



## Behavioral Nudging And Citizen Adoption Of E-Government Services: A Systematic Review Of Local Government Marketing Strategies

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**Abstract:** *The increasing implementation of e-government services has transformed how local governments deliver public services and engage with citizens. However, despite significant investments in digital infrastructure, citizen adoption of digital government services remains inconsistent. This study systematically reviews the most effective marketing strategies for increasing citizen adoption of e-government services in local government contexts. Using a systematic literature review (SLR) approach based on PRISMA guidelines, this study synthesized evidence from 24 empirical studies retrieved through the Elicit academic search platform. The findings reveal that behavioral nudging is the most consistently effective strategy for promoting e-government adoption. Interventions involving simplification, default settings, social influence, facilitating conditions, and collective-benefit framing generated stronger adoption outcomes than passive mass-media campaigns and conventional promotional approaches. The review further indicates that trust, digital literacy, demographic characteristics, and service complexity significantly moderate the effectiveness of marketing interventions. In low-trust and digitally marginalized communities, community-based facilitation and peer mentoring approaches proved more effective than purely informational campaigns. Meanwhile, targeted digital communication and multichannel engagement strategies demonstrated positive outcomes among digitally literate populations. This study contributes to the e-government literature by integrating behavioral governance and public sector marketing perspectives into citizen adoption research. The findings suggest that successful digital governance depends not only on technological quality, but also on citizen-centered communication, trust-building mechanisms, and behavioral intervention strategies.*

**Keywords:** *Behavioral Nudging, Citizen Adoption, E-Government Services, Public Sector Marketing, Institutional Trust*

### INTRODUCTION

The rapid expansion of digital technologies has fundamentally transformed how governments deliver public services, communicate with citizens, and manage administrative processes. Across both developed and developing countries, e-government initiatives have been widely implemented to improve administrative efficiency, reduce operational costs, enhance transparency, and increase accessibility to public services. Local governments increasingly rely on digital platforms such as online tax payments, electronic identification systems, e-retribution



applications, digital licensing services, and citizen engagement portals to accelerate public sector digital transformation. Nevertheless, despite substantial investments in digital infrastructure and information systems, many e-government initiatives continue to experience relatively low levels of citizen adoption and sustained usage.

The persistent gap between technological availability and actual citizen utilization has become a major concern in digital governance research. Existing evidence indicates that many citizens continue to prefer traditional service channels, including face-to-face interactions and telephone-based services, even when digital alternatives are available and operational. This challenge is particularly visible in local government contexts, where citizen populations are highly heterogeneous in terms of digital literacy, socioeconomic background, age, trust in government, and technological readiness. Recent studies further demonstrate that digital infrastructure, public trust, staff competency, and digital literacy significantly influence the success of e-government implementation at the local level (Gupta et al., 2025; Hartanto et al., 2021; Hooda et al., 2022; Setyawan et al., 2024). Consequently, the success of e-government initiatives increasingly depends not only on technological quality, but also on the effectiveness of marketing and behavioral intervention strategies designed to encourage citizen adoption.

Previous research on e-government adoption has largely been dominated by technology-oriented perspectives such as the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Diffusion of Innovation Theory. These frameworks emphasize perceived usefulness, ease of use, social influence, facilitating conditions, and behavioral intention as key determinants of technology adoption. Recent integrative models also highlight the importance of technological literacy, trust, and perceived risk in shaping citizen attitudes toward digital government services (Gupta et al., 2025; Hooda et al., 2022). Although these perspectives provide valuable explanatory insights, they often underemphasize the role of active marketing interventions, communication strategies, and behavioral governance mechanisms in influencing citizen decision-making processes.

