



Application of WCAG Standards to Upload Page Design in Nigerian Peer-to-Peer E-commerce

Afeez Babatunde Siyanbola*

Department of Fine and Applied Arts, Olabisi Onabanjo University, Ogun State, Nigeria

Abstract	Article Information
<i>Accessibility considerations in design are essential to ensuring that individuals of all abilities are not excluded from participating in the digital economy. Accessibility is especially important on the upload page of peer-to-peer (P2P) e-commerce platforms, as it serves as the primary entry point for users to independently list products and services. This study adopted a sequential mixed-methods research design across three distinctive segments: (1) a comparative audit assessing the accessibility compliance of leading P2P platforms in Nigeria; (2) the iterative design and development of an accessible upload page prototype; and (3) user testing of the prototype with individuals of diverse abilities. Phase 1 findings revealed widespread compliance failures across audited Nigerian platforms, notably missing field labels, inadequate color contrast, unannounced dynamic status updates, and broken keyboard navigation. Guided by these insights, a prototype upload page was developed using user-centered design approaches and WCAG 2.1 Level AA standards. Usability testing with 20 participants, including screen reader users, yielded an average System Usability Scale (SUS) score of 74.75, placing the prototype within the "Good" usability range. The study demonstrates that integrating Web Content Accessibility Guidelines (WCAG) 2.1 standards into P2P interface workflows significantly removes usage barriers and fosters digital inclusion.</i>	Article History: Received: 27-05-2026 Revised: 15-07-2026 Accepted: 29-09-2026 Keywords: <i>User Experience, Accessibility, Peer-to-Peer, WCAG, E-commerce, Upload page</i>
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INTRODUCTION

Accessibility in design refers to developing products or services to be used by anyone, regardless of ability or disability. Accessibility ensures that digital solutions are user-centered, effectively addressing the diverse needs of all consumers. Kaur (2018) explained that accessibility allows users of all abilities to understand, use, and enjoy digital products. Accessibility guarantees that designers adopt an inclusive design mindset when crafting user-centered products. Accessibility is articulated in

ISO FDIS 9241-210 as 'the usability of a product, service, environment or facility by people with the widest range of capabilities' (ISO, 2019). Accessibility is a core consideration in the design of digital experiences. Accessibility in digital experiences encompasses a range of considerations, including visual, auditory, physical, speech, cognitive, and neurological disabilities. Designers are responsible for shaping user experiences by crafting interactive interfaces that embody usability and inclusivity, recognizing that neglecting

accessibility considerations can marginalize significant user groups. Accessibility of digital products guarantees the inclusion of all segments of target users of a digital product. All user segments deserve a quality life and have the right to equitable access and participation in the digital economy, as guaranteed by the regulations that govern digital product development. Having barrier-free access to digital solutions is essential for social inclusion of users with physical impairment. Apparently, some of the breakthroughs and improvements in user experience witnessed over the years were achieved through designers' consideration for the needs of users with disabilities.

Peer-to-peer e-commerce platforms are built to rely on user-generated content; hence, the upload page is the gateway to the platform (Kaplan & Haenlein, 2010). P2P platforms connect buyers and sellers to sell new items, pre-loved items, second-hand goods, and pay for different items. Examples of peer-to-peer marketplaces are eBay, Uber, and Airbnb, which enable providers of goods and services of different capacities to sell and compete for buyers seamlessly. The emergence of peer-to-peer (P2P) markets creates a compelling opportunity for individuals to participate in economic activities from the convenience of their homes. They are simply a click or tap away from buying and selling. However, providing an accessible upload page within a P2P e-commerce platform enhances the platform's usability for a wider audience, encompassing individuals with visual, motor, and cognitive impairments. Nielsen (2012) noted that developers of peer-to-peer (P2P) platforms pay close attention to accessibility when designing upload pages, as difficulties experienced by any segment of the target audience in using this core feature can lead to feelings of exclusion and negatively affect the overall user experience across the platform. It has been observed that accessibility is a key factor hindering the embrace of e-commerce in Nigeria and sub-Saharan Africa. There is a systemic digital exclusion challenge in Nigeria that creates a divide across Nigeria's digital landscape.

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User-centered products focus on human needs; the conceptualization and development of digital solutions revolve around understanding users' requirements, diverse abilities, and contexts of use (Norman, 2013). User satisfaction and fulfillment are prioritized by ensuring accessibility standards are integrated at every stage of development, enabling users to maintain full control of the product (ISO, 2019). The interaction design foundation noted that accessibility standards ensure that users can access the corresponding user experience; however, they encounter a product or service (e.g., using assistive devices). Accessibility creates an inclusive experience for all users, the degree of product or system usage by people with diverse capabilities in achieving their goals in specific use contexts (ISO, 2019). Iwarsson and Ståhl (2023) defined accessibility as the ability of "all people, particularly disabled and aged, to use Websites in different contexts of use, including traditional and assistive technologies; to achieve this, Websites need to be designed to support usability across these contexts"

Accessibility encompasses the design concepts and practices that support digital and physical goods being accessible to people of all abilities and impairments. Achieving accessibility and inclusivity in product design requires real commitment to integrating accessibility values into the physical touchpoints of digital interfaces for diverse user needs. Accessible products are 35% more usable by users of diverse capabilities (AbilityNet, 2023). Societies globally are striving towards creating the necessary awareness directed at expanding the access of people with disabilities to digital technologies with little or no encumbrances. WHO report from 2011 stated that there are over one billion persons with disabilities worldwide, constituting approximately 15% of the global population (World Health Organization & World Bank, 2011). An understanding of the abilities of this segment of the population is driving user-centered design approaches concerned with the diverse ways a user, regardless of ability or preferred modes of functioning, may possibly

interact with the environment (Droutsas, 2021). Digital accessibility represents a fundamental goal of social inclusion globally. The concept of social inclusion has evolved from the French Republican tradition of the 1970s (Silver 2015), removing barriers to labor markets and materials to active, unrestricted participation in society, including economic, social, political, and cultural activities. Brik and Brown (2024) broaden the understanding of social inclusion to include environment and neighborhood, civic and cultural, economic, social relations and resources, service provision and access, and health and well-being, spanning multiple systematic levels, including the individual, the family system, and workplaces.

Accessibility considerations in design are guided by two philosophical design concepts separately propounded by the Americans and the Europeans. The Design Council Publication on inclusive design noted that the two major movements that impacted the growth of Inclusive Design (also known [in Europe] as Design for All and Universal Design in the USA) were influenced by an aging population and the growing movement to integrate disabled people into mainstream society" (Design Council, 2008). Both philosophies were developed to promote the prioritization of inclusivity in the development of products, services, and experiences for users, regardless of their abilities or disabilities. Although the two philosophies are often used interchangeably, there are differences in their approaches, each emphasizing distinct aspects of accessibility and inclusivity. Universal Design, in particular, focuses on designing physical products and spaces, especially in contexts where creating multiple variations would result in significant costs (Farmer, 2024). The Human Computer Interaction (HCI) society introduced the concept of "Design for All" in the late nineties as a result of research efforts by the European Commission (Stephanidis and Emiliani, 1999). According to Rodighiero Design (2024), "Design for All" represents the desire to live in a society in which every individual, regardless of abilities, disability, age, gender, or cultural origin,

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has access to the same services, products, and opportunities. The "Design for All" philosophy fundamentally seeks to enhance human life, autonomy, and well-being through inclusive design.

Universal Design is centered on products, architecture, and education. "Design for All" adopted a broader approach by focusing on users' diverse needs, encompassing age, culture, and gender (Stephanidis and Emiliani, 1999). "Design for All" idea is rooted in legislation and policies that have been funded by the European Commission. According to Klironomos et al. (2006), the concept of "Design for All" in HCI is anchored on three design ideas: (1) User-centered design, placing the user at the center of the interaction design process. (2) Accessibility and assistive technologies for disabled people. (3) Universal Design for physical products and the built environment.

