Contents

Executive summary

Millions of people buy and sell goods online courtesy of e-commerce apps. In Kenya, according to the 2021 FinAccess Report, it is estimated that over 81% of adults indicated that they use digital devices (particularly for mobile money transactions), while 34% indicated that they use mobile banking.[1] Other studies have shown that, in Kenya, 16% of adults make and receive payments for goods and services on mobile money and e-commerce (13%).[2]

As the e-commerce industry grows, it represents an important new venue for many Kenyans to earn a living. For this reason, it is important that e-commerce applications are accessible—that they support people buying and selling goods and services regardless of their disability.

Accessible applications can best be achieved by implementing digital accessibility standards. Specifically, Kenya launched the Kenya Standard on Accessibility for ICT Products and Services for persons with disabilities in 2022, the first standard of its kind in Africa.[3] The Standard on Accessibility guides all producers and service providers to make their products and services accessible to all, including persons with disabilities.

This report is part of a larger research project on platform livelihoods and youth living with disabilities in Kenya conducted by inABLE and Technoprise, in partnership with Caribou Digital and the Mastercard Foundation. Overall, the project aims to to understand the opportunities and challenges young people with disabilities face when seeking to earn a living via digital platforms (i.e., social media and e-commerce platforms). This study is, in turn, part of Caribou Digital's broader Platform Livelihoods Project.[4] All research outputs are available here.

This report documents two parts of the research project: usability testing and digital accessibility compliance testing.

1 Kenya National Bureau of Statistics, 2021 FinAccess Household Survey, December 2021, www.knbs.or.ke/wp-content/uploads/2021/12/2021-Finaccess-Household-Survey-Report.pdf.

2 Lars Kamer, "Usage of Digital Services in Kenya as of 2020, by Type of Service," Statista, November 22, 2022, www.statista.com/statistics/1284615/usage-of-digital-services-in-kenya-by-type-of-service/.

3 Kenya Bureau of Standards, "Kenya Standard: Accessibility—ICT Products and Services," April 5, 2022, www.kebs.org/images/miscellaneous/KS-2952_2_2022.pdf.

4 See www.platformlivelihoods.com/.

The usability testing explored the ease-of-use of three of the most popular e-commerce platforms in Kenya: Jumia, Jiji, and PigiaMe. Sellers with disabilities (including visual impairment, hearing impairment, and physical disability) completed a series of tasks representative of selling on online platforms, and their completion (or noncompletion) of those tasks was used to generate usability scores for each platform, disaggregated by disability type and specific task. In addition to the testing, participants were asked qualitative interview questions to better understand their experiences as sellers with disabilities.

Overall, **the usability testing results show that the platforms have poor usability for visually impaired sellers, especially those who use screen readers.** PigiaMe earned higher usability ratings than both Jiji and Jumia across all groups, but still presented some difficulties for sellers with disabilities (e.g., lack of labeled images, poor color contrast). Sellers struggled to upload photos and list products for sale regardless of platform. Participants provided several general recommendations to increase the usability of the platforms for sellers with disabilities, including better screen reader support and labeling, plainer language, and simpler registration processes.

To complement users' experiences of platforms, the research team conducted a technical digital accessibility assessment, providing compliance and scenario testing using assistive technology. This assessment followed the World Wide Web Consortium (W3C)'s international set of guidelines known as the Web Content Accessibility Guidelines (WCAG 2.1 A, AA guidelines). The assessment was conducted by Technoprise Global, with a team of Trusted Tester Certified testers with and without disabilities. Digital accessibility is when all users—with or without disabilities—can perform the same functions and access the same information. A checklist combining the recommendations of the W3C guidelines was utilized with the latest accessibility authoring tools, user interaction principles, and most commonly used assistive technology to ensure that site content not only follows guidelines of structure, but also conveys information in the most relevant and usable formats for the understanding of all users.

The digital accessibility assessment found that **the three most challenging tasks for screen reader users are signing up or registering, uploading a product, and logging out from the platforms**, reflecting the results of the usability testing. Setting payments was only partly successful. The accessibility assessment also found that icons could not be read by talkback software, swipe functions were not reading correctly, and screens were restricted to portrait orientation, making some navigation challenging for persons with disabilities (especially the visually impaired).

01
Project overview

Millions of people buy and sell goods online courtesy of e-commerce apps. In Kenya, according to the 2021 FinAccess Report 2021, it is estimated that over 81% of adults indicated that they make use of digital devices (mobile money transactions mostly), while 34% indicated using mobile banking.[5] Other studies have shown that, in Kenya, 16% of the adults make and receive payments for goods and services on mobile money and e-commerce (13%).[6]

As the e-commerce industry grows, it represents an important new venue for many Kenyans to earn a living. For this reason, it is important that e-commerce applications are accessible—that they support people buying and selling goods and services regardless of their disability. As the e-commerce industry grows, designing applications for accessibility is important. Accessible applications ensure that all users are able to accomplish selling and buying goods through e-commerce platforms, regardless of their ability.