In practice, local governments increasingly employ a wide range of promotional and behavioral approaches to increase citizen engagement with digital public services. These approaches include multichannel communication campaigns, social media engagement, targeted digital advertising, peer-to-peer facilitation, behavioral nudging, social proof messaging,



simplifying digital procedures, and default-option interventions. Among these strategies, behavioral nudging has recently emerged as one of the most promising approaches for increasing e-government adoption. Behavioral nudges work by restructuring the decision environment through simplification, default settings, facilitating conditions, collective benefit framing, and social influence cues that reduce cognitive friction and encourage digital service usage. Recent behavioral governance research further suggests that nudging strategies can significantly improve digital adoption when combined with transparency, trust-building, and citizen-centered communication mechanisms (Alsalem et al., 2026; Crăciun et al., 2025).

Empirical evidence increasingly demonstrates the effectiveness of behavioral interventions in digital government contexts. Several studies report significant improvements in online renewals, electronic transactions, digital identity adoption, and citizen engagement following the implementation of nudging-based interventions and targeted digital campaigns. However, findings regarding the comparative effectiveness of different marketing strategies remain fragmented across countries, service categories, and demographic groups. While some studies report strong outcomes from behavioral nudges and targeted online campaigns, others find limited or insignificant effects from passive mass-media communication and conventional promotional activities.

Moreover, the effectiveness of marketing interventions appears to be strongly moderated by contextual factors such as institutional trust, digital literacy, demographic segmentation, service complexity, and socioeconomic exclusion. Trust has repeatedly been identified as a central determinant of behavioral intention and actual use of e-government systems, particularly in contexts involving privacy concerns, perceived risks, and digital insecurity (Gupta et al., 2025; Hooda et al., 2022). In low-trust or digitally marginalized communities, purely informational campaigns may fail to generate meaningful behavioral change, whereas community-based facilitation and peer mentoring approaches may be more effective. Conversely, digitally literate populations are more likely to respond positively to online nudges, self-service systems, and social media-based engagement strategies. These inconsistencies indicate the absence of an integrated understanding regarding which marketing approaches work most effectively, under what contextual conditions, and through which behavioral mechanisms.

Despite the growing body of empirical research on e-government promotion strategies, systematic evidence synthesis comparing the effectiveness of behavioral, communicative, and



structural interventions in local government settings remains limited. Existing reviews predominantly focus on technological adoption determinants rather than comparative marketing effectiveness, leaving an important theoretical and practical gap within digital governance and public administration literature. Therefore, this study aims to systematically review and synthesize empirical evidence regarding the most effective marketing strategies for increasing citizen adoption of e-government services in local government contexts. Specifically, this review evaluates the effectiveness of behavioral nudging, multichannel communication, social media engagement, community-based facilitation, and regulatory interventions while identifying the contextual factors that moderate their effectiveness.

This study contributes to the literature in three important ways. First, it extends conventional e-government adoption research by integrating behavioral governance and public sector marketing perspectives into the analysis of citizen digital adoption. Second, it provides comparative evidence regarding the relative effectiveness of different marketing intervention types across diverse local government environments. Third, it develops a contextual understanding of how trust, digital literacy, demographic characteristics, and service complexity shape the success of e-government marketing strategies. By synthesizing evidence from multiple countries and methodological approaches, this review offers theoretical insights and practical guidance for policymakers, local governments, and public institutions seeking to improve citizen engagement with digital public services.

## **METHOD**

This study employed a systematic literature review (SLR) approach to synthesize empirical evidence regarding the effectiveness of marketing strategies in increasing citizen adoption of e-government services in local government contexts. The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure methodological transparency, rigor, and replicability (Page et al., 2021).

The literature search was conducted using the Elicit academic search engine, which integrates major scholarly databases including Semantic Scholar and OpenAlex. More than 138 million academic publications were accessible through the search system. The primary search query used in this review was: “What marketing approaches are most effective for increasing



citizen adoption of e-government digital services in local government contexts?” The initial search identified 1,000 potentially relevant studies, which were subsequently screened using predefined inclusion and exclusion criteria.

Studies were included if they: (1) focused on citizen adoption of local government digital services; (2) examined marketing, communication, behavioral, or promotional interventions; (3) reported measurable adoption-related outcomes; and (4) employed empirical research designs such as randomized controlled trials, quasi-experiments, surveys, case studies, or systematic reviews. Studies focusing solely on technical system development or non-citizen-facing services were excluded. After the screening process, 24 studies from multiple countries and regional contexts were retained for final analysis.

