



Gendered Voice AI in Indonesia: A Technofeminist Digital IR Analysis

Aulia Eka Hastari

Parahyangan Catholic University, Indonesia; eplctckids@gmail.com

Elisabeth Dewi

Parahyangan Catholic University, Indonesia; elisabeth.dewi@unpar.ac.id

| Dikirim: 10-03-2026 | Diterima: 11-07-2026 | Dipublikasikan: 31-08-2026 |

Keywords

digital domestication;
Digital IR; Indonesia;
gender bias; voice
assistants;
technofeminism

ABSTRACT

Voice-based artificial intelligence (AI) is often presented as neutral infrastructure, yet its voices, names, and interaction scripts carry gendered expectations. This article examines how feminized voice AI is governed and reproduced in Indonesia. It uses a qualitative single-case study and document and discourse analysis of an 11-document corpus (2021-2025) comprising academic studies, UNESCO and Indonesian governance texts, a corporate statement, and public reporting on Project Nirmala. Guided by technofeminism, the analysis traces design, discourse, governance, and reproduction. It finds, first, that corporate reforms such as removing a female default address interface choice without necessarily changing feminized service scripts. Second, Indonesia's 2023 AI Ethics Circular recognizes inclusion, humanity, transparency, and accountability but provides no operational criteria for gendered persona or interaction design. Project Nirmala illustrates how a young female AI persona is reproduced in local innovation. The article contributes to digital International Relations (Digital IR) by showing that AI interfaces are sites where transnational corporate norms, international ethical standards, and domestic soft law interact to normalize or contest gendered power.

Kata Kunci

Asisten suara; bias
gender; domestikasi
digital; Digital IR;
Indonesia
technofeminism;

ABSTRAK

Kecerdasan artifisial (AI) berbasis suara sering diposisikan sebagai infrastruktur yang netral, padahal suara, nama, dan skrip interaksinya membawa ekspektasi gender. Artikel ini menganalisis bagaimana AI suara yang difeminisasi ditata kelola dan direproduksi di Indonesia. Penelitian menggunakan metode kualitatif dengan studi kasus tunggal serta analisis dokumen dan wacana terhadap 11 dokumen (2021-2025), yang mencakup kajian akademik, dokumen UNESCO dan Indonesia, pernyataan korporasi, serta pemberitaan mengenai Project Nirmala. Dengan *technofeminism*, analisis menelusuri desain, wacana, tata kelola, dan reproduksi. Temuan pertama menunjukkan bahwa reformasi korporasi, seperti penghapusan suara perempuan sebagai pilihan bawaan, mengubah pilihan antarmuka tanpa selalu mengubah skrip layanan yang difeminisasi. Kedua, Surat Edaran Etika AI Indonesia 2023 mengakui inklusivitas, kemanusiaan, transparansi, dan akuntabilitas, tetapi belum menyediakan kriteria operasional untuk desain persona dan interaksi yang sensitif gender. Project Nirmala memperlihatkan reproduksi persona AI perempuan muda dalam inovasi lokal. Artikel ini berkontribusi pada kajian Hubungan Internasional digital (Digital IR) dengan menunjukkan bahwa antarmuka AI merupakan ruang pertemuan antara norma korporasi transnasional, standar etika internasional, dan *soft law* domestik yang dapat menormalisasi atau menantang relasi kuasa gender.

INTRODUCTION

Voice assistants such as Siri, Alexa, and Google Assistant have moved from novelty to everyday infrastructure. They answer questions, organize schedules, and mediate access to digital services through human-like voices and conversational scripts. Yet their apparent neutrality is unsettled by a persistent pattern: assistance has often been personified as female and coded through patience, politeness, and availability. UNESCO (2021a) and Sindoni (2024) show that this pattern is not merely a question of sound. Voice, naming, visual cues, and scripted responses combine to associate femininity with service.

This association is also an International Relations problem. Voice AI is designed by firms whose products operate across borders, while international organizations and states attempt to govern those products through ethical standards, corporate policies, and domestic regulation. Digital diplomacy research demonstrates that digital infrastructures reshape political communication, state practice, and relations between public authorities and audiences (Triwibowo, 2023). Extending that insight, this article treats AI interfaces as political sites where private authority, international norms, and domestic oversight meet. The question is not only whether an interface is biased, but also who defines acceptable design, who is accountable for its effects, and how transnational design conventions acquire legitimacy in local settings.