Accessible applications can best be achieved by implementing digital accessibility standards. In 2022, Kenya was the first country in Africa to develop accessibility standards, the Kenya Standard on Accessibility for ICT Products and Services, for persons with disabilities.[7] These standards will guide all producers and service providers to make their products and services accessible to all, including persons with disabilities.

This study aims to fill a gap in the literature; to our knowledge, no usability or accessibility testing has been done for communities of people with disabilities who are earning livelihoods as sellers in Kenya or elsewhere in Africa. Therefore, this research project is intended to **illustrate how the lens of usability can uncover significant challenges in making platform livelihoods accessible**. The project includes several parts: a survey, focus group discussions, interviews with youth with disabilities, and the usability and accessibility testing documented in this report. All research outputs are available here.

5 Kenya National Bureau of Statistics, *2021 FinAccess Household Survey*, December 2021, www.knbs.or.ke/wp-content/uploads/2021/12/2021-Finaccess-Household-Survey-Report.pdf.

6 Lars Kamer, "Usage of Digital Services in Kenya as of 2020, by Type of Service," Statista, November 22, 2022, www.statista.com/statistics/1284615/usage-of-digital-services-in-kenya-by-type-of-service/.

7 Kenya Bureau of Standards, "Kenya Standard: Accessibility—ICT Products and Services," April 5, 2022, www.kebs.org/images/miscellaneous/KS-2952_2_2022.pdf.

02

Usability testing of three key e-commerce platforms in Kenya

Usability testing is an evaluation of a product or service to determine how easy it is to use. This study included usability testing **to determine the ease of use of the most commonly used online selling platforms in Kenya**.

2·1 The design

Following an initial survey (of 148 respondents) conducted as part of a broader qualitative research project, a subset of 19 participants was recruited for the usability testing.

- **User profiles**: The sample was composed of 12 men and 7 women. Their ages ranged from 19 to 36, with an average age of 28. There were 6 visually impaired users, 7 hearing-impaired users, and 6 users with limited upper-limb mobility; participants were placed in one of three user groups based on their disability. All participants held at least a high school diploma, and 11 participants had at least some college training. The majority of the participants lived in Nairobi, with one participant each living in Thika, Meru, Kasarani, Gatundu, and Wangige. The participants worked in a wide range of fields, including business, information technology administration, engineering, and education.
- **Tasks tested**: Participants were asked to complete a set of 12 representative tasks of selling on e-commerce platforms to document the experience of being an online seller with a disability. These tasks, or "scenarios," are processes that a typical seller experiences while using the platforms, such as signing up, listing a product on the store, and receiving payment. Each task was rated on a 3-point scale: 0 indicated failure to complete the task, 1 indicated partial or assisted completion, and 2 indicated successful, unassisted completion. The results were used to calculate average success scores for each platform, scenario, and participant. Analysis of this data describes the usability of each online store (Jumia.co.ke, Jiji.co.ke, Pigiame.co.ke) for sellers with disabilities.

- **Selection of platforms**: Four online platforms were identified based on their popularity: Jumia, PigiaMe, Jiji, and Kilimall.[8] The research team went through the process of registering a seller account on each platform, revealing that Jumia, PigiaMe, and Jiji had general and straightforward registration processes. However, the registration process for Kilimall was very complicated. It required a verification code, had many levels of questions before registration completed (including a mandatory Kenya Revenue Authority (KRA) PIN), and required documents uploaded before registration. Therefore, Kilimall did not meet a minimum threshold of usability to be included in the study.
- **Apps vs. website testing**: The study also considered the availability of seller accounts of the three online platforms as applications or websites—if they could be accessed on mobile phone, desktop/mobile web, or both. A Jumia seller account was only accessible on desktop/mobile web, while Jiji and PigiaMe were accessible on both desktop/mobile web and mobile app. The study therefore tested Jumia on desktop for blind users and mobile web for deaf and physically challenged users. Jiji and PigiaMe were tested on mobile apps for all users.

2•2 Results

The usability testing results provide insights into how sellers with disabilities interact with the three selected online selling platforms, including objective performance measures and subjective experience drawn from interviews. Results are presented by participant group, by task, and by platform.

Overall, **the results highlighted that none of the platforms were fully accessible, and the most difficult tasks on these platforms were uploading and posting items for sale**. Visually impaired users were the least supported due to the lack of screen-reading technology on the platforms. Hearing-impaired users were the second least supported, with the main challenge being the language used by the platform. The physically impaired users had the strongest usability rates. Detailed results follow.

8 Standard Digital, "Top Online Shopping Sites in Kenya," *The Standard*, November 11, 2020, www.standardmedia.co.ke/entertainment/life-hacks/article/2001393528/top-online-shopping-sites-in-kenya.

2·2·1 Results by disability group

The user groups consisted of three categories of disability (visual impairment, hearing impairment, and physical impairment). Data was examined by disability group to **better understand specific accessibility challenges across different disabilities. It was noted that the websites with simple interfaces (few links, clear instructions, and static graphics) were deemed more usable.**

Table 1 displays success rates by disability group. The success rates represent the percentage of tasks completed by the participants for each platform.

