



International Journal of Electronic Governance

ISSN online: 1742-7517 - ISSN print: 1742-7509

<https://www.inderscience.com/ijeg>

E-government implementation and internal user satisfaction in a Peruvian naval tertiary medical centre: a cross-sectional study

Edgar Pfuño-Ramos, Jorge A. Vargas-Merino, Miguel A. Arce-Huamani

DOI: [10.1504/IJEG.2026.10077039](https://doi.org/10.1504/IJEG.2026.10077039)

Article History:

Received:	16 October 2025
Last revised:	07 January 2026
Accepted:	28 January 2026
Published online:	18 March 2026



International Journal of Electronic Governance

ISSN online: 1742-7517 - ISSN print: 1742-7509

<https://www.inderscience.com/ijeg>

E-government implementation and internal user satisfaction in a Peruvian naval tertiary medical centre: a cross-sectional study

Edgar Pfuño-Ramos, Jorge A. Vargas-Merino, Miguel A. Arce-Huamani

DOI: [10.1504/IJEG.2026.10077039](https://doi.org/10.1504/IJEG.2026.10077039)

Article History:

Received:	16 October 2025
Last revised:	07 January 2026
Accepted:	28 January 2026
Published online:	18 March 2026

E-government implementation and internal user satisfaction in a Peruvian naval tertiary medical centre: a cross-sectional study

Edgar Pfuño-Ramos
and Jorge A. Vargas-Merino

Escuela de Posgrado,
Universidad Privada Norbert Wiener,
Lima 15046, Peru
ORCID: 0000-0002-0481-9975
ORCID: 0000-0002-3084-8403
Email: edgard1310@gmail.com
Email: Jorge.vargasm@uwiener.edu.pe

Miguel A. Arce-Huamani*

Facultad de Ciencias de la Salud,
Programa académico de Medicina Humana,
Universidad Privada Norbert Wiener,
Lima 15046, Peru
ORCID: 0000-0003-3185-4861
Email: miguelangel.arce@uwiener.edu.pe
*Corresponding author

Abstract: *Background:* Evidence linking e-government (GE) implementation to internal-user satisfaction in healthcare is scarce. *Methods:* Analytical cross-sectional study of 150 employees at a Peruvian naval medical centre. GE was measured across Presence, Interaction, Transaction, and Transformation (Deficient/Adequate/Excellent). Satisfaction was assessed with a validated survey. We estimated Spearman's ρ , χ^2 /Cramér's V , Cochran–Armitage trend, and prevalence ratios (PR) for \geq Adequate satisfaction. *Results:* Overall GE was mainly Adequate (70.7%); satisfaction, 62.7%. Presence skewed Deficient (59.3%); Transformation, Excellent (53.3%). GE correlated weakly but positively with satisfaction ($\rho = 0.181$; $p = 0.027$; Cramér's $V = 0.264$; $\chi^2(4) = 20.84$); an ordered trend was evident ($Z = 3.87$; $p = 0.00011$). vs. Deficient GE, \geq Adequate satisfaction rose stepwise – Adequate: PR = 1.45 (95% CI 1.11–1.90); *Excellent*: PR = 1.64 (1.26–2.12). *Conclusions:* Higher GE aligns with greater satisfaction; prioritising basic Presence while sustaining advanced capabilities may yield the largest gains.

Keywords: e-government; internal-user satisfaction; public sector; health services; SDG 16: peace; justice and strong institutions.

Reference to this paper should be made as follows: Pfuño-Ramos, E., Vargas-Merino, J.A. and Arce-Huamani, M.A. (2026) 'E-government implementation and internal user satisfaction in a Peruvian naval tertiary medical centre: a cross-sectional study', *Int. J. Electronic Governance*, Vol. 18, No. 5, pp.1–12.

Biographical notes: Edgar Pfuño-Ramos is a Peruvian professional whose recent academic work includes a 2024 Master's thesis in Public Management and Governance at Universidad Norbert Wiener on e-government and internal user satisfaction in a naval medical institution in Callao. Publicly available professional information also links him to the Peruvian Navy. His work focuses on digital government, information technologies, and service improvement in institutional settings.

