

a technical concern—it is a governance imperative that ensures transparency, citizen participation, and inclusive digital transformation.

Keywords: Web Accessibility, Inclusive Governance, WCAG 2.1, IDEA Framework

Introduction

In the digital era, colleges and universities are becoming more dependent on Internet-based employment, learning, interaction, and service delivery. The government website serves as an important window to e-government (Bhing & Palaoag, 2019). In the case of the State Universities and Colleges (SUCs) in the Philippines, whose mandate entails the provision of inclusiveness and equity of access to quality education. It is not limited to a technical requirement about accessibility of websites or having education, but it becomes a governance imperative. It transformed government and many other processes within it that were once deemed as being intricate, complex, and complicated (Bajar, 2020). Web accessibility is characterized by the Web Content Accessibility Guidelines (WCAG) of the World Wide Web Consortium (W3C). The term Web Content Accessibility Guidelines (WCAG) can be used to refer to the process of making websites accessible to people who have low or no vision as well as a wide range of skills, such as those that are visual, auditory, or cognitive, or those with mobility disorders (World Wide Web Consortium [W3C], 2023).

As pointed out by Lagura (2025), addressing the digital divide and improving digital governance have significant implications for promoting inclusivity, stimulating economic growth, and bolstering citizen involvement. Governance and the possibility of it bringing inclusiveness and growth to the economy are very significant in empowering citizens. Bridging this gap will allow oppressed communities to have fair access to essential services such as education, healthcare, and the financial system, thus contributing to social equality and decreasing the system's inequality. This is in line with the situation in the world that is best seen through adherence to the principles of inclusivity, which is embodied in Sustainable Development Goal 4 (hereinafter referred to as SDG 4), which has the focus of ensuring inclusiveness and equity in the context of quality education and lifelong learning opportunities for everyone (UNESCO, 2020). It also finds legal grounding in the Magna Carta for Persons with Disability (R.A. No. 7277, 1992), (R.A. No. 10070, 2010), and the Act Expanding the Benefits and Privileges of PWDs (R.A. 10754, 2016), which mandate public institutions—including SUCs—to provide equitable access to services through inclusive digital infrastructure.

Despite these mandates, recent research shows that the government and educational websites in the Philippines have failed to comply with the basic accessibility standards. An example would be that of Bokingito et al. (2025); the level of web accessibility compliance with the Philippine government agencies has an average of 53.43 percent web presence and 82.50 percent usability, which points to the fact that there are problems of digital inclusivity at a system level. Furthermore, Khalid and Lavilles (2019) found that a number of local government websites remain at the basic or emerging stage of development. Similarly, studies by Campoverde-Molina et al. (2021) showed that the main violations occur in image contrasts, image alt text, buttons, and links without visible text, which mostly represent a lack of accessibility components.

This study addresses a crucial gap: while some research has been conducted on e-government and accessibility, a comprehensive, prescriptive, and data-driven analysis of SUCs' website accessibility in the Philippine context remains lacking. As SUCs are geographically dispersed and serve diverse populations—including students with disabilities, those from rural and disadvantaged areas, and indigenous learners—failure to maintain accessible digital platforms exacerbates the digital divide and violates the principle of inclusive governance (Wang & Si, 2024; United Nations, 2006).

The necessity of this research lies in its potential to identify structural deficiencies, inform data-driven recommendations, and catalyze reforms in digital governance practices among SUCs. It moves beyond mere compliance audits and instead offers prescriptive analysis, which is crucial for sustainable digital transformation. By employing both automated evaluation tools and qualitative clustering techniques, the study provides a detailed view of accessibility issues and usability patterns across a representative sample of SUCs.

The implications of this research are significant. First, it supports policy formulation and refinement at both the institutional and national levels, guiding the Commission on Higher Education (CHED), SUC administrators, and web developers in building digitally inclusive ecosystems. Second, it contributes to the academic discourse on digital equity in the public sector, digital ethics, and information and communications technology (ICT) for development. Third and most importantly, it gives power to marginalized learners by making sure that SUC websites do not act like gatekeepers; they are gateways to education, resources, and public services.

Moreover, this paper is an investigation into the accessibility, web presence, and usability of State Universities and Colleges (SUCs) websites in the Philippines, paying special attention to identifying technical or structural problems, which may make such websites more difficult to use by individuals with disabilities. Ultimately, this study aims to evaluate the accessibility, usability, and compliance of State Universities and Colleges (SUC) websites in the Philippines with established accessibility standards. It seeks to identify key barriers that hinder access for users with disabilities and to analyze the inclusivity of user experience, particularly in terms of navigation and equitable information delivery. Finally, the study intends to propose actionable recommendations that will enhance digital inclusivity and align SUC websites with governance principles and legal requirements.

Method

Research Design

This paper used a mixed-methods evaluative research design to measure accessibility, usability, and user experience of State Universities and Colleges (SUCs) websites in the Philippines. The design combined both quantitative evaluations with the help of standardized evaluation tools and automated testing and qualitative evaluations through heuristic evaluation and clustering of

themes. Through this strategy, it was possible to effectively examine the online inclusivity of SUC websites and come up with viable data-based recommendations.

Research Site and Sampling

The study was conducted across all 17 administrative regions of the Philippines, ensuring representation from Luzon, Visayas, and Mindanao. A quota sampling design was used, with one State University or College (SUC) selected per region, yielding a total of 17 institutions. This approach provided balanced regional coverage and reflected the heterogeneity of higher education institutions nationwide. As quota sampling is non-probability based, findings are descriptive and not intended for statistical generalization.