Indonesia offers a focused case through which to examine this global-local process. The Ministry of Communication and Informatics' Circular Letter No. 9/2023 sets out values including inclusivity, humanity, transparency, and credibility and accountability for public and private electronic-system providers (Ministry of Communication and Informatics, 2023). However, it does not name gendered persona design, voice defaults, or interaction scripts as objects of oversight. At the same time, Project Nirmala presents a locally developed autonomous metahuman AI as a 21-year-old woman with a stable identity, tone, and communication style (Annisa, 2025). Nirmala is not identical to a conventional voice assistant, but it is an analytically useful case of gendered, interactive AI personification.

Existing research establishes that vocal gender cues can shape trust and social perception, although their effects vary by task, accent, and context (Goodman & Mayhorn, 2023; Piercy et al., 2025). Discourse studies further show that feminization is produced through linked design and language choices rather than a single voice setting (Leisten & Rieser, 2022; Sindoni, 2024). What remains less developed is an IR account of how such interface norms travel between corporate design, international ethics, and national governance. This article addresses that gap through the concept of digital domestication: the process through which gendered technological relations become familiar, legitimate, and repeatable in everyday and domestic political contexts.

Accordingly, the article asks two questions: a) how does technofeminism explain the governance and reproduction of feminized voice AI through design, discourse, and accountability arrangements; and b) how are these global patterns reproduced, negotiated, or left unchallenged in Indonesia's AI ethics framework and Project Nirmala? The article argues that feminized voice AI is reproduced when gendered design conventions are legitimized through service-oriented discourse and remain outside operational governance standards. Its contribution to Digital IR is to show that interface design is a transnational site of authority and norm translation, not only a technical or cultural artifact. The next sections synthesize the literature, operationalize the framework, explain the qualitative single-case method, and present the findings.

LITERATURE REVIEW

Gendered Voice Cues: Conditional Effects, Persistent Coding

Research on voice assistants spans human-computer interaction, communication, discourse studies, and feminist technology studies. Across these fields, one point is well established: users do not encounter synthetic voices as socially empty signals. Goodman and Mayhorn (2023) found that perceived gender affected judgments of trustworthiness and benevolence in medication-instruction scenarios. Their results identify a social-categorization effect, not evidence that women are naturally more trustworthy or suited to assistance.

The effect is nevertheless conditional. Piercy et al. (2025) show that voice gender interacts with accent and task type; gender alone does not consistently determine trust. This complicates the industry claim that a feminized assistant simply reflects universal user preference. The relevant analytical question is therefore how specific contexts activate gendered expectations of warmth, authority, and competence. The literature agrees that gender coding is present, while cautioning against treating its effects as uniform.

This distinction matters for the present study. A governance analysis cannot infer social harm from the presence of a female voice alone. It can, however, examine whether organizations repeatedly package assistance through feminized traits, how they justify those choices, and whether oversight mechanisms recognize the resulting pattern. In that sense, conditional user effects and persistent institutional coding are compatible findings rather than competing explanations.

From Interface Discourse to Governance

Discourse-oriented research moves the analysis from isolated vocal cues to the combined politics of personification. Sindoni (2024) shows that mainstream assistants have been feminized through multimodal configurations that include voice, naming, color, persona, and conversational style. The term 'female by default' therefore describes an assemblage of design decisions. Feminization is reproduced when these decisions make a compliant and emotionally available helper appear ordinary.

Research on harassment responses illustrates why scripts are governance objects. Leisten and Rieser (2022) find that the perceived appropriateness of responses to sexual harassment varies with the assistant's gender presentation. A refusal, deflection, or accommodating response is not only a technical output; it establishes a normative boundary for interaction. Corporate script design consequently regulates behavior while remaining largely invisible to users and public authorities.

Governance initiatives have begun to address parts of this problem. Apple's removal of a default Siri voice shifted the burden from a preselected persona to user choice (Apple, 2021). UNESCO's global ethics framework goes further by calling for traceability, impact assessment, auditability, and action against gender stereotyping (UNESCO, 2021b). The two interventions reveal a central debate. Choice-based reform treats bias as an interface option, whereas accountability-based reform asks whether design and deployment reproduce unequal relations across the AI lifecycle. Technofeminism supports the latter view because it examines institutions and social relations alongside artifacts.

Digital IR and the Indonesia Gap

Digital IR scholarship is concerned with how digital technologies reorganize political practice, communication, and authority. In Indonesia, Triwibowo (2023) shows that digital diplomacy is shaped by domestic interests, organizational capacity, and the relationship between state-to-state and state-to-public communication. This scholarship establishes that digital instruments are not external tools added

to politics; their institutional adoption changes who can communicate, through which infrastructures, and with what limits.

