The Impact of Assistive Technology

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Global Disability Innovation Hub | GDI Hub Accelerate

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AT2030

UKaid from the British people

Introduction: Six things you should know about the impact of Assistive Technology

The Assistive Technology (AT) start-up sector is growing but a data vacuum of reliable & robust insights at a venture and ecosystem are restricting investment decisions. The difficulty in reaching and surveying AT users discourages robust impact measurement of both products and services. This presents challenges in quantifying benefits and costing improvements.

There is a need to create data and evidence for the AT sector. The current data vacuum is challenging venture but also ecosystem growth. At the ecosystem-level the lack of data and evidence creates a significant barrier for the sector to make informed decisions about where and when to invest.

The objective of this research was to develop an easily administrable set of surveys – AT Lean Impact Assessment Suite – which would capture company-level impact for emerging AT companies from the users' perspectives whilst simultaneously delivering ecosystem-wide learnings.

Global Disability Innovation (GDI) Hub alongside partners 60 Decibels chose six pilots to test a standardised set of survey modules to measure the user experience and impact performance of portfolio companies.

The resulting insights from across the AT start-up ecosystem, can be summarised as six key learnings:

1. **Emerging AT[1] companies working in innovation are reaching users with AT for whom no good alternatives exist.** While nearly half of the users report prior use of similar AT products, 85% say they cannot think of a good alternative to the AT company's offering. This suggests that the offerings of these emerging AT companies are superior to what's available on the market for this set of users or limited user knowledge exists of what is available.
2. **AT products are making a positive difference in users' lives across a variety of dimensions.** AT improves users' confidence and self-esteem, ability to work and social participation. Nearly four in five users report improved quality of life, citing improved functioning and independence. Nearly all the AT companies surveyed outperform the 60 Decibels global benchmark for impact on quality of life.
3. **Many report challenges with AT, which inhibit value creation and satisfaction.** A consistent link across companies is that users who report challenges have a significantly lower Net Promoter Score than those who don't experience challenges. However, the good news is that challenge resolution can improve customer satisfaction. Companies can use user voices to describe challenges and suggestions for improvement to improve user satisfaction.

[1] Throughout this report we use AT and assistive tech as abbreviations for assistive technology

4. **The impact of AT and the potential for scale is higher among rural users.** AT users living in rural areas report higher improvements in quality of life because of their AT product compared to their urban and peri-urban peers. Furthermore, findings on scalability show that a higher proportion of rural users say their AT product is a 'must have' compared to urban and peri-urban users. Expanding reach in rural markets can help emerging AT companies meet their inclusivity and impact goals.
5. **AT companies are showcasing that gender inclusivity is not a distant goal.** The overall gender distribution across all products surveyed is almost equal, with 58% male and 42% female users. Moreover, specific AT services, such as a Hangout Hub (a safe space for individuals who are deaf or hard of hearing), have reached 71% female users. Users of the Hangout Hub and users of a product distributed by a second AT company explicitly expressed that their quality of life improved due to increased self-esteem and confidence, which are key contributors to well-being. Other AT companies can make this a focus area in the future and track progress over time. For example, new AT product styles within prosthetics and glasses may appeal more to female users and have a greater impact on their lives, as measured by metrics, such as improvements in social ties.
6. **Lean Data is a promising pathway for assistive tech impact measurement and driving insights.** Users spent 15 to 30 minutes sharing how AT impacted their lives, challenges, and suggestions for AT companies, indicating they care deeply about their AT. Survey response rates were also high. This was helped by our inclusive approach to data collection, which suggests unbiased, representative data can be collected even when data collection is not in-person. Our Inclusive Lean Data approach can be a speedy and repeatable way to collect qualitative and quantitative AT impact data. Additionally, companies can make business decisions and communicate their impact using data and insights powered by AT user voices.

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1. ABOUT THE STUDY

1.1 About Global Disability Innovation Hub and AT2030

Global Disability Innovation Hub (GDI Hub) is a research and practice centre driving disability innovation for a fairer world. Operational in 41 countries, with more than 70 partners, we've reached 28 million people since launching in 2016.

GDI Hub's vision is for disability justice; for a world without barriers to participation and with opportunity for all. GDI Hub addresses intractable challenges by co-designing innovative solutions that are inclusive, accessible, and better than before.

GDI Hub Accelerate is the global agency for disability innovation. A powerhouse of insight, innovation, and technical excellence inside GDI Hub – we design, test, and scale solutions. We work with start-ups, ventures, businesses, bilateral organisations, and governments to harness the value of innovation through our Insights Hub, Venture Studio and Bespoke Consultancy.

AT2030 tests 'what works' to improve access to life-changing Assistive Technology (Assistive Tech) for all; investing £20m over 5 years to support solutions to scale. Led by GDI Hub and funded by UK aid, AT2030 will reach 9 million directly and 20 million more indirectly, driving a lifetime of potential. AT2030 co-sponsored the first Global Report on Assistive Technology and developed the Assistive Technology Impact Fund (ATIF).

1.2 About 60 Decibels

60 Decibels is a global, tech-enabled impact measurement company that brings speed and repeatability to social impact measurement and customer insights, providing regional and sectoral benchmarks on impact performance by listening to the people who matter most. Through the Lean Data approach, 60 Decibels speak directly to customers, employees, or beneficiaries, which enables organizations to understand impact relative to peers and set performance targets. With a network of 1,000+ researchers in 80+ countries and having worked with more than 800 of the world's leading impact investors, companies, foundations, corporations, NGOs, and public sector organizations, 60 Decibels makes it easy to listen to the people who matter most.

1.3 The Assistive Tech Impact Module Suite

The Inclusive Lean Impact Tool was developed in collaboration between GDI Hub Accelerate and 60 Decibels. Together we built a suite of survey modules focused on measuring the impact of AT companies on end-users and implementing small-sample impact assessment studies with six early-stage Assistive Tech start-ups. These combined the inclusive design and AT sector expertise of GDI Hub with the lean impact methodology of 60 Decibels to create an inclusive lean impact tool – the Assistive Tech Impact Module Suite. This suite is a standardised set of survey modules designed to measure AT portfolio companies' user experience and impact performance. The module suite has two components:

- **The Core Module**

The core module consists of standardised user experience and satisfaction questions that are product or service agnostic. Their value stems from the fact that they have been tried and tested across industries and help understand businesses in identifying areas for improvement and benchmarking their performance against industry standards.

- **AT Product or Service-Focused Modules**

The company can choose these modules based on their offering. Depending on the desired impact they seek to create, and their learning priorities, they can select components. Unlike standardised core modules that can be applied to different products or services, AT service-focused modules allow companies to pick and choose user experience and impact metrics that best align with their offering, theory of change, and learning objectives. The survey modules (see Table 1) include qualitative and quantitative questions that can be easily administered via phone or video call.

Table 1:Assistive Tech Impact Module Suite Metrics

I. Core AT Impact Metrics	
• First access to a product or service like the company's offering • Availability of alternatives to the company's offering • Impact of AT product or service on quality of life • Net Promoter Score & drivers • Challenges with the AT product or service • Suggestions for improvement for the AT company • 60 dB Gender Impact of Core Metrics	
II. AT Product or Service-Focused Additional Modules	
Affordability of AT products and services	• Mode of financing • Value for money • Burden of paying for the product or service
Impact on activities of daily living and wellbeing	• Change in the ability to see words / letters • Change in the ability to read any curriculum books and other study materials • Impact on confidence and self-esteem • Impact on pain & discomfort
Impact on social ties and relationships	• Impact on dependence on a caregiver/family member • Impact on participation in social events and gatherings

Impact on work	• Impact on quality of work • Impact on the amount of time it takes to do a typical task at work
Usage of the assistive tech product	• Accessibility of AT product • Ease of use of AT product

2. THE ASSISTIVE TECH LEAN IMPACT ASSESSMENTS

2.1 Background to the AT Lean Impact Assessment Suite

The AT start-up sector faces issues of operating in a data vacuum when making investment decisions. The difficulty in reaching and surveying AT users discourages robust impact measurement of the products and services. When data is collected, it is often specific to a sub-sector, e.g. mobility or hearing, and therefore lacks sector-wide comparability. This lack of ecosystem-level data and evidence creates a significant barrier for the sector to make informed decisions, highlighting the need for a first-of-its-kind attempt to create data and evidence for the AT sector.