Stephanidis and Emiliani (1999) in their study acknowledged the efforts of Europe in ensuring the right of all citizens to be "connected" (i.e., to obtain and maintain access) to a society-wide pool of information resources and interpersonal communication facilities. Stephanidis and Emiliani (1999) addressed accessibility from three collaborative normative approaches: reactive approach (adaptation of products to build required accessibility features), proactive approach (appropriate actions during the early phases of a product's life cycle), and legislative (means of policy measures such as legislation and standardization). The United States focused primarily on the disabled individual's right to access the built environment and public places, leading directly to the promulgation of the Americans with Disabilities Act 1990 (ADA, 1990), with a strong lead coming from the civil rights movement. In the UK, this focus was extended to include access to services, enshrined in the Disability Discrimination Act 1995 (DDA, 1995), and in Europe to include access to information and related services via the internet and communications technology (ICT) media under the aegis of the European Union. The

UK Equality Act 2010 has updated, simplified, and strengthened previous legislation, and the new regulations will be implemented progressively over the coming years. Lazar et al. (2015), in a publication titled "Ensuring Digital Accessibility through Process and Policy," noted that inaccessible digital interfaces represent a form of societal exclusion that may be illegal under various laws. Lazar et al. (2015) explained how design workflow processes constitute a barrier, especially through missing links, poor keyboard focus, and less accessible error messages, which significantly hinders the completion of tasks. Studies on accessibility of popular marketplaces such as eBay and Craigslist reflect high compliance with accessibility standards in dynamic form designs that specifically capture the needs of visually impaired users (Chang, 2018). However, this paper adopted a proactive approach in integrating accessible features into the conceptualization and development of the upload page of a peer-to-peer e-commerce platform.

According to Awad (2023), the Web Content Accessibility Guidelines (WCAG) set the standard for digital accessibility, first published in 1999; the guidelines guaranteed the accessibility of people with diverse abilities to efficiently use digital products. Web accessibility guidelines are designed to enable inclusive design. The guidelines have nudged developers into crafting digital experiences that adhere to accessibility standards, enhancing the acceptance of digital products amongst users. These guidelines have expanded the understanding of key considerations that ensure user experience products are accessible and beneficial to all individuals, irrespective of their physical abilities. Research shows that implementing web accessibility guidelines may also benefit non-disabled users, but only in specific areas (e.g., using plain language); WCAG (Annexure Table 1) is the benchmark for determining the accessibility compliance level of digital products. Digital distribution platforms for apps, such as the Play Store and Apple App Store, subject apps to WCAG guidelines as a core part of their review process before granting approval for

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them to be listed on these platforms. WCAG is built on four guiding principles: Perceivable, Operable, Understandable, and Robust (Spyridonis, 2017).

In Nigeria, legislative and regulatory instruments enforce these guidelines. The Discrimination Against Persons with Disabilities (Prohibition) Act (2018) legally mandates accessible services and information and communication technologies across public and private sectors (Joint Association of Persons with Disability, 2021). Additionally, the Nigerian National Information Technology Development Agency (NITDA) National Software Quality Assurance (SQA) framework stipulates the adoption of WCAG 2.1 AA accessibility standards for all citizen-facing digital services (Adepetun, 2026).

A peer-to-peer (P2P) marketplace is a dynamic business model that directly connects buyers and sellers through an online platform, enabling users to conduct transactions without any intermediary. It allows users to engage in commerce without the involvement of a third-party facilitator. Unlike conventional e-commerce platforms, where an administrator manages the marketplace, P2P platforms are decentralized, allowing individuals to interact directly with one another. Sellers upload items for sale on the platform, and the products are presented with detailed descriptions, images, and pricing. Turban et al. (2018) explained that peer-to-peer platforms use specific software with technical features that enable seamless transactions and support commercial activities without the need for traditional intermediaries.

eBay, Amazon Marketplace, Vinted, Poshmark, and Airbnb are some of the most popular P2P marketplaces globally. A category of P2P marketplaces includes sharing platforms, which have significantly disrupted the global transportation industry. Fast-growing ride-sharing platforms such as Uber, Lyft, Didi, BlaBlaCar, Grab, and Ola have transformed previously inefficient, expensive, and unregulated taxi markets worldwide. The upload page is the most critical section of peer-to-peer marketplaces, allowing

sellers and service providers to list their offerings without oversight from a central authority. Upload pages are designed to be intuitive and user-centered. In compliance with WCAG standards, designers adopt best practices in the creation and implementation of upload pages for P2P e-commerce platforms. The following best practices are recommended in the development of an accessible upload page, as identified in existing literature ([Annexure Table 2](#)):

Statement of the Problem

The paper identifies that many peer-to-peer (P2P) e-commerce platforms, particularly in Nigeria and Sub-Saharan Africa, have inadequate accessibility features on their upload pages, creating barriers for users with disabilities. Since the upload page is the primary gateway for users to list products and services, poor accessibility limits participation in the digital economy, undermines social inclusion, and excludes users with visual, motor, and cognitive impairments. Although international accessibility standards such as WCAG 2.1 exist, there is limited compliance among Nigerian P2P platforms due to weak regulatory enforcement and insufficient integration of accessibility principles into interface design. Consequently, there is a need to evaluate existing platforms and develop an accessible upload page that complies with recognized accessibility standards.

In sub-Saharan Africa, the accessibility of digital interfaces does not appear to be a major consideration in policy and development aimed at enabling equitable access to digital platforms for users with diverse abilities. There are no effective regulatory frameworks and enforcement mechanisms ensuring adherence to accessibility standards in product design, development, and implementation. A study revealed that only 2% of websites in Kenya meet basic accessibility standards ([Chukwuma, 2025](#)). These revelations underscore the exclusion present in the African digital landscape, which restricts access to the digital economy for users with diverse abilities. While global platforms such as Uber and Amazon

Sci. Technol. Arts Res. J., July –Sep, 2026, 15(3), 88-110 have been exemplary in integrating accessibility features, such practices appear to be lacking in African peer-to-peer (P2P) e-commerce platforms. This study addresses these gaps by conducting a comparative audit of the upload pages of selected P2P e-commerce platforms operating in Nigeria and developing a user-centered P2P upload page grounded in accessibility considerations.

Research questions

1. What is the level of compliance with WCAG 2.1 (AA) standards on the upload pages of selected Nigerian peer-to-peer e-commerce platforms?
2. What specific accessibility and usability barriers do users with impairments face when interacting with these upload pages?
3. How can a user-centered, WCAG 2.1-compliant upload page for a Nigerian P2P e-commerce platform be prototyped and evaluated?

MATERIAL AND METHODS

Design

This study adopted a sequential mixed-methods research design. Sequential mixed methods involves the analysis of quantitative data, and the results guide the subsequent qualitative phase for explanation and elaboration ([Creswell & Plano Clark, 2018](#)). User-centered methodology was adopted during the development phase, emphasizing the pivotal role of users in the design process. The design process was iterative and aligned with the definition provided by the Interaction Design Foundation, which describes user-centered design as an iterative approach that is centered on knowing users and their capabilities throughout the phases of design and development. The research design is structured into three distinct phases:

1. Comparative audit of accessibility features in leading peer-to-peer (P2P) e-commerce platforms in Nigeria.

2. Ideation and iterative development of a prototype upload page incorporating accessibility best practices.
3. User testing of the prototype by individuals with diverse abilities.

Comparative Audit Protocol

A comparative audit of the upload pages of leading Nigerian e-commerce platforms (selected based on popularity) was conducted using the WAVE Accessibility Evaluation Tool. This tool is extensively used to evaluate website compliance levels with the Web Content Accessibility Guidelines (WCAG).

Data Collection Procedure

No human respondents were recruited at this stage. The Uniform Resource Locators (URLs) of the selected e-commerce store upload pages were evaluated using wave.webaim.org. The key accessibility metrics evaluated included: Form field labels; Field size and spacing; Navigation and keyboard accessibility; Feedback and error messaging; Image upload accessibility.