The voice-assistant literature, however, is still dominated by micro-level questions of trust, perception, and interaction, while AI ethics documents operate at a broad normative level. The connection between them remains underdeveloped. International norms may condemn discriminatory bias, yet domestic policies can retain general principles without operational standards for voice, persona, or scripts. Conversely, local developers can adopt globally recognizable gendered personas without any direct act of policy transfer.

From Digital Governance to Interface Politics

Digital IR provides a bridge between these levels. Work on digital diplomacy shows that digitalization changes diplomatic practice, institutional adaptation, and communication with foreign and domestic publics rather than simply supplying a new channel for established activity (Bjola & Holmes, 2015; Triwibowo, 2023). More recent IR scholarship makes the broader point that digital technology cannot be isolated as a specialist issue because it reorganizes the objects, actors, and relations through which world politics is conducted (Liebetrau & Monsees, 2024). However, this literature often begins with states, diplomatic institutions, cybersecurity, or platforms. It gives less attention to the interface through which ordinary users encounter transnational digital systems and their embedded social classifications.

Internet-governance research helps identify why the interface matters to IR. DeNardis (2014) demonstrates that political authority is exercised not only through public law but also through privately controlled architectures and technical arrangements. Applied to conversational AI, this insight means that defaults, names, persona attributes, and response scripts are not merely product details. They are privately made rules that organize how assistance is represented before governments or international organizations formally assess it. Companies possess the capacity to alter these rules at scale, while users usually encounter them only after deployment. Interface design therefore materializes an asymmetry between those who define a system's social form and those expected to interact with it.

The gendered voice-AI and digital-governance literatures consequently operate at different analytical scales. Experimental and discourse studies identify how trust, warmth, service, and harassment responses are organized within interaction. Digital IR and governance studies examine how firms, international organizations, and states distribute authority across borders. Neither scale alone explains how a gender-coded interface becomes a governance problem. Micro-level evidence cannot establish transnational authority by itself, while broad ethical principles may condemn discrimination without specifying the design elements that require review. Connecting the two scales makes it possible to trace how an interface choice is normalized, translated into policy language, or omitted from accountability mechanisms.

This article addresses that gap by treating the AI interface as a transnational site where private design authority, international ethical standards, and domestic governance meet. Its focus is narrower than a general account of AI governance and broader than a study of user perception. It examines the movement between a concrete design convention and the institutional conditions that make the convention repeatable. This position also clarifies the Indonesian case: the analysis does not ask whether Indonesia passively receives a complete foreign model, but how globally familiar gendered design relations remain intelligible when international norms are translated into domestic soft law and local innovation.

Three conclusions emerge from the literature. First, feminization is a multi-layered design and discourse pattern rather than a single acoustic variable. Second, its effects are context-dependent, which requires cautious claims about users but close attention to organizational choices. Third, existing

research has not sufficiently explained how corporate design conventions, international ethics, and Indonesian soft law interact. This article fills that gap by operationalizing digital domestication as a governance process that connects design, discourse, governance, and reproduction.

CONCEPTUAL FRAMEWORK

Technofeminism and Digital Domestication

Technofeminism is the article's primary theoretical lens. Wajcman (2004) rejects both technological determinism and the idea that technology is a neutral object fully controlled by society. Gender relations influence technological priorities, labor, organizations, and design; technologies, in turn, make particular social relations easier to repeat and harder to see. Wajcman and Young (2023) extend this argument to contemporary AI by emphasizing that gender is embedded throughout digitalization rather than added after a system is built.

For voice AI, this mutual-shaping approach directs attention to the link between artifacts and institutions. A feminine voice does not possess a fixed political meaning. Its meaning emerges through its combination with a female name, a young persona, deferential scripts, corporate explanations, and repeated placement in assistive roles. Those choices draw on existing expectations about gendered labor; their repetition can then stabilize the same expectations.

The article uses digital domestication to specify this process. Classic domestication studies examine how technologies enter routines and acquire taken-for-granted meanings within everyday life (Silverstone et al., 1992). Here, domestication also carries a feminist meaning: voice AI is frequently positioned as an always-available helper, a role historically associated with feminized domestic and emotional labor. Digital domestication therefore names both the incorporation of AI into ordinary routines and the normalization of gendered service relations.

Two supporting perspectives connect this claim to IR. Tickner (1992) shows that gendered power is not confined to private life but structures international authority and accepted political knowledge. Buolamwini and Gebru (2018) demonstrate why accountability must be infrastructural: unequal outcomes can persist through data, evaluation, and organizational practice even when systems appear technically neutral. Together, these perspectives allow the article to move from an interface feature to a governance question about private actors, international norms, national oversight, and the reproduction of power.

