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The Transformation of Government Public Relations Toward Government 4.0: Challenges and Opportunities (A Literature Study)

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Abstract

This study aims to analyze the dynamics of government public relations transformation toward the Government 4.0 era by mapping strategic challenges and adaptation opportunities. Utilizing a Narrative Literature Review method, this study synthesizes 14 reputable journal articles (Scopus-indexed) published between 2019 and 2025 through a thematic analysis approach. The results indicate a paradigm shift in service delivery, moving from administrative E-Government toward AI E-Government that demands high levels of personalization. Crucial challenges identified reside not in technological infrastructure, but in bureaucratic cultural resistance and the digital literacy competency gaps among public relations personnel. Nevertheless, this era offers significant opportunities to reconstruct public trust by optimizing social media as an instrument for transparency and humanistic citizen engagement. This study concludes that the success of public relations transformation depends on ecosystem collaboration and a functional shift from being mere information disseminators to becoming facilitators of strategic digital interaction.

KEYWORDS

government; digital transformation; public trust; smart government.

Introduction

The rapid advancement of information and communication technology has catalyzed fundamental transformations across various facets of life, including governance. The Industrial Revolution 4.0 necessitates swift adaptation across all sectors, shifting from conventional methodologies toward a more integrated digital approach. This phenomenon compels public institutions to go beyond the mere digitization of archives, requiring a revolution in their engagement with the public. Within this context, public communication serves as a strategic vanguard, ensuring that government policies are accurately understood and internalized by the citizenry amidst the increasingly dense and boundless flow of information.

Digital transformation in the public sector is not merely a transient trend but an urgent necessity to enhance bureaucratic efficiency. This transformative trajectory encompasses shifts in organizational culture, structural frameworks, and the adoption of more agile service delivery models. Nevertheless, the pursuit of public sector digitalization encounters multifaceted challenges, ranging from internal resistance to the uneven distribution of infrastructural readiness across various regions (Herlan et al., 2024).

A prominent manifestation of this transformation is the revolutionary implementation of E-Government. By 2025, it has become evident that E-Government has fundamentally reshaped public service delivery in Indonesia, fostering greater responsiveness. The government is currently mandated to provide integrated platforms that enable citizens to access services ubiquitously anytime and anywhere. This shift directly reconfigures the state-citizen relationship, transitioning it toward a more

interactive and participatory dynamic (Abdurrahman et al., 2025).

Within this emerging communication ecosystem, social media has surfaced as a vital strategic tool for governmental public relations. The utilization of social media has transcended mere online presence; it has evolved into a sophisticated instrument for diplomacy and effective information dissemination. Empirical studies within ministries demonstrate that well-orchestrated social media strategies are capable of bridging communication gaps and cultivating a positive institutional image among both local and global publics (Nugraha & Irwansyah, 2022).

While technology offers unprecedented convenience, government public relations practitioners encounter a paradox between opportunity and challenge in disseminating policies. On one hand, digitalization accelerates the diffusion of regulatory information; yet, on the other, public acceptance does not invariably align with this velocity. Consequently, government public relations must strategically map communication opportunities while simultaneously anticipating challenges regarding public resistance toward new policies (Amalia et al., 2025).

The cornerstone of government communication success in the Government 4.0 era resides in public trust. Public Relations (PR) serves as a primary pillar in constructing and sustaining both institutional reputation and this foundational trust. Absent a solid reputation, even the most sophisticated technological innovations will struggle to gain public acceptance; thus, the role of public relations is central to maintaining the stability of public perception (Nurlaila et al., 2025).

The demand for transparency has emerged as an unavoidable imperative. Optimizing the role of public relations is essential to manifest public information disclosure in accordance with statutory mandates. At the local government level, digital public relations initiatives are directed toward broadening public access, empowering citizens to monitor governmental performance. Consequently, this fosters a framework of accountable and transparent governance (Anggraini & Maulida, 2023).

The synergy between technological integration and human competency is a critical determinant of this transformation's success. Frequently, the most formidable challenge lies not in the procurement of technology, but in the adaptive capacity of human resources within public relations to operate these digital tools. Such competency gaps may impede the acceleration of public sector transformation unless addressed through robust and targeted capacity-building strategies (Fitriani et al., 2025).