The results indicate that OList recorded the highest score (5/10), followed by JiJi (2/10), while

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Betacar recorded the lowest score (1/10). The difference between JiJi and Betacar reflects the greater severity and concentration of accessibility barriers identified on Betacar. Overall, the findings reveal significant accessibility gaps, particularly in keyboard navigation, form labeling, error feedback, color contrast, and assistive-technology support.

Ideation and Prototype Development Protocol Expert Panel Recruitment

Participants were recruited through purposive sampling using referrals across professional UX/UI networks, software engineering hubs, and disability advocacy organizations in Lagos State, Nigeria. A Google Forms survey detailing the study scope, participant rights, data privacy protocols, and institutional consent was distributed via email. Prior to participation, written informed consent was secured from all individuals. The expert review panel comprised 10 professionals (N=10): three UX/UI designers, two front-end engineers, two back-end engineers, and three accessibility advocates (Table 1). Ethical approval for this study was granted by the Olabisi Onabanjo University Research Ethics Committee.

Table 1

Demographic Characteristics of Study Participants

Characteristic	Category	Frequency (n)	Percentage (%)
Professional Role	UX/UI Designers	3	30%
	Front-end Engineers	2	20%
	Back-end Engineers	2	20%
	Accessibility Advocates	3	30%
Years of Experience	3–5 years	6	60%
	> 5 years	4	40%
Gender	Male	6	60%
	Female	4	40%
Age Group (years)	25–34	6	60%
	35–44	4	40%

Design (High Fidelity) Co-Design Procedure

Virtual workshops were conducted via Zoom three times over a four-week period (approximately 180

minutes per session). The sessions proceeded as follows:

Session 1: Audit results of Nigerian P2P e-commerce platforms were reviewed to map critical visual and functional barriers.

Session 2: Participants utilized Figma Jam to sketch accessible upload page layouts. Thumbnail sketches were translated into structural wireframes in real time.

Session 3: Low-fidelity and high-fidelity prototype layouts were prioritized using WCAG 2.1 Level AA principles (perceivability, operability, and understandability).

High Fidelity Design

Realistic-looking icons, text input fields, and navigation elements were styled with colors for the high-fidelity phase. The camera icon supports the 'upload photos' text to enhance the clarity of that section of the upload page based on its importance to the upload flow. This enables users to fully understand the functionalities of the user interface icons on the upload page, enabling seamless usability. When users click on the camera icon, they are directed to their camera or image library on their upload device. Deep blue is the selected primary color for the design; this color is applied to the camera icon and the supporting text 'upload photos' to accentuate this important aspect of the upload page. This color (#16587D) meets a high WCAG contrast level on white (7.13:1). The 'Title' label is bold, has the same size, and aligns with other labels below it. Placeholders were added underneath the

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'Title' and 'Describe your item' labels to direct users on the appropriate information required to be filled in the input fields below these two labels. Placeholders are often helpful for new users or less frequent tasks. The color of the text labels is a very dark gray-black (#1111), while the placeholders have a dark gray color (#5C5B5B). Both colors fulfill the accessibility standard for a white background. The labels below 'Describe your item' have a red asterisk (*) to indicate that the required inputs are compulsory. Accordions were added to the labels to prompt users on the necessary actions to be taken. Accordions were added to the labels to guide users on the required actions. Each accordion directs users to a corresponding modal, where they are expected to complete the required interactions before returning to the upload page. This is an accessibility consideration in relation to ease of navigation.

Usability Evaluation Protocol Sample and Recruitment

Two distinct user cohorts (N = 20 each) were recruited to evaluate the low-fidelity and high-fidelity prototypes. Sampling across Nigeria's six geopolitical zones ensured demographic and geographic diversity. Participants included regular and occasional sellers, casual buyers, and individuals with functional limitations (visual, motor, or hearing impairments) using assistive technologies (Table 2).

Table 2

Demographic Characteristics of Study Participants

Characteristic	Low-Fidelity Testing Cohort (N=20)	High-Fidelity Testing Cohort (N=20)
Geographic Distribution	North Central (n=3), North East (n=3), North West (n=3), South East (n=3), South South (n=3), South West–Lagos (n=5)	Urban, semi-urban, and rural strata across Nigeria
Age Range	18–50+ years	18–55+ years
Target Devices	Desktop / Mobile web browsers	Android & iOS mobile devices
Recruitment Channels	Market associations, university lists, disability orgs	P2P user groups, community networks

Testing Procedure and Evaluation Metrics

1. Low-Fidelity Evaluation: 45–60 minute remote sessions using task scenarios (image selection, input navigation, modal interactions). A think-aloud protocol captured qualitative usability feedback.
2. High-Fidelity Evaluation: 40-minute remote testing sessions. Participants completed realistic tasks: uploading four images, deleting two images, populating required fields, navigating modals, and resolving simulated errors.
3. Quantitative Metrics: Post-test usability was evaluated using John Brooke's 10-item System Usability Scale (SUS) on a 5-point Likert scale.

RESULTS AND DISCUSSION

Results

Comparative Accessibility Audit Findings

The WAVE evaluation revealed significant accessibility non-compliance across all audited Nigerian P2P platforms in [Table 3](#). The compliance level in [Table 4](#) indicates that OList achieved the highest compliance score (5/10), followed by Jiji (2/10) and Betacar (1/10). Overall findings demonstrate widespread gaps in keyboard accessibility, programmatic form labeling, real-time error announcements, and screen-reader support. This outcome confirms the alternate hypothesis that the audited Nigerian P2P upload pages show a statistically significant difference in WCAG 2.1 compliance.

Table 3

Comparative Audit of Accessibility Compliance on Leading Nigerian P2P Platforms

Platform	Labeling of Form Fields	Size & Spacing	Color Contrast & Compliance	Navigation & Keyboard	Feedback & Error Messaging	Image Upload Accessibility
Jiji	Missing persistent labels; placeholder text only (WCAG 3.3.2)	Low-contrast visual weight on target buttons	Insufficient contrast ratio on system icons (WCAG 1.4.3)	Input fields overlap with mobile virtual keyboard	No dynamic screen-reader status notifications (WCAG 4.1.3)	Image upload mechanism disabled
OList	Explicit HTML labels applied (WCAG 3.3.2)	Touch targets meet minimum spacing	Compliant text-to-background contrast (WCAG 1.4.3)	Custom drop-downs lack tab focus (WCAG 2.1.1)	Validation errors omitted from screen reader trees (WCAG 3.3.1)	Image upload preview lacks alt text (WCAG 1.1.1)
Betacar	Form labels unassociated or misassigned (WCAG 1.3.1)	Interactive targets fail touch dimension rules	Substandard contrast on controls and text (WCAG 1.4.3)	Modal dialogs fail to lock focus (WCAG 2.4.3)	No inline text error feedback or live announcements (WCAG 3.3.1)	Upload button missing accessible name (WCAG 4.1.2)

Table 4*Compliance Level Ratings of Evaluated P2P Platforms*

Platform	Summary of Accessibility Findings	WCAG 2.1 Compliance Interpretation
Jiji	Missing form labels; low visual button weight; sub-standard icon contrast; keyboard overlap; lack of status feedback	Score: 2/10 (Low Compliance)
OList	Proper form labeling; adequate touch spacing; compliant contrast; keyboard-inaccessible drop-downs; screen-reader error omissions	Score: 5/10 (Moderate Compliance)
Betacar	Mis-associated labels; tiny click points; poor contrast; focus-trapping modal dialogs; missing error feedback	Score: 1/10 (Very Low Compliance)

Prototype Iterations and Interface Design

To address the audit findings, low-fidelity and high-fidelity interfaces were generated as shown in [Annexure Figures 1-6](#). The accessibility parameters adopted in the high-fidelity design are enunciated below:

Color Contrast: Deep blue (#16587D) was selected as the primary accent color for key interactive elements. Applied to white backgrounds, it achieves a 7.13:1 contrast ratio, passing WCAG AAA standards. Text labels use dark gray (#111111) and placeholder text uses #5C5B5B, meeting WCAG AA requirements.