Digital IR: Interface Authority and Norm Translation

From a Digital IR perspective, an interface is more than the access point between a user and a technical system. It is a site where transnational private authority becomes visible in ordinary interaction. Firms establish defaults, persona categories, response boundaries, and update cycles across multiple jurisdictions. Those decisions do not replace state authority, but they structure the object that states later attempt to regulate. DeNardis's (2014) account of governance through technical architecture supports this move from visible policy to the less visible arrangements that organize digital conduct. Voice AI extends that problem into the social representation of service.

Norm translation occurs across three linked layers. Corporate design converts assumptions about assistance into operational features and scripts. International organizations formulate principles such as non-discrimination, human oversight, traceability, and auditability, but generally depend on other actors for implementation. Domestic authorities translate those principles into legal or soft-law categories that determine what developers must explain and what regulators can examine. Translation is incomplete when a broad commitment to inclusion is not accompanied by criteria for persona, voice, or interaction

design. The gap between the layers is analytically significant because it permits a feature to be socially consequential yet institutionally difficult to name.

Each concept in the framework performs a distinct function. Technofeminism explains how gender relations shape technology and are reshaped through it. Digital domestication identifies how those relations become familiar, usable, and repeatable within an everyday and national setting. Digital IR identifies the actors, scales, and cross-border movement of authority involved in that process. Global governance, used here as a supporting perspective rather than the article's primary positioning, maps the division of responsibility among companies, international organizations, and states. Keeping these functions separate prevents domestication from becoming a synonym for diffusion and prevents technofeminism from being reduced to the identification of a female voice.

The framework therefore carries an analytical expectation rather than a deterministic hypothesis. Reproduction is more likely when gender-coded design is legitimized through service-oriented discourse and remains outside operational accountability standards. Reproduction may be interrupted when defaults, personas, and scripts become explicit objects of assessment, justification, and audit. It may also be negotiated when local actors alter a global convention without fully rejecting it. These possibilities guide comparison across the corpus while preserving the study's central limitation: document evidence can show how a relation is represented and governed, but it cannot establish a uniform effect on users.

Operational Analytical Framework

The framework translates these concepts into four connected stages. Design identifies the material and interaction choices through which an AI persona is constructed. Discourse examines how those choices are explained and made socially meaningful. Governance maps the actors, standards, and accountability mechanisms that permit, constrain, or ignore those choices. Reproduction evaluates whether the association between femininity and service is repeated across platforms and local contexts, or whether it is interrupted. Figure 1 presents the sequence, while Table 1 specifies the indicators used in coding.

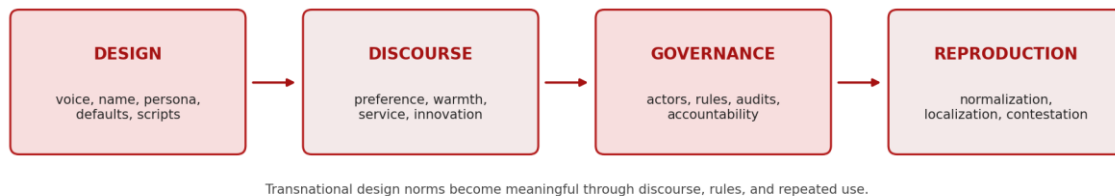


Figure 1. Design-discourse-governance-reproduction analytical sequence

Table 1. Operational indicators for document and discourse analysis

Stage	Analytical focus	Observable indicators	Guiding question
Design	Technical and interface choices	Voice and pitch; name; age; persona; default settings; response scripts; humanization	Which design choices code assistance as feminine, neutral, or non-human?
Discourse	Meanings that legitimize design	Claims about user preference, warmth, trust, service, safety, innovation, or authenticity	How are gendered choices explained, normalized, or challenged?
Governance	Authority, rules, and accountability	Corporate policies; international norms; national guidance; audits; impact assessment; oversight	Which actors set standards, and what responsibilities or gaps are visible?
Reproduction	Persistence across settings and use	Repeated links between femininity and service; transfer from global platforms to local products; absence of corrective standards	How are gendered relations reproduced, localized, negotiated, or interrupted?

The arrows indicate an analytical sequence, not a deterministic causal chain. Design choices become politically consequential through discourse and governance, while reproduction may be partial, contested, or interrupted. The framework is therefore used to compare documents and identify relationships among actors and norms; it does not claim that every user responds to a gendered interface in the same way.