Furthermore, government public relations must be capable of responding to the ever-evolving dynamics of E-Government. The revolution in public services necessitates that public relations practitioners transition beyond being mere messengers to becoming proficient listeners through digital data analytics. This shift enables the government to design more precise policies that align accurately with the actual needs and expectations of the public.

Drawing upon these dynamics, this research aims to conduct an in-depth examination through a literature study on the transformation of government public relations toward Government 4.0. By synthesizing contemporary findings from 2020 to 2025, this paper comprehensively maps the strategic challenges and available opportunities, intending to provide a reference framework for strengthening the role of government public relations in the future.

Methods

This study adopts a qualitative research approach using a narrative literature review method to systematically identify, summarize, and critically synthesize scholarly works related to the transformation of government public relations within the Government 4.0 ecosystem. The narrative literature review method is particularly appropriate for studies aiming to explore conceptual developments, theoretical debates, and evolving phenomena in a comprehensive and interpretive manner. Unlike systematic literature reviews that emphasize rigid protocols and quantitative aggregation, narrative reviews offer methodological flexibility that allows researchers to construct holistic interpretations of complex social and organizational dynamics (Baumeister & Leary, 1997; Snyder, 2019).

Data collection was conducted through an extensive search of peer-reviewed journal articles and conference proceedings indexed in the Scopus database to ensure academic rigor and credibility. The literature search was limited to publications from 2019 to 2025 to maintain relevance to recent technological and governance developments. Key search terms included “Government Public Relations,” “Government 4.0,” “Digital Transformation,” and “Public Communication Challenges.” Retrieved articles were screened based on their substantive relevance, with particular attention given to studies discussing both opportunities and challenges in public sector digitalization (Snyder, 2019).

Data analysis employed thematic analysis combined with narrative synthesis to integrate findings across diverse sources. Selected studies were categorized into key thematic areas, including shifts in government communication models, infrastructural and cultural barriers to digital adoption, and the implications of digital transformation for service efficiency and public trust. Through iterative comparison and interpretive synthesis, this approach enabled the construction of a coherent analytical narrative that addresses the research questions and provides deeper insights into the trajectory of government public relations transformation in the digital era (Sukhera, 2022; Xiao & Watson, 2019).

Result and Discussion

Excellence Theory

The Excellence Theory, pioneered by James E. Grunig, serves as a fundamental framework for evaluating the performance of government public relations. This theory posits four communication models: press agentry (propaganda), public information (one-way dissemination), two-way asymmetrical (bidirectional but organization-dominant), and the ideal model, two-way symmetrical (balanced bidirectional communication). Within traditional bureaucratic contexts, government PR practices are frequently confined to the public information model, focusing primarily on policy dissemination without establishing adequate space for dialogue. However, Excellence Theory emphasizes that PR effectiveness is only achievable if an organization practices the two-way symmetrical model, which treats the public not as passive objects but as strategic partners in decision-making (Grunig, 2013; Ruslan, 2012) .

The relevance of Excellence Theory is further amplified in the Government 4.0 era, where digital technology acts as a primary enabler for symmetrical communication. Digital transformation compels government public relations to abandon monologic patterns in favor of interactive dialogue through social media platforms, e-government portals, and smart public service applications. In this study, Excellence Theory is applied to examine whether Government 4.0 technologies are genuinely utilized to listen to public aspirations through dialogue, negotiation, and collaboration, or merely function as digital extensions of one-way information dissemination and image building. When government public relations successfully institutionalize symmetrical communication practices supported by digital technology, the potential to strengthen public trust, civic engagement, and

smart governance outcomes becomes significantly greater (Kriyantono, 2021; Mergel, 2016).

Theory of Diffusion of Innovations

The Diffusion of Innovations Theory, formulated by Everett M. Rogers, provides an analytical framework for examining how new ideas and Government 4.0 technologies are introduced, communicated, and ultimately adopted within government institutions. Rogers explains that innovation adoption is shaped by five key attributes: relative advantage, compatibility, complexity, trialability, and observability. In the context of public sector transformation, this theory is particularly useful for explaining the uneven and often slow pace of digitalization across government organizations. While digital technologies frequently offer clear relative advantages in terms of efficiency, transparency, and service quality, their perceived complexity often becomes a major barrier, especially among public relations practitioners who possess limited digital competencies (Rogers, 2003).