2.2 Objective of the AT Lean Impact Assessment Suite

The objective of the AT Lean Impact Assessment Suite was to develop an easily administrable set of surveys which would capture company-level impact for emerging AT ventures from the users' perspectives whilst simultaneously delivering ecosystem-wide learnings.

2.3 Participating companies

GDI Hub chose six companies to assess (shown in Table 2), deploying the AT Lean Impact Assessment Suite, from across the AT start-up ecosystem.

Table 2: Description of Participating Companies

Company	Assistive Tech Device and Service
Wazi	Wazi is the first East African eyewear brand in Uganda to design, manufacture and distribute prescription eyewear. Wazi offers high-quality eyewear which incorporates local designs and is tailor-made to suit the shapes and sizes of its wearers in African markets.
Lugha Ishara	Lugha Ishara's Hangout Hub is a meeting place designed to provide a safe space for individuals who are deaf or hard of hearing to connect and socialize with others. The platform includes features such as video chat, instant messaging, and group activities that cater to the unique communication needs of the deaf and hard-of-hearing community. The goal of the Hangout

	Hub is to combat social isolation and create a supportive community for those with hearing loss.
Trestle Labs	Trestle Labs's Kibo XS device, a small and portable electronic device designed to be a versatile and user-friendly tool for visually impaired individuals, allowing them to access and interact with the world around them more easily and independently. The Kibo XS device is a handheld device that can read and recognize text from a variety of sources, including books, newspapers, and product labels. It uses advanced optical character recognition (OCR) technology and a text-to-speech engine to read the recognized text aloud to the user in a clear and natural-sounding voice.
Kilimanjaro Blind Trust Africa (KBTA)	KBTA has the distribution rights for the Orbit Reader 20 across east Africa. The Orbit Reader 20 is a portable braille display device designed to assist visually impaired individuals in reading and writing. The device can display both text and graphics and includes a Perkins-style keyboard for typing. The Orbit Reader 20 connects to other devices such as smartphones, tablets, and computers via Bluetooth or USB, allowing users to access a wide range of digital content in braille format.
Koalaa	Koalaa produces an affordable, upper-limb soft prosthetic. Based in the UK, Koalaa is developing an end-to-end service blueprint for providing prostheses in low-income settings.
The Accessibility Institute (TAI) Limited	The Accessibility Institute's SafariSeat is a revolutionary, low-cost, all-terrain wheelchair. It's easy to repair and can be manufactured with basic tools, using locally available materials and components.

3. METHODOLOGY

3.1 About the Lean Data Studies

Between August and December 2022, 60 Decibels researchers who had received Lean Data and the Assistive Tech Impact Module Suite-specific training surveyed 296 users or guardians of Assistive Technology (AT) from six companies in their local languages or sign language. The response rate for the survey was high, at 90%, which means that out of every 10 calls attempted, 9 converted into successful surveys. This increases our confidence that the results represent the user base of participating AT companies.

Participating companies had at least 60 active users at the time of the survey. The project aimed to survey 20-50 users of each company's AT product, customising the module suite based on their offering and learning priorities.

3.1.1 Participants

Participants for **Lugha Ishara, Trestle Labs,** and **Wazi** were all adults over 18. For **TAI Limited** and **Koalaa**, users under 18 were encountered; in these cases, parents or guardians responded due to ethical constraints.

Regarding ethical standards for working with adults, the surveys began by reading out an introductory statement that explained the purpose of the survey, the use of their data, and the anonymity clause. participants were then asked for their consent to continue with the interview by asking, "Are you happy to continue with the interview?" If the participant answered "yes," the interview continued. If the participant answered "no," the call was ended, and the participant marked as "unwilling to be interviewed.".

For **Kilimanjaro Blind Trust Africa**, school-going children under 18 were surveyed. Here additional steps were taken to ensure informed consent and adequate support for these users, including:

- Obtaining written consent from the parents for surveying their children.
- Ensuring the age-suitability of questions and the survey questions were simplified with the assistance of KBTA.
- Phone surveys were conducted under the supervision of a designated teacher.
- To minimize disruption to the student's academic activities, researchers conducted phone surveys only during scheduled school breaks and times provided by the teachers.

By ensuring all these ethical considerations are in place, learners were directly engaged and valuable insights into their experiences with Orbit Reader 20 were collected.

Table 3: Lean Data Study KPIs

Company	Mode of Interview	Date	Country	Languages	AT Offering	Number of Surveys	Response Rate	Survey Time (mins)
Wazi	Phone	Aug 2022	Uganda	Rutooro, Luganda, Runyankole, English	Eyeglasses	66	96%	16
Lugha Ishara	Phone and Video enabled sign language surveys	Sept 2022	Kenya	Swahili, Kenyan Sign Language	Hangout Hub	24 (20 Parents of deaf children & 4 teachers who work in the hangout hub)	92%	27
Trestle Labs	Phone	Sept 2022	India	Hindi, English	Kibo XS Device	52	83%	23
Kilimanjaro Blind Trust Africa (KBTA)	Phone	Sept2022	Kenya	Swahili, English	Orbit Reader 20	72 (20 Teachers & 52 learners)	100%	26
Koalaa	Phone	Oct 2022	Sierra Leone, Sri Lanka, Turkey	Sinhala, Krio, Arabic, English	Upper limb prosthetic	23	74%	26
TAI Limited	Phone	Dec 2022	Kenya	Swahili	SafariSeat wheelchair	59	89%	21

3.2 Benchmarking

Benchmarking of impact is an essential part of impact measurement, one that is vital for impact-seeking organisations to reach their full potential. Benchmarks provide a standard to judge performance, understand what is possible, and see opportunities and gaps for improvement. Benchmarking makes it possible to make gathering impact data part of the regular operating cycle of every impact-seeking organisation and impact investor. The collective aspiration is not just to prove the impact at one point but to understand how things change over time and how individual organisations can actively improve impact performance. Throughout this report, all core metrics have been compared with the 60 Decibels Global

Benchmark[2] to evaluate the performance of the assistive tech of the six companies and understand their impact in a broader landscape. This benchmark consists of companies from a variety of sectors across the globe.

We envisage that over time and as the adoption of the AT module suite increases, benchmarks specific to AT companies and even sub-sectors like vision, hearing and mobility can be made possible. This would enable companies to set targets, seek improvements based on specific yardsticks of best-in-class performance, and understand how far they've come to improve AT users' lives. GDI Hub and 60 Decibels will continue to collaborate to make this a reality.

[2] 60 Decibels has collected impact data since 2015. Over the years, we've conducted 242,000+ interviews in 67 countries, with customers of 560+ companies through 1,045 Lean Data projects across multiple sectors: energy, agriculture, financial inclusion, health, education, and more. By asking the same questions across multiple projects, we've been able to develop benchmarks. These benchmarks are the average performance of all our projects, providing context and insights on sector, portfolio, and company impact and areas for focus.

4. RESULTS[3]

4.1 User Profiles

Data regarding AT users' demographics, including gender, level of education, location, age, and duration of use of their AT were collected. These are given in Table 4.

Table 4: Demographics of the users surveyed

Gender	**KBTA (n = 72)**	**Koalaa (n = 23)**	**Lugha Ishara (n = 24)**	**TAI (n = 59)**	**Trestle Labs (n = 52)**	**Wazi Vision (n = 66)**	**Total (n = 296)**
Male	51%	74%	29%	64%	69%	62%	58%
Female	49%	26%	71%	36%	31%	38%	42%
Location	**KBTA**	**Koalaa (n = 29)**	**Lugha Ishara (n = 0)**	**TAI (n = 59)**	**Trestle Labs (n = 52)**	**Wazi Vision (n = 66)**	**Total (n = 191)**
City	-	39%	-	10%	94%	70%	54%
Town	-	48%	-	31%	4%	10%	22%
Village or countryside	-	13%	-	59%	2%	20%	24%
Average Household Size	**KBTA**	**Koalaa (n = 28)**	**Lugha Ishara (n = 20)**	**TAI (n = 59)**	**Trestle Labs (n = 51)**	**Wazi Vision (n = 65)**	**Total (n = 226)**
Average	-	6.2	4.7	5.5	4.6	4.4	5.0
Age	**KBTA**	**Koalaa (n = 28)**	**Lugha Ishara (n = 20)**	**TAI (n = 55)**	**Trestle Labs (n = 51)**	**Wazi Vision (n = 65)**	**Total (n = 226)**

[3] Please note that totals reported throughout the report are weighted averages of the results. Weights are determined based on the sample sizes of the company.