Jorge A. Vargas-Merino holds a Doctorate in Administrative Sciences from Universidad Nacional Mayor de San Marcos, a Master's degree in Economics, regulation and competition in public services from the University of Barcelona, and a Master's degree in Business Administration from Universidad Nacional de Trujillo. He is a CONCYTEC-qualified researcher (RENACYT) and has served as a researcher, postgraduate lecturer, thesis advisor, reviewer, and jury member in several Peruvian universities. His academic work focuses on innovation, sustainability, marketing, public management, and higher education.

Miguel A. Arce-Huamani is a Peruvian physician, epidemiologist, and health management specialist. He holds master's degrees in Health Services Management and in Clinical Epidemiology and Biostatistics. Public records identify him as a full-time faculty member in Medicine at Universidad Privada Norbert Wiener since 2025. He has also advised medical theses and served as principal investigator on funded research projects. His interests include public health, health systems, oncology, and the epidemiology of noncommunicable diseases.

1 Introduction

E-government service design is central to how stakeholders assess the quality of digital public services and user satisfaction, because design characteristics shape perceived service quality and trust (Chan et al., 2021). Recent evidence also shows that service-quality dimensions and platform attractiveness are intricately linked to behavioural intention and perceived quality in municipal e-services (Patergiannaki and Pollalis, 2024). In Thailand, models combining information-systems success and service-quality perspectives underscore how system and service quality foster trust and satisfaction with government platforms (Nookhao and Kiattisin, 2023). Evidence from a one-stop e-government portal in Bahrain likewise highlights accessibility, information quality, security, reliability, and perceived ease of use as actionable drivers of satisfaction (AL-Kaabi, 2023). Beyond transactional portals, dialogic and credible government communication through social media can strengthen engagement and trust, connecting communication governance with user experience (Fan et al., 2022). Taken together, contemporary scholarship converges on the view that reliable, usable, and responsive digital services are prerequisites for sustained satisfaction and public value creation (Duffy et al., 2025).

Despite this progress, much of the literature continues to privilege citizen-facing outcomes; fewer studies examine internal users public employees who operate and

depend on e-government systems despite their central role in translating digital services into day-to-day organisational performance (Rahmatullah et al., 2025). Evidence suggests that the maturity of e-government capabilities may influence employees' job satisfaction and organisational outcomes, underscoring the need to evaluate internal-user experience alongside external service delivery metrics (Waladali and Rabaiah, 2022). In parallel, recent research on digital government maturity models highlights substantial heterogeneity in model dimensions and emphases, which complicates how maturity is mapped onto real-world organisational practice and user experience (Waara, 2025). In healthcare organisations, implementation of digital systems often encounters constraints related to infrastructure, training, usability, and policy readiness, factors that can directly shape staff acceptance and perceived value (Alhassan et al., 2025; Finnegan and Mountford, 2025). In Peru, digital government reforms have advanced within broader state modernisation agendas; however, peer-reviewed evidence on how implementation maturity translates into satisfaction among healthcare staff remains limited (Díaz Shupingahua et al., 2022; Iparraguirre, 2025).

Accordingly, this study addresses a specific niche that remains underdeveloped in the e-government satisfaction literature: internal users in a high-reliability, security-sensitive healthcare organisation. In military medical institutions, administrative and clinical staff rely on digital services not only to access information, but also to coordinate workflows that have direct implications for continuity of care, compliance, and operational readiness; their user experience is therefore a critical (yet often unmeasured) layer of e-government performance. Therefore, the objective of the present study was to assess the relationship between e-government implementation and internal user satisfaction among administrative and clinical personnel in a naval medical institution in Peru. This study adds value in three ways:

- 1 it contributes staff-side evidence from a specialised public healthcare organisation a naval tertiary medical centre where hierarchical governance and mixed clinical-administrative workflows can shape digital service experience
- 2 it operationalises e-government implementation using a staged framework (Presence, Interaction, Transaction, and Transformation), distinguishing front-end informational performance from back-office capability
- 3 it reports policy-relevant effect measures by complementing rank-based association with ordered trend testing and prevalence ratios to support prioritisation of improvement actions.

2 Materials and methods

2.1 Study design and setting

We carried out an analytical, non-experimental, cross-sectional correlational study using a quantitative, applied approach and a hypothetico-deductive framework. The study took place in 2023 at the Centro Médico Naval 'Cirujano Mayor Santiago Távara', a naval tertiary facility in Bellavista, Callao, Peru. This setting concentrates military and civilian

personnel who routinely use institutional digital services, allowing standardised, survey-based assessment of e-government implementation and internal user satisfaction.