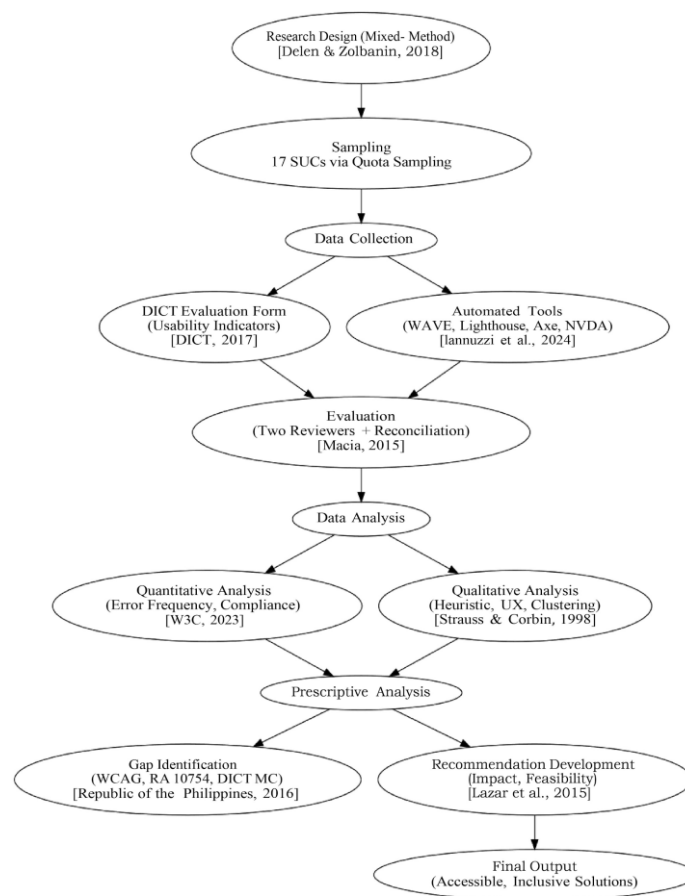


Figure 1. Methodology Workflow

Research Instruments

Standardized Assessment Form

An evaluation form based on the Department of Information and Communications Technology (DICT) Web Audit Resource Pool was employed. It assessed web presence and usability across four key indicators: accessibility, identity, navigation, and content. This tool provided a qualitative scoring framework for interface evaluation.

Automated Accessibility Testing Tools

A range of automated tools were employed to assess technical compliance with the Web Content Accessibility Guidelines (WCAG) 2.1, Level AA. These included the Web Accessibility Evaluation tool (WAVE), Lighthouse, Axe DevTools, AChecker, and NonVisual Desktop Access (NVDA). Testing was conducted on each website's homepage as well as selected subpages, with the results carefully documented in structured diagnostic logs.

Data Analysis

In the quantitative phase, the web usability evaluation rubric was assessed using this rubric and rated per indicator using a three-level scale: compliant, partially compliant, and noncompliant. The web presence evaluation applied a four-stage e-governance maturity framework based on internationally recognized digital governance models. Each of the 17 SUC websites was assessed according to benchmark criteria to determine digital maturity level. Scores from automated tools were analyzed using descriptive statistics to determine the level of compliance across the sample. Frequency distributions of errors were summarized across institutions. It was then evaluated according to the Web Content Accessibility Guidelines (WCAG) 2.1 that are structured around the POUR principles (Perceivable, Operable, Understandable, and Robust) and prioritize Level AA compliance. The national standards, such as the Republic Act No. 10754 (2016) and DICT Memorandum Circular No. 2017-004, were also referred to.

Automated tools (WAVE, Lighthouse, Axe, AChecker, NVDA) were applied to homepages and key internal pages, with results reviewed independently by two evaluators. Results were documented and reviewed by two independent researchers. Where needed, manual inspection was done to resolve discrepancies. After synthesizing evaluation results, it was benchmarked against standards. Then the formulation recommendations were done through gap analysis, guided by prescriptive analytics that deal with what should be done based on the data findings (Delen & Zolbanin, 2018). Gap analysis was based on four dimensions: accessibility, identity, navigation, and content. Recommendations were prioritized by feasibility, impact, and compliance, ensuring alignment with inclusive governance principles. It categorized them into four broad areas, namely, technical redesign, content governance, institutional policy, and capacity building. Each recommendation was evaluated for feasibility, impact, and compliance alignment.

In the qualitative phase, each of the 17 SUC websites was evaluated through a two-step process. First, heuristic evaluation was performed by two web usability and digital governance-trained researchers according to a highly personalized rubric that relied on the heuristics defined by Nielsen (1994) and the usability indicators of DICT. The analysis was guided by Nielsen's usability heuristics (1994) and aligned with four indicators from DICT (2017) and W3C (2023): accessibility, identity, navigation, and content. The qualitative data were then clustered using pattern coding (Macia, 2015) and thematic analysis after scoring (Strauss & Corbin, 1998). Thematic coding identified recurring usability issues, which were clustered to reveal systematic trends.

This qualitative approach contextualized automated compliance scores by highlighting user-oriented design factors that influence inclusivity and navigation.

To boost reliability and validity of the assessment process, triangulation was used through cross-validating automated and manual assessments. Debriefing sessions among peers were also conducted to settle on the differences in interpretation of the evaluators. There was also an audit trail that was kept to record all the important decisions made, including the assessment rubrics and tools that were used during the process. This methodological rigor saw to it that the conclusions and the recommendations were based on data that can be verified and reproduced and that were in line with the best practices around the world for policies of web governance and digital inclusivity.

Results

Selection of SUC Samples

The study encompassed 17 State Universities and Colleges (SUCs) across all administrative regions of the Philippines, ensuring nationwide representation. Institutions ranged in founding years from 1901 to 1974, reflecting a mix of historically established and relatively newer universities. The oldest institutions included Leyte Normal University and Philippine Normal University (both founded in 1901), while the most recent were Davao Oriental State University (1974) and Surigao State College of Technology (1971). Each region was represented by one SUC, with selections spanning Luzon (e.g., Batangas State University, Central Luzon State University), Visayas (e.g., Cebu Normal University, West Visayas State University), and Mindanao (e.g., Mindanao State University, Western Mindanao State University). This geographic spread enabled comparative analysis of accessibility performance across diverse institutional contexts and digital infrastructures.