Max	-	70	55	74	68	85	85
Min	-	6	23	10	20	20	6
Average	-	34	39	37	36	40	37

The data in Table 4 provide useful insights into the user demographics and usage patterns of the different AT companies/products.

- **Gender distribution** varies across different companies/products. Lugha Ishara has the highest percentage of female users (71%), and Koalaa has the highest percentage of male users (74%). The overall gender distribution across all products is almost equal, with 58% male and 42% female users.
- **Location –** Trestle Labs has the highest percentage of users from cities (94%), and TAI is reaching the highest percentage of users in villages (59%).
- **Average Household Size** varies across different companies/products. Koalaa has the highest average household size (6.2 people) and Wazi Vision has the lowest (4.4 people). Trestle Labs and Wazi Vision have similar average household sizes of 4.6 and 4.4 people respectively.
- **Age –** The age range of users varies across different companies/products. Wazi Vision has the oldest users (max age of 85 years) and Koalaa has the youngest users (min age of 6 years). The average age of users is similar across different companies/products, with a range of 35-40 years.

4.2 Income Inclusivity[4]

The Inclusivity Ratio shows the degree to which companies are over or under-penetrating low-income segments in their countries of operation. This allows comparison prelative performance in countries with different poverty rates and evaluate trends by country and product.

The Inclusivity Ratio is a metric developed by 60 Decibels to estimate the degree to which an enterprise is reaching less well-off individuals. It is calculated by taking the average of Company % / National %, at

[4] We were not able to gather inclusivity ratio data for Koalaa and KBTA. For Koalaa, the small sample size per country was too small (n<10) to collect sufficient data for calculating the inclusivity ratio. For KBTA, we did not survey teachers for PPI as they are not direct users of the product, and the learners we surveyed did not have the necessary knowledge to answer the PPI questions, as they were under the age of 18, and PPI questions are about household asset ownership and consumption.

the $1.90, $3.20 & $5.50 lines for low-middle-income countries, or at the $3.20, $5.50 and $11 lines for middle-income countries.

$$\sum_{x=1}^{3} \frac{([\boldsymbol{Company}]\ \boldsymbol{Poverty\ Line}\ \$x)}{(\boldsymbol{Country\ Poverty\ Line}\ \$x)}$$

Equation 1: income inclusivity equation

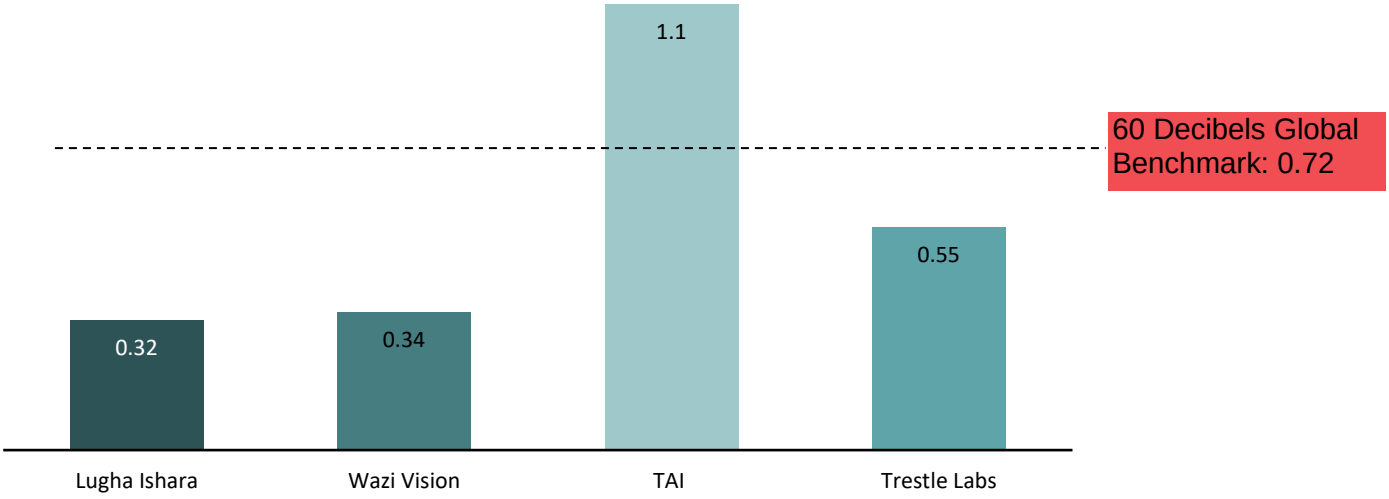


Figure 1: Income Inclusivity

Using income inclusivity, TAI limited is doing a good job at serving relatively less well-off users, outperforming the 60 Decibels benchmark for inclusivity. Trestle Labs, Wazi Vision and Lugha Ishara serve wealthier clients than the national average. There may be scope for these organisations to reach low-income users with their AT.

5. Core Metrics Performance

5.1.1 User Profile: First Access

At users were asked whether they had previously owned or used a product or service like their AT product (See Figure 2). First-time access can serve as a reliable indicator of the impact of AT companies. Without these companies, first-time users might not have had access to products or services with comparable attributes.

Overall, 54% of users are accessing their AT for the first time, which is lower than the 60 Decibels Global Benchmark average of 66%.

Lugha Ishara has the highest percentage of first-time users of a service like the Hangout hub, indicating its unique offering.

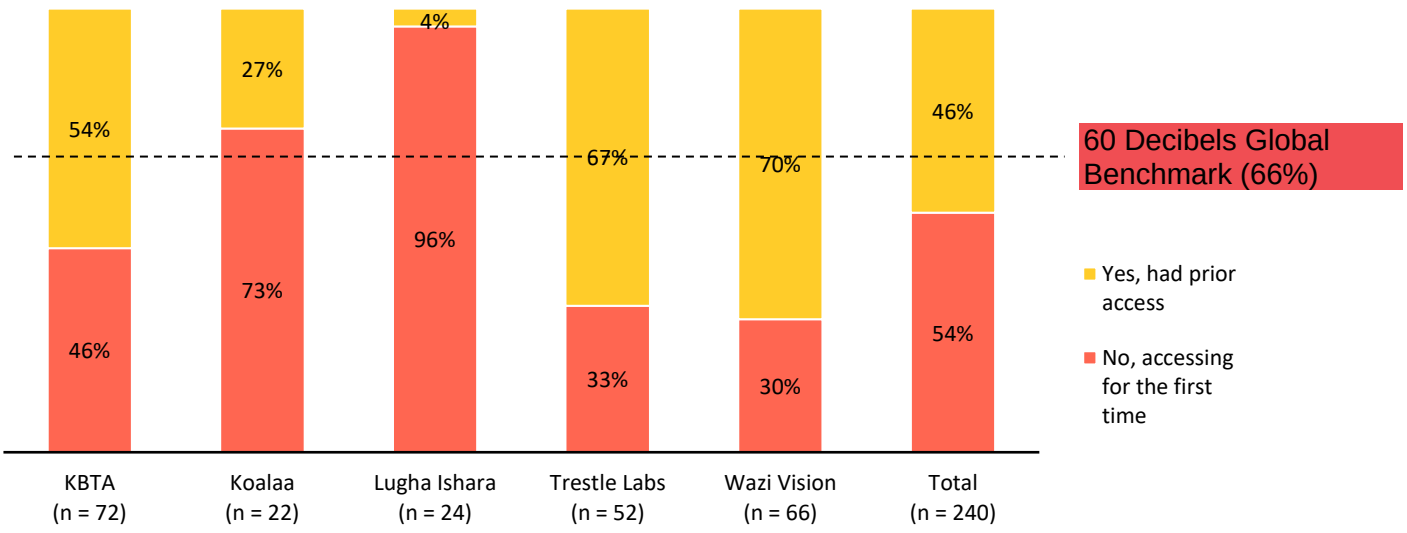


Figure 2. Q: Have you owned/ used a product similar to the [AT product] before? Or Q: Before interacting with [AT product], did you have access to a similar product?

Female users of KBTA, Wazi Vision and Trestle Labs are more likely to report not having prior access (60%, 40% and 38%, respectively) than their male users (32%, 24% and 31%, respectively), suggesting these companies may be lowering barriers to AT access for female users.

5.1.2 User Profile: Availability of Alternatives

The availability of alternatives provides insight into the competitive landscape and the degree to which a company provides a scarce product or service. AT users were asked if they can think of a 'good alternative' for the AT offering of the company; the results are displayed in Figure 3.

Figure 3: Q: Could you easily find a good alternative to the [company] [AT product/service]?