Data extraction focused on several dimensions, including marketing intervention type, target digital service, adoption effectiveness, contextual characteristics, moderating factors, and study methodology. The extracted studies were analyzed using thematic synthesis and comparative evidence analysis to identify recurring patterns and evaluate the relative effectiveness of different intervention approaches. The analysis particularly emphasized behavioral nudging, multichannel communication, social media engagement, community-based facilitation, and regulatory interventions as dominant categories within the literature.

To strengthen analytical rigor, greater emphasis was placed on studies employing experimental and quasi-experimental designs because these approaches provide stronger causal evidence regarding intervention effectiveness. Nevertheless, qualitative and observational studies were also incorporated to capture contextual and behavioral dimensions that may not be fully observable through experimental approaches alone.

Several limitations should be acknowledged. First, some included studies were evaluated primarily through abstract-level evidence due to limited full-text accessibility. Second, substantial heterogeneity across study designs, intervention types, and adoption measures limited direct comparability between findings. Third, most studies focused on short-term adoption outcomes, making the long-term sustainability of intervention effects difficult to assess.



## **RESULT AND DISCUSSION**

### **Characteristics of Included Studies**

The 24 included sources span a wide range of geographic contexts, study designs, marketing interventions, and target digital services. The table below summarizes the key characteristics of each study. The included studies represent 14 different countries or regions, spanning Europe (UK, Spain, Greece, Switzerland, Netherlands, Kosovo, Russia), the Americas (USA, Colombia, Mexico), Asia-Pacific (South Korea, Australia, Indonesia), and Africa (Morocco). Only six studies had full texts available, with the remaining 18 assessed from abstracts alone. The vast majority are primary studies, with one systematic literature review (Sari et al., 2025). Study designs range from randomized controlled trials (John & Blume, 2017) and large-scale field experiments (Hyttinen et al., 2022) to case studies (Valle-Cruz & Sandoval-Almazan, 2022), surveys (El Harim & El Harmouzi, 2025; Teerling & Pieterse, 2009), and observational analyses (DePaula & Dincelli, 2018). This heterogeneity in methods and contexts complicates direct comparisons but allows for the identification of cross-cutting patterns.

### **Effects**

Among the studies that reported quantitative adoption outcomes, the results generally indicate that active marketing interventions increase citizen use of digital government services, though effect magnitudes vary substantially depending on intervention type, context, and measurement approach.

Several additional studies examined adoption-related outcomes but did not report specific quantitative effect sizes. The study of Greek local governments found that municipalities with more educated inhabitants were more likely to adopt Web 2.0 tools, and that active Facebook engagement could increase citizen awareness (Triantafyllidou et al., 2016). In Kosovo, no significant correlation was found between local government online activity and overall citizen engagement levels (Rexhepi et al., 2021). In Mexico, citizens reported that electronic procedures and services did not generate perceived value (Valle-Cruz & Sandoval-Almazan, 2022). In Australia, strategies targeting "hard to reach" age groups (18–24 and 65+) had limited success (Gibby et al., 2014).

The strongest experimental evidence comes from the behavioral nudging studies. The RCT in Essex demonstrated that both simplification and collective benefit framing increased online



renewals by six percentage points relative to a control letter, while a messenger-based intervention had no effect (John & Blume, 2017). The large-scale field experiment by Hyytinen et al. found that the most effective nudge treatment doubled the adoption rate among slow adopters, with results described as "statistically highly significant and quantitatively large" (Hyytinen et al., 2022). Faulkner et al.'s quasi-experiment showed a 14.1 percentage point increase (95% CI: 9.1–19.2) in online service use when defaults were altered and facilitating conditions were provided (Faulkner et al., 2019). Schneider et al. found that both default options and social proof nudges increased eID adoption in a controlled experiment, though default options simultaneously fueled privacy concerns toward the government, which attenuated their effectiveness (Schneider et al., 2020).