Table 1. List of SUCs Samples

Region	SUC	Year Founded
01 - Ilocos Region	University of Northern Philippines	1906
02 - Cagayan Valley	Isabela State University	1918
03 - Central Luzon	Central Luzon State University	1907
04 - CALABARZON	Batangas State University	1903
05 - Bicol Region	Central Bicol State University of Agriculture	1953
06 - Western Visayas	West Visayas State University	1902
07 - Central Visayas	Cebu Normal University	1902
08 - Eastern Visayas	Leyte Normal University	1901
09 - Zamboanga Peninsula	Western Mindanao State University	1913
10 - Northern Mindanao	Central Mindanao University	1910
11 - Davao Region	Davao Oriental State University	1974
12 - Soccsksargen	University of Southern Mindanao	1971
13 - NCR	Philippine Normal University	1901
14 - CAR	Benguet State University	1916
15 - BARMM	Mindanao State University	1961
16 - Caraga	Surigao State College of Technology	1971
17 - MIMAROPA	Western Philippine University	1904

Web Presence Evaluation

As Table 2 shows, the assessment of the websites of 17 State Universities and Colleges (SUCs) demonstrated a worrying tendency of low performance in digital maturity. Adopting a four-stage model according to e-governance development (stage 1 to stage 4, with stage 1 being emerging web presence and stage 4 being connected web presence), each SUC website was evaluated under the standard benchmarks. There were only five SUCs that passed the requirement of Stage 1, which means they had basic web features, i.e., institutional information and downloadable resources. Out of these, two SUCs, namely Cebu Normal University and Leyte Normal University, proceeded to Stage 2, and this means that they have added features that are enhanced, like updated content, interactive features, and search features. All the reviewed websites of the SUCs did not go even beyond Stage 2 (Enhanced), which would indicate the presence of integrated online services, or Stage 4 (Connected), the indicator of participatory and feedback-oriented digital interaction.

Table 2. Web Presence Scoreboard of the SUC Websites

SUC	STAGE				Remark
	1	2	3	4	
Batangas State University	73.08%	64.71%	33.33%	49.33%	Failed
Benguet State University	84.62%	64.71%	25.00%	20.00%	Stage 1
Cebu Normal University	88.46%	82.35%	50.00%	15.00%	Stage 2
Central Bicol State University of Agriculture	73.08%	58.82%	33.33%	10.00%	Failed
Central Luzon State University	73.08%	52.94%	25.00%	30.00%	Failed
Central Mindanao University	76.92%	76.47%	50.00%	20.00%	Failed
Davao Oriental State University	73.08%	70.59%	50.00%	15.00%	Failed
Isabela State University	80.77%	64.71%	50.00%	15.00%	Stage 1
Leyte Normal University	84.62%	88.24%	41.67%	15.00%	Stage 2
Mindanao State University	76.92%	76.47%	50.00%	15.00%	Failed
Philippine Normal University	76.92%	82.35%	41.67%	10.00%	Failed
Surigao State College of Technology	76.92%	76.47%	41.67%	15.00%	Failed

Table 2. (Cont.) Web Presence Scoreboard of the SUC Websites

SUC	STAGE				Remark
	1	2	3	4	
University of Northern Philippines	76.92%	64.71%	16.67%	30.00%	Failed
University of Southern Mindanao	73.08%	52.94%	16.67%	15.00%	Failed
West Visayas State University	76.92%	76.47%	50.00%	20.00%	Failed
Western Mindanao State University	69.23%	70.59%	33.33%	10.00%	Failed
Western Philippine University	84.62%	76.47%	41.67%	10.00%	Stage 1

Legend:

1 = Emerging Web Presence, 2 = Enhanced Web Presence, 3 = Transactional,

4 = Connected

P = Passed (rating is 80% - 100%)

F = Failed (rating is 0% - 79%)

Web Usability Evaluation

The usability assessment of 17 State Universities and Colleges (SUCs) websites expressed a major gap on four dimensions of usability, namely accessibility, identity, navigation, and content. According to the results of the evaluation presented in Table 3, no SUC website was fully compliant in any of these aspects. Partial compliance in accessibility was only attained by five SUCs, while identity was only obtained in three institutions, all others were classified as noncompliant. Considering navigation, four SUCs partially complied. Only one SUC attained the same threshold in the content dimension. Overall, the University of Northern Philippines was the only one that has partially complied with several indicators, whereas the other 16 SUCs have shown a system-wide noncompliance.

Table 3. Web Usability Scoreboard of the SUC Websites

SUC	Indicators				
	A	I	N	C	OR
Batangas State University	88.24%	83.33%	71.43%	70%	NC
Benguet State University	82.35%	77.78%	78.57%	60%	NC
Cebu Normal University	76.47%	77.78%	78.57%	55%	NC
Central Bicol State University of Agriculture	82.35%	72.22%	71.42%	60%	NC
Central Luzon State University	94.12%	83.33%	78.57%	80%	NC
Central Mindanao University	82.35%	94.44%	78.57%	60%	NC
Davao Oriental State University	82.35%	77.78%	78.57%	60%	NC
Isabela State University	82.35%	83.33%	85.71%	60%	NC
Leyte Normal University	88.23%	83.33%	85.71%	60%	NC
Mindanao State University	82.35%	88.89%	78.57%	60%	NC
Philippine Normal University	88.24%	83.33%	78.57%	65%	NC
Surigao State College of Technology	82.35%	83.33%	71.43%	60%	NC