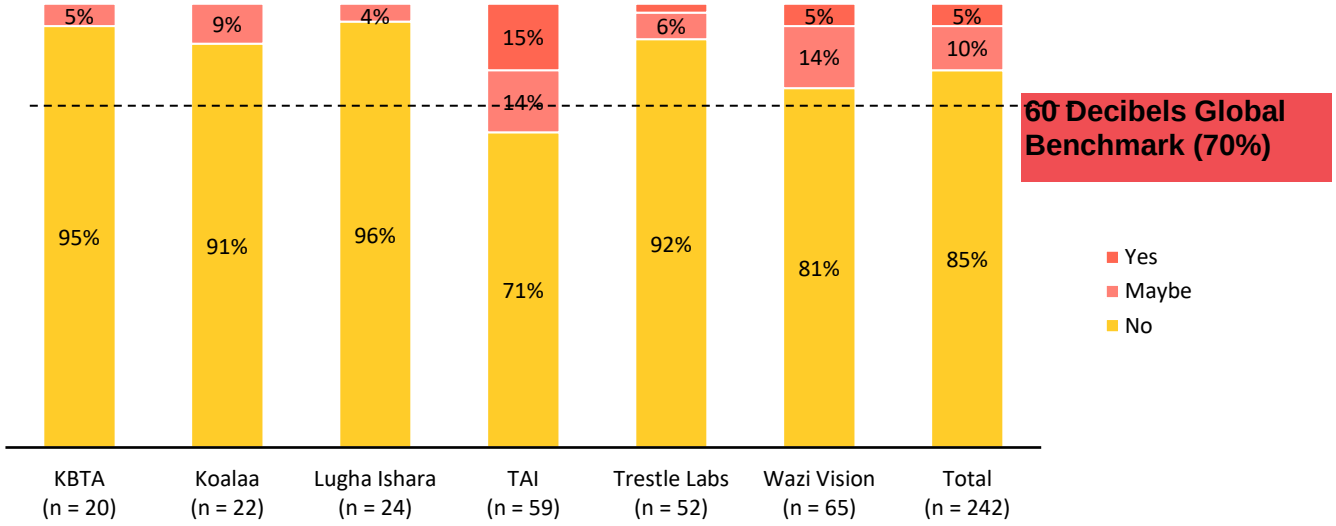


Figure 3: Q: Could you easily find a good alternative to the [company] [AT product/service]?

85% of users report not having access to good alternatives to their AT product, highlighting the distinctiveness of companies' Assistive Technology (AT) offerings and limited competition in the market. In this context, the role of companies providing AT products is crucial, as they facilitate access to unique services and solutions that might not be readily accessible otherwise.

All companies outperform the 60 Decibels Global average of 70% for this metric.

5.1.3 Impact Performance: Quality of Life

To gauge the depth of impact, users were asked to reflect on whether their quality of life has changed because of their AT product or service. Results are displayed in Figure 4

Overall, 4 in 5 users across all AT companies report improvements in their quality of life, with 46% saying it has 'very much improved'. 4 of 6 companies outperform the 60 Decibels benchmark on quality of life improvement. KBTA and Lugha Ishara have the highest proportions of users reporting significant improvements in their quality of life while Trestle Labs has the least impact.

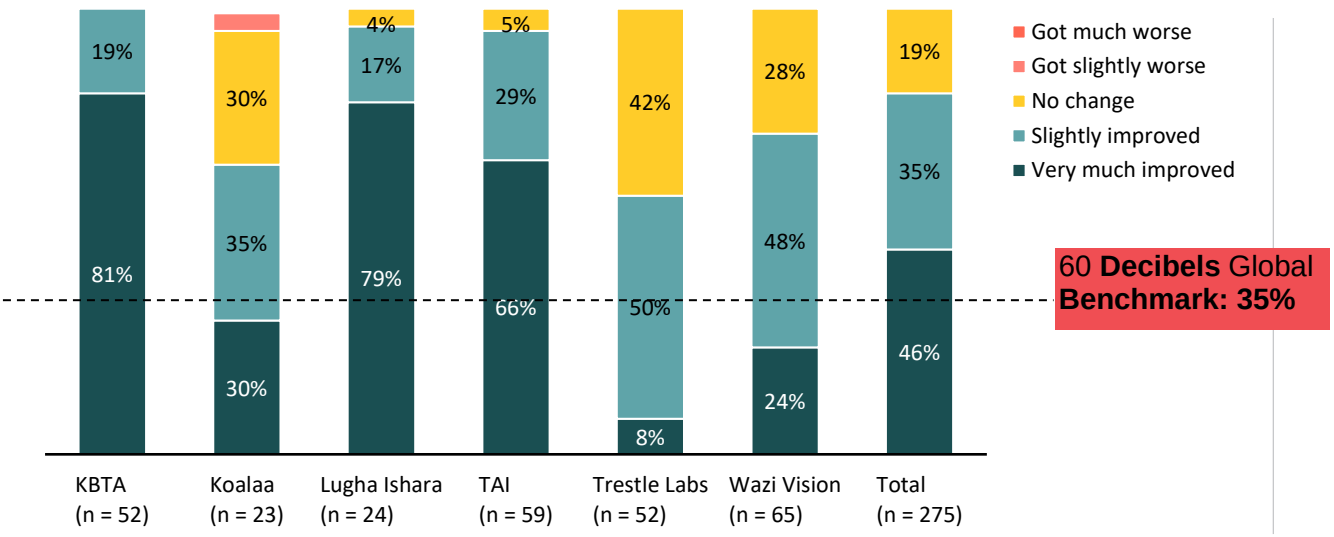


Figure 4 Q: Has your quality of life changed because of the [company] [AT product/service]?

Respondents were also asked to describe – in their own words – the positive changes they were experiencing because of their AT product or service. The top outcomes per company are shown in Table 5 below. These answers are in response to the open-ended question "please explain how your quality of life has improved" which was then coded by 60 Decibels.

Table 5: Top Outcomes for 81% of Beneficiaries Who Say Quality of Life Improved

Company	% Improved QOL	Sample size (n = 223)	Top Outcome	2nd Outcome	3rd Outcome
KBTA	100%	52	Improved ability to read/type notes	Increased independence	Better interaction with others
Koalaa	70%	15	Increased Independence	Better movement/mobility	Ability to dress oneself
Lugha Ishara	96%	23	Better interaction with others	Increased confidence	Easier/better communication
TAI	95%	56	Better movement/mobility	Increased independence	Better interaction with others
Trestle Labs	58%	30	Improved ability to read	Access to translated documents	Increased independence
Wazi Vision	72%	47	Improved ability to see	Improved ability to read	Reduced discomfort

Improved functioning and ability to do activities of daily living (reading, seeing, mobility, self-care) was the top reason across all AT products for improvement in quality of life. Other reasons included improved independence and social interaction. This showcases that across a variety of different types of products, AT companies can create impact by focusing on improving users' ability to do day-to-day activities more independently and improve their social wellbeing.

Overall, rural users of AT products are significantly more likely to report improvements in quality of life (90%) compared to their peers who live in cities and towns (68%), suggesting that impact is experienced more deeply by the rural market.

5.1.4 User Satisfaction: Net Promoter Score ®

The Net Promoter Score® (NPS) is a gauge of satisfaction and loyalty. that measures the willingness of users to recommend a company's products or services to others. Users are asked to rate their likelihood to recommend on a scale of 0 to 10, and the NPS is calculated by subtracting the percentage of detractors (scores 0-6) from the percentage of promoters (scores 9-10). The resulting score ranges from -100 to +100. Anything above 50 is considered excellent. A negative score is considered poor. Percentage results of the detractor, passive and promoter scores can be found in Figure 5 below.