Form Structure & Indicators: Persistent labels paired with descriptive placeholder text reduce cognitive load. Red asterisks (*) explicitly mark required inputs. Dedicated accordion controls route users to structured modal steps (Category, Condition, Weight, Price).

Usability Test Results**Low-Fidelity Usability Test Results**

Preliminary testing of the low-fidelity prototype (N = 20) indicates the following performance metrics ([Figure 1](#)): Task Effectiveness: 73% of participants completed assigned navigation tasks successfully, while 27% were unsuccessful.

Click-Through Completion: 58% of interaction flows were completed successfully, while 42% were unsuccessful.

User Satisfaction: 53% expressed high satisfaction ("Happy"), 31% remained neutral, and 16% reported dissatisfaction ("Unhappy"). **High-**

Fidelity System Usability Scale (SUS) Evaluation

System Usability Scale (SUS) measuring tool, as developed by John Brooke, was deployed to ascertain the usability compliance of the developed upload page mock-up prototype. [Laubheimer \(2018\)](#) posited that the System Usability Scale is a post-test questionnaire consisting of ten (10) standard questions addressing the system's usability and learnability. UX researchers recommended this standard tool over other homegrown tools due to its high reliability, validity, and sensitivity ([Laubheimer, 2018](#)). System Usability Scale is an efficient tool for gathering valid statistical data that gives a reliable score about a system.

Following interaction with the high-fidelity prototype, 20 participants completed the standard 10-item SUS evaluation ([Table 5](#)).

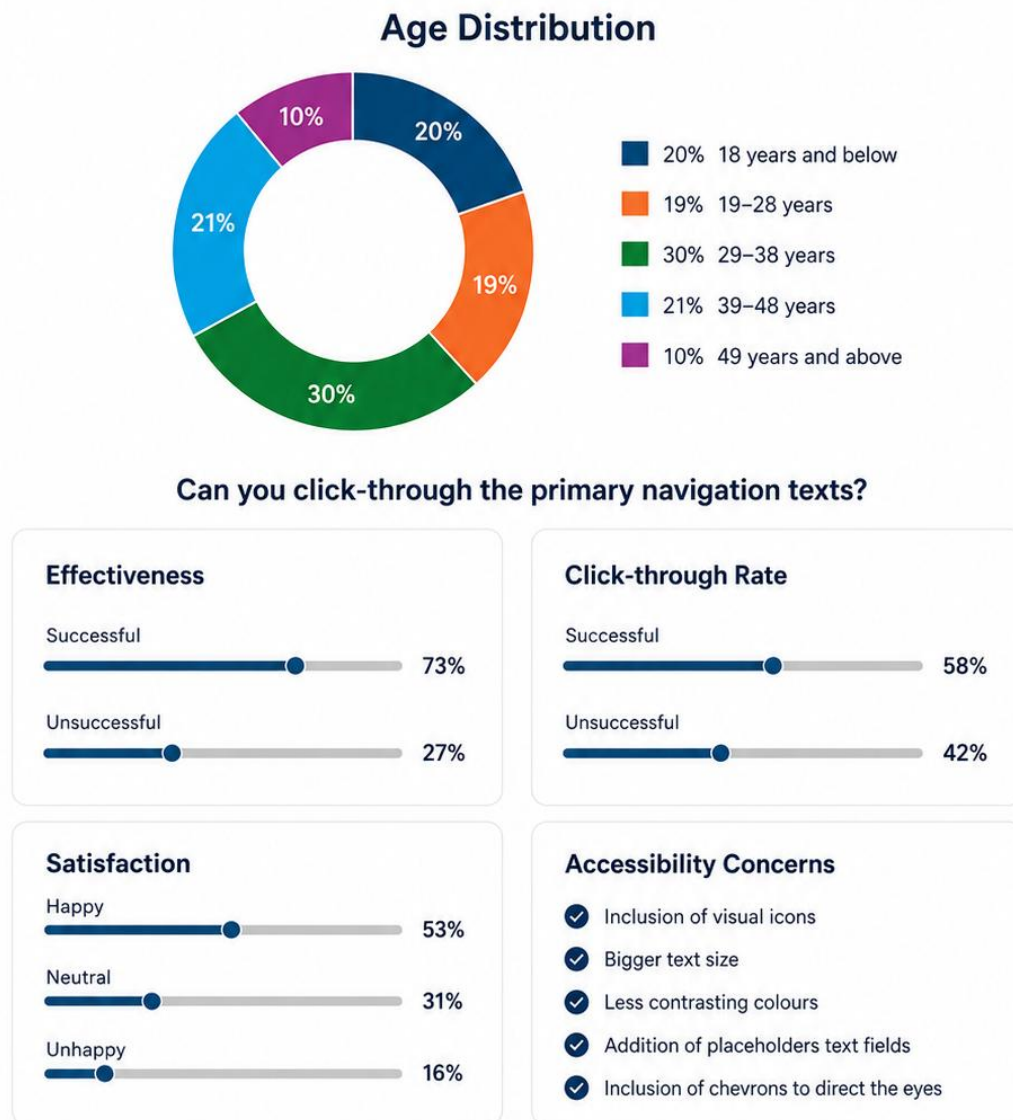


Figure 1. User test results on the low-fidelity prototype

Table 5

SUS Response Table

S.No	Item	Strongly Disagree			Strongly agree		Mean
		1	2	3	4	5	
Q1	I think that I would like to use this system frequently.	1	1	2	9	7	1.95
Q2	I found the system unnecessarily complex.	12	4	2	1	1	2.60
Q3	I thought the system was easy to use.	6	5	4	3	2	4.35

Table 5 continues

Q4	I think that I would need the support of a technical person to be able to use this system.	0	0	3	7	10	3.90
Q5	I found the various functions in this system were well integrated.	2	2	0	7	9	1.95
Q6	I thought there was too much inconsistency in this system.	7	10	1	2		3.50
Q7	I would imagine that most people would learn to use this system very quickly.	0	2	6	6	6	1.90
Q8	I found the system very cumbersome to use.	12	4	2	2	0	3.70
Q9	I felt very confident using the system.	1	1	6	5	7	2.35
Q10	I needed to learn a lot of things before I could get going with this system	5	7	3	2	3	4.0

SUS Score Calculation

Dividing across the participant cohort shows an average SUS score of 74.75. According to standardized SUS benchmarks (Lewis & Sauro, 2018), a score of 74.75 places the accessible upload

interface within the "Good" usability category (above the industry benchmark of 68). This outcome affirms the alternate hypothesis that the WCAG-compliant prototype will significantly meet the System Usability Scale.