RESEARCH METHODOLOGY

Research Design and Case Selection

This study uses a qualitative single-case design with Indonesia as the case and Project Nirmala as an illustrative within-case example. A single-case approach is appropriate when a bounded setting allows a theoretical mechanism to be examined in depth rather than statistically generalized (Yin, 2018). Indonesia was selected because the same national setting contains an official AI ethics instrument aimed at public and private actors and a visible locally developed interactive AI persona. This combination allows the analysis to compare stated governance principles with a concrete public representation of AI design.

Project Nirmala was selected purposively because its public description explicitly documents gender, age, persona consistency, communication style, and proposed assistive functions (Annisa, 2025). It is not treated as representative of all Indonesian AI products or as technically equivalent to Siri or Alexa. Its role is narrower: it makes visible how gendered personification can be incorporated into local interactive AI and publicly framed as innovation.

Corpus, Time Boundary, and Selection Criteria

The verified analytical corpus contains 11 documents published from 2021 through 2025. It comprises five academic studies on gendered voice interaction and digital politics; three governance texts (two UNESCO materials and Indonesia's Circular Letter No. 9/2023); one corporate statement on Siri voice settings; and two public-discourse sources, from UN Women and Medcom.id. Foundational theoretical and method texts are cited to construct the framework but are not counted as empirical corpus documents.

The 2021 starting point marks two relevant governance shifts: Apple removed Siri's single default voice, and UNESCO member states adopted the Recommendation on the Ethics of Artificial Intelligence. The 2025 endpoint captures the last complete calendar year available when the corpus was bounded and includes the public emergence of Project Nirmala. Earlier sources are retained only when they are foundational to technofeminism, feminist IR, domestication theory, or research method.

Documents were included when they met at least one of four criteria: they directly examined gendered voice or persona design; analyzed trust, service scripts, or harassment in voice interaction; established relevant AI ethics and accountability principles; or provided attributable evidence about Indonesian AI governance or Project Nirmala. Generic discussions of AI bias without a connection to voice, persona, governance, or the Indonesian case were excluded, as were duplicate news summaries and unattributed social-media claims.

The surviving research record does not preserve a database-by-database query log or a reproducible search string. The article therefore does not present the corpus as a systematic review. Instead, it reports a purposively bounded and fully identified document set. This transparent limitation avoids retrospective precision that the available records cannot support.

Document, Discourse, and Coding Procedure

Document analysis was used to examine the content, institutional purpose, and relationship among academic, corporate, international, national, and media texts (Bowen, 2009). Discourse analysis was used more narrowly to identify how texts constructed gendered AI through terms such as preference, warmth, service, inclusion, authenticity, and innovation (Phillips & Hardy, 2002). The study analyzes public claims and policy language; it does not test the underlying software or infer undocumented developer intention.

Coding followed a hybrid deductive-inductive logic. The four framework stages - design, discourse, governance, and reproduction - supplied the deductive parent codes. Within those categories, recurring motifs were coded inductively, including female by default, user preference, warmth and trust, politeness and compliance, harassment response, inclusion, auditability, accountability, and persona consistency. This procedure follows thematic analysis principles in which theory-driven questions and data-driven patterns can be combined transparently (Braun & Clarke, 2006).

Analysis proceeded in two passes. The first recorded explicit claims, actors, and design or policy features in each document. The second compared how the same motifs moved across the global and Indonesian layers. A finding was retained only when it could be linked to a named text; interpretive claims were then made through the operational framework. Because the corpus contains no interviews, user observation, or product audit, the findings concern discourse and governance rather than the causal effects of *Nirmala* or other assistants on Indonesian users.

Unit of Analysis and Comparative Logic

The unit of analysis was not each document as an undivided whole, but an identifiable passage or feature relevant to persona design, gendered interaction, institutional responsibility, or accountability. Examples included a statement about default voice selection, a description of a persona's gender and age, a script for responding to harassment, and a policy provision on inclusivity or auditability. Treating passages as units allowed the same document to contribute to more than one analytical stage while preventing a general document purpose from being mistaken for specific evidence.

The document types served different analytical functions. Academic studies established the observed patterns and qualifications surrounding gendered voice cues, trust, scripts, and digital politics. Apple's statement documented a corporate response at the interface level. UNESCO materials identified international ethical expectations, while the UN Women material recorded a public problem definition. Indonesia's Circular Letter supplied the domestic accountability categories against which those expectations could be compared. Reporting on Project *Nirmala* provided attributable evidence of local persona design and its public framing. The corpus was thus purposively structured around actors and governance levels rather than treated as a set of interchangeable texts.