Table 3. (Cont.) Web Usability Scoreboard of the SUC Websites

SUC	Indicators				
	A	I	N	C	OR
University of Northern Philippines	94.12%	83.33%	85.71%	85%	PC
University of Southern Mindanao	82.35%	83.33%	85.71%	60%	NC
West Visayas State University	82.35%	88.89%	71.43%	60%	NC
Western Mindanao State University	82.35%	83.33%	71.43%	65%	NC
Western Philippine University	82.35%	77.78%	71.43%	60%	NC

Legend:

A = Accessibility, I = Identity, N = Navigation, C = Content, OR = Overall Remarks

NC = Noncompliant (rating is 0% - 84%)

PC = Partially Compliant (rating is 85% - 99%)

CP = Compliant (rating is 100%)

Automated Evaluation

Automated tools uncovered widespread accessibility shortcomings across all SUC websites, with no institution achieving full compliance and only a few showing partial adherence in specific areas. The most prevalent issues included missing or empty alternative text, violating SC 1.1.1, which affected 69% of state university sites (Akgül, Y., 2020). Additionally, about 76% websites failed to meet the minimum 4.5:1 contrast ratio for body text, hindering users with visual impairments or color blindness (Palomino et al., 2025). Keyboard navigation was another common problem, as many menus, pop-ups, and interactive elements were not accessible via keyboard, breaching WCAG 2.1.1 guidelines and excluding users with motor disabilities (Huang & Benyoucef, 2014). Furthermore, improper use of Accessible Rich Internet Applications (ARIA) labels and skipped heading structures led to poor screen reader performance and navigation difficulties (Aydin et al., 2020). Finally, numerous form inputs lacked proper labels or clear error messages, limiting accessibility for users with cognitive or visual challenges (W3C, 2023; Iannuzzi et al., 2024).

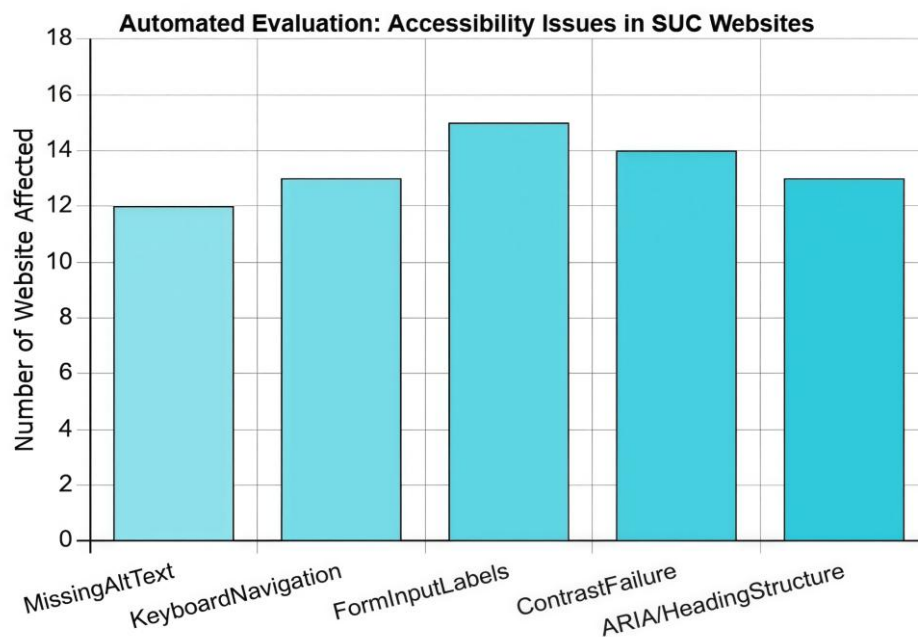


Figure 2. Accessibility Issues

A majority of websites (69%) lacked meaningful alternative text for images, violating WCAG 2.1 SC 1.1.1 and rendering visual content unreadable for users relying on screen readers, particularly those who are blind or visually impaired. Misuse of ARIA labels and incorrect heading structures (SC 1.3.1, 2.4.6) further disrupted logical reading flow. In terms of visual design, approximately 13 out of 17 websites failed to meet the minimum contrast ratio (4.5:1) for body text, violating SC 1.4.3 and compromising readability for users with low vision or color blindness. Keyboard navigation support was also lacking, as many interactive elements such as dropdown menus, pop-ups, and buttons were inaccessible via keyboard (SC 2.1.1), excluding users with motor impairments; NVDA tests confirmed that menus were either skipped or trapped, violating operability standards. Structural and semantic code errors were prevalent, with automated scans identifying an average of 21 errors and 52 alerts per homepage, including unlabeled form fields, broken links, and redundant navigation, violating WCAG principles such as SC 3.3.2 (Error Identification) and SC 4.1.2 (Name, Role, Value). Google Lighthouse scores for accessibility ranged from 41% to 67%, with none exceeding the 80% threshold considered satisfactory. Heuristic analysis further revealed that most websites failed to organize information logically, with many lacking search functionality, updated news, or downloadable forms, thereby reducing informational value and transparency. Finally, identity and institutional branding weaknesses were evident, as at least 14 of the 17 websites did not clearly reflect the institution's identity through logos, mandates, or contact details, leading to ambiguity and a weakened public presence.