2.2 Population and sample

The target population comprised internal users of the Centro Médico Naval ‘Cirujano Mayor Santiago Távara’, including uniformed military personnel, permanent civilian staff, and contracted civilian staff. Inclusion criteria were: employees aged 18–60 years, actively working at the institution during data collection, and providing written informed consent. We excluded individuals without a defined institutional role, those who declined participation, and those with documented psychiatric or neurological conditions. Participants were recruited onsite through consecutive, voluntary enrolment of eligible staff during working shifts across administrative and clinical areas until the prespecified sample size was reached, aiming to capture representation across the main employment categories.

The sample size was calculated to compare two independent proportions (exposed vs. non-exposed) using a two-sided α of 0.05, 80% power, and equal allocation (1 : 1). Drawing on prior data, we anticipated an outcome prevalence of 22% in the non-exposed group and 45% in the exposed group, corresponding to an odds ratio of ~2.9, a risk ratio of ~2.0, and an absolute difference of 23% points (Dubale et al., 2023). Using the Fleiss method with continuity correction, the minimum required total sample was 150 participants (75 exposed and 75 non-exposed), a conservative specification that ensures adequate power for the primary comparison without unnecessary inflation of the sample.

2.3 Data collection

Data were collected in person using structured, self-administered questionnaires. Content validity was established by expert judgement (five reviewers with relevant academic credentials), who confirmed applicability and clarity. A pilot with 20 internal users preceded fieldwork; responses were processed to estimate reliability. Pilot participants were not included in the final analytic sample. Fieldwork procedures were standardised (same instructions and completion conditions), and questionnaires were checked at the point of collection to minimise missing responses. Internal consistency was high for both instruments (e-government, $\alpha = 0.799$; internal user satisfaction, $\alpha = 0.809$; 20 items each). Data were tabulated in Microsoft Excel and analysed using SPSS v27.0.

2.4 Variables

The exposure was e-government implementation, measured with a 20-item instrument mapped to four staged domains: Presence, Interaction, Transaction, and Transformation. Each item used a five-point Likert response (1 = Never to 5 = Always), producing a total score ranging from 20 to 100, where higher values indicate more advanced implementation. To support interpretability and to align with the theoretical score range, total scores were categorised using equal-width intervals across the 20–100 scale.

Specifically, the 80-point range (100–20) was divided into three equal bands (26.67 points each), yielding cut-points at 46.67 and 73.33; for reporting, thresholds were rounded to whole-number score intervals (20–46, 47–73, 74–100). Domain-level scores were computed analogously to describe implementation profiles across stages.

The outcome was internal user satisfaction, assessed with a 20-item Likert instrument covering five dimensions: person–job fit, job challenge, working conditions, coworker support, and rewards/benefits. Item responses were summed to a total score (range 20–100), with higher scores indicating greater satisfaction. For effect-size estimation and to match the primary comparison used in the sample-size assumptions, satisfaction was additionally operationalised as a binary outcome (\geq Adequate satisfaction = Adequate or Excellent vs. Deficient). Operational definitions and coding rules were specified a priori to guide data entry and analysis.

2.5 *Data analysis*

Categorical variables were summarised as frequencies and percentages; scale variables were described according to distributional properties. Normality was assessed using the Kolmogorov–Smirnov test ($\alpha = 0.05$) given the overall sample size ($n = 150$). Because the main scale variables and their domain scores were non-normally distributed, non-parametric inference was used. The primary association between overall e-government implementation (ordinal: Deficient/Adequate/Excellent) and satisfaction (ordinal: Deficient/Adequate/Excellent) was evaluated using Spearman’s rho; nominal association was additionally quantified using Pearson’s χ^2 and Cramér’s V. A linear-by-linear trend test was used to evaluate ordered gradients across e-government levels.

For effect-size estimation, satisfaction was dichotomised as \geq Adequate satisfaction (Adequate or Excellent) vs. Deficient. Prevalence ratios (PR) and 95% confidence intervals were estimated using a generalised linear model with Poisson distribution and log link, applying robust (sandwich) standard errors; Deficient e-government served as the reference category. Statistical significance was set at two-sided $p < 0.05$. Analyses were conducted in SPSS v27.0.