Beyond technical considerations, the attribute of compatibility highlights the cultural and institutional dimensions of innovation diffusion. Government 4.0 initiatives frequently conflict with entrenched bureaucratic norms characterized by hierarchical authority, procedural rigidity, and risk aversion. Such organizational cultures tend to be incompatible with the flexible, collaborative, and user-centered logic embedded in digital governance models. Prior studies

Table 1. Literature Review: Public Relations Transformation & Government 4.0

No	Author (Year)	Article Title	Key Findings: Challenges and Opportunities
1	Wachid et al. (2024)	Evolving human resource dimension in Indonesia's digital public relations landscape	Challenges: Findings identify a digital literacy competency gap among public relations practitioners in Indonesia. Technical proficiency must be urgently enhanced to align with the rapid pace of digital transformation
2	Amalia et al. (2025)	Government Public Relations: Opportunities and Challenges in Socializing the Mayor's Regulation	Opportunities: Direct communication strategies are highly effective in fostering public understanding. Challenges: Societal resistance to new policies necessitates a more adaptive persuasive approach.
3	Nurlaila et al. (2025)	Public Relations Sebagai Pilar Reputasi dan Kepercayaan Publik	Opportunities: Public relations serves a strategic function as a pilar for constructing institutional reputation and public trust amidst an era of information uncertainty.
4	Anggraini & Maulida (2023)	Optimalisasi Peran Humas Pemerintah... sebagai Upaya Mewujudkan Transparansi...	Opportunities: Digitalization facilitates broader access to public information transparency. Challenges: Infrastructural limitations and human resource constraints in regional areas impede the optimization of public relations' strategic roles.
5	Abdul Wahi & Berényi (2023)	Systematic Literature Review on Adoption of E-government among Employees...	Challenges: Human factors specifically public officials serve as the primary determinants of success. Internal resistance and a competency gap constitute the most significant impediments to the adoption of new systems.
6	Aleisa (2024)	Key factors influencing the e-government adoption: a systematic literature review	Challenges: Non-technical factors encompassing cultural, social, and religious dimensions profoundly influence technology adoption. Opportunities: Trust in data security remains the pivotal determinant for successful adoption
7	Nguyen et al. (2024)	Unlocking e-government adoption: Exploring the role of... social media engagement...	Opportunities: Active social media utilization significantly enhances e-government adoption. Social media serves as a potent instrument for augmenting citizen satisfaction.
8	Alajmi et al. (2023)	The determinants of smart government systems adoption... in Saudi Arabia	Challenges: Security concerns constitute a primary barrier to adoption. Opportunities: Managerial support and incentives accelerate the adoption of intelligent systems.
9	Sihotang et al. (2025)	The e-government adoption ecosystem...: A case study on the village information systems...	Opportunities: An ecosystem approach characterized by collaboration between village governments, technology vendors, and the community ensures system sustainability. Consequently, collaboration serves as the fundamental key to successful transformation
10	Zahid & Haji Din (2019)	Determinants of Intention to Adopt E-Government Services in Pakistan...	Opportunities: Establishing Relational Bonds encompassing economic, social, and structural dimensions with citizens can significantly enhance public trust and the behavioral intention to utilize digital services.
11	Qiyamullaily & Subriadi (2024)	Influencing the Adoption of e-Government: A Systematic Literature Review	Challenges and Opportunities: Trust, Performance Expectancy, and Social Influence serve as universal determinants for the success of e-government implementation.
12	Zou et al. (2025)	Factors Influencing the Acceptance of Industry 4.0 Technologies...	Opportunities: Perceived Usefulness is identified as the most potent factor driving the acceptance of 4.0 technologies.
13	Mohiuddin et al. (2023)	The Role of Governments in Driving Industry 4.0 Adoption...	Opportunities: Government policies and subsidies exert a significant impact on reshaping organizational structures to become more flexible and digitally ready.
14	Rojas-Berrio et al. (2022)	Factors Influencing 4.0 Technology Adoption in Manufacturing SMEs...	Challenges: A lack of qualified staff and infrastructural deficiencies constitute the primary impediments to the implementation of 4.0 technologies.

indicate that resistance to innovation in the public sector is commonly rooted not in infrastructure deficits, but in cognitive barriers, institutional inertia, and fear of organizational change (Dunleavy et al., 2006).