An evidence matrix connected each coded passage to its source, actor, governance level, relevant research question, framework stage, and analytical use. Comparison then searched for convergence, divergence, and silence. Convergence occurred when different documents recognized the same association or accountability concern; divergence occurred when they explained or addressed it differently; silence referred to an operational category present in the framework but absent from a governance text. Silence was not treated as proof of institutional intention. It was used more narrowly to identify what the available policy language did not make assessable.

Trustworthiness was supported by separating explicit statements from interpretation and by retaining only claims traceable to named sources. Interpretations of reproduction were checked against alternative explanations, including contextual variation in user responses and the possibility that a local product

developed without direct imitation of a foreign assistant. The study did not employ intercoder reliability testing, claim thematic saturation, or reconstruct an undocumented systematic search. These limits narrow the conclusion to a governance mechanism visible in public documents; they do not invalidate comparison within the bounded corpus.

FINDINGS AND DISCUSSION

Global Governance of Gendered AI

At the design stage, the corpus shows that feminization is distributed across several interface elements. Sindoni (2024) identifies voice, naming, visual presentation, and conversational style as mutually reinforcing signs of a female assistant. Apple's 2021 removal of a single default Siri voice changes one of these elements by requiring user selection (Apple, 2021). The change is meaningful because it interrupts an automatic female default, but the evidence does not show that it also transforms service-oriented scripts or the broader personification of assistance.

The contrast between Apple's interface reform and UNESCO's lifecycle approach reveals two understandings of bias. Requiring voice selection redistributes choice at one moment of setup and removes the symbolic effect of a universal female default. A lifecycle approach asks a wider set of questions: how the persona was constructed, which assumptions shaped its scripts, what evidence was used to assess impacts, and who can audit or change the result (UNESCO, 2021b). Choice can interrupt a default without requiring the company to explain the social organization of assistance across the rest of the system.

At the discourse stage, user preference functions as a powerful justification. The experimental literature partly explains why this justification is plausible: female-perceived voices may receive higher trust or benevolence ratings in specific contexts (Goodman & Mayhorn, 2023). Yet Piercy et al. (2025) demonstrate that such effects depend on accent, task, and interaction. The corpus therefore does not support a universal preference claim. It supports a different conclusion: social expectations about gender are activated through design, then reframed as market demand.

At the governance stage, the principal actors occupy unequal positions. Technology companies control interface design, deployment, and internal data, while UNESCO articulates international standards centered on human rights, non-discrimination, traceability, impact assessment, and auditability (UNESCO, 2021b). States translate those standards through domestic instruments. This arrangement makes accountability fragmented: international organizations can define expectations, but evidence about compliance and the authority to change product design remain largely with firms and national regulators.

These actors also possess different forms of authority. Companies exercise direct and rapid control over design, deployment, internal testing, and product data. UNESCO exercises normative authority by defining internationally endorsed expectations, but it cannot independently inspect every proprietary system or compel a redesign. States possess regulatory and procurement authority, yet their capacity depends on whether ethical principles are translated into reviewable obligations. Users may select among offered voices or contest a persona publicly, but they do not set the available categories. The distribution of authority therefore explains why recognition of gender bias does not automatically produce consistent accountability.

The reproduction stage is visible in the distance between recognition and operational control. UNESCO and UN Women explicitly identify gender stereotyping in AI, and Apple has altered a prominent default (UN Women, 2025; UNESCO, 2021a). Nevertheless, the analyzed materials provide no shared standard for auditing persona, tone, compliance, or responses to harassment across

conversational systems. As long as governance focuses on general bias principles or voice choice alone, the wider association between femininity and assistive labor can persist.

The central governance condition is consequently fragmentation rather than a complete regulatory vacuum. Corporate reforms, international recommendations, and national rules all exist, but they target different objects and rely on different evidence. A voice-selection policy addresses defaults; an ethics recommendation addresses principles across the lifecycle; national guidance determines which duties become locally actionable. The gaps between these instruments allow persona and script design to remain under-specified. For Digital IR, this fragmentation shows how cross-border digital power can persist without a single commanding actor or an explicit global rule.

This finding locates gendered voice AI within Digital IR. The issue crosses borders through corporate platforms and design conventions, but authority is dispersed among firms, international organizations, and states. The result is not an absence of governance; it is governance through uneven standards, private infrastructures, and soft accountability. Gendered interface norms are consequently part of global digital politics because they are produced and contested through transnational relations of authority.