2.6 *Ethical considerations*

This study was reviewed and approved by the Comité Institucional de Ética en Investigación of the Universidad Privada Norbert Wiener (CIEI-UPNW), which issued a ‘Constancia de Aprobación Automática’ for the protocol titled “Gobierno Electrónico y Satisfacción de los Usuarios Internos del Centro Médico Naval Cirujano Mayor Santiago Távara, Callao, Perú 2023”, Version 01 dated 08 January 2024. The institution provided written authorisation for onsite data collection. All participants gave documented informed consent; participation was voluntary and could be withdrawn at any time. Data were collected anonymously, stored on password-protected devices with restricted access, and reported only in aggregate. The study adhered to the principles of the Declaration of Helsinki and applicable national regulations.

3 Results

Distribution. Among 150 respondents, overall electronic government (GE) was predominantly Adequate (106/150, 70.7%), with 36 (24.0%) Deficient and 8 (5.3%) Excellent. Overall satisfaction was Adequate in 94 (62.7%), Excellent in 30 (20.0%), and Deficient in 26 (17.3%). By GE dimension, Presence skewed Deficient (89/150, 59.3%), Interaction and Transaction showed more even spreads, and Transformation concentrated at Excellent (80/150, 53.3%). $N = 150$ (Table 1).

Table 1 Distribution of electronic government (overall), satisfaction (overall), and GE dimensions

<i>Variable/Dimension</i>	<i>Category</i>	<i>n (%)</i>
Electronic government (overall)	Deficient	36 (24.0%)
	Adequate	106 (70.7%)
	Excellent	8 (5.3%)
Satisfaction (overall)	Deficient	26 (17.3%)
	Adequate	94 (62.7%)
	Excellent	30 (20.0%)
GE dimension: Presence	Deficient	89 (59.3%)
	Adequate	32 (21.3%)
	Excellent	29 (19.3%)
GE dimension: Interaction	Deficient	70 (46.7%)
	Adequate	40 (26.7%)
	Excellent	40 (26.7%)
GE dimension: Transaction	Deficient	60 (40.0%)
	Adequate	50 (33.3%)
	Excellent	40 (26.7%)
GE dimension: Transformation	Deficient	40 (26.7%)
	Adequate	30 (20.0%)
	Excellent	80 (53.3%)

Percentages within each variable/dimension (row block). GE = electronic government; $N = 150$.

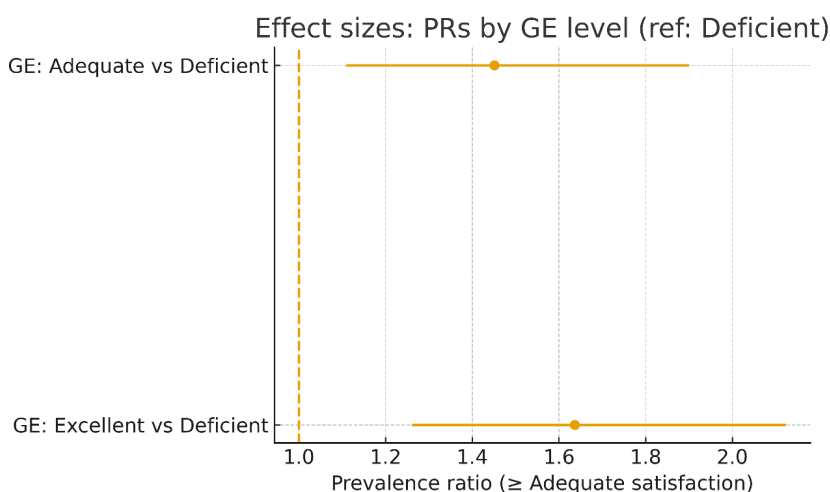
Association between GE and satisfaction. There was a weak, positive monotonic association between overall GE and satisfaction (Spearman's $\rho = 0.181$; $p = 0.027$). Nominal association was small (Cramér's $V = 0.264$; $\chi^2(4) = 20.84$). A significant linear trend was observed across ordered GE levels ($Z = 3.87$; $p = 0.00011$). When dichotomising the outcome as \geq Adequate satisfaction (Adequate or Excellent) and using Deficient GE as the reference, prevalence ratios (PR) indicated higher satisfaction at higher GE levels: PR = 1.45 (95% CI 1.11–1.90) for Adequate vs. Deficient, and PR = 1.64 (95% CI 1.26–2.12) for Excellent vs. Deficient (Table 2).