Among multichannel marketing approaches, the results are more variable. The Antioquia case study showed substantial adoption growth over five years (tax filing from 52% to 79%; payment from 13% to 41%), but regression analyses indicated that coercive pressure (laws and regulations) and conformance to the environment were significant predictors, while mobilization campaigns were not (Ramirez-Madrid et al., 2022). This finding is echoed by the Dutch pilot project comparison, which concluded that economic and legal instruments produce more direct effects than communication or service instruments (Van De Wijngaert et al., 2011). By contrast, the online public health campaigns in London produced large and statistically significant increases in engagement during campaign periods (Hanson et al., 2024), and Russia's national e-service portal grew from 22.5 million to 68 million registered users between 2015 and 2018, though multiple concurrent factors make causal attribution difficult (Treakhtenberg & Dyakova, 2019).

Notably, some mass media and passive online activity approaches showed null or negative findings. The national mass media campaign in South West England failed to produce engagement, while grassroots community volunteer approaches demonstrated success (Phippen, 2007). Similarly, in Kosovo, local government online activity bore no significant relationship to citizen engagement (Rexhepi et al., 2021).

## **Thematic Analysis**

### **Behavioral Nudging as a High-Impact Intervention**

Behavioral nudging emerged as the most consistently effective category of intervention across included studies. Six studies explicitly tested nudging techniques (Faulkner et al., 2019;



Fechner et al., 2016; Gonin & Neumann, 2025; Hyytinen et al., 2022; John & Blume, 2017; Schneider et al., 2020), and all reported positive effects where measured. The specific mechanisms differed: simplification of communications and collective benefit framing each increased online renewals by six percentage points in the Essex RCT (John & Blume, 2017); altering defaults and providing facilitating conditions produced a 14.1 percentage point increase in the Australian quasi-experiment (Faulkner et al., 2019); and informative and social influence nudges doubled adoption among slow adopters in the Finnish field experiment (Hyytinen et al., 2022).

Default options and social proof both increased eID adoption in a laboratory setting, though default options carried the unintended consequence of heightening privacy concerns (Schneider et al., 2020). Geofenced proactive notifications on mobile devices were found to be preferred by users for in-situ discovery of engagement opportunities, even when users did not interact immediately (Fechner et al., 2016). The introduction of FAQs to Swiss local government websites improved self-service only when administrations informed users about the FAQs through other channels (Gonin & Neumann, 2025), underscoring that even usability-oriented nudges require active cross-channel promotion.

### **Trust as a Central Mediator**

Trust emerged as a critical mediating variable across multiple studies. In Morocco, trust was the most influential predictor of e-government adoption, with media exposure and digitalization exerting strong positive effects on trust, which in turn drove adoption intentions (model  $R^2 = 0.657$  for adoption, 0.672 for trust) (El Harim & El Harmouzi, 2025). The Spanish research on electronic administration confirmed that trust integrates into traditional technology adoption models and is influenced by service quality and recommendations from government and third parties. In Bandung, institutional trust was identified as one of three external factors critically mediating the relationship between perceived usefulness/ease of use and adoption, alongside training intensity and digital literacy (Sari et al., 2025). The South West England study highlighted that a disengaged population with low trust in government posed fundamental barriers to engagement, which grassroots approaches using trusted community volunteers were better able to overcome than mass media campaigns (Phippen, 2007).

### **The Role of Socio-Demographic Segmentation**



Multiple studies identified citizen demographics as key moderators of marketing effectiveness. Age-based differences were prominent: in Australia, the 18–24 and 65+ age groups constituted a "Hard to Reach Group" with distinctly different inhibiting factors from the 25–64 majority (Gibby et al., 2014). In Bandung, resistance to the e-retribution system was concentrated among older market traders who found the system complex and not user-friendly, even as overall adoption rose from 44% to 90% (Sari et al., 2025). In Russia, the promotional campaign's success was limited to the urban middle class, and e-service use correlated with age, education, and financial situation (Treakhtenberg & Dyakova, 2019). Education level influenced adoption propensity in Greece, where municipalities with more educated populations were more likely to adopt Web 2.0 tools (Triantafillidou et al., 2016). The Essex RCT is notable as an exception: nudges based on simplification and collective benefit increased online renewals irrespective of age and level of deprivation (John & Blume, 2017), suggesting that well-designed behavioral interventions may partially bridge demographic divides.