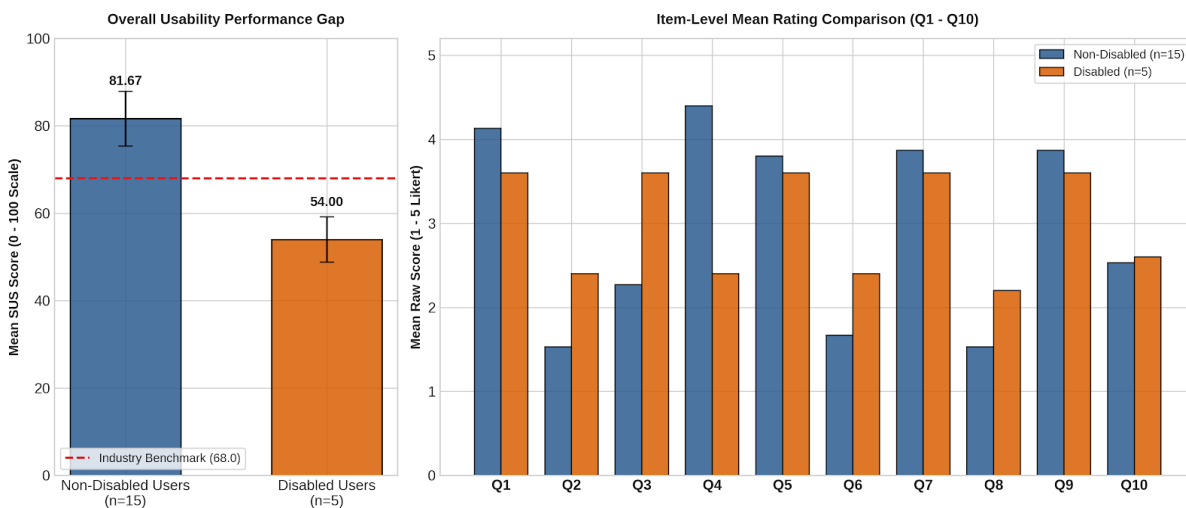


Figure 2. Graphical Representation of Disabled and Non-disabled SUS Performance

Noticeably, there is a difference in the SUS performance of Non-disabled and disabled users, as shown in Figure 2. Non-disabled users rated the prototype at 81.67 (Grade A / "Excellent"), exceeding the 68.0 industry benchmark. But screen-reader users rated the prototype at 54.00 ("Marginal / OK"), which falls below the benchmark line by 14 points. This analysis proves alternate hypothesis 3 is correct: there is a significant difference in the

SUS performance of Non-disabled and disabled users.

Discussions

The comparative audit of existing Nigerian peer-to-peer (P2P) e-commerce platforms revealed widespread deficiencies in accessibility compliance, particularly within form-intensive upload pages. Most audited platforms demonstrated

low to moderate compliance with WCAG 2.1 standards across core accessibility areas, including form labeling, keyboard navigation, error feedback, and compatibility with assistive technologies. These findings underscore the limited integration of accessibility features in Nigerian P2P e-commerce platforms, which significantly excludes a large segment of the population from accessing the digital economy. [Lazar et al. \(2015\)](#) emphasized that inaccessible digital interfaces can constitute a form of societal exclusion, especially in contexts where digital platforms increasingly mediate access to livelihoods. The audit findings reinforce concerns raised by [Chukwuma \(2025\)](#), who argue that many e-commerce platforms in Africa fail to meet even basic accessibility benchmarks. The results also align with studies identifying form elements as primary sources of accessibility failure on commercial websites. Theoretically, these findings validate the low adoption of pragmatic accessibility approaches advocated by [Stephanidis and Emiliani \(1999\)](#). Nigerian P2P platforms largely operate within a design paradigm that places limited emphasis on accessibility drivers, contrasting with global best practices where accessibility is embedded early in development workflows ([Lazar et al., 2019](#)). In contrast, the developed upload page prototype demonstrates deliberate adherence to accessibility standards. High-contrast color schemes such as deep blue (#16587D) with a contrast ratio of 7.13: enhance readability, a core component of interface comprehension ([Akgul, 2020](#)). Instructional placeholders, visual state changes on active input fields, and affordances such as camera icons paired with labels ("Upload Photos") collectively improved perceivability and reduced cognitive load ([Norman, 2013](#); [Spyridonis, 2017](#)). Dynamic feedback mechanisms provided essential interaction signals, supporting self-efficacy for diverse users ([Lazar et al., 2019](#)). The universal accessibility criteria require a critical examination of the evaluation metrics and participant sub-groups. At the same time, the prototype achieved an overall mean System Usability Scale (SUS) score

Sci. Technol. Arts Res. J., July –Sep, 2026, 15(3), 88-110 of 74.75 (N=20). This score differential highlights critical nuance. While non-disabled users perceived the prototype as highly usable, screen-reader users encountered friction that lowered their subjective rating. Screen reader users required little assistance (Mean= 240) due to spatial constraints, resulting in less compliance with text hierarchy. Screen-reader users have higher scores for system complexity, perceived inconsistency, and cumbersome interaction as compared to the non-disabled users. This gap shows that while the visual affordances, contrast levels, and interactive states mitigated general usability barriers, screen-reader users experienced latent assistive technology compatibility issues.

Despite these limitations, the study contributes to shaping an inclusive African digital landscape. While accessibility research is well established in Europe and North America, empirical studies focusing on African digital platforms are limited. By combining accessibility audits, participatory design approaches, and empirical usability testing, this work provides context-specific evidence that accessibility-driven UX design is necessary in developing P2P marketplaces for African markets. The iterative evaluation reflects ISO 9241-210 standards for user-centered design while contextualizing "Design for All" principles in mobile-first, resource-constrained environments. Future research must expand sample sizes among assistive technology users and incorporate specialized accessibility evaluation instruments to iteratively bridge the usability gap between disabled and non-disabled participants.

CONCLUSIONS

Accessibility is a fundamental driver of inclusivity in digital product design. The African digital landscape is a vibrant ecosystem with diverse potentials, capable of delivering equitable access to digital experiences. This study explored the accessibility gaps hindering digital inclusion and preventing a significant segment of users from having a seamless and meaningful experience on the upload pages of peer-to-peer (P2P) e-commerce

platforms in Nigeria. The findings clearly demonstrate the need to adopt standards-driven design approaches aligned with global best practices to effectively address these challenges. The study presents a replicable framework anchored on accessibility audits, user-centered design, and empirical testing. The framework development was guided by the specifications of the Web Content Accessibility Guidelines (WCAG). In addition, the user-centered workflow adopted in this study significantly helps designers and developers prioritize accessibility when creating digital solutions that are driven by users and tailored to African contexts. The vast potential of Africa's digital landscape can be fully harnessed through the development of inclusive digital marketplaces driven by accessibility-focused design.

Recommendations

Indigenous e-commerce platforms in Nigeria should consistently strive to improve accessibility on their upload pages through user feedback and empirical reports validated against established accessibility guidelines.

Designers and developers of e-commerce solutions in Africa must ensure balance between accessibility and usability as a core principle of effective design solutions.

A standardized design system grounded in accessibility principles should be established as a benchmark for design training in African design schools.

It is necessary for African designers and developers to embrace accessibility standards in the development of digital products for Africans.

CRedit author statement

Afeez Babatunde Siyanbola: Conceptualization, Methodology, Draft Writing, Data Curation, Data Visualization, Resources, Analysis, Reviewing, and Editing

Declaration of competing interests

The author declares no competing interests.

Ethical Approval

Not Applicable

Data availability

Data sources are appropriately cited in text.