This theory also underscores the strategic role of communication and change agents in accelerating innovation adoption. Effective diffusion requires that innovations be framed as accessible, relevant, and aligned with organizational

values, thereby reducing uncertainty and resistance among adopters. In government public relations, this implies the need for internal communication strategies that emphasize trialability and observability, allowing stakeholders to experience tangible benefits of digital tools before full-scale implementation. Empirical research demonstrates that leadership support, participatory communication, and continuous capacity-building significantly enhance innovation acceptance in public organizations (Gil-Garcia et al., 2018; Mergel, 2016). Consistent with this perspective, recent literature identifies that the principal obstacle to Government 4.0 transformation lies not merely in technological readiness, but in mental resistance and organizational culture that perceive innovation as a threat rather than an opportunity (Fitriani et al., 2025).

Mapping the Literature: An Overview of the Fourteen Selected Studies

Table 1 presents the fourteen studies that constitute the core corpus of this literature review. Thematically, these studies can be clustered into three groups. The first group comprises studies situated directly within the practice of government public relations in Indonesia, namely research on the evolving human resource dimension of digital public relations (Wachid et al., 2024), the opportunities and challenges faced by local government public relations in socializing new regulations (Amalia et al., 2025), public relations as a pillar of institutional reputation and public trust (Nurlaila et al., 2025), and the optimization of government public relations roles in realizing public information transparency (Anggraini & Maulida, 2023). The second group consists of studies on e-government and smart government adoption across diverse national contexts, including Indonesia, Vietnam, Pakistan, and Saudi Arabia (Abdul Wahi & Berényi, 2023; Alajmi et al., 2023; Aleisa, 2024; Nguyen et al., 2024; Qiyamullaily & Subriadi, 2024; Sihotang et al., 2025; Zahid & Haji Din, 2019). The third group encompasses studies on Industry 4.0 technology adoption which, although not exclusively situated in the public sector, offer highly relevant insights into the human, organizational, and policy determinants of 4.0 transformation (Mohiuddin et al., 2023; Rojas-Berrio et al., 2022; Zou et al., 2025).

A cross-reading of these fourteen studies reveals a consistent pattern. The challenges of transformation are predominantly non-technical in nature, encompassing human resource competency gaps, internal and societal resistance, and concerns regarding data security. Conversely, the opportunities are largely relational and institutional, including public trust, social media engagement, perceived usefulness, multi-stakeholder collaboration, and governmental policy support. Employing Excellence Theory and Diffusion of Innovations Theory as analytical lenses, the following discussion synthesizes these findings into five interrelated themes.

From Information Dissemination to Dialogue: Repositioning the Role of Government Public Relations

The Indonesian studies within the corpus indicate that government public relations is currently in a transitional position between the public information model and the two-way communication model. Amalia et al. (2025), examining the socialization of a mayoral regulation on parking fee reduction in Pekanbaru City, found that direct communication strategies were highly effective in fostering public understanding. Nevertheless, the persistence of societal resistance toward the new policy demonstrates that information dissemination alone is insufficient; government public relations requires a more adaptive persuasive approach that accommodates public responses. Within the framework of Excellence Theory, this finding affirms that communication effectiveness is determined not by the volume of information distributed, but by the extent to which public relations is capable of listening to, and negotiating meaning with, its publics.

A similar pattern emerges in the study by Anggraini & Maulida (2023) on the Nagan Raya District Government, which demonstrates that digitalization facilitates broader public access to information and supports the realization of transparency as mandated by statutory regulations. However, infrastructural limitations and human resource constraints in regional areas impede the optimization of the strategic roles of public relations. This finding suggests that digital transparency in many regional governments still operates largely at the level of information availability, a characteristic of one-way communication, and has yet to evolve into dialogic accountability in which citizens can actively respond to and oversee governmental performance.