Indonesia's Governance Gap

Indonesia's Circular Letter No. 9/2023 provides a broad ethical basis for AI governance. It applies to business actors and public and private electronic-system providers, and it names inclusivity, humanity, security, accessibility, transparency, credibility and accountability, data protection, sustainability, and intellectual property (Ministry of Communication and Informatics, 2023). It also assigns supervisory roles to government, providers, and users. These provisions establish that AI development has social consequences and is not solely a private technical matter.

The gap appears when those values are compared with the operational indicators. The Circular contains no reference to gender, voice defaults, persona construction, interaction scripts, or harassment responses. Its accountability language focuses on trustworthy information, data, risk management, and compliance with existing law. It does not specify how a developer should assess whether an AI persona reproduces stereotypes or how a regulator should verify such an assessment.

The distinction between principle and operation sharpens this gap. Inclusivity states a value, but an operational standard identifies the object to be reviewed, the responsible actor, the evidence required, and the consequence of an unresolved risk. For gendered conversational AI, such a standard could make defaults, names, age coding, service scripts, or harassment responses visible to assessment. The Circular does not specify these objects, a responsible reviewer, or documentation that a developer must produce. Its general principles can guide conduct, but the corpus provides no pathway by which a regulator could compare two persona designs or require a reasoned account of their gender coding.

This omission is substantively important because gendered interface design can satisfy general values while escaping scrutiny. A product may be accessible, transparent about data, and technically secure while still repeatedly representing assistance as young and female. The governance problem is therefore not that the Circular endorses feminization; no evidence supports that claim. The problem is that its categories do not make gendered persona and interaction design legible as objects of accountability.

Project Nirmala makes that blind spot concrete. Medcom.id describes Nirmala as an autonomous metahuman AI developed by Ruang Waktu, publicly presented as a 21-year-old woman with a consistent identity, tone, and communication style (Annisa, 2025). At the design stage, gender and age are explicit product attributes. At the discourse stage, the persona is linked to positivity, entertainment, authenticity, and collaboration. Other stated applications include customer service and brand

representation, placing the young female persona within recognizable forms of assistive and relational labor.

The evidentiary layers of the case must be kept distinct. The explicit evidence is that Nirmala was publicly assigned a female gender, an age of 21, and a consistent tone and communication style. The interpretation is that these attributes constitute designed identity rather than an incidental label because they organize how the product is introduced and where it may be used. The governance implication is narrower still: the Indonesian framework does not require a developer to explain whether such attributes draw on gendered service expectations or to document an assessment of alternative persona choices. This three-step reading grounds the claim without treating reporting as a technical audit.

The case does not prove that Nirmala's developers copied a particular foreign assistant or that Indonesian audiences adopt the intended meaning. It shows a more limited but defensible form of reproduction: a globally familiar association between a feminized persona and interactive service is independently legible and marketable in local innovation. Because existing Indonesian guidance does not ask developers to justify or assess that association, it travels into the domestic setting without becoming a specific governance question.

Alternative explanations remain possible. A young female persona may have been selected for branding, narrative coherence, production convenience, or reasons not reported in the corpus. Indonesian audiences may also interpret the persona in diverse or resistant ways. The analysis neither rejects those possibilities nor converts them into evidence. Its finding is institutional: a globally recognizable link between femininity and relational service can be presented as local innovation without triggering a specific requirement for justification or gender-sensitive review. Reproduction here refers to the availability of the design relation, not proof of a single developer intention or uniform audience effect.

Digital Domestication as a Governance Process

Across the two empirical layers, digital domestication operates through the full analytical sequence. Design gives assistance a gendered voice or persona. Discourse makes the choice appear natural through claims about preference, warmth, authenticity, or innovation. Governance distributes authority among companies, international organizations, and the Indonesian state, but regulates the interface unevenly. Reproduction occurs when the association between femininity and service remains available for reuse across products and contexts.

The connection among the stages is conditional but cumulative. Design supplies the recognizable elements of a gendered helper. Discourse links those elements to positive qualities and reduces the visibility of their social history. Governance then determines whether the connection must be named, supported by evidence, and opened to review. When no operational requirement interrupts the sequence, the persona remains available as an apparently ordinary template for future products. Domestication occurs through this interaction of familiarity, legitimating language, and regulatory silence, not through the automatic transfer of a finished model from abroad.