Overall, the AT users who engaged to give a Net Promoter Score® of 37 which is favourable. There was a clear trend in the NPS by company with the NPS for Wazi Vision being the highest at 83. Table 6

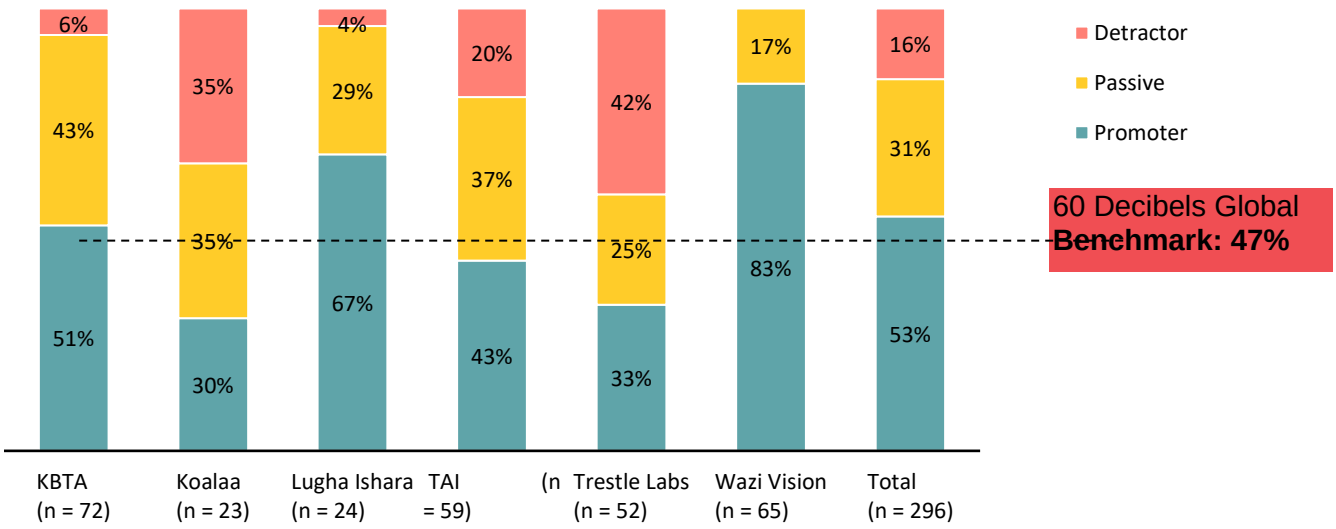


Figure 5 Q: On a scale of 0-10, how likely is it that you would recommend the [company] [AT product/service] to a friend, where 0 is not at all likely and 10 is extremely likely?

Table 6 Net Promoter Scores

KBTA	Koalaa	Lugha Ishara	TAI	Trestle Labs	Wazi	Total
45	-5	63	23	-9	83	37

5.1.5 NPS Drivers

Asking respondents to explain their NPS rating provides insight into what they value and what creates dissatisfaction. NPS drivers by promoters help a company gain valuable insights into the key factors that drive customer loyalty and satisfaction. This information can then be used to improve user experience and retention.

In Table 7 gives the responses to the question 'what specifically about [company] [AT product/service] would cause you to recommend it to a friend or family member?'. The results found that AT products' reliability, functionality, and comfort stood out as the top drivers of value and satisfaction among users.

Table 7: Value Drivers among Promoters

Company	% Promoters	Sample size (n = 160)	#1 value driver	#2 value driver	#3 value driver
KBTA	51%	37	Accessibility of learning material	Portability	Paperless nature
Koalaa	35%	10	Comfortable prosthetics	AT product is reliable and functions well	User-friendly AT product
Lugha Ishara	67%	16	Improved confidence	Inclusivity	Good user experience
TAI	43%	25	AT product is reliable and functions well	Independent ease of use	Comfortable than alternatives
Trestle Labs	33%	17	AT product is reliable and functions well	Portability	User-friendly AT product
Wazi Vision	83%	55	Comfortable eyewear	Good design	Affordable price

NPS drivers by detractors are factors or attributes of the company that significantly negatively impact user loyalty and satisfaction. These insights can improve user experience, address product or service issues, and enhance overall user satisfaction. Limitations in functionality and capabilities of the device

and high price points are the biggest pain points for users. Table 8 gives answers to the identified pain points among detractors.

Table 8: Pain Points Among Detractors

Company	% Detractors	Sample size (n = 49)	#1 pain point	#2 pain point	#3 pain point
KBTA	6%	4	Unaffordable price	Does not support autosave	Limited functionality
Koalaa	34%	10	Prosthetic is heavy	Mismatching color of the prosthetic	Prosthetic does not fit well
Lugha Ishara	4%	1	Inconsistency due to distance	-	-
TAI	20%	12	Tiring and strenuous for arms	Difficult to use	-
Trestle Labs	42%	22	Limited scanning capabilities	Unaffordable price	Does not aid independence

5.1.6 User Challenges & Customer Service

40% report challenges with their AT products or services. 87% say their challenge had not yet been resolved (35% of total users). Unresolved challenges can encourage negative word-of-mouth and detract from positive impact. Wazi users are less likely to report challenges than other AT companies.[5]

Table 9 % of all users that have unresolved challenges

KBTA	Koalaa	Lugha Ishara	TAI	Trestle Labs	Wazi	Total
50%	50%	-	40%	40%	2%	35%

[5] Lugha Ishara users were not asked about resolution of challenges.

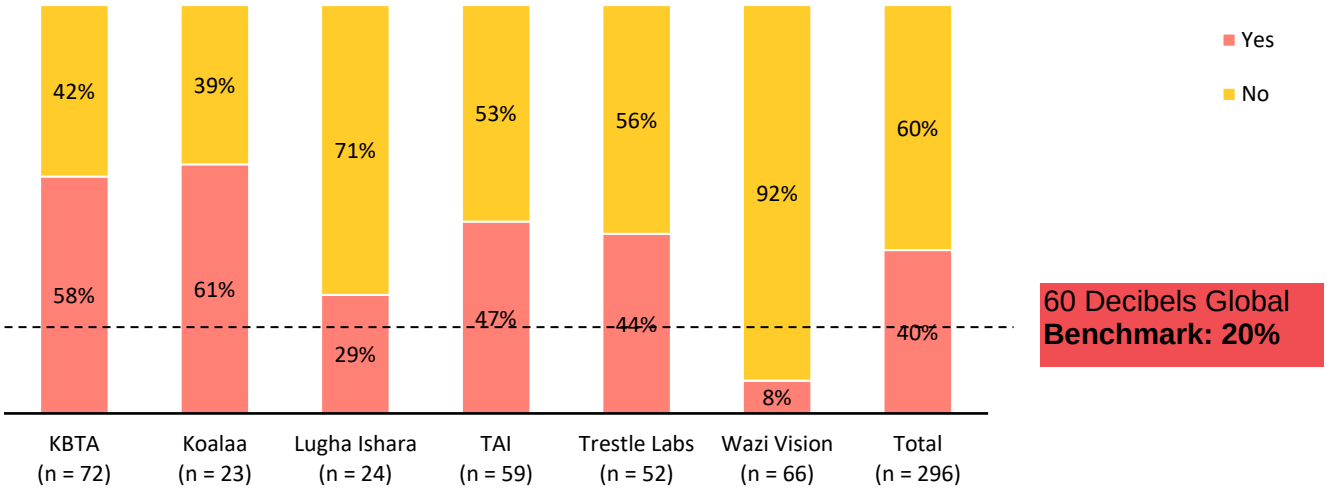


Figure 6 Q: Have you experienced any challenges with using the [company] [AT product/service]?

5.1.7 User Challenges: Top Issues

Table 10, which presents the findings from the open-ended question 'can you explain any challenges you have faced with the [company] [AT]'? The results demonstrate the range of challenges which are often product (and therefore domain) specific.

Table 10: Most Common Issues for 40% of Users Who Say They've Experienced a Challenge

Company	% experiencing challenges	Sample size (n = 119)	#1 challenge	#2 challenge	#3 Challenge
KBTA	58%	42	Difficult reading flow	Long repair time	Faulty SD card
Koalaa	61%	14	Heavy weight of the prosthetic	The prosthetic does not fit well	Mismatching color of the prosthetic
Lugha Ishara	29%	7	Communication barrier	Employ more differently abled instructors	-
TAI	47%	28	Absence of motor capacity	Faulty wheelchair	Moving the wheelchair is difficult and tiresome
Trestle Labs	44%	23	Difficulty in scanning documents	Faulty device	PDF conversion issue
Wazi Vision	8%	5	Inability to use	Loose frames	-

Notably, the experience of challenges with a product is linked with lower satisfaction among users. Overall, across all product types, users who face a challenge with their product have a very poor NPS of -1. On the other hand, users who are not facing a challenge have an NPS of 58, which is very good. Resolving user challenges holds the promise of improving satisfaction- those with unresolved challenges have an NPS of -12, while those whose challenges were resolved to have an NPS of 27, which is good.