Table 1 Usability testing success rates by disability group

↓ Platforms	↓ Disability type Hearing impairment	Visual impairment	Physical impairment
Jumia	69%	56%	87%
Jiji	94%	47%	87%
PigiaMe	96%	77%	100%
Average	**86%**	**60%**	**91%**

The main challenge for the visually impaired participants, who had the least success accessing platforms, was poor or no support for screen readers, which are a crucial technology for this user group. The hearing-impaired sellers had reasonable success rates accessing platforms; their main challenge was requirements for voice-only communication channels. Users in the physically impaired group had the highest average success rate, but still faced enough difficulty to result in failed tasks. It should be noted that all three platforms favored sighted users, hence the higher success rates in the hearing-impaired and physically impaired groups.

2·2·2 Results by scenario

The usability testing results were also examined by task to **better understand which tasks were most difficult for which users and why.** The two most difficult tasks across all platforms were uploading/listing a product and logging out from the portal. The sign-up process and set-up of payment methods were the tasks with highest success rates. Table 2 highlights the success rates by each platform and subtask.

Table 2 Success rates of subtasks by e-commerce platform

H = Hearing impairment V = Visual impairment P = Physical impairment

		Jumia			Jiji			PigiaMe		
		H	V	P	H	V	P	H	V	P
1	**Sign-up process**	**70%**	**76%**	**96%**	**100%**	**65%**	**98%**	**93%**	**98%**	**100%**
	Access the webpage/app.	71%	92%	100%	100%	83%	100%	100%	100%	100%
	Fill in the required details.	67%	50%	83%	100%	50%	92%	100%	100%	100%
	Finish the validation process.	58%	75%	100%	100%	67%	100%	71%	92%	100%
	Confirm that the account is ready to use.	83%	88%	100%	100%	58%	100%	100%	100%	100%
2	**Uploading a product process**	**69%**	**35%**	**75%**	**98%**	**43%**	**67%**	**100%**	**54%**	**100%**
	Access and activate the upload link.	58%	25%	80%	100%	50%	67%	100%	50%	100%
	Select and upload product.	75%	38%	80%	93%	33%	67%	100%	42%	100%
	Provide product description.	58%	38%	80%	100%	40%	67%	100%	58%	100%
	Confirm upload success.	83%	38%	60%	100%	50%	67%	100%	67%	100%
3	**Set up payment method**	**70%**	**100%**	**100%**	**100%**	**30%**	**100%**	**100%**	**83%**	**100%**
	Create payment method.	70%	100%	100%	100%	30%	100%	100%	83%	100%
4	**Create your contacts**	**50%**	**63%**	**100%**	**67%**	**34%**	**100%**	**90%**	**83%**	**100%**
	Include phone, email, or location.	75%	75%	100%	100%	30%	100%	100%	83%	100%
	Indicate delivery method/process.	25%	50%	100%	33%	38%	100%	80%	83%	100%
5	**Logout from portal**	**100%**	**0%**	**60%**	**100%**	**40%**	**83%**	**100%**	**67%**	**100%**
	Log out.	100%	0%	60%	100%	40%	83%	100%	67%	100%
	Average	**69%**	**56%**	**87%**	**94%**	**47%**	**87%**	**96%**	**77%**	**100%**

Participants struggled most with uploading and posting an item for sale (listing). Participants' difficulties stemmed from being unable to identify the image they wanted and struggling to correctly upload the image. They experienced further frustration with describing, labeling, and categorizing their items, which required a significant amount of manual input.

2•2•3 Results by platform

The results show that the most usable platforms were those that had their icons clearly labeled to ensure that users can easily navigate from one section to another, had proper color contrast (especially important for partially visually impaired users), and were screen-reader compliant. Table 3 summarizes the usability rates per platform.

Table 3 Overall successful usability rates per type of disability and per platform

↓ Platforms	↓ Disability type: Hearing impairment	Visual impairment	Physical impairment	**Average success rate**
Jumia	69%	56%	87%	**71%**
Jiji	94%	47%	87%	**76%**
PigiaMe	96%	77%	100%	**91%**

These results highlight that **none of the platforms were fully accessible for first-time users with disabilities**, particularly hearing- and visually impaired groups. Usability scores were lowest for visually impaired users. The variation in results across the three platforms reflected how well that platform supports screen-reading technology.

The most common key issues revealed during usability testing are listed below. Similar issues were identified in the accessibility assessment (see Section 3).

- Unlabeled buttons, webpage items, and images.
- Hard-to-identify required fields and information.
- Confusing platform navigation.
- Poor screen-reader compatibility.
- Insufficient color contrast (leading to difficulty reading text).

2•2•4 Qualitative findings

The final component of the usability testing involved asking participants a series of interview questions to gather more qualitative data. The interviews confirmed core findings from the usability testing:

- The most usable e-commerce platform across all disability groups was the one that offered better navigation and an easier sign-up process.
- The biggest challenges in using the platforms mentioned by users are no labeling, poor screen-reader support, and low contrast. Other complaints related to complex language (often in English), difficult sign-up processes (with verification codes sent by email or text) where "*giving up is the easier option*," and complicated methods of posting items.