This process is neither simple diffusion nor proof of direct policy transfer. The corpus does not identify a single global rule requiring feminized AI. Instead, reproduction is enabled by a governance environment in which private design choices circulate transnationally, international norms remain broad, and domestic soft law does not operationalize gendered interaction. Project Nirmala illustrates the local end of that process, while the Circular reveals why the design remains difficult to evaluate within existing policy categories.

The framework allows three possible outcomes. Reproduction occurs when the femininity-service association remains recognizable and reusable. Negotiation occurs when local actors alter its voice,

visual form, function, or public meaning while retaining part of the relation. Interruption occurs when alternative design, explicit standards, assessment, or contestation makes the association less automatic. The present corpus offers the strongest evidence for reproduction and governance silence. It offers limited evidence for negotiation through Nirmala's locally developed metahuman form, but insufficient evidence to establish how users reinterpret it. Apple demonstrates partial interruption at the level of voice default, not across the entire persona.

Technofeminism clarifies the power relation involved. The interface reflects preexisting expectations that service should be warm, patient, and available; it then provides a repeatable technological form through which those expectations can be encountered. Digital domestication is thus a governance process because the durability of the relation depends on institutional decisions about defaults, scripts, standards, audits, and oversight - not only on private user choice.

This reading makes the global-local relation more precise. The global layer supplies widely circulating products, design conventions, and ethical vocabularies; the domestic layer determines how those conventions are adapted and which become objects of accountability. Neither layer is analytically complete on its own. Digital domestication connects them by showing how transnational private authority can acquire everyday legitimacy while remaining subject to incomplete national translation. The concept thus identifies a mechanism of digital world politics that operates through routine interaction rather than only through interstate negotiation.

The article's original contribution to IR is therefore specific: it extends Digital IR from the study of digital tools in political communication to the politics embedded within digital interfaces themselves. Voice AI links micro-level interaction to macro-level authority. Corporate design, international ethical norms, and national soft law jointly determine which forms of gendered power are visible, contestable, and accountable in an increasingly transnational digital environment.

CONCLUSION

This article asked how technofeminism explains feminized voice AI as a governance problem and how the pattern is reproduced or challenged in Indonesia. In response to RQ1, the analysis finds that feminization is produced through a sequence of design, discourse, governance, and reproduction. Voice, persona, and scripts draw on gendered service expectations; discourse legitimizes those choices; and fragmented authority leaves the wider pattern only partially governed. Corporate reforms to voice defaults can interrupt one design feature, but they do not by themselves establish accountability for persona and interaction.

In response to second research question, Indonesia's 2023 AI Ethics Circular establishes relevant values but does not operationalize gendered interface design. Project Nirmala demonstrates that a young female AI persona can be integrated into local innovation and publicly associated with relational and assistive functions. The defensible finding is not that the product causes gender stereotypes, but that existing governance categories do not require the association between femininity and service to be identified, justified, assessed, or audited.

The theoretical contribution is to define digital domestication as a global-local governance process. This concept connects technofeminism with Digital IR by showing how power is embedded in interfaces and stabilized through relations among transnational firms, international organizations, and domestic regulators. The politics of AI therefore begins before a system enters formal foreign policy or diplomatic practice: it is already present in the design conventions and accountability arrangements through which digital systems become ordinary.

More broadly, the study suggests that Digital IR should examine not only how states and diplomats use digital technologies, but also how political relations are built into technologies that operate across

borders. Interfaces organize visibility, authority, and expected social roles before they become subjects of formal regulation. Examining them expands the empirical scope of IR from the strategic use of digital tools to the everyday infrastructures through which transnational norms and inequalities can be normalized. This article does not claim that interface design produces identical effects across users or societies. It identifies a governance mechanism that can be tested through comparative research, technical audits, interviews, and user studies in Indonesia and other digital environments.

The evidence supports targeted rather than expansive recommendations. Indonesia can translate its existing commitments to inclusivity and accountability into gender impact assessment for conversational personas, documented justification of defaults, and interaction audits that include service scripts and responses to harassment. Public procurement can require these records when conversational AI is used in public-facing services. These recommendations follow directly from the identified governance gap. Because the study is based on a small purposive document corpus and one illustrative local case, future research should test the framework through user studies, developer interviews, technical audits, and comparisons across ASEAN.

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BIOGRAFI

Aulia Eka Hastari is a master's student in International Relations at Parahyangan Catholic University, Indonesia. Her academic interests include gender studies, technology governance, feminist International Relations, and artificial intelligence.

Elisabeth Dewi is an Associate Professor in the Department of International Relations at Parahyangan Catholic University. Her research focuses on gender, feminist theory, and the intersection of global politics and social justice.