Graphical summary. A forest plot of PRs (Figure 1) illustrates the monotonic gradient in \geq Adequate satisfaction with increasing GE level; points denote PR and bars the 95% CI (reference = Deficient) (Figure 1).

Table 2 Association between electronic government and satisfaction (compact)

Metric	Estimate	95% CI	p-value/note
Spearman's rho (overall)*	0.181	–	$p = 0.027$
Cramér's V	0.264	–	$\chi^2(4)=20.84$
Goodman–Kruskal's γ	0.303	–	–
Kendall's τ_b	0.172	–	–
Weighted κ (linear)	0.217	–	–
Linear trend (Cochran–Armitage)	$Z = 3.87$	–	$p = 0.00011$
Prevalence ratio: GE Adequate vs. Deficient	1.45	1.11–1.90	–
Prevalence ratio: GE Excellent vs. Deficient	1.64	1.26–2.12	–

Outcome for effect sizes and PRs is '≥ Adequate satisfaction' (Adequate or Excellent). The reference category for PRs is 'Electronic government: Deficient'. Two-sided p-values are reported; 95% confidence intervals are shown. Abbreviations: PR, prevalence ratio; CI, confidence interval; κ , weighted kappa (linear weights); ρ , Spearman's rho; τ_b , Kendall's tau-b; γ , Goodman–Kruskal's gamma.

Figure 1 Forest (PR) (see online version for colours)

Effect sizes (prevalence ratios, PR) for ≥ Adequate satisfaction across electronic government levels (reference: Deficient). Points denote PR and bars denote 95% CI; the vertical dashed line indicates the null value (PR = 1.00). Outcome defined as Adequate or Excellent satisfaction.

4 Discussion

This study sets out to examine how the implementation level of e-government (GE) relates to internal-user satisfaction in a specialised public healthcare setting. Overall, ratings clustered at the mid-tier for both constructs, but the dimensional profile was asymmetric: foundational front-end elements (Presence) underperformed, while back-office capabilities (Transformation) concentrated at the top end. Although the overall correlation between GE and satisfaction was small, the ordered tests and prevalence-ratio

gradient revealed a clear dose–response pattern, with the greatest marginal gains in satisfaction when services move from Deficient to Adequate. The forest plot corroborated this monotonicity. Collectively, these signals suggest that perceived value depends more on lifting baseline informational and service attributes than on refining already mature transformational functions. In practical terms, deficits in clarity, accuracy and navigability likely operate as limiting steps that blunt the user-experience return from higher-order digital capability. Analytically, the triangulation of rank-based association, linear trend testing, and policy-facing prevalence ratios strengthens interpretability and aligns the findings with decision-making needs. These results provide the frame for the subsequent comparison with prior literature and support a staged improvement strategy prioritising Presence while sustaining Transformation.

Interpreted against recent evidence, the observed ‘Presence’ gap is consistent with service-design findings showing that satisfaction with digital government is strongly shaped by core informational and facilitating service characteristics, particularly when users rely on websites for clarity, guidance and credible information. It also aligns with e-government service-quality studies in which fulfilment and trustworthiness, as well as security/privacy and perceived value, play central roles in shaping satisfaction and behavioural outcomes. In our setting, the monotonic prevalence-ratio gradient suggests that moving a platform from ‘deficient’ to ‘adequate’ implementation may yield larger satisfaction gains than marginal refinements at already high maturity – an interpretation supported by reviews that repeatedly identify usability and information quality as dominant drivers across digital public services. Importantly, by focusing on internal users within a specialised healthcare environment, this study extends prior work that links e-government maturity to public servants’ job satisfaction by quantifying how implementation levels translate into internal-user satisfaction in real organisational workflows.