Table 4. Summary of Automated Evaluation Results

Evaluation Tool	Key Issues Identified	WCAG/Standard Violated	Supporting Findings
WAVE	Missing or empty alternative text Improper ARIA labels- Skipped heading structures	WCAG 2.1 SC 1.1.1, SC 1.3.1, ARIA best practices	<i>69% of SUCs had images lacking alt text; screen readers failed to read content correctly</i>
Google Lighthouse	Low accessibility scores (41–67%) Poor contrast ratios Unlabeled form inputs	WCAG 2.1 SC 1.4.3, SC 3.3.2	No SUC website passed the 80% satisfactory threshold; 76% failed contrast standards.
Axe DevTools / AChecker	Keyboard inaccessibility of pop-ups/menus Non-responsive elements	WCAG 2.1 SC 2.1.1, SC 2.4.7	Key navigation elements were not keyboard-accessible, failing to serve users with motor disabilities
NVDA (Screen Reader Test)	Inconsistent heading structure Poor screen reader navigation	WCAG 2.1 SC 1.3.1, SC 2.4.6	Heading levels were improperly used, reducing navigation efficiency for screen reader users.
WAVE Alerts Summary	Average of 21 errors and 52 alerts per homepage	Mixed structural issues	Common alerts involved low contrast, missing labels, and untagged form fields.

Usability and User Experience (UX) Analysis

The results revealed widespread deficiencies across all four indicators, with none of the SUCs achieving full compliance in any category. Only the University of Northern Philippines attained partial compliance across accessibility, navigation, and content dimensions (Table 3). The rest exhibited at least one significant barrier in each category.

Accessibility (Perceivability & Operability)

Most websites lacked basic, inclusive features such as scalable fonts, keyboard navigation, and screen reader compatibility. The absence of these features imposes serious barriers for users with visual, motor, or cognitive impairments (W3C, 2023). According to Lazar, Goldstein, and Taylor (2015), accessibility is the cornerstone of universal usability; neglecting it systematically excludes users from essential information and services. The findings align with Jackson (2023), indicating that there is no one-size-fits-all approach to digital accessibility.

Identity (Trust & Recognition)

Institutional identity was poorly represented in most sites. Logos were either missing, pixelated, or inconsistently used across pages. Furthermore, information about the institution (mission, vision, leadership, and contact details) was often hard to locate or outdated. As Huang and Benyoucef (2014) emphasize, a clear, trustworthy identity is critical to web credibility. Weak

branding and disjointed layouts can diminish user trust and reduce engagement from external stakeholders, such as prospective students and partner organizations.

Navigation (Usability & Flow)

Navigation structures were inconsistently implemented. Menus were often overcrowded, poorly labeled, or hidden behind interactive elements incompatible with keyboard navigation. In several cases, users were forced to click through multiple layers to access basic information such as academic calendars or enrollment forms. This frustrates users and contradicts Jakob Nielsen's usability heuristics, which recommend minimalist, user-centered navigation systems (Nielsen, 1994). According to Kivijärvi and Pärnänen (2023), poor navigation significantly disrupts information-seeking behavior and negatively affects user retention.

Content (Clarity & Relevance)

Many websites displayed outdated or incomplete information. Some had blank pages for critical services, such as admissions or research, while others presented content in unstructured, verbose formats that were not mobile-friendly. Consistency in language, page titles, and layout was often lacking. This violates WCAG 2.1 guidelines on understandability and reflects weak content governance. As Wang and Si (2024) argue, poor content management not only misinforms users but also damages institutional credibility.

Discussion

Selection of SUC Samples

The study had been based on an assessment of 17 State Universities and Colleges (SUCs) in the Philippines, where one representative institution was chosen per administrative region in the country (17 regions in all). It was purposely based on the year of establishment in that each region had the oldest SUC, which was selected on a purposive basis. The institutional maturity, as Cai, Li, and Feng (2020) stressed, may be associated with the ability to install and maintain digital governance systems such as user-friendly websites and e-services. But the findings in this research disagree with that premise. Although these sampled SUCs have been around for a long time, most of them displayed low digital maturity levels, especially in reaching greater levels of web presence, which includes transactional or connected functions. The results implies that age is not always synonymous with digital progress. Rather, it is noted that investment in web development, digital policy enforcement, and capacity-building should be made deliberately irrespective of the age of institutions. The selection strategy of the company also points to another significant policy implication: even the historically significant SUCs are not immune to falling behind on the digital transformation front, and it still supports the idea of a system-wide intervention regardless of the type of institution. It is thus problematic that older institutions are assumed to be inherently more digitally competent. It should be substituted with evidence-based tests of real digital capability and adherence to accessibility regulations as defined by DICT and the Web Content Accessibility Guidelines (WCAG).

Web Presence Evaluation

As shown in Table 2, only five SUCs passed the stage one, and none of the institutions reached 80% on the transactional phase. This indicates that most SUCs have low digital maturity, especially regarding the delivery of responsive, interactive, and integrated online services. The inability to progress beyond transactional stages in eGovernment maturity models is linked to gaps in governance and cooperation, hindering digital governance capacity (Nielsen, 2017). According to Akgul (2020), all target audiences, such as teachers, students, and parents, have access to university websites. They should be accessible, usable, of high quality, and easy to read in order to guarantee equal access among all the stakeholders. The results of the research prompted the need to enhance the performance of the sites of universities in terms of usability, quality performance, and readability across the board of stakeholders. This is a great challenge to ensure that this information is available to every target group.

The researcher concludes that this digital stagnation is not only a technical problem but also a sign of deeper-rooted system flaws in institutional digital strategy. The absence of transactional and connected web presence, online enrollment, real-time support, feedback portals, etc., implies that SUCs are not yet as integrated with digitalization into their central system of governance. There are a number of critical implications of the same. To begin with, the lack of accessibility and interactivity does not equally impact students with disabilities, which is a violation of local and international accessibility requirements. Inclusive digital inclusion (as stressed by WCAG 2.1 and the UN CRPD (2006). Furthermore, this failure to comply with Republic Act No. 10754 (2016) and DICT Circular 2017-004 exposes institutions to policy and compliance risks.