### **Channel Selection and Content Strategy**

The choice of marketing channel and content type significantly affected outcomes. Affective and symbolic social media content generated greater user engagement (likes, comments, shares) than emotionally neutral government information on U.S. local government Facebook pages (DePaula & Dincelli, 2018). Greek local governments were advised to differentiate strategies by platform, with citizens showing greater awareness of Facebook pages but more interest in YouTube channels (Triantafillidou et al., 2016). The Dutch research on multichannel marketing emphasized that socio-psychological factors were more important than technology itself in determining channel shift behavior (Van De Wijngaert et al., 2011), while the Teerling and Pieterse studies found that citizens held enduring preferences for traditional channels (front desk, telephone) that required deliberate intervention to change (Teerling & Pieterse, 2009, 2011). Cross-channel reinforcement was validated by the Swiss FAQ study, where website improvements alone were insufficient without notification through other channels (Gonin & Neumann, 2025).

### **Coercive and Structural Interventions**

Several studies found that regulatory and structural changes had stronger effects than voluntary communication campaigns. In Colombia, coercive pressure through laws and regulations was a significant predictor of e-government adoption, while promotional mobilization



campaigns were not (Ramirez-Madrid et al., 2022). The Dutch pilot comparison similarly concluded that economic and legal instruments produced more direct effects than communication or service instruments (Van De Wijngaert et al., 2011). However, these approaches carry contextual limitations: coercive strategies may be politically infeasible in certain jurisdictions and may generate backlash or compliance without genuine adoption. The Colombian study also noted that COVID-19 containment measures influenced electronic tax payments but not tax filing (Ramirez-Madrid et al., 2022), illustrating how external environmental pressures can selectively drive digital adoption.

### **Synthesis**

The apparent heterogeneity in findings across these 24 studies can be substantially explained by distinguishing intervention type, population context, and outcome measurement. Behavioral nudging versus passive communication. The most consistent finding is that behavioral nudging interventions outperform passive communication campaigns. The three highest-quality experimental designs (the Essex RCT (John & Blume, 2017), the Finnish field experiment (Hyytinen et al., 2022), and the Australian quasi-experiment (Faulkner et al., 2019)) all tested nudging approaches and all found statistically significant, substantively large effects.

By contrast, passive or broadcast-oriented approaches showed mixed results: the mass media campaign in South West England failed entirely (Phippen, 2007), Kosovo's local government online activity showed no correlation with engagement (Rexhepi et al., 2021), and Colombian mobilization campaigns were not significant predictors of adoption when controlling for regulatory changes (Ramirez-Madrid et al., 2022). The London health promotion campaigns (Hanson et al., 2024) represent an exception, though these involved highly targeted digital advertising with demographic precision rather than broadcast messaging.

This pattern suggests that the mechanism matters more than the channel. Nudges work because they reduce cognitive friction (simplification (John & Blume, 2017), default alteration (Faulkner et al., 2019)), leverage social norms (social proof (Schneider et al., 2020), social influence (Hyytinen et al., 2022)), or make benefits immediately salient (collective benefit framing (John & Blume, 2017), benefit promotion (Faulkner et al., 2019)). Mass media campaigns, by contrast, may fail because they do not alter the decision environment itself and cannot overcome the inertia of established channel preferences (Teerling & Pieterse, 2009, 2011).