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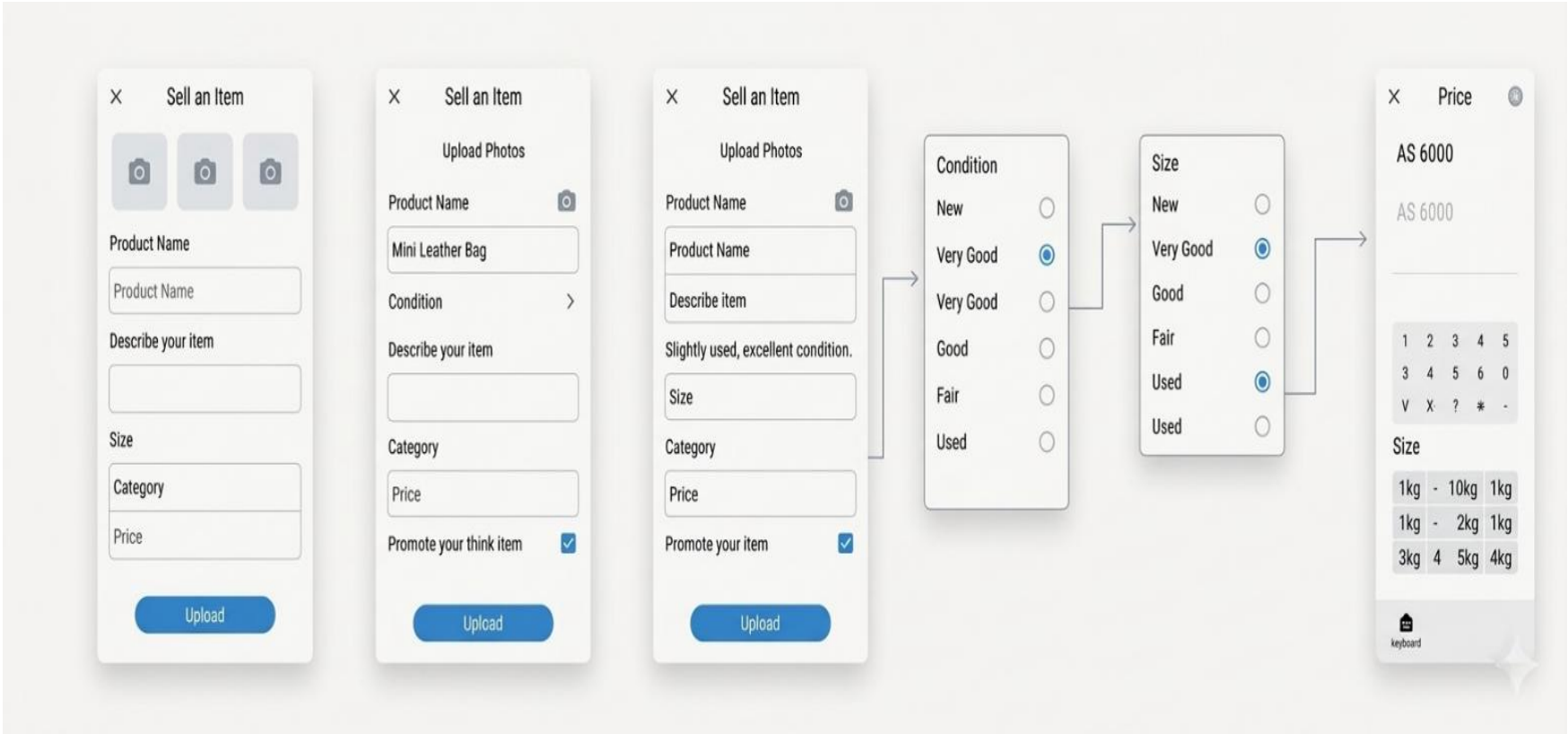
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Annexure Table 1*Summary of Web Content Accessibility Guidelines Version 2.0*

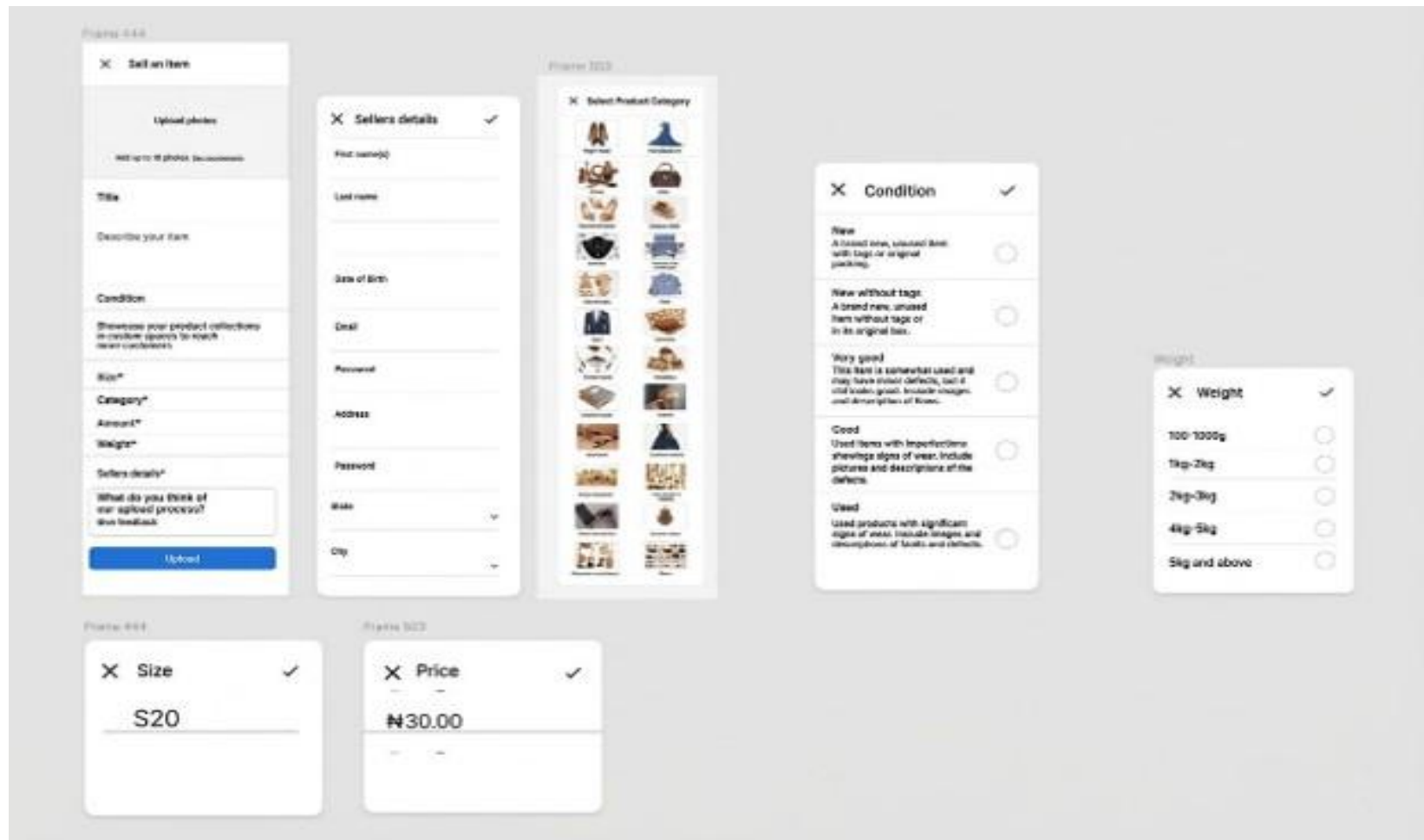
Principle	Guideline
Perceivable - The user interface should be presentable to users in ways they can perceive	1.1 Text Alternatives: Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language. 1.2 Time-based Media: Provide alternatives for time-based media 1.3 Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure 1.4 Distinguishable: Make it easier for users to see and hear content including separating foreground from background Text alternatives are equivalents for non-text content. Examples include: • Short equivalents for images, including icons, buttons, and graphics • Description of data represented on charts, diagrams, and illustrations • Brief descriptions of non-text content such as audio and video files • Labels for form controls, input, and other user interface components
Operable - User interface components and navigation must be operable	2.1 Keyboard Accessible: Make all functionality available from a keyboard 2.2 Enough Time: Provide users enough time to read and use content 2.3 Seizures: Do not design content in a way that is known to cause seizures 2.4 Navigable: Provide ways to help users navigate, find content and determine where they are
Understandable - Information and the operation of user interface must be understandable	3.1 Readable: Make text content readable and understandable 3.2 Predictable: Make Web pages appear and operate in predictable ways 3.3 Input Assistance: Help users avoid and correct mistakes
Robust - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies	4.1 Compatible: Maximize compatibility with current and future user agents, including assistive technologies