5.1.8 Scalability

We measure scalability by asking users how they would feel if they could no longer use their AT products or services. This question helps gauge whether a company has created a 'must-have' product for their users, contributing to understanding how scalable their service is. According to research by PMFSurvey (formerly Survey.io) involving hundreds of companies, if over 40% of users report they would be 'very disappointed' to no longer use a company's product, there is a much higher chance that sustainable customer acquisition channels can be built.

Based on PMFSurvey's benchmark for scalability, KBTA, TAI Limited, and Wazi Vision have highly scalable AT products. KBTA is a 'must-have' product for its users, with 97% of them indicating that they would be very disappointed if they could no longer use the product. Koalaa and Trestle Labs currently offer 'good-to-have' products, with only 25% and 4% of users, respectively, indicating that they would be very disappointed if they could no longer use the product.

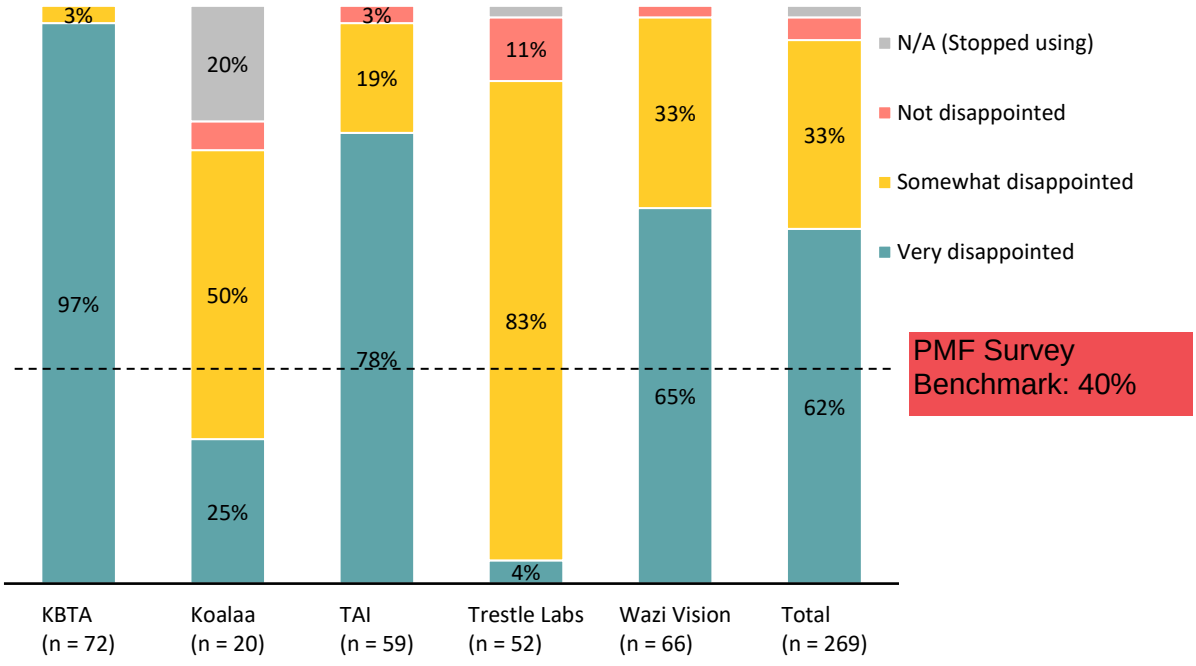


Figure 7: How would you feel if you could no longer use your [AT product/service]?

Users' location is associated with how they would feel if they could no longer use the product. Rural users are more likely to report being very disappointed at the loss of the AT offering (67%) compared to their

urban peers (31%), suggesting that exploring underserved and rural markets might help AT companies unlock scale.

5.1.9 Suggested Improvements

As part of the effort to continuously improve AT products and services, we solicited feedback from users by asking them “What about [AT product] can be improved?" In the table below, we present the top three suggestions for improvement per company as identified by the users. These suggestions can help understand how AT can better address the needs and expectations of users.

Q: What about [company] [AT product/service] could be improved? Open-ended, coded by 60 Decibels.

Table 11: Suggestions for Improvement

Company	Sample size (n = 244)	#1 suggestion	#2 suggestion	#3 suggestion
KBTA	20	Upgrade the Orbit Reader 20 with additional functionalities	Load more information on various subjects in the gadget	Better training and guidance on how to operate the device/machine
Koalaa	23	Improved movement of the limp	Reduce weight of limb	Create better match for skin tones
Lugha Ishara	24	Increase the frequency of lessons	Separate parent and child sessions	Increase the location of their branches
TAI	59	Add motorization feature	Balance cycling handle	-
Trestle Labs	52	Improve accuracy in signing larger books	Reduce subscription fee	Better customer support
Wazi Vision	66	Introduce more designs and styles	Reduce the size of the glasses	-

5.2 Gender Spotlight

Aggregating performance against a plethora of metrics is always a challenge. However, doing so is valuable because it allows simplified and aggregated comparison across different segments. Such clear-eyed comparison can be a powerful indicator and incentive for setting a standard for creating transformative impact for users across different segments. We conducted an aggregated gender segmentation analysis that helps provide a comparative view of the impact of AT across different core metrics.

How to read the gender segmentation charts: Table 12 shows gender performance across the five-core metrics – Quality of Life, First Access, No Access to Alternatives, Challenges, and Net Promoter Score. The size of the shape represents the overall impact performance. The bigger the chart, the better!

Blue dotted lines show the performance of male respondents, while purple dotted lines show the performance of female respondents. The average of all five-core metrics is calculated to determine the interaction and experience score for each gender per company (See scores in Table 13 to Table 19).

Table 12: gender segmentation chart per core metric.

OVERALL

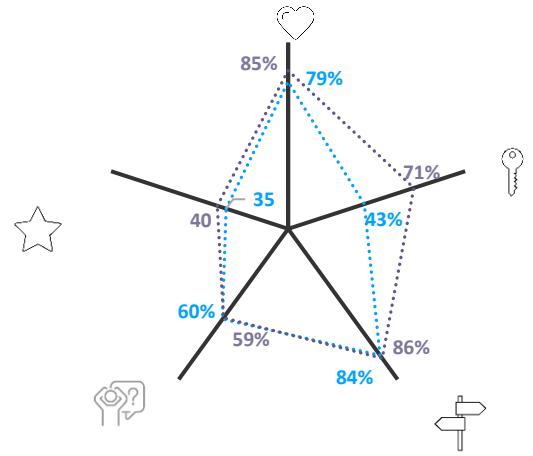
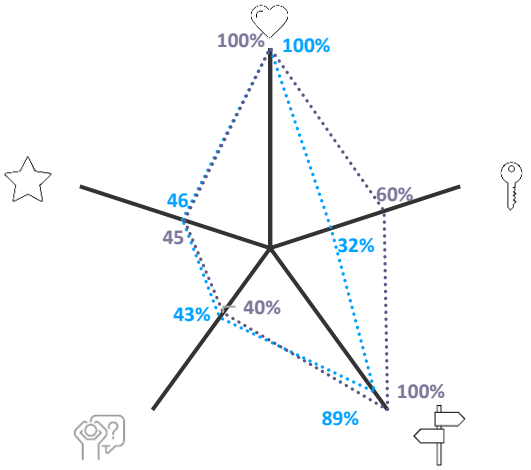


Table 13: The average gender score of all five-core metrics for all six companies.

.....	Female Avg.	68%
.....	Male Avg.	60%

Core Metrics	
Quality of life	% of beneficiaries whose lives have slightly or significantly improved
First Access	% of beneficiaries accessing product/service for the first time
No access to alternatives	% of clients not able to access a good alternative
Challenges	% of beneficiaries not experiencing challenges
Net Promoter Score (NPS)	Scale -100 to 100

KBTA



Koalaa

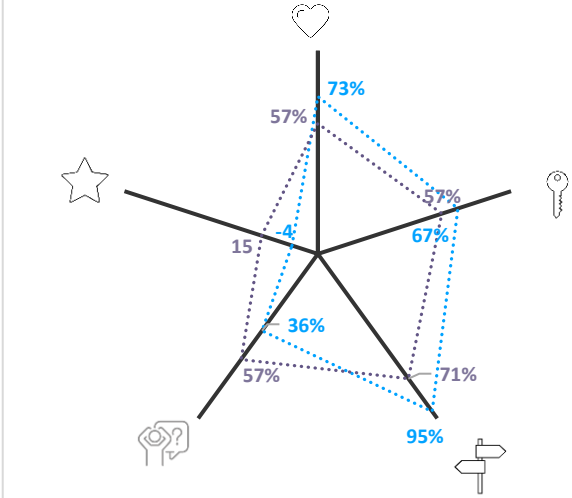


Table 15: The average gender score of all five-core metrics for KBTA.