Population context determines response to intervention type. The digital divide moderates which interventions succeed. Populations with higher education and existing digital literacy respond to online-channel marketing and social media strategies (El Harim & El Harmouzi, 2025; Triantafillidou et al., 2016), while populations with lower digital literacy, older age, or socioeconomic disadvantage require more intensive, human-mediated approaches. The grassroots volunteer model in South West England succeeded where mass media failed precisely because it used trusted intermediaries in a population characterized by high social exclusion and low government trust (Phippen, 2007). In Bandung, the peer-to-peer "Duta Digital Pasar" mentoring program was effective at increasing perceived ease of use among market traders with low digital literacy (Sari et al., 2025). Russia's promotional success was concentrated among the urban middle class, leaving other populations behind (Treakhtenberg & Dyakova, 2019). These findings indicate that marketing strategies must be calibrated to population characteristics—nudges and online campaigns for digitally literate segments, and community-based facilitation for underserved groups.

Trust deficits require different interventions than awareness deficits. Studies finding that trust was a primary barrier (Morocco (El Harim & El Harmouzi, 2025), Spain, South West England (Phippen, 2007), Indonesia (Sari et al., 2025)) point to a distinct adoption pathway from those where awareness or convenience was the constraint. Where trust is the limiting factor, strategies emphasizing transparency, institutional credibility, and peer recommendation appear more effective than ease-of-use messaging alone. Schneider et al. illustrate this tension directly: default options increased eID adoption but simultaneously increased privacy concerns, an effect that could only be mitigated by adding social proof cues (Schneider et al., 2020). This finding implies that nudging strategies applied in low-trust environments must be combined with trust-building measures to avoid counterproductive effects.

Service type and complexity condition the impact of marketing. The Colombian case demonstrates that the same set of government actions produced different adoption trajectories for tax filing versus tax payment services (Ramirez-Madrid et al., 2022), suggesting that service complexity and transaction type moderate marketing effectiveness. The London campaigns showed similar variation: a simple registration service (Come Correct) saw dramatic uptake during the campaign, while a longer-commitment program (Second Nature weight loss) showed less clear



high-engagement effects (Hanson et al., 2024). The Bandung e-retribution case involved a mandatory digital shift for a routine transaction, which may partly explain the dramatic 44% to 90% adoption growth independent of marketing alone (Sari et al., 2025). These patterns suggest that marketing is most effective for services with low-to-moderate complexity and clear immediate benefits, while more complex services may require structural or regulatory reinforcement.

Sustainability of effects remains uncertain. A critical limitation across the evidence base is the scarcity of long-term follow-up data. The South West England study explicitly identified sustaining engagement as the key challenge (Phippen, 2007). Most experimental studies measured outcomes over short windows without assessing whether behavior persisted (Faulkner et al., 2019; Hyytinen et al., 2022; John & Blume, 2017). The Colombian and Russian cases offer longer time series (five and three years respectively) (Ramirez-Madrid et al., 2022; Treakhtenberg & Dyakova, 2019), but both involved concurrent structural and regulatory changes that confound attribution to marketing alone. Whether nudge-driven adoption represents durable behavioral change or temporary compliance remains an open question that would require experimental designs with extended follow-up periods of at least 12 months post-intervention.

## CONCLUSION

This systematic review demonstrates that behavioral nudging is the most consistently effective strategy for increasing citizen adoption of e-government services in local government contexts. Compared with passive mass-media campaigns, interventions based on simplification, default settings, social influence, and facilitating conditions produced stronger and more consistent adoption outcomes. The findings further show that trust, digital literacy, demographic characteristics, and service complexity significantly influence the effectiveness of marketing interventions. In low-trust and digitally marginalized communities, community-based facilitation and peer mentoring approaches were more effective than purely informational campaigns. These results indicate that successful digital governance depends not only on technological quality, but also on citizen-centered communication and behavioral strategies.

Theoretically, this study extends e-government adoption research by integrating behavioral governance and public sector marketing perspectives. Practically, the findings suggest that local governments should prioritize adaptive communication strategies, trust-building mechanisms, and



behavioral interventions to improve citizen engagement with digital public services. Despite its contributions, this review is limited by methodological heterogeneity across studies and the limited availability of long-term adoption evidence. Future research should therefore employ longitudinal and comparative designs to examine the sustainability of behavioral intervention effects across different institutional and cultural contexts.

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