Annexure Table 2*Accessibility Guidelines for Upload page*

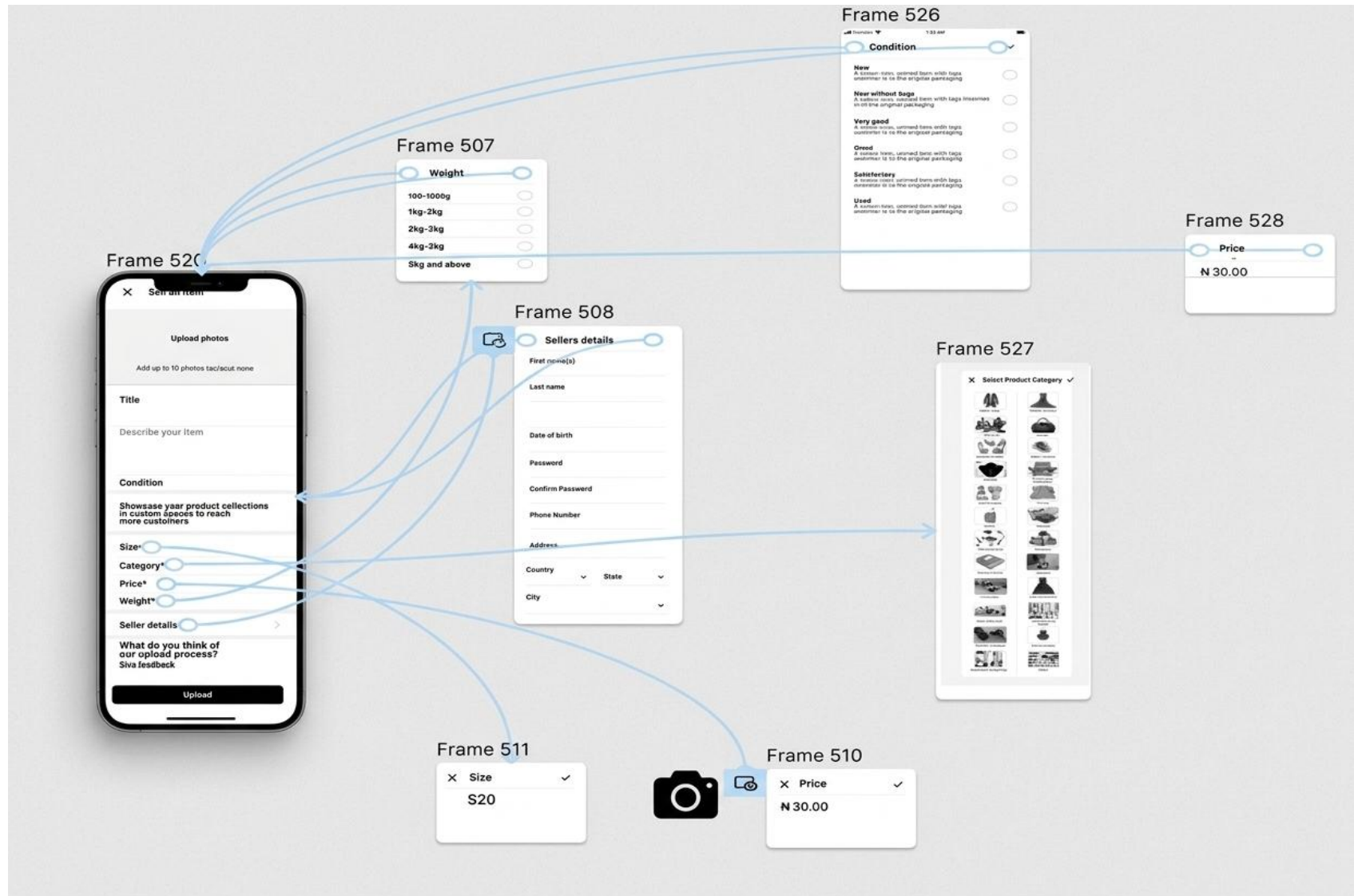
Accessibility Guidelines	Details
Clear Instructions	Concise instructions visible, and available in multiple formats (text and audio descriptions) (Clark, 2019).
Feedback and Error Handling	Provide accessible error messages, tooltips, and confirmation notifications to assist users with a variety of needs. (Lazar et al., 2019).
High Contrast and Readability	Implement good colour contrast ratios and scalable fonts to accommodate users with low vision



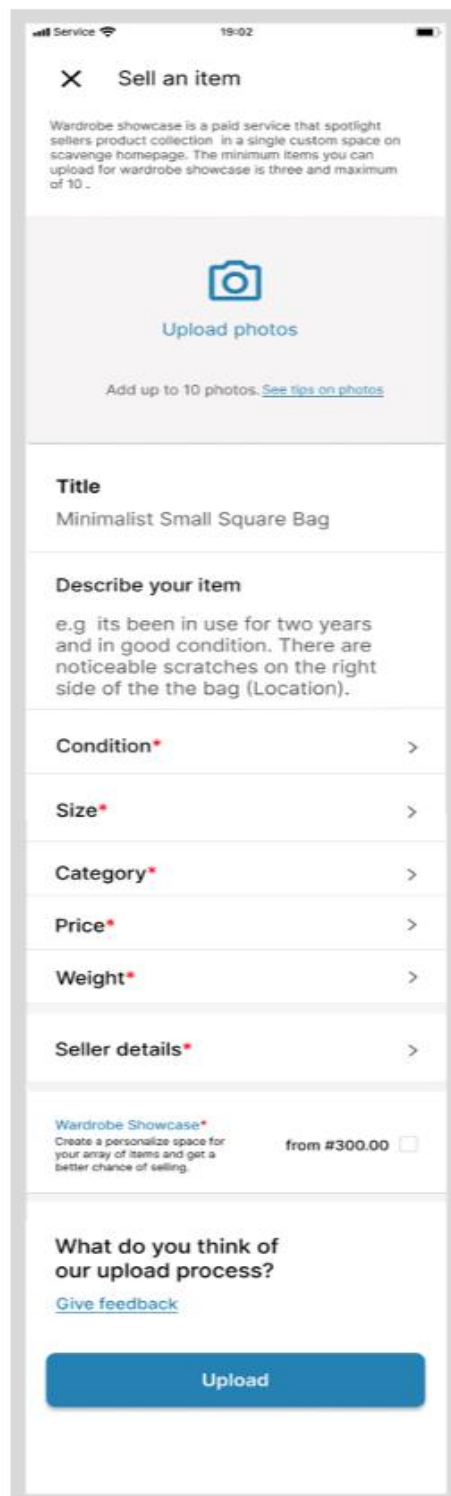
Annexure Figure 1. Thumbnail sketches of the e-commerce mobile upload page



Annexure Figure 2. Low fidelity digital wireframes of developed e-commerce mobile upload primary page and corresponding pages



Annexure Figure 3. Low fidelity prototype of the e-commerce mobile upload page



The image shows a mobile app interface for uploading an item. At the top, there's a status bar with 'Service', signal strength, and time '19:02'. Below it is a header with a close button (X) and the title 'Sell an item'. A paragraph explains the 'Wardrobe showcase' service. The main section is titled 'Upload photos' with a camera icon and a link to 'See tips on photos'. Below this are several input fields: 'Title' (with the example 'Minimalist Small Square Bag'), 'Describe your item' (with a detailed example), and a list of attributes: 'Condition*', 'Size*', 'Category*', 'Price*', 'Weight*', and 'Seller details*', each with a right arrow. A 'Wardrobe Showcase*' section offers a personalized space for a fee 'from #300.00'. At the bottom, there's a feedback link 'What do you think of our upload process? Give feedback' and a large blue 'Upload' button.

Sell an item

Wardrobe showcase is a paid service that spotlight sellers product collection in a single custom space on scavenge homepage. The minimum items you can upload for wardrobe showcase is three and maximum of 10 .

Upload photos

Add up to 10 photos. [See tips on photos](#)

Title

Minimalist Small Square Bag

Describe your item

e.g its been in use for two years and in good condition. There are noticeable scratches on the right side of the the bag (Location).