.....	Female Avg.	69%
.....	Male Avg.	62%

Table 14: The average gender score of all five-core metrics for Koalaa.

.....	Female Avg.	51%
.....	Male Avg.	53%

5.2.1 Gender Trends by Company

KBTA: Female users are more likely to report accessing the AT product for the first time as compared to male users (60% vs 32%) and they are more likely to report that they do not have any good alternatives as well (100% vs 89%). Improvements in quality of life, user satisfaction, and instances of challenges are similar for both male and female users.

Koalaa: Male users are likelier to report that their quality of life 'very much improved' than female users (73% vs 57%). They are also more likely to be using the AT product for the first time (67% vs 57%) and having no other good alternatives (95% vs 71%) compared to female users. However, female users are more likely to report that they do not face challenges than male users (57% vs 36%). They are also more likely to report higher satisfaction levels than male users, as indicated by their Net Promoter Score (15 vs -4).

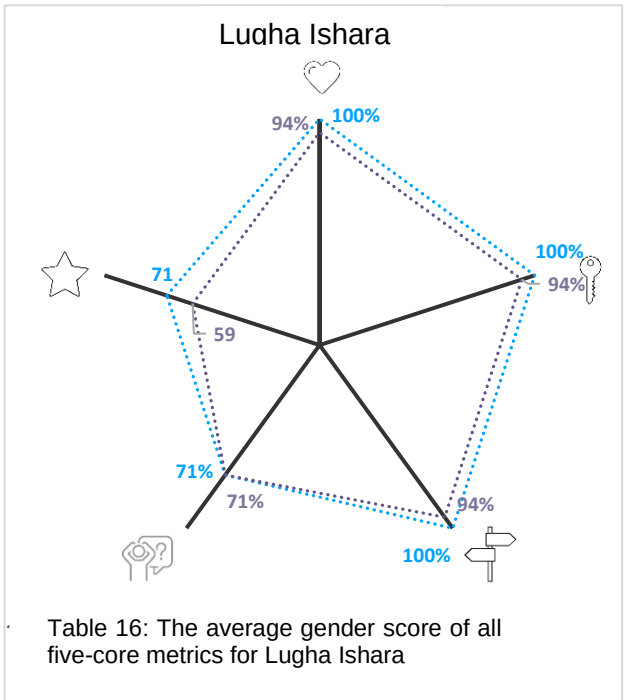


Table 16: The average gender score of all five-core metrics for Lugha Ishara

.....	Female Avg.	82%
.....	Male Avg.	88%

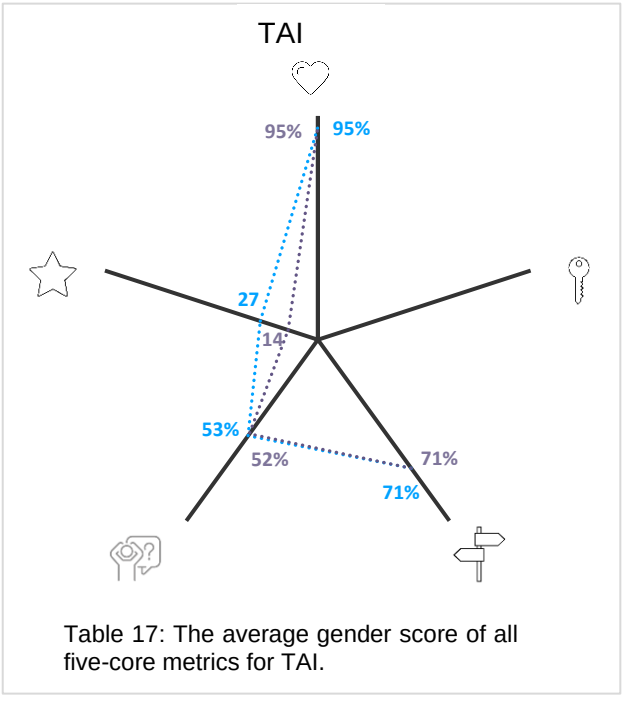


Table 17: The average gender score of all five-core metrics for TAI.

.....	Female Avg.	58%
.....	Male Avg.	62%

Lugha Ishara: Male users are more likely to report improved quality of life than female users (100% vs 94%). They are also more likely to indicate that they are accessing the AT product for the first time (100% vs 94%) and indicate that they do not have any other alternatives as well (100% vs 94%). While gender variations across these metrics are minimal, they can have a compounding effect on the overall satisfaction level. Male users are more likely to report higher satisfaction than female users, as indicated by their Net Promoter Score (71 vs 59).

TAI Limited[6]: Male and female users are likely to experience the same level of impact when it comes to their improved quality of life and access to alternatives. Male users are more likely to report higher satisfaction than female users, as indicated by their Net Promoter Score (27 vs 14).

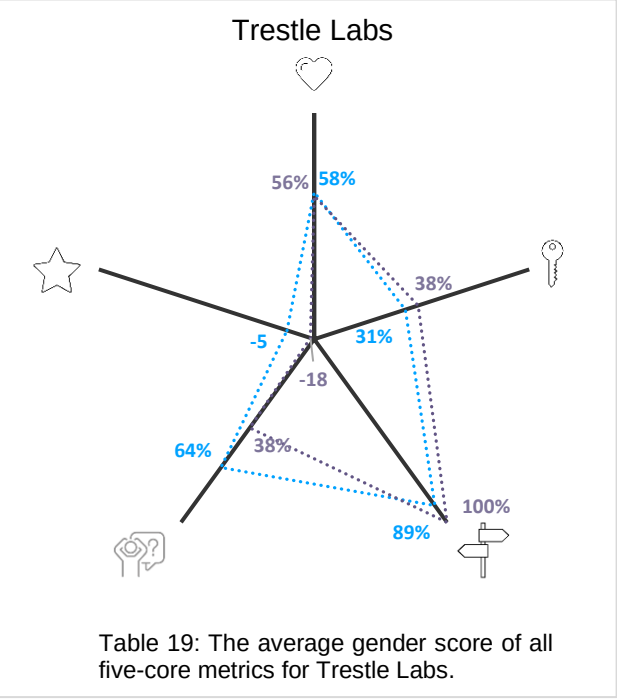


Table 19: The average gender score of all five-core metrics for Trestle Labs.

	Female Avg.	43%
	Male Avg.	47%

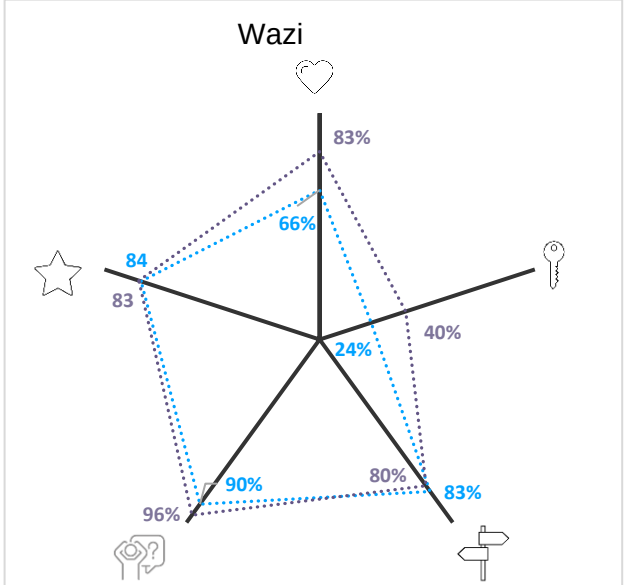


Table 18: The average gender score of all five-core metrics for Wazi.

	Female Avg.	77%
	Male Avg.	69%

Trestle Labs: Male and female users experience similar improvements in quality of life and are equally likely to be first-time users of a product like the Kibo XS device. However, male users are more likely to report not facing any challenges than female users (64% vs 38%).

[6] First access metric was not captured for this company

Wazi: Overall satisfaction level is similar across male and female users, as indicated by their Net Promoter Score. Female users are more likely to report 'very much improved' quality of life as compared to male users (83% vs 66%). They are also more likely to report accessing the product for the first time as compared to male users (40% vs 24%).

Overall, KBTA and Wazi Vision stand-out as products whose female users experience similar or higher positive impact of the AT product on their lives.