During interviews, participants described these challenges and experiences.

> "PigiaMe is much better because of usability. It didn't have any issue at all, and it also provided the user the ability to delete the product, something I did not find with the rest."
> `Physically impaired participant`

> "Jumia has a long list of requirements that's hard to fill. The Jumia sign-up process was long and tedious. The form requires a lot of information before the account can be set up. The requirements at every stage make it difficult to proceed, and giving up is the easier option."
> `Hearing-impaired participant`

> "Jumia—language barrier. Jiji—I was unable to sign in, not accessible to screen reader users. PigiaMe—I was unable to upload products and sign out."
> `Visually impaired participant`

Users all suggested the need for increased compatibility with screen readers, comprehensive labeling of interface items, and improved contrast and legibility as their most valuable interface design considerations.

> "The digital platforms should develop a platform that is accessible in terms of labeling the form fields. Make use of well conversant languages to the user. Select fields should be accessible."
> `Visually impaired participant`

> "Include an SMS option on Jumia, and minimize some of the requirements on the long list."
> `Hearing-impaired participant`

> "All the apps should have an option for saving the data before proceeding to the next page. This will help just in case a user forgets to move to the next step."
> `Physically impaired participant`

The qualitative report focuses in more detail on users' experiences and recommendations.

03
Digital accessibility compliance assessment

Following the usability testing, the team conducted a digital accessibility[9] assessment of the same three platforms (desktop/web version) to confirm the results and provide further details, focusing on compliance and task testing using assistive technology. Whereas the usability testing focused on the user experience of the e-commerce apps of actual users, the compliance assessment and task testing were completed by a team of experts (with and without disabilities) to determine the accessibility of the applications to persons with visual impairments.

Usability testing highlighted the pains and gains of using the applications from users' perspectives, while the compliance assessment confirmed these perspectives and highlighted other gaps or positives of the applications in relation to those with visual impairments.

The study's digital accessibility compliance assessment was based on the World Wide Web Consortium (W3C)'s international set of guidelines, the Web Content Accessibility Guidelines (WCAG 2.1)[10] and AA guidelines.[11] The same three e-commerce platforms were tested (Jumia, Jiji, and PigiaMe) to determine whether and how these guidelines were applied.

These guidelines were used to assess how the three e-commerce platforms were perceived, operated, understood by users with disabilities, and if they were robust enough to meet the (majority of the) different needs of persons with disabilities, as well as all other users.

9 Digital accessibility is when all users with or without disabilities can perform the same functions and access the same information.

10 The Web Content Accessibility Guidelines (WCAG) 2.1 cover a wide range of recommendations for making web content more accessible. Following these guidelines will make content more accessible to a wider range of people with disabilities, including accommodations for visually impairedness and low vision, hearing impairedness and hearing loss, limited movement, speech disabilities, photosensitivity, and combinations of these, and some accommodation for learning disabilities and cognitive limitations; but will not address every user need for people with these disabilities.

11 In order to meet the needs of different groups and different situations, three levels of conformance are defined: A (lowest), AA, and AAA (highest).

3.1 Overall accessibility assessment findings

This subsection presents the summary results from the tasks tested during the accessibility testing. (The tasks were those used in the usability testing.) The team used the Android's TalkBack assessment software and the similar VoiceOver feature on iOS that identifies whether the online store can be accessed and used by a person with disability (e.g., a person who is completely visually impaired). The testing experts were able to use the software to identify and record the challenges that a person using a screen reader would face trying to use the platforms.

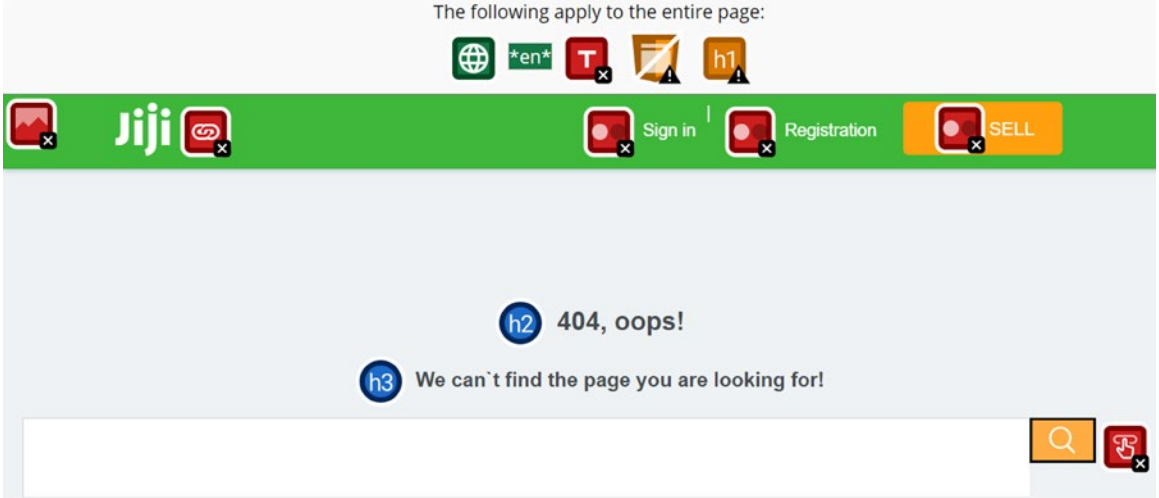
Table 4 summarizes the results of the accessibility testing for the three e-commerce platforms by task. The three most challenging tasks for screen reader users are signing up or registering, uploading a product, and logging out from the platforms. These align with the challenges outlined in the usability testing. Setting payments was only partly successful.

