (78%)</td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church 3</td>
<td></td>
<td>1 (13%)</td>
<td>1 (13%)</td>
<td>3 (38%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Instructional Video</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church 1</td>
<td></td>
<td>1 (6%)</td>
<td></td>
<td>1 (6%)</td>
<td>5 (29%)</td>
<td>7 (41%)</td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church 2</td>
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<td>1 (4%)</td>
<td>1 (4%)</td>
<td>23 (85%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Church 3</td>
<td></td>
<td>1 (13%)</td>
<td>1 (13%)</td>
<td>4 (50%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Instructional Handout</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church 1</td>
<td></td>
<td>1 (6%)</td>
<td></td>
<td>3 (18%)</td>
<td>5 (29%)</td>
<td>6 (35%)</td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church 2</td>
<td></td>
<td>2 (7%)</td>
<td></td>
<td></td>
<td>22 (81%)</td>
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<td></td>
</tr>
<tr>
<td>n (%)</td>
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<tr>
<td>Church 3</td>
<td></td>
<td>1 (13%)</td>
<td>1 (13%)</td>
<td>3 (38%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
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</table>
## ONLINE GIVING IN CHURCHES

<table>
<thead>
<tr>
<th>iPad or Tables made available</th>
<th>Church 1</th>
<th>Church 2</th>
<th>Church 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td>1 (6%)</td>
<td>1 (6%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td></td>
<td>3 (18%)</td>
<td>3 (11%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td></td>
<td>3 (18%)</td>
<td>19 (70%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td></td>
<td>4 (24%)</td>
<td>1 (13%)</td>
<td>4 (50%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Someone helpful to assist in accessing the giving app and processing the offering</th>
<th>Church 1</th>
<th>Church 2</th>
<th>Church 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td>1 (6%)</td>
<td>4 (12%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td></td>
<td>1 (96%)</td>
<td>2 (7%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td></td>
<td>2 (12%)</td>
<td>2 (7%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td></td>
<td>8 (67%)</td>
<td>20 (74%)</td>
<td>4 (50%)</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>The scripture messages thanking me for my donation</th>
<th>Church 1</th>
<th>Church 2</th>
<th>Church 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td>1 (6%)</td>
<td>2 (7%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td></td>
<td>3 (18%)</td>
<td>2 (7%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td></td>
<td>5 (29%)</td>
<td>22 (81%)</td>
<td>4 (50%)</td>
</tr>
<tr>
<td></td>
<td>4 (24%)</td>
<td>8 (50%)</td>
<td>4 (50%)</td>
</tr>
</tbody>
</table>
### ONLINE GIVING IN CHURCHES

<table>
<thead>
<tr>
<th>If there was a component of the implementation you could have done without, which would it be?</th>
<th>Church 1 n (%)</th>
<th>Church 2 n (%)</th>
<th>Church 3 n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QR Code</td>
<td>2 (12%)</td>
<td>2 (7%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td>Instruction Video</td>
<td>3 (11%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction Handout</td>
<td></td>
<td>2 (7%)</td>
<td></td>
</tr>
<tr>
<td>iPad or Tablets</td>
<td>4 (24%)</td>
<td>5 (19%)</td>
<td>2 (25%)</td>
</tr>
<tr>
<td>Someone to assist</td>
<td>3 (18%)</td>
<td>5 (19%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you think the instructional video could have been played once?</th>
<th>Church 1 n (%)</th>
<th>Church 2 n (%)</th>
<th>Church 3 n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8 (47%)</td>
<td>16 (59%)</td>
<td>5 (63%)</td>
</tr>
<tr>
<td>No</td>
<td>6 (35%)</td>
<td>8 (30%)</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Church 1 N = 17; Church 2 N = 27; Church 3 N = 8.*
ONLINE GIVING IN CHURCHES

Figure 1. First and Second Page of Online Giving App for Church 1
Figure 2. Procedural Fidelity

*Note:* Results for Procedural Fidelity across the three churches. During baseline, procedural fidelity was based on the behavior of church leadership. During intervention, data was based on the treatment integrity of the lead researcher. During maintenance, procedural fidelity was based on the behavior of church leadership.
ONLINE GIVING IN CHURCHES

Figure 3. Percentage of Online Giving Occurrences Per Week and Loose Cash

*Note:* Results for Online Giving Occurrences Per Week and Loose Cash across the three churches.
ONLINE GIVING IN CHURCHES

Figure 4. Monetary Value for Weekly Non-Automated Giving

Note: Results for Monetary Value for Weekly Non-Automated Giving across the three churches.
ONLINE GIVING IN CHURCHES

Figure 5. Total Monetary Value of Weekly Giving for the Church

Note: Results for Total Monetary Value of Weekly Giving for the Church across the three churches.
ONLINE GIVING IN CHURCHES

Figure 6. Number of New Online Givers

Note: Results for Number of New Online Givers for the Church across the three churches.
Appendix

Appendix A. The Researcher’s Treatment Integrity Checklist

1. Meet with the pastor and church helpers reminding them of the QR code, instructional video, and availability of the iPad and tablets via church helpers during the offering.