At a more strategic level, Nurlaila et al. (2025) position public relations as a pillar for constructing institutional reputation and public trust amidst an era of information uncertainty. This perspective becomes increasingly relevant as governance shifts toward integrated smart government frameworks and artificial intelligence-based public services, which raise citizen expectations regarding response velocity and service personalization (Prihatmanto et al., 2024; Savveli et al., 2025). Taken together, these three Indonesian studies indicate that, in the Government 4.0 era, the function of public relations is shifting from message production toward relationship management. This reinforces the central argument of Excellence Theory that digital technology becomes meaningful only when it is utilized to institutionalize symmetrical communication between the state and its citizens.
Challenge I: The Human Resource Competency Gap as the Principal Bottleneck

The most consistently identified challenge across the corpus concerns the readiness of human resources. Wachid et al. (2024) identify a digital literacy competency gap among public relations practitioners in Indonesia and emphasize that technical proficiency must be urgently enhanced to keep pace with the rapid trajectory of digital transformation. This finding is corroborated by Anggraini & Maulida (2023), who identify human resource constraints as a principal impediment to the optimization of public relations roles at the regional level. The convergence of these two studies indicates that the competency gap is not merely an individual problem, but a structural one that spans national and local levels of government public relations in Indonesia.

Comparable evidence emerges from outside the domain of public relations. In the context of manufacturing SMEs in an emerging economy, Rojas-Berrio et al. (2022) identify a lack of qualified staff and infrastructural deficiencies as the primary impediments to the implementation of 4.0 technologies. Although situated in the business sector, this pattern closely mirrors conditions within public organizations in developing countries, where technology procurement frequently outpaces the development of the human capabilities required to operate it. Within the public sector itself, the systematic review by Abdul Wahi & Berényi (2023) affirms that human factors, specifically public officials, serve as the primary determinants of e-government success, with competency gaps and internal resistance constituting the most significant impediments to the

adoption of new systems.

From the perspective of Diffusion of Innovations Theory, competency gaps amplify the perceived complexity of an innovation, thereby slowing its adoption even when its relative advantages are evident. For government public relations, practitioners who lack data analytics and digital media competencies tend to utilize digital channels merely as one-way information boards, which, in Grunig's terms, keeps public relations confined to the public information model. Consequently, capacity building in data literacy, social media analytics, and digital crisis communication should be positioned as a precondition, rather than a complement, to the transformation of government public relations toward Government 4.0.

Challenge II: Cultural Resistance, Non-Technical Factors, and Security Concerns

Beyond competency, the literature highlights that adoption is strongly shaped by cultural and social factors. Abdul Wahi & Berényi (2023) demonstrate that internal resistance among public sector employees, often rooted in apprehension toward disrupting established work routines, constitutes a major barrier to the adoption of new systems. Expanding this perspective, Aleisa (2024) reveals that non-technical factors encompassing cultural, social, and religious dimensions profoundly influence technology adoption. These findings correspond directly to the compatibility attribute in Rogers' theory: innovations that conflict with prevailing values and hierarchical bureaucratic norms will struggle to take root, irrespective of their technical sophistication.

Notably, resistance does not originate solely from within the bureaucracy. The study by Amalia et al. (2025) demonstrates that societal resistance toward new policies likewise constitutes a substantive challenge for government public relations. Accordingly, government public relations confronts resistance on two fronts simultaneously: internal resistance from bureaucratic personnel and external resistance from the public. This dual pressure requires public relations practitioners to function as change agents within their organizations while also serving as adaptive persuasive communicators toward the citizenry.

The third dimension of this challenge concerns security and trust in data protection. Alajmi et al. (2023) found that security concerns constitute a primary barrier to the adoption of smart government systems by public sector organizations in Saudi Arabia, while Aleisa (2024) identifies trust in data security as the pivotal determinant of successful e-government adoption. These findings indicate that security is not merely a technical matter, but also a communication matter. Perceptions of security are shaped by the manner in which institutions communicate their data protection policies, incident-handling procedures, and transparency commitments. In this regard, government public relations bears a strategic responsibility in risk communication; absent such communication, even highly sophisticated systems risk being perceived as instruments of surveillance rather than public service.

Opportunity I: Social Media Engagement and the Reconstruction of Public Trust

Amidst these challenges, the literature identifies social media as one of the most promising opportunities. Nguyen et al. (2024), in their study in Vietnam, demonstrate that active social media engagement, together with perceived usefulness, perceived ease of use, and trust, significantly enhances e-government adoption, with social media serving as a potent instrument for augmenting citizen satisfaction. This finding constitutes the most direct empirical support for the argument that social media functions as a strategic vehicle for two-way symmetrical communication, enabling government public relations to listen to public grievances in real time, respond rapidly, and humanize interactions between the state and its citizens.