Table 4 Results of accessibility testing using Talkback assessment software (for Android and iOS)

↓ Task	Jumia	Jiji	PigiaMe	↓ Comments and key issues
Sign-up/registration process	Fail	Fail	Fail	Controls/elements without accessible names
Uploading a product process	Fail	Fail	Fail	Input fields without persistent visible labels
Set up the payment method	Fail	Pass	Pass	Elements with illogical focus order
Create your contacts - How you want your customers to contact	Pass	Pass	Pass	This task was successful across all three online stores
Logout from the portal	Fail	Fail	Fail	No state provided for expanded elements

To illustrate the challenges faced by users using screen readers, the assessment team used the Web Accessibility Evaluation (WAVE) tool.[12] The results are shown in Figure 1, which gives an example of the accessibility issues on Jiji's website. The icons with (×) indicate an accessibility failure as determined by the WAVE tool.

Figure 1 Example of results for accessibility issues on jiji.co.ke website using WAVE tool



The WAVE tool demonstrates that a person using a screen reader will encounter the following challenges when accessing Jiji's website:

1. The screen reader does not read any title page on the Jiji website. Without a proper title, many users (especially those using screen readers or other assistive technology) may have difficulty orienting themselves to the page.
2. The screen reader will not be able to read "Jiji" because there is no alternative text in the background.
3. The screen reader will not be able to recognize that Jiji has a hyperlink.
4. The section where a person is supposed to type "what I am looking for" has no label describing its purpose; therefore, the screen reader will not recognize what task that field is for.
5. An additional challenge noted for the partially visually impaired is the issue of differentiating colors, also known as color contrast. This is highlighted under "sign in," "registration," and "sell" sections of the page.

This example illustrates the number of obstacles facing a user who requires a screen reader (i.e., any user with visual impairment) to access and navigate an e-commerce platform.

12 WAVE is a free web accessibility evaluation tool developed by WebAIM.org. It provides visual feedback about the accessibility of your web content by injecting icons and indicators into your page. This is used to illustrate the findings, but for this assessment the research team used the more robust TalkBack software.

3•2 Specific accessibility assessment findings

In relation to users with visual impairments, the accessibility assessment found that the icons could not be read by the TalkBack software, the swipe function was not functioning correctly, and screens were restricted to portrait orientation, making some navigation challenging for persons with disabilities (especially the visually impaired).

3•2•1 Icons do not have accessible names.

All three applications have unlabeled or incorrectly marked elements and icons, which can be confusing to assistive technology users (as per examples 1 and 4 above). The use of assistive technologies, such as screen readers, screen magnifiers, and speech recognition software, is greatly enhanced by the size icons. By providing information about the role, state, and value of all user interface components present on a page, authors make it possible for assistive technologies to reliably interpret the platform and facilitate compatibility.

3•2•2 Elements cannot be accessed as blind or visually impaired users navigate the page via swipe.

People who are visually impaired rely on screen readers that have a swiping feature to navigate through and interact with elements on the screen. However, when swiping on the left or on the right, the screen reader cannot read incorrectly marked content and therefore may miss major functionalities of the page.

3•2•3 Screens are restricted to portrait orientation.

Content should not prevent the user from changing the display orientation. When content requires a particular orientation, users who have a mounted device, such as those attached to wheelchairs, will be unable to interact with or access content in a particular orientation. Flexible orientation may also benefit users with low vision who may change the orientation of a device to increase the width of the reading area and enlarge text.

04
Conclusions

Overall, because they are not designed with accessibility in mind, the three most commonly used e-commerce platforms in Kenya are generally inaccessible to users. User experience is below par for sellers with disabilities.

Creating accessible content and applications can be hard for many institutions, and not every website succeeds because of the technical nature of designing for accessibility. In spite of the ineffectiveness of implementing the existing laws on digital accessibility, each institution should strive to make their websites and applications as accessible as possible. The usability testing and accessibility assessment indicate specific gaps in usability and accessibility of e-commerce platforms for people living with disabilities in Kenya, which could and should be addressed by platforms, government, and relevant actors in the development space.

Appendix A
Usability testing and accessibility assessment information

A·1 Project scope/matrix

This project's accessibility assessment focused mostly on the Android phone, because the majority of Kenyans use this type of smartphone. However, iOS software was also assessed, because some visually impaired users prefer iPhones. Chrome was the selected browser, and TalkBack the selected screen reader application.