2. Meet with the AV department to make sure they have QR code and instructional video and know when to display or play on the sanctuary screens as well as stream them online.

3. Make sure the QR code, instructional video, and task analysis are available on the church’s website and social media pages.

4. Make sure QR Code is on the back of seats prior to the beginning of service.

5. Handout the task analysis, containing the QR code at the beginning of service, to the parishioners.

6. During the time of offering, while the pastor reads script and speaks about the importance of giving, have the QR code presented on the large screens at the front of the church.

7. Make sure the instructional how-to video is played during the service right after the pastor speaks.

8. Make sure the pastor mentions the iPad, Tablets, and church helpers available during offering, as well as the QR code, instructional video, and task analysis available on the website and social media pages.

9. Make sure the trained church members with iPads are available and visible during the offering period.
ONLINE GIVING IN CHURCHES

Appendix B. Pre- and Post-Experimental Procedures Questionnaire

Please circle your answer.

1. Which type of giving do you prefer? (Circle one)
   
   A. Giving online through the app
   
   B. Non-automated giving (passing of the plate, basket, altar, donation box, mail drop off, digital check)

2. If you don’t give online, why? (Circle one)
   
   A. I don’t know how
   
   B. I don’t like taking out my personal information during service
   
   C. Too complicated
   
   D. For spiritual reasons
   
   E. Other
   
   F. This doesn’t apply to me, I give online

3. If you prefer non-automated giving, which form do you prefer? (Circle one)
   
   A. Cash
   
   B. Check
   
   C. Credit Card
   
   D. Digital check
   
   E. This doesn’t apply to me, I give online

4. If you prefer non-automated giving, why? (Circle one)
   
   A. It’s the way I have always done it
   
   B. I would prefer not to learn a new method
   
   C. For spiritual reasons
   
   D. Other
   
   E. This doesn’t apply to me, I give online

5. Do you give by envelope? (Choose from 1-5)
   
   Never  1  2  3  4  5  All the time
ONLINE GIVING IN CHURCHES

6. If you give within the service, how do you give? (Circle one)
   A. Online  
   B. Passing of the plate  
   C. Basket  
   D. Alter  
   E. Donation Box

7. If you give between the services, how do you give? (Circle one)
   A. Online  
   B. Mail  
   C. Drop off at office  
   D. Someone picks up my offering from my home  
   E. Digital Check

8. How open are you to learning how to give online? (Choose from 1-5)
   Never    1    2    3    4    5    Very open
ONLINE GIVING IN CHURCHES

Appendix C. Giving App Task Analysis

(Giving App Step-By-Step Instructions)

1. Open the camera app on your phone.

2. Hold the camera so the QR code appears in the viewfinder in the camera app.

3. Tap the notification to open the link associated with the QR code.

4. Enter amount

5. Leave “Tithe” for fund as default

6. Leave GIVE ONCE

7. Enter in your email address

8. Press continue

9. Enter your credit card number

10. Enter the name on the credit card

11. Enter expiration month and year

12. Enter CVV – three-digit number on the back of the card

13. Enter billing address

14. Enter billing state

15. Enter billing postal code

16. Press give online
Appendix D. Church Member Assistance Checklist

1. When the pastor mentions iPads and Tablets are available for those who do not have a smartphone, hold up your Tablet and smile.

2. If someone makes a gesture (i.e., verbally asks you to come over, puts up their hand, waves at you, looks at you for over 30 seconds), go over to them and offer help.

3. You can say: “Can I offer you some help?”

4. Walk them through the Giving App Step-By-Step Instructions.

5. Assure them their credit card information is not kept on the iPad and is protected.
### Appendix E. Social Validity Survey

Please rate your satisfaction with our components of the changes to the giving process.

1. **QR Code**
   - Not satisfied 1 2 3 4 5 Very satisfied

2. **Instructional Video**
   - Not satisfied 1 2 3 4 5 Very satisfied

3. **Instructional Handout**
   - Not satisfied 1 2 3 4 5 Very satisfied

4. **iPad or Tablets made available**
   - Not satisfied 1 2 3 4 5 Very satisfied

5. **Someone helpful to assist in accessing the giving app and processing the offering.**
   - Not satisfied 1 2 3 4 5 Very satisfied

6. **The scripture messages**
   - Not satisfied 1 2 3 4 5 Very satisfied

7. **If there was a component of the implementation you could have done without, which would it be? (Please circle)**
ONLINE GIVING IN CHURCHES

A. QR Code

B. Instructional Video

C. Instructional Handout

D. iPad or Tablets made available

E. Someone to Assist

8. Do you think the instructional video could have been played once? (Circle one)

A. Yes
B. No