Trust emerges as a recurring core variable across the corpus. Zahid & Haji Din (2019) demonstrate that establishing relational bonds with citizens, encompassing economic, social, and structural dimensions, significantly enhances public trust and the behavioral intention to utilize digital services in Pakistan. In a similar vein, the systematic review by Qiyamullaily & Subriadi (2024) identifies trust, performance expectancy, and social influence as universal determinants of successful e-government implementation, constructs that are rooted in the extended unified theory of acceptance and use of technology (Venkatesh et al., 2012). These findings align with the position of Nurlaila et al. (2025) that public relations constitutes a pillar of public trust, as well as with meta-analytic evidence that government transparency is a dominant factor in shaping citizen perceptions of e-government services (Saleh et al., 2024).

Synthesizing these studies, it can be argued that public trust is cultivated relationally rather than technologically. The role of social influence identified by Qiyamullaily & Subriadi (2024) further suggests that public opinion circulating on social media, including citizen testimonials and community conversations, shapes adoption decisions. Government public relations can therefore leverage the observability attribute of innovation by showcasing tangible success stories and authentic citizen experiences with digital services. This substantiates the paradigm shift in government public relations from information management toward relationship management.

Opportunity II: Perceived Usefulness as Persuasive Leverage

The second opportunity concerns the perceived usefulness of technology. The meta-analysis by Zou et al. (2025) across various sectors identifies perceived usefulness as the most potent factor driving the acceptance of Industry 4.0 technologies. This finding is consistent with Nguyen et al. (2024), who demonstrate the significant role of perceived usefulness and ease of use in e-government adoption, and with Qiyamullaily & Subriadi (2024), who emphasize performance expectancy, a construct conceptually proximate to perceived usefulness. The convergence of these three studies indicates that both citizens and public employees adopt new technologies when they perceive concrete benefits arising from their use.

For government public relations, this implies a necessary shift in communication strategy from merely promoting the existence of new applications or platforms toward demonstrating their tangible value, such as time savings, cost efficiencies, and service convenience. This approach aligns with the attributes of relative advantage and observability in Diffusion of Innovations Theory. The case examined by Amalia et al. (2025) illustrates this point: even a policy offering direct benefits to the public, such as a reduction in parking fees, may still encounter resistance when its benefits are not communicated adaptively. Internally, communicating usefulness clearly to public employees can likewise reduce the resistance identified by Abdul Wahi & Berényi (2023).

Opportunity III: Collaborative Ecosystems, Policy Support, and Sustainable Evaluation

The third opportunity lies in the establishment of collaborative ecosystems. Sihotang et al. (2025), employing a stakeholder theory perspective in their case study of village information systems in Indonesia, demonstrate that collaboration among village governments, technology vendors, and the community ensures the sustainability of e-government systems. Within such an ecosystem, government public relations can serve as a central orchestrator that bridges technical interests with the social needs of citizens. Absent this multi-stakeholder collaboration, digital initiatives frequently

culminate as mere procurement projects that fail to deliver genuine empowerment to the citizenry.

This bottom-up collaboration must be accompanied by top-down support. Mohiuddin et al. (2023) demonstrate that government policies and subsidies exert a significant impact on reshaping organizational structures to become more flexible and digitally ready in emerging countries. This finding is reinforced by Alajmi et al. (2023), who show that managerial support and incentives accelerate the adoption of intelligent government systems. For government public relations, regulatory legitimacy and leadership commitment provide the necessary mandate for practitioners to pursue communication innovations without being constrained by administrative rigidity.

Finally, the sustainability of transformation requires continuous evaluation. Prior reviews indicate that e-government evaluations frequently focus on the technical availability of systems while neglecting usability and citizen satisfaction (Huda et al., 2022). Government public relations can play a strategic role in this feedback mechanism by utilizing social media listening, as suggested by the findings of Nguyen et al. (2024), together with periodic measurements of public satisfaction and trust. Such a closed feedback loop represents the essence of the two-way symmetrical model, in which public input genuinely informs the refinement of policies and digital services.