Table 5 Testing matrix

↓ Platform	↓ Browser	↓ Screen reader
Android	Chrome /App	TalkBack

A·2 Scenarios Tested

A test scenario is a group of steps to complete a task. In the digital accessibility assessment, the following scenarios were tested by compliance testers following the WCAG 2.1 standards. As shown in Table 6, the following scale was used to report compliance:

- **Pass (2)**—The user with disability was able to complete the task with no assistance and no bugs were found.
- **Partial (1)**—The user with disability was able to complete the task with assistance.
- **Fail (0)**—The scenario did not pass some of the WCAG standards.

Appendix A

Table 6 Summary of usability testing results

↓ Task	↓ Scenario	Jumia	Jiji	PigiaMe
Sign-up process	Access the app/web page.	2	2	2
	Fill in the required details.	0	0	0
	Finish the validation process.	0	0	N/A
	Confirm the account is ready for use.	2	0	0
Uploading a Product	Access and activate the product link.	0	0	0
	Select and upload the product.	0	0	0
	Provide the description of the product.	0	0	0
	Confirm the product is successfully uploaded.	0	0	0
Set up payment method	Create the payment method for the product.	0	2	2
Create your contacts	Phone-email-location.	2	2	2
	Indicate delivery method/process.			
Log out from the portal		0	0	0

The tasks for the three seller accounts below were done as follows: PigiaMe seller account (desktop), Jiji seller account and Jumia seller account (mobile app via an Android device).

Table 7 Scenarios tested by seller accounts

Jumia seller account (Android)	Jiji seller account (Android)	PigiaMe seller account (desktop)
Sign up process	Sign up process	Sign up process
Access the app	Access the app	Access the webpage
Fill in the required details	Fill in the required details	Fill in the required details
Finish the validation process	Finish the validation process	Finish the validation process
Confirm that the account is ready for use	Confirm that the account is ready for use	Confirm that the account is ready for use

Appendix B
Accessibility assessment and usability testing completion data

B·1 Scenarios and scoring

To evaluate the usability of each platform, the research team created 12 scenarios, or use cases (UCs). These UCs represented various processes that a typical user experiences on the platforms. They are included below as they were provided to the participants.

Scenarios were scored on a 3-point scale: 0 indicated failure to complete the task, 1 indicated partial completion/assisted completion, and 2 indicated successful completion. The scores for each scenario were used to calculate average usability and accessibility scores for each platform, scenario, and user group.

Sign-up Process

UC 1 Access the webpage.

UC 2 Fill in the required details.

UC 3 Finish the validation process.

UC 4 Confirm that the account is ready for use.

Uploading a Product Process

UC 5 Access and activate the upload link.

UC 6 Select and upload the product you want to sell.

UC 7 Provide the description of the product.

UC 8 Confirm that the product is successfully uploaded and published.

Set Up Payment Method

UC 9 Create the payment method for your product.

Create Your Contacts – How you want your customers to contact

UC 10 Provide phone, email, and/or location.

UC 11 Indicate your delivery method/process.

Log Out Process portal

UC 12 Log out after you are done with all the processes.