Our sample showed a predominance of Adequate ratings for both overall GE and user satisfaction, with a more polarised pattern across specific GE dimensions. This aligns with Peruvian evidence reporting mid-level dominance for both constructs ‘medio’ for e-government services (75.3%) and for user satisfaction (77.4%) suggesting that, in similar administrative settings, users commonly appraise digital public services as acceptable but improvable rather than excellent (Díaz Shupingahua et al., 2022). The higher concentration of Excellent ratings in Transformation in our setting contrasts with the overall mid-level profile previously described and may reflect local gains in back-office integration despite front-end limitations. Such convergence on mid-tier evaluations, paired with pockets of excellence, points to incremental service maturation rather than system-wide optimisation. From a policy perspective, the parallel with prior Peruvian data underscores a regional need to lift the ‘middle’ of the distribution through baseline usability, content quality, and workflow reliability improvements before expecting widespread excellence.

We observed a positive, yet modest, monotonic association between overall GE and satisfaction. This contrasts with a strong correlation reported in a comparable Peruvian analysis (Spearman’s $\rho = 0.701$; $p < 0.001$), where dimension-level relations with satisfaction were also sizeable Presence 0.597, Interacción 0.351, Transacción 0.457, Transformación 0.509 (Díaz Shupingahua et al., 2022). Several mechanisms could attenuate the association in our context. First, if perceived usefulness and core quality attributes are unevenly distributed across modules, their aggregate effect on satisfaction weakens, consistent with structural findings that information quality, service quality,

system quality, and perceived usefulness (but not ease of use) drive satisfaction and downstream, trust and continuance intention (Devkant Kala et al., 2024). Second, satisfaction may be partly routed through user competencies rather than service attributes; in public e-health services, satisfaction tightly tracks health and e-health literacy, not sociodemographics, and is the main predictor of readiness to use services (Duplaga and Turosz, 2022). Strengthening content relevance and support for lower-literacy users may therefore yield larger satisfaction gains than interface tweaks alone.

At the dimension level, our profile combined deficits in Presence with strong Transformation performance, indicating back-office progress outpacing front-end basics. Prior work shows that each dimension relates positively to satisfaction most notably Presence ($\rho = 0.597$) and Interacción (0.351), Transacción (0.457), and Transformación (0.509) implying that weaknesses in early-touch elements can dampen overall satisfaction even when advanced capabilities are in place (Díaz Shupingahua et al., 2022). This pattern aligns with models in which information quality, service quality, and system quality – together with perceived usefulness – shape satisfaction and subsequent trust and continuance (Devkant Kala et al., 2024). When information is not easily discoverable, accurate, or actionable (a ‘Presence’ attribute), downstream perceptions can be constrained even if transactional or transformational features are robust. Moreover, if user literacy mediates satisfaction responses to interface and content, weaknesses in foundational layers may disproportionately affect groups with lower e-health literacy (Duplaga and Turosz, 2022). Prioritising Presence upgrades clear navigation, reliable content, and visible service commitments while sustaining transformation gains is likely to produce the largest marginal improvements in satisfaction and sustained use in similar public service ecosystems.

This study advances the internal-user literature by disentangling how stage-specific e-government implementation maps onto satisfaction in a specialised public healthcare setting. Three insights emerge. First, despite a predominance of Adequate ratings, Presence lagged while Transformation clustered at Excellent, revealing a front-end/back-office asymmetry that many evaluations blur. Secondly, the overall association between GE and satisfaction was positive but modest, yet a clear monotonic gradient in \geq Adequate satisfaction across GE levels indicates that moving services from Deficient to Adequate yields meaningful gains, with diminishing returns thereafter. Thirdly, combining rank-based effect sizes with prevalence ratios and a visual summary strengthens interpretability for decision-makers. These findings are most transferable to large, hierarchical public health organisations with centralised IT governance and mixed clinical–administrative workforces, particularly in middle-income contexts where digital portfolios mature unevenly. More broadly, the results refine current models by showing that transformational back-office capability does not compensate for weak informational Presence, underscoring the need to lift baseline usability and content reliability to convert digital capability into perceived value.

We pre-specified a justified sample size and achieved complete enrolment ($n = 150$), enhancing statistical precision. Measurement quality was supported by piloting and acceptable internal consistency for both instruments ($\alpha \approx 0.80$). The analysis plan matched data properties, using non-parametric correlation, an ordered linear-trend test, multiple concordance metrics, and effect estimates as prevalence ratios complemented by a forest plot facilitating transparent, policy-facing interpretation. Dimension-level reporting (Presence, Interaction, Transaction, Transformation) enables actionable

diagnostics rather than a single undifferentiated score. Ethical approval, standardised administration, and anonymised handling further strengthen internal validity.