The researcher further observes that the continued reliance on manual and in-person processes—for tasks like enrollment, payment, or academic record requests—undermines efficiency and accessibility. In an increasingly digitized society, these limitations widen the digital divide and weaken the ability of SUCs to deliver timely, transparent, and citizen-centered services. Moreover, among the reasons behind the lag in e-government progress are the lack of technological infrastructure and skills, organizational issues, and inadequate government regulations, among others (Khalid & Lavilles, 2019). According to Hodges et al. (2020), digital infrastructure is no longer optional but essential, especially in the wake of global disruptions such as the COVID-19 pandemic, which highlighted the importance of digital resilience in maintaining educational continuity.

Web Usability Evaluation

Web usability results (Table 3) underscore a significant digital usability gap in Philippine higher education, which can hinder institutional effectiveness, transparency, and inclusivity. Usability is essential not only for aesthetic or functional quality but also for ensuring user-friendly access to critical services and information. According to Huang and Benyoucef (2014), high usability in e-government and educational websites enhances public trust, supports effective service delivery, and encourages stakeholder engagement. Conversely, poorly structured sites—characterized by unclear identity, broken navigation paths, and outdated content—lead to

frustration and distrust among users, particularly students and faculty who depend on these platforms for day-to-day academic transactions.

The researcher contends that the incomplete adherence to any dimension implies the major flaw in the approaches to digital governance that are taken by institutions. The overall inability to achieve any substantial levels of usability is indicative of a larger inability to prioritize, invest, and develop web development. Such a shortcoming is especially concerning within the accessibility sphere. Since none of the websites met all of the standards developed, including the Web Content Accessibility Guidelines (WCAG 2.1), SUCs may deprive individuals with disabilities or those in geographically isolated and disadvantaged areas (GIDAs) of access to the necessary educational information and services. This directly contradicts national mandates under Republic Act No. 10754 (2016) and international commitments, such as the United Nations Convention on the Rights of Persons with Disabilities (UN CRPD, 2006), which obligate public institutions to provide equitable and inclusive access.

Moreover, the non-conformance of the identity and navigation reduces the credibility of the institutions. According to Kivijärvi and Pärnänen (2023), the problems with usability (the broken navigation and lack of consistency in identity markers) discourage users and may have a negative impact on the reputation of the institution. To SUCs, this may mean a missed chance in attracting students, research collaborations, and community engagement. What is more, the lack of an organized content strategy manifests itself in outdated, inaccurate, or incomplete information, which, in turn, decreases the functional value of the websites and increases the possibility of misinformation, inefficiency, and user dissatisfaction.

The researcher concludes that such usability gaps are indicative of a wider institutional ownership and digital leadership gap. SUCs, in the majority of cases, perceive web presence as a technicality instead of a strategic communication and governance tool. To address this, it is vital not only to redesign user interfaces and enhance visual branding but also to assume a complete digital transformation strategy. This plan must have usability audits, content management systems, and personnel training on a regular basis. According to Iannuzzi et al. (2024), integrating automated testing tools with manual usability reviews and capacity-building of the administrators is a very effective way of enhancing digital performance in the public sector.

Automated Evaluation

The findings show a significant disparity between the digitized presence of SUCs and their service capability. They serve different users fairly. These violations of accessibility are not technical omissions but rather systemic obstacles to learning and to governance. Jackson (2023) suggests that web pages and online programs not accessible to people are in violation of Section 504 of the Rehabilitation Act. IHE1. Moreover, Republic Act No. 10754 (2016) and DICT Memorandum Circular No. 2017-004 legally require Philippine SUCs to make sure that their online platforms can be accessed by persons with disabilities. The non-observance of these regulations exposes SUCs to legal and reputational penalties besides the exclusion of students, faculty, and citizens who depend on the online services that are available.

On the part of the researcher, automated tools were critical in generating viable insights in an efficient manner. Although manual inspection is still required in order to provide contextual correctness, automated testing offers objective, repeatable, and scalable results, which is also a significant benefit to institutions with a small IT staff or audit capacity. Automated audits are especially useful in institutional benchmarking and monitoring of compliance (Al-Sakran and Alsudairi, 2021). Results obtained using automated accessibility testing tools were effective in discovering common and persistent violations in SUC websites. The information gathered using these tools was used in formulating some concrete, practical advice on web redesign and accessibility improvement. To further advance, SUCs will need to incorporate automated accessibility assessment into their ongoing digital governance to enhance compliance, not just to sustain the ideals of equity, inclusivity, and digitalization in Philippine higher education.

Usability and UX Analysis

The cumulative effect of the usability issues disproportionately affects vulnerable user groups, including individuals with disabilities, first-time internet users, and those in low-bandwidth or mobile-only environments. The absence of adaptive layouts, screen-reader labels, and simplified language excludes many from accessing public higher education equitably, violating both local accessibility mandates (RA 10754 (2016); DICT Circular 2017-004) and international frameworks like the UN CRPD (2006) and SDG 4 on inclusive, quality education (United Nations, 2015).

From the researcher's perspective, SUC websites, as digital frontlines of institutional engagement, should serve as inclusive gateways to education, not digital barriers. Unfortunately, the UX findings demonstrate that current designs prioritize institutional convenience over user inclusivity. This finding aligns with Bokingkito et al. (2025), who assert that many Philippine government websites fail to meet participatory and service-oriented digital design standards, often excluding the very communities they are intended to serve.

The usability failures identified are not isolated technical lapses—they reflect a lack of user-centered design thinking at the policy and implementation level. SUCs must adopt inclusive design practices that engage end-users in the development process, especially those with disabilities or limited digital literacy. Moreover, usability audits should not be considered as a one-time activity but should be considered as a part of continuing digital governance and quality assurance systems (UNESCO, 2020; Iannuzzi et al., 2024).

Usability testing, stakeholder consultations, and the responsive content approaches should be institutionalized on a regular basis to enhance user satisfaction and meet the ethical and legal requirements of equitable access. The lack of such reforms could cause SUCs to remain digitally exclusionary and therefore ineffective in providing education and public service during the digital era.