B·2 Scenarios and scoring for accessibility assessment

Figure 2 Jumia use cases and scoring

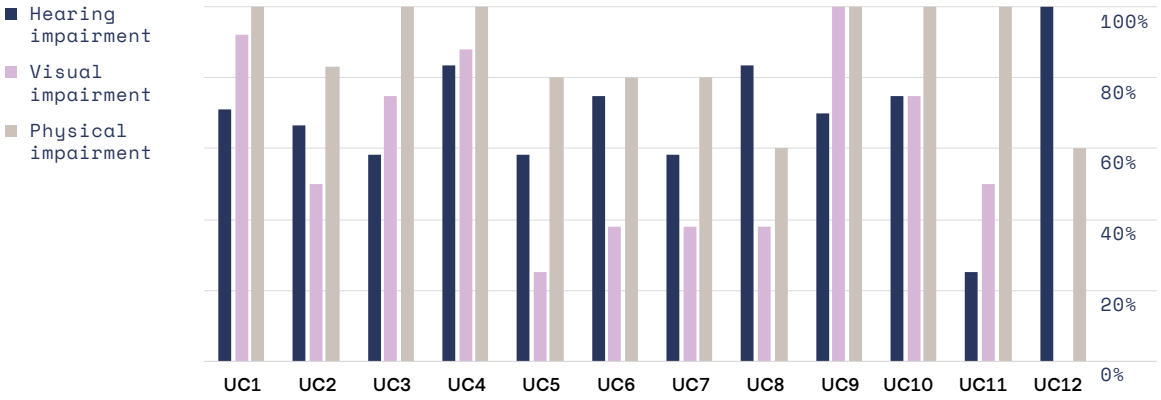


Figure 3 Jiji use cases and scoring

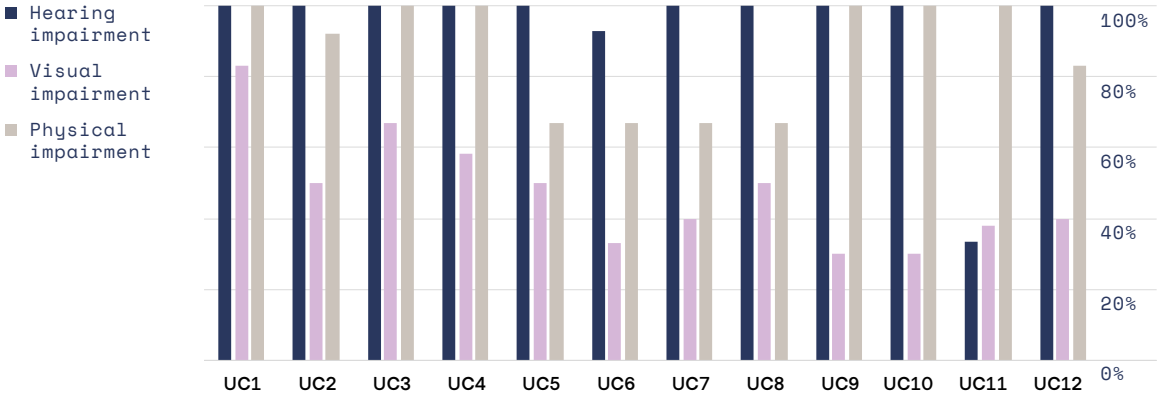
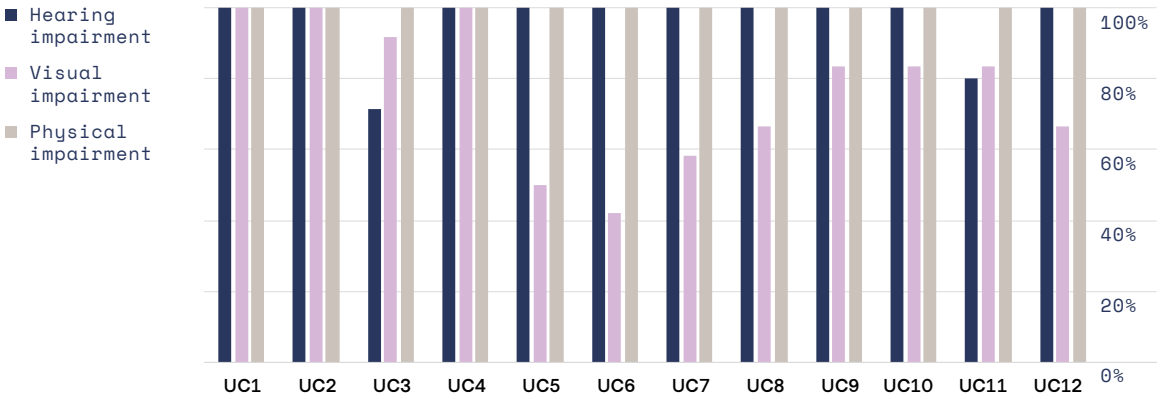


Figure 4 PigiaMe use cases and scoring



B·3 Scenarios and scoring for usability testing

Table 7 Jumia usability testing results

Jumia ↓ Use cases	Hearing impairment							TOTAL	Visual impairment						TOTAL	Physical impairment						TOTAL
	D01	D02	D03	D04	D05	D06	D07		B02	B03	B04	B05	B06	B07		P01	P02	P03	P04	P05	M06	
1 Sign up process																						
Access the webpage.	1	1	1	2	2	2	2	79%	2	2	2	2	2	2	100%	2	2	2	2	2	2	100%
Fill in the required details.	1	1	1	2	2	1	0	57%	2	2	2	1	0	0	58%	2	2	2	2	0	2	83%
Finish the validation process.	1	1	1	1	2	1	×	58%	2	2	2	1	×	×	88%	2	2	2	2	×	2	100%
Confirm that the account is ready for use.	2	1	1	2	2	2	×	83%	2	2	2	1	×	×	88%	2	2	2	2	×	2	100%
2 Uploading a product process																						
Access and activate the upload link.	1	1	1	1	2	1	×	58%	0	0	1	1	×	×	25%	2	2	0	2	×	2	80%
Select and upload the product you want to sell.	1	1	1	2	2	2	×	75%	x	0	2	1	×	×	50%	2	2	0	2	×	2	80%
Provide the description of the product.	2	1	1	1	1	1	×	58%	x	0	2	1	×	×	50%	2	2	0	2	×	2	80%
Confirm that the product is successfully uploaded and published.	2	1	1	2	2	2	×	83%	x	0	2	1	×	×	50%	2	2	0	0	×	2	60%
3 Set up the payment method																						
Create the payment method for your product.	1	1	1	2	2	×	×	70%	0	2	2	2	×	×	75%	2	2	2	2	×	2	100%
4 Create your contacts - How you want your customers to contact																						
You can include phone, email, or even physical location.	2	2	1	1	×	×	×	75%	0	2	2	2	×	×	75%	2	2	2	2	×	2	100%
Indicate your delivery method/process.	0	0	1	0	1	1	×	25%	0	0	2	2	×	×	50%	2	2	2	2	×	2	100%
5 Log out from the portal																						
Log out after you are done with all the processes.	2	2	2	2	2	2	×	100%	0	0	0	0	×	×	0%	2	2	0	2	×	0	60%
	67%	54%	54%	75%	83%	63%	8%	69%	33%	50%	88%	63%	8%	8%	59%	100%	100%	58%	92%	8%	92%	87%