Condition* >

Size* >

Category* >

Price* >

Weight* >

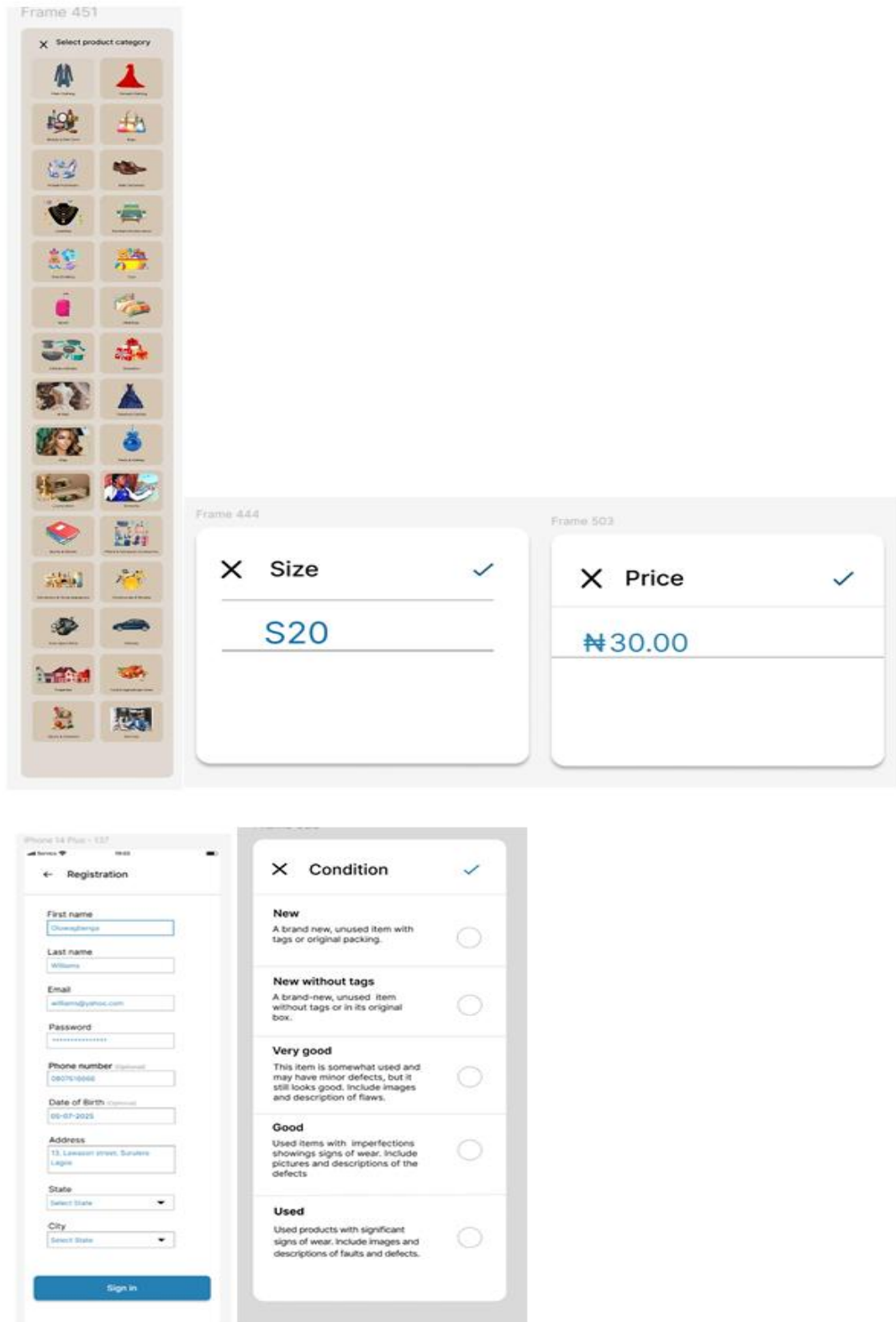
Seller details* >

Wardrobe Showcase*
Create a personalize space for your array of items and get a better chance of selling. **from #300.00** ☐

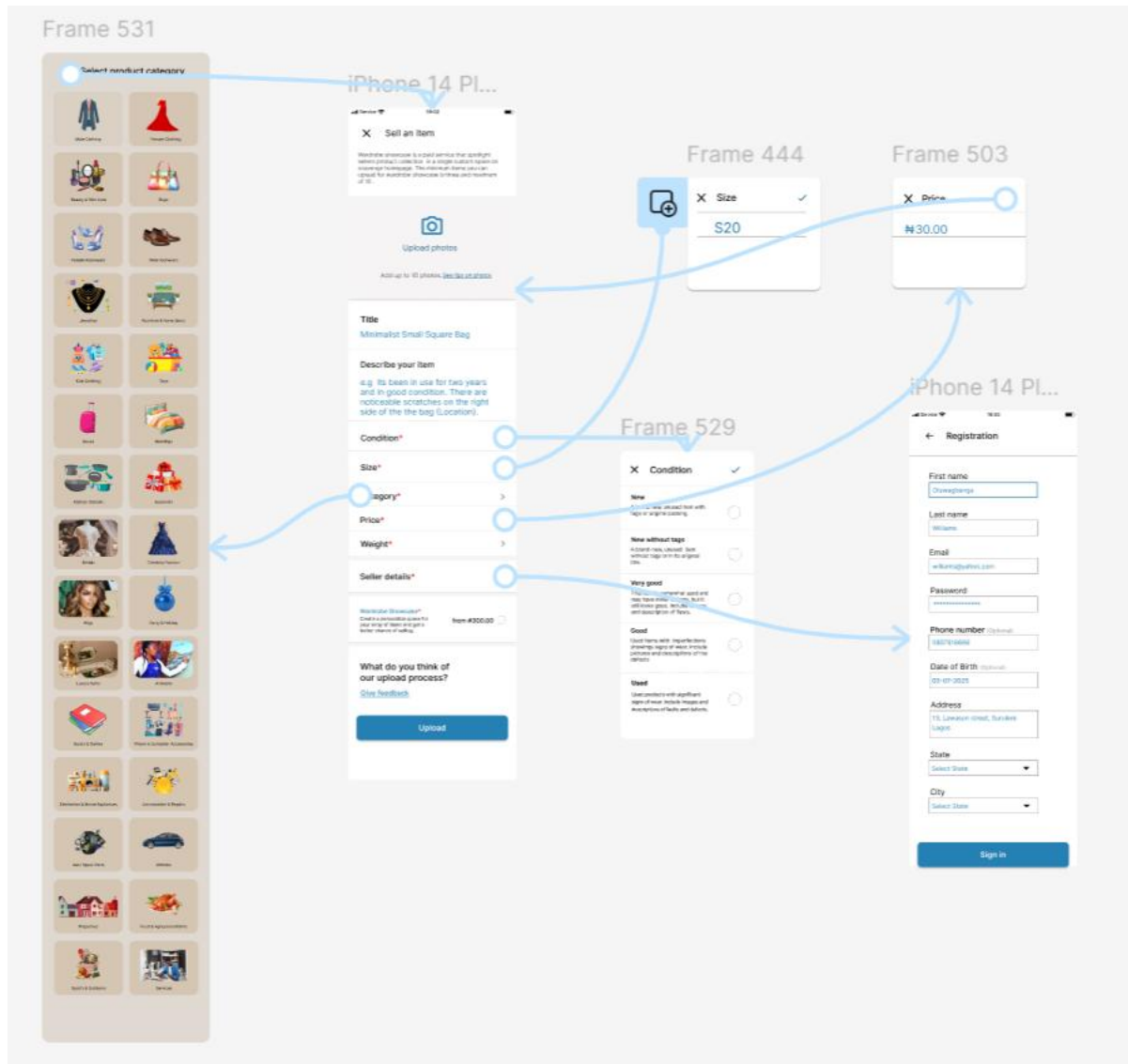
What do you think of our upload process?
[Give feedback](#)

Upload

Annexure Figure 4. High-Fidelity design of the upload page



Annexure Figure 5. High fidelity screens of the secondary pages of the upload page



Annexure Figure 6. Prototype mock-up of the upload page