Cross-sectional design prevents causal inference, and same-time, self-administered measures raise the possibility of common-method and social-desirability bias. Being a single-institution study in a naval medical centre constrains external validity; results should be extrapolated mainly to similar public healthcare organisations with comparable digital portfolios and workforce structures. Categorising composite scores, while policy-friendly, may compress variance and attenuate associations; likewise, dichotomising satisfaction to estimate prevalence ratios trades granularity for interpretability. Unmeasured factors such as digital literacy, prior platform experience, or service load could confound or mediate relationships, and we did not model multi-dimensional effects simultaneously. Finally, non-normal distributions limited parametric modelling options, and the absence of longitudinal follow-up precluded assessing durability of satisfaction as platforms evolve.

5 Conclusion

This study set out to determine whether higher levels of e-government (GE) implementation are associated with greater internal-user satisfaction in a specialised public healthcare organisation. We found a positive relationship with a clear monotonic increase in the prevalence of \geq Adequate satisfaction across GE tiers, indicating that upgrading services from Deficient to Adequate yields the most tangible gains. The dimension profile strong Transformation alongside weak Presence suggests that back-office capability alone does not translate into satisfaction when front-end informational basics (clarity, accuracy, navigability) lag. Taken together, these findings support a staged improvement strategy that prioritises lifting baseline informational and service quality before pursuing system-wide excellence. While drawn from a single institution, the conclusions are most applicable to similarly structured public providers in middle-income settings seeking dependable, user-centred digital value.

Funding

This research did not receive any specific financial support from public agencies, commercial entities, or non-profit organisations.

Conflict of interest

The authors declare no conflicts of interest.

Author contributions according to the *CrediT* taxonomy

E.P.R.: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Writing – Original Draft, and Writing – Review and Editing.

J.A.V.M.: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Writing – Original Draft, and Writing – Review and Editing.

M.A.A.H.: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Writing – Original Draft, Supervision, Validation, and Writing – Review and Editing.

Ethical responsibilities

This study was reviewed and approved by the Comité Institucional de Ética en Investigación of the Universidad Privada Norbert Wiener (CIEI-UPNW). Institutional permissions and confidentiality safe-guards were ensured; the study complied with the principles of the Declaration of Helsin-ki.

Informed consent

All procedures were conducted in accordance with the Declaration of Helsinki and were approved by the Institutional Research Ethics Committee of Universidad Privada Norbert Wiener (CIEI-UPNW), which issued an Approval Certificate (“Constancia de Aprobación Automática”) for the protocol “Gobierno Electrónico y Satisfacción de los Usuarios Internos del Centro Médico Naval Cirujano Mayor Santiago Távara, Callao, Perú 2023”, Version 01 (08 January 2024). Each participant received study information and provided written informed consent prior to inclusion. Participation was voluntary with the right to withdraw at any time; questionnaires were anonymous and data were analysed only in aggregate. Institutional authorisation for onsite data collection was granted by the Centro Médico Naval.

References

- Alhassan, A., Offei, F.O., Adu, B.O., Gunu, A.I., Mintah, D.Y., Bobuafor, C., Klu, D. and Doe, P.F. (2025) ‘A scoping review of acceptance and utilization of electronic health records among healthcare professionals in Ghana’, *Discover Public Health*, Vol. 22, No. 1, p.730, Available at. <https://doi.org/10.1186/s12982-025-01146-9>
- AL-Kaabi, R. (2023) ‘The impact of e-government services on customer satisfaction in the private sector: a case study of the Kingdom of Bahrain (SIJILAT) an online commercial registration’, *The Electronic Journal of Information Systems in Developing Countries*, Vol. 89, No. 6, p.e12275, Available at. <https://doi.org/10.1002/isd2.12275>
- Chan, F.K.Y., Thong, J.Y.L., Brown, S.A. and Venkatesh, V. (2021) ‘Service design and citizen satisfaction with E-government services: a multidimensional perspective’, *Public Administration Review*, Vol. 81, No. 5, pp.874–894, Available at. <https://doi.org/10.1111/puar.13308>
- Díaz Shupingahua, M., Pizzán-Tomanguillo, N. del P., Rosales Bardalez, C.D., Reátegui Salas, J.A. and Pizzán-Tomanguillo, S.L. (2022) ‘Servicios de e-gobierno y satisfacción del usuario en una municipalidad’, *Sapientia: International Journal of Interdisciplinary Studies*, Vol. 3, No. 1, pp.728–744, Available at. <https://doi.org/10.51798/sjjs.v3i1.258>