Appendix B

Table 8 Jiji usability testing results

Jiji	Hearing impairment								Visual impairment							Physical impairment						
↓ Use cases	D01	D02	D03	D04	D05	D06	D07	TOTAL	B02	B03	B04	B05	B06	B07	TOTAL	P01	P02	P03	P04	P05	M06	TOTAL
1 Sign up process																						
Access the webpage.	2	2	2	2	2	2	2	100%	2	2	1	2	1	2	83%	2	2	2	2	2	2	100%
Fill in the required details.	2	2	2	2	2	2	2	100%	1	1	1	1	1	2	58%	2	2	2	2	2	2	100%
Finish the validation process.	2	2	2	2	2	2	2	100%	1	1	1	1	2	2	67%	2	2	2	2	2	2	100%
Confirm that the account is ready for use.	2	2	2	2	2	2	2	100%	2	2	1	0	0	0	42%	2	2	2	2	2	2	100%
2 Uploading a product process																						
Access and activate the upload link.	2	2	2	2	2	2	2	100%	2	2	1	×	0	1	60%	2	2	2	0	2	2	83%
Select and upload the product you want to sell.	2	2	2	2	2	2	2	100%	1	1	1	×	0	0	30%	2	2	2	0	2	2	83%
Provide the description of the product.	2	2	2	2	2	2	1	93%	1	2	1	×	0	0	40%	2	2	2	0	2	2	83%
Confirm that the product is successfully uploaded and published.	2	2	2	2	2	2	1	93%	2	2	1	×	0	0	50%	2	2	2	0	2	2	83%
3 Set up the payment method																						
Create the payment method for your product.	2	2	2	2	2	2	×	100%	0	×	1	×	0	2	38%	2	2	2	2	2	2	100%
4 Create your contacts - How you want your customers to contact																						
You can include phone, email, or even physical location.	2	2	2	2	2	2	×	100%	0	×	1	×	0	2	38%	2	2	2	2	2	2	100%
Indicate your delivery method/process.	0	0	0	0	2	2	×	33%	0	×	1	×	0	2	38%	2	2	2	2	2	2	100%
5 Log out from the portal																						
Log out after you are done with all the processes.	2	2	2	2	2	2	×	100%	1	×	1	×	2	0	50%	2	1	1	2	2	2	83%
	92%	92%	92%	92%	100%	100%	58%	93%	54%	54%	50%	17%	25%	54%	49%	100%	96%	96%	67%	100%	100%	93%

Appendix B

Table 9 PigiaMe usability testing results

PigiaMe	Hearing impairment							TOTAL	Visual impairment						TOTAL	Physical impairment						TOTAL
↓ Use cases	D01	D02	D03	D04	D05	D06	D07		B02	B03	B04	B05	B06	B07		P01	P02	P03	P04	P05	M06	
1 Sign up process																						
Access the webpage.	2	2	2	2	2	2	2	100%	2	2	2	2	2	2	100%	2	2	2	2	2		100%
Fill in the required details.	2	2	2	2	2	2	2	100%	2	2	2	2	2	2	100%	2	2	2	2	2		100%
Finish the validation process.	0	2	2	2	2	0	2	71%	1	2	2	2	2	2	92%	2	2	2	2	2		100%
Confirm that the account is ready for use.	×	2	2	2	2	×	2	100%	0	2	2	2	2	2	83%	2	2	2	2	2		100%
2 Uploading a product process																						
Access and activate the upload link.	×	2	2	2	2	×	2	100%	1	1	2	1	1	0	50%	2	2	2	2	2		100%
Select and upload the product you want to sell.	×	2	2	2	2	×	2	100%	1	1	2	1	0	0	42%	2	2	2	2	2		100%
Provide the description of the product.	×	2	2	2	2	×	2	100%	1	2	2	2	0	0	58%	2	2	2	2	2		100%
Confirm that the product is successfully uploaded and published.	×	2	2	2	2	×	2	100%	2	2	2	2	0	0	67%	2	2	2	2	2		100%
3 Set up the payment method																						
Create the payment method for your product.	×	2	2	2	2	×	2	100%	0	2	2	2	2	2	83%	2	2	2	2	2		100%
4 Create your contacts - How you want your customers to contact																						
You can include phone, email, or even physical location.	×	2	2	2	2	×	2	100%	0	2	2	2	2	2	83%	2	2	2	2	2		100%
Indicate your delivery method/process.	×	2	2	2	0	×	2	80%	0	2	2	2	2	2	83%	2	2	2	2	2		100%
5 Log out from the portal																						
Log out after you are done with all the processes.	×	2	2	2	2	×	2	100%	2	2	2	2	0	0	67%	2	2	2	2	2		100%
	17%	100%	100%	100%	92%	17%	100%	96%	50%	92%	100%	92%	63%	58%	76%	100%	100%	100%	100%	100%		100%