Policy implications

The study's findings call for strategic digital transformation across all SUCs. This transformation must begin with investment in inclusive web development, guided by WCAG standards, and extend to cybersecurity, system integration, and institutional capacity-building. As Palomino et al. (2025) note, despite the efficiency of automated evaluations, they alone are insufficient for capturing deeper user experience barriers. Thus, a complementary manual assessment was conducted, in which experts in accessibility and user experience performed the assessment. Thus, SUCs need to adopt performance-oriented digital government policies such as periodic audits, user-centered design culture, and collaborative feedback mechanisms to enhance transparency and involvement. The evaluation findings confirm that most of the SUCs are still at the initial phases of digital governance, and there are a lot of structural and strategic obstacles to overcome. Unless these institutions are intervened in and included with deliberate, specific, and intentional efforts, they will continue to propagate the marginality and will not serve their purpose of ensuring that the education in the realm of the digital age is accessible, efficient, and participatory.

Moreover, there is a dire need for policy measures and institutional change to improve the digital accessibility of the SUC websites. Institutions have to view their digital platforms as core to the delivery of education services rather than as peripheral. Making user-centered design choices and enforcing accessibility, enhancing usability of navigation, and keeping content of the highest quality and of the latest updates are not just technical enhancements but ethical and operational necessities. The absence of such reforms subjects SUCs to the risk of being further left behind in the fast-digitizing learning scenario, thus diminishing their capacity to deliver their mandate of inclusive, responsive, and fair education to all.

User Experience Implications for Diverse User Groups

The cumulative effect of these usability issues disproportionately affects vulnerable user groups, including individuals with disabilities, first-time internet users, and those in low-bandwidth or mobile-only environments. The absence of adaptive layouts, screen-reader labels, and simplified language excludes many from accessing public higher education equitably, violating both local accessibility mandates (RA 10754 (2016); DICT Circular 2017-004) and international frameworks like the UN CRPD (2006) and SDG 4 on inclusive, quality education (United Nations, 2015).

From the researcher's perspective, SUC websites, as digital frontlines of institutional engagement, should serve as inclusive gateways to education, not digital barriers. Unfortunately, the UX findings demonstrate that current designs prioritize institutional convenience over user inclusivity. This finding aligns with Bokingkito et al. (2025), who assert that many Philippine government websites fail to meet participatory and service-oriented digital design standards, often excluding the very communities they are intended to serve.

Inference and Path Forward

Usability audits should not be considered as a one-time activity but should be considered as a part of continuing digital governance and quality assurance systems (UNESCO, 2020; Iannuzzi et al., 2024). Usability testing, stakeholder consultations, and the responsive content approaches should be institutionalized on a regular basis to enhance user satisfaction and meet the ethical and legal requirements of equitable access. The lack of such reforms could cause SUCs to remain digitally exclusionary and therefore ineffective in providing education and public service during the digital era.

Proposed Framework

Due to the identified accessibility and usability gaps that are pervasive throughout the websites of 17 State Universities and Colleges (SUCs) in the Philippines, this paper puts forward a series of prescriptive and actionable recommendations based on the empirical data and in accordance with the international regulations and the requirements of the national law. The paper proposes the model of inclusive web governance in SUCs, which is called the IDEA Framework of Inclusive Web Governance in SUCs. The IDEA Framework is four interconnected pillars that are formed of institutionalization, design, evaluation, and action. It is based on the national accessibility requirements (WCAG 2.1), national requirements and legal regulations (RA 10754 (2016), DICT MC 2017-004), and the SUC's vision of inclusive governance.

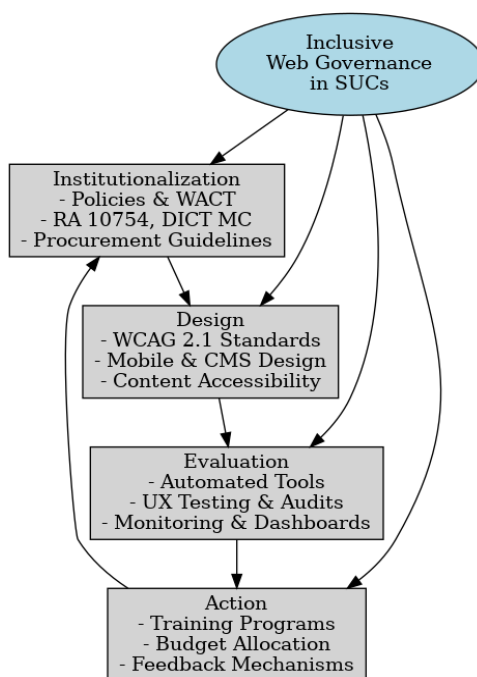


Figure 2. Framework Diagram

Institutionalization

To maintain long-term compliance, SUCs may inculcate web accessibility standards within the institutional policy using the WCAG 2.1 (W3C, 2023) and the DICT Memorandum Circular No. 2017-004 as reference. Technical standards, roles, responsibilities, timelines, and penalties for noncompliance should be formalized in an accessibility policy. In addition, create a Web Accessibility Compliance Team (WACT). Every SUC should establish a Web Accessibility Compliance Team (WACT) as recommended by DICT, and this team should consist of web developers, IT personnel, academic personnel, and persons with disabilities (PWD) representatives. Such a team must be assigned to check the compliance, read updates, and address accessibility-related issues. Lastly, make accessibility part of the procurement and academic policies, which are in line with RA 10754 (2016) and the UN CRPD. Lazar et al. (2015) note that the commitment and accountability of accessibility are guaranteed through integration into the institutional policies instead of one-time compliance initiatives.