- Dubale, A.T., Mengestie, N.D., Tilahun, B. and Walle, A.D. (2023) ‘User satisfaction of using electronic medical record system and its associated factors among healthcare professionals in Ethiopia: a cross-sectional study’, *BioMed Research International*, Vol. 2023, Article ID 4148211, Available at. <https://doi.org/10.1155/2023/4148211>
- Duffy, A., Boroumandzad, N., Sherman, A.L., Christie, G., Riadi, I. and Moreno, S. (2025) ‘Examining challenges to co-design digital health interventions with end users: systematic review’, *Journal of Medical Internet Research*, Vol. 27, p.e50178, Available at. <https://doi.org/10.2196/50178>
- Duplaga, M. and Turosz, N. (2022) ‘User satisfaction and the readiness-to-use e-health applications in the future in polish society in the early phase of the COVID-19 pandemic: a cross-sectional study’, *International Journal of Medical Informatics*, Vol. 168, p.104904, Available at. <https://doi.org/10.1016/j.ijmedinf.2022.104904>
- Fan, M., Epadile, M., Qalati, S.A. and Qureshi, N.A. (2022) ‘The effects of eGovernment efficiency on subjective wellbeing’, *Frontiers in Psychology*, Vol. 13, p.768540, Available at. <https://doi.org/10.3389/fpsyg.2022.768540>
- Finnegan, H. and Mountford, N. (2025) ‘25 years of electronic health record implementation processes: scoping review’, *Journal of Medical Internet Research*, Vol. 27, No. 1, p e60077, Available at. <https://doi.org/10.2196/60077>
- Iparraguirre, P.K.J. (2025) ‘El impacto del gobierno digital en la modernización del estado: revisión sistemática’, *Revista Científica Visión de Futuro*, Vol. 29, No. 1, pp.87–106, Available at. <https://visiondefuturo.fce.unam.edu.ar/index.php/visiondefuturo/article/view/848> (Accessed 6 January, 2026).
- Kala, D., Chaubey, D.S., Meert, R.K. and Al-Adwan, A.S. (2024) ‘Impact of user satisfaction with E-government services on continuance use intention and citizen trust using TAM-ISSM framework’, *Interdisciplinary Journal of Information, Knowledge, and Management*, Vol. 19, p.001, Available at. <https://www.informingscience.org/Publications/5248> (Accessed 15 October, 2025).
- Nookhao, S. and Kiattisin, S. (2023) ‘Achieving a successful e-government: determinants of behavioral intention from thai citizens’ perspective’, *Heliyon*, Vol. 9, No. 8, p.e18944, Available at. <https://doi.org/10.1016/j.heliyon.2023.e18944>
- Patergiannaki, Z. and Pollalis, Y.A. (2024) ‘E-government quality from the citizen’s perspective: the role of perceived factors, demographic variables and the digital divide’, *International Journal of Public Sector Management*, Vol. 37, No. 2, pp.232–254, Available at. <https://doi.org/10.1108/IJPSM-07-2023-0229>
- Rahmatullah, R., Habibi, A., Khaeruddin, K., Yaqin, L.N., Alharmali, T.M., Fauzee, M.S.O. and Mahat, J. (2025) ‘A study of user satisfaction and net benefits in Indonesia through the DeLone and McLean model for E-government success’, *Discover Sustainability*, Vol. 6, No. 1, p.710, Available at. <https://doi.org/10.1007/s43621-025-01645-4>
- Waara, Å. (2025) ‘Examining digital government maturity models: evaluating the inclusion of citizens’, *Administrative Sciences*, Vol. 15, No. 3, p.73, Available at. <https://doi.org/10.3390/admsci15030073>
- Waladali, E. and Rabaiah, A. (2022) ‘Impact of e-government maturity on public servants’ job satisfaction’, *Problems and Perspectives in Management*, Vol. 20, No. 3, pp.501–515, Available at. [https://doi.org/10.21511/ppm.20\(3\).2022.40](https://doi.org/10.21511/ppm.20(3).2022.40)