Synthesis: An Integrative Map of Challenges and Opportunities

Overall, the fourteen studies indicate that the challenges and opportunities of government public relations transformation are two sides of the same coin, with each challenge corresponding to a specific opportunity. The human resource competency gap (Abdul Wahi & Berényi, 2023; Anggraini & Maulida, 2023; Rojas-Berrio et al., 2022; Wachid et al., 2024) may be addressed through policy support, managerial commitment, and incentives for capacity building (Alajmi et al., 2023; Mohiuddin et al., 2023). Internal and societal resistance (Aleisa, 2024; Amalia et al., 2025) may be mitigated by demonstrating perceived usefulness and harnessing social influence (Nguyen et al., 2024; Qiyamullaily & Subriadi, 2024; Zou et al., 2025) . Security concerns (Alajmi et al., 2023; Aleisa, 2024) may be counterbalanced through relational bonds, transparency, and the reputational role of public relations (Anggraini & Maulida, 2023; Nurlaila et al., 2025; Zahid & Haji Din, 2019). Meanwhile, institutional fragmentation may be overcome through multi-stakeholder collaborative ecosystems (Sihotang et al., 2025). This mapping affirms that the transformation of government public relations toward Government 4.0 is fundamentally a communicative and relational project rather than a purely technological one.

This synthesis also reveals a notable research gap. Of the fourteen studies reviewed, only four directly examine the practice of government public relations, while the remainder address e-government adoption in general or Industry 4.0 adoption across sectors. Consequently, empirical studies examining how government public relations practitioners utilize artificial intelligence, big data analytics, and smart government platforms in their daily communication practices remain limited. Future research is therefore recommended to examine these practices more directly, so that the strategic role of government public relations within the Government 4.0 ecosystem can be mapped more comprehensively.

Conclusion

Based on the synthesis of fourteen studies reviewed in this literature study, it can be concluded that the transformation of government public relations toward Government 4.0 is fundamentally a communicative and relational project rather than a purely technological one. The literature indicates that government public relations in Indonesia remains in a transitional position between the public information model and the two-way symmetrical model. Digitalization has broadened public access to information and supported transparency; however, in many regional governments, this transparency still operates largely at the level of information availability and has yet to evolve into dialogic accountability in which citizens actively participate in overseeing governmental performance.

The challenges of this transformation are predominantly non-technical and can be grouped into three dimensions. First, a structural human resource competency gap, particularly in digital literacy and data analytics, spans both national and regional levels and amplifies the perceived complexity of innovation. Second, government public relations confronts resistance on two fronts: internal resistance from bureaucratic personnel accustomed to established routines, and external resistance from the public toward new policies, both of which are shaped by cultural, social, and religious factors. Third, concerns regarding data security constitute a primary barrier to the adoption of smart government systems, indicating that security is not only a technical issue but also a matter of risk communication.

Conversely, the literature identifies three principal opportunities that correspond directly to these challenges. Social media engagement offers a strategic vehicle for two-way symmetrical communication and for reconstructing public trust through relational bonds and transparency. Perceived usefulness and performance expectancy provide persuasive leverage, requiring public relations to shift from merely promoting the existence of digital platforms toward demonstrating their tangible value to citizens and public employees. Furthermore, multi-stakeholder collaborative ecosystems, reinforced by governmental policy support, managerial commitment, incentives, and continuous evaluation oriented toward usability and citizen satisfaction, provide the institutional foundation for sustainable transformation.

Practically, these findings imply that capacity building should be positioned as a precondition rather than a complement to digital transformation, and that government public relations practitioners must be repositioned from information disseminators to relationship managers, internal change agents, and facilitators of public feedback. This study is limited by its narrative review design and by the composition of its corpus, in which only four of the fourteen studies directly examine the practice of government public relations, while the remainder address e-government adoption in general or Industry 4.0 adoption across sectors. Future research is therefore recommended to empirically examine how government public relations practitioners, particularly in Indonesian regional governments, utilize artificial intelligence, big data analytics, and smart government platforms in their daily communication practices. Ultimately, technology in the Government 4.0 era should serve not merely as a tool for administrative efficiency, but as an instrument of democracy that empowers the citizenry.

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