Design

In order to increase accessibility of the websites and user experience, it is advised to create websites that would be designed in consideration of inclusive and responsive design. It entails complying with the Web Content Accessibility Guidelines (WCAG) 2.1 Level AA that guarantee that web content can be used by more individuals with disabilities such as visual, auditory, physical, speech, cognitive, language, learning, and neurological impairments. The introduction of mobile-responsive designs serves to make content easily readable and navigable on multiple gadgets, which is in line with the growing number of people who use the web. Furthermore, to improve accessibility, it may be helpful to add a Content Management System (CMS) that has accessibility plugins, like the ones allowing you to automatically provide alternative text to images. This will standardize the layout, provide more control over versions, and make checks on compliance points easier to monitor (Iannuzzi et al., 2024). Akgul (2020) claims that a properly set up CMS with accessibility extensions promotes the delivery of public services and digital inclusion in educational services. Focusing on the clarity and readability of the content will guarantee that everybody can understand the information easily, whereas adherence to institutional identity will allow sustaining brand consistency and recognition throughout the site.

Web design should also accommodate users who have poor bandwidth or access to the web only via mobile devices, particularly in GIDAs. The redesigning must follow the concepts of progressive enhancement to make it accessible on different devices and browsers (W3C, 2023). Huang and Benyoucef (2014) state that user-centered web redesign can enhance user trust, navigability, and engagement, which are essential to institutional credibility and efficiency of services.

Evaluation

In order to guarantee that the web accessibility and user experience can be improved on a regular basis, one is advised to carry out assessments on a regular basis in a systematic fashion. The automated tools, including WAVE, Axe, and Lighthouse, should be used in this process to streamline the identification of the accessibility problems. In addition to these tools, heuristic user experience (UX) reviews and user testing, especially using assistive technologies such as NVDA, can be useful at gaining insights into how certain products can be used by people with disabilities in the real world. Accessibility audits should be conducted annually in order to thoroughly evaluate the adherence with the accessibility standards and outline the areas that need improvement. Also, it is possible to measure progress using performance dashboards to monitor important indicators, promote data-based decision-making, and maintain a high level of commitment to accessibility objectives (Iannuzzi et al., 2024; W3C, 2023; and Macia, 2015).

Action

In order to adequately remedy the established problems of accessibility, there is a need to convert the results of evaluation into specific and practical interventions. This is achieved by formulating the short-term and long-term improvement plans, which are in line with the institutional goals and the needs of the users. Training programs ought to be carried out for IT personnel and content managers so that they can be empowered with the skills and knowledge needed to apply the best practices of accessibility, bearing in mind that human capacity is just as significant as technological infrastructure in maintaining digital accessibility (Iannuzzi et al., 2024). Besides, sufficient budgets and resources should also be allocated to facilitate continuous web accessibility improvement. Moreover, the publication of audit outcomes and the active gathering of user feedback will encourage transparency, which will create a culture of accountability and constant refinement.

Conclusion

This research project found that there was a major deficit in the state of digital infrastructure and accessibility compliance of State Universities and Colleges (SUCs) throughout the Philippines. The web presence evaluation demonstrated that most SUCs are still at the lowest or the basic level of the assessment, which is the emerging level; two are at the enhanced level, and none of them is at the transactional or connected stage. Moreover, the usability test revealed the high level of noncompliance with major dimensions: accessibility, identity, navigation, and content. None of the SUCs was fully compliant with any of the areas, and the only institution that showed partial compliance was in the area of institutional management adherence with all indicators. These results indicate a major digital maturity gap that interferes with the ability of SUCs to support their various stakeholders, especially students with disabilities and students in geographically isolated and disadvantaged regions (GIDAs).

The findings indicate that web accessibility and usability have not been an institutional focus in most SUCs. While legal frameworks, such as Republic Act No. 10754 (2016), and international mandates, like the UN CRPD, emphasize the right to accessible digital platforms, the evidence shows limited adherence to these standards. From outdated content to inaccessible navigation and fragmented online services, the current state of SUC websites compromises the principles of inclusive governance, transparency, and digital equity. If left unaddressed, these digital deficiencies will continue to erode stakeholder trust, hinder operational efficiency, and deepen the educational digital divide.

The recommendations presented are practical, scalable, and grounded in the real-world accessibility shortcomings of SUC websites identified during this study. Their implementation would not only close the compliance gap but also empower SUCs to become leaders in digital inclusion, providing a model for other government institutions. Inclusive, accessible digital platforms are no longer aspirational—they are a legal and moral imperative.

Recommendations

Based on the findings, several key recommendations are proposed to drive a system-wide digital transformation among State Universities and Colleges (SUCs). First, SUCs should institutionalize web accessibility and usability standards by adopting and strictly implementing the Web Content Accessibility Guidelines (WCAG 2.1) along with the DICT Memorandum Circular No. 2017-004, integrating these into their digital governance frameworks and quality assurance processes. Conduct Periodic Digital Audits and Usability Testing: Regular digital audits and usability testing must be mandated, combining automated and manual evaluations of web presence, accessibility, and user experience, with results incorporated into performance assessments by oversight bodies such as CHED and DICT. Investing in human and technological capacity building is essential, with budgets allocated for training in IT, content management, inclusive digital design, and accessibility compliance, as well as updating to modern Content Management Systems for efficient website management. Redesign and standardize SUC websites. A comprehensive redesign and standardization of SUC websites should be undertaken to produce coherent, user-friendly, mobile-responsive sites with improved branding, logical navigation, and regularly updated content. Strengthen policy support and accountability mechanisms by ensuring effective policy support and accountability. National agencies should require SUCs to submit annual web accessibility reports, encouraging performance-based budget allocations that reward both compliance and innovation. Lastly, promoting stakeholder engagement through feedback portals and consultation mechanisms will allow students, faculty, and the public to contribute insights that foster ongoing improvements and greater institutional accountability.

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