5.3 AT Company and Product-Specific Metrics

In this section, findings from questions that were asked to companies based on their AT offering and learning priorities are presented.

5.3.1 Affordability of Assistive Tech Product

Affordability and financing were identified as learning priorities by Wazi Vision and Trestle Labs. A deep dive into how users financed their products, the burden of financing and the perceived value for money of their AT demonstrated differences at the product level e.g. glasses (Wazi) were not perceived as a financial burden whereas reading aids (Tresle Labs) were financially burdensome for over 50% of users (see section 5.3.1.3). Perceptions about affordability are a function of the price point – lower for Wazi's eyeglasses, and higher for the Kibo XS device.

5.3.1.1 Mode of Financing

While some users can purchase AT products independently, others may rely on charitable donations or other forms of assistance to acquire these products.

Most users of Wazi and Trestle Labs self-financed their AT product, with 65% and 87%, respectively. This question was also asked to TAI Limited's SafariSeat users, 95% of whom report receiving their AT product as a donation. Table 20 presents the findings in response to the multiselect question 'How did you finance the [AT product/service]?'

Table 20: Financing AT Products

	Wazi Vision (n = 66)	Trestle Labs (n = 52)
Fully self-financed	65%	87%
Government program	12%	0%
Purchased by family/friend	6%	8%
Received as a donation (from company, from local government, etc.)	18%	6%

Funded by non-profit	0%	0%

5.3.1.2 Value for Money

To gauge users' satisfaction with the cost-effectiveness of their AT products, AT users were asked to rate if they feel that the money they spent on the products or service is well-spent. Overall, the majority of paying users feel that their AT products are worth the money they spend, with 59% saying the value for money is 'good' or 'very good'.

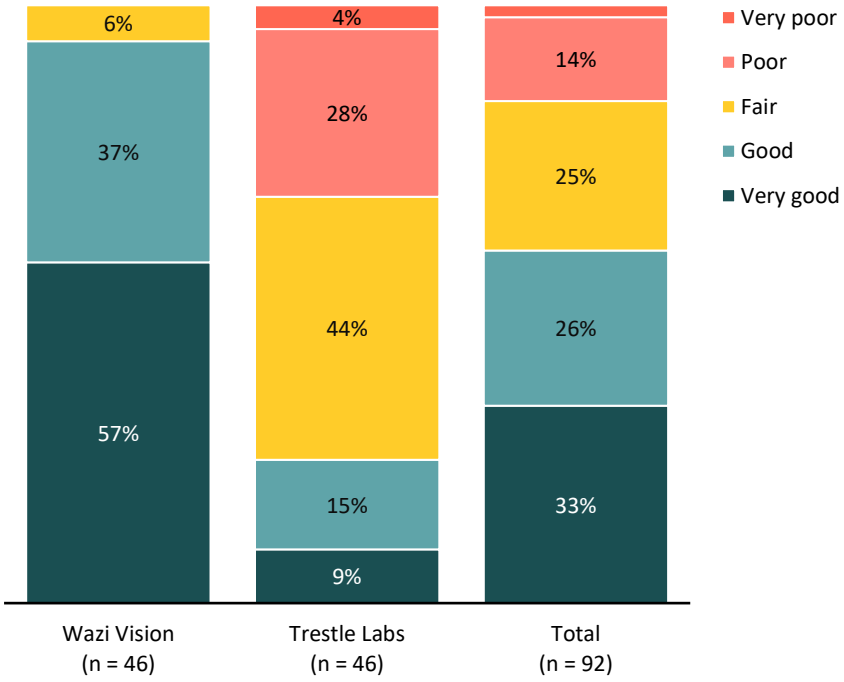


Figure 8 Q: How do you rate the value for money of your [AT product/service]?

5.3.1.3 Burden of Payment

AT users were asked paying users of AT products to share their views on affordability specifically whether they found the cost to be a heavy burden, somewhat of a burden, or not a problem. Slightly more than two-thirds (69%) do not consider the cost of their AT product to be a burden at all.

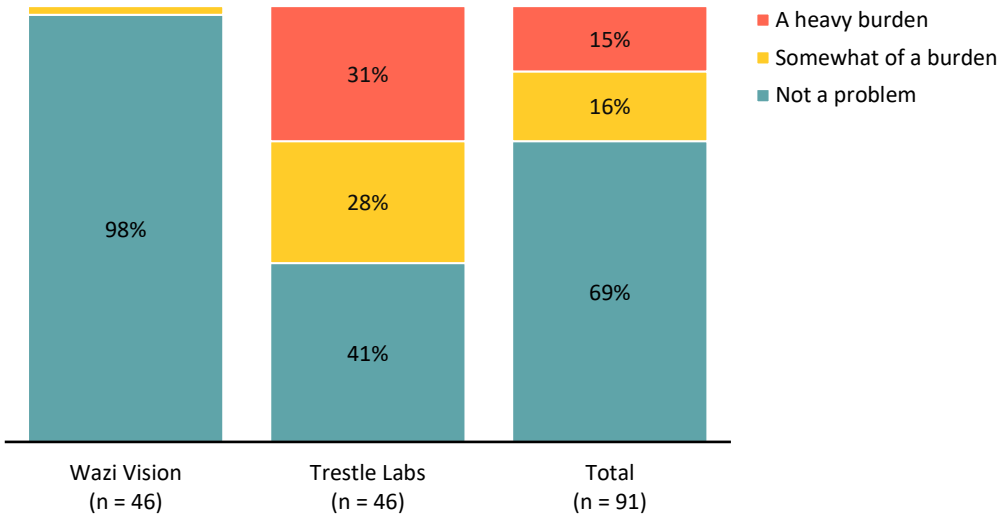


Figure 9 Q: Thinking about this [product / service] did you find the cost of [AT product / service] a heavy burden, somewhat of a burden, or not a problem?

5.3.2 Use of the Assistive Tech Product

5.3.2.1 Ability to Use AT Product Whenever Needed

AT users were asked how frequently users were able to use their AT products when they needed to. More than three-quarters of users across these groups report being able to use their AT product whenever necessary. Of this group, 58% say that they are always able to use their AT product whenever they need it. Notably, among KBTA users, a striking 96% reported being able to use their Orbit Reader 20 whenever they needed to, indicating a high degree of satisfaction with the product's accessibility.

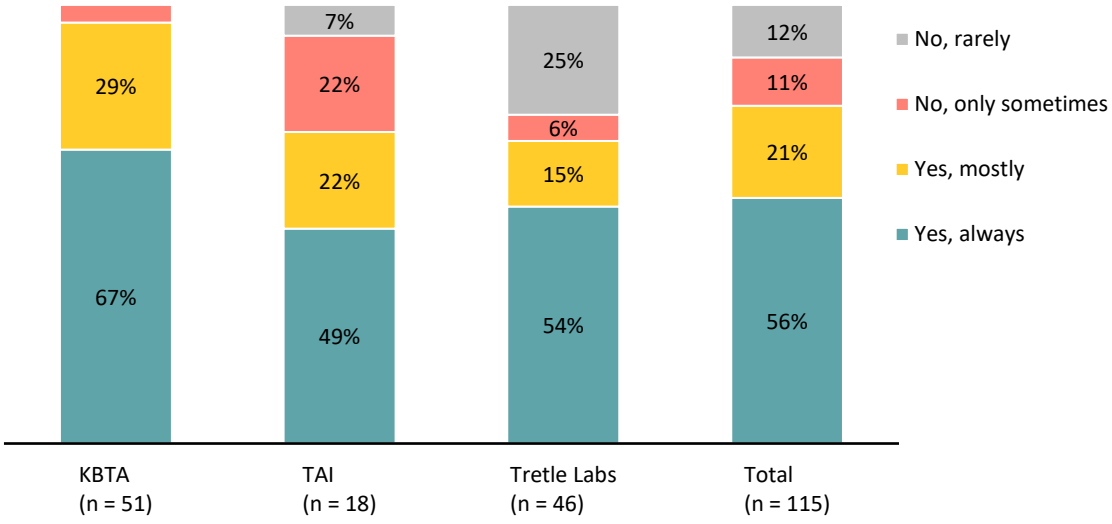


Figure 10 Q: Are you able to use the product whenever you need to?

5.3.2.2 Ease of Use

Most AT users find the product easy to use independently. Specifically, 62% of respondents stated that it was easy to use, with 41% indicating that it is very easy. The high percentage of KBTA users who reported that their Orbit Reader 20 was very easy to use suggests that this specific product is generally well-designed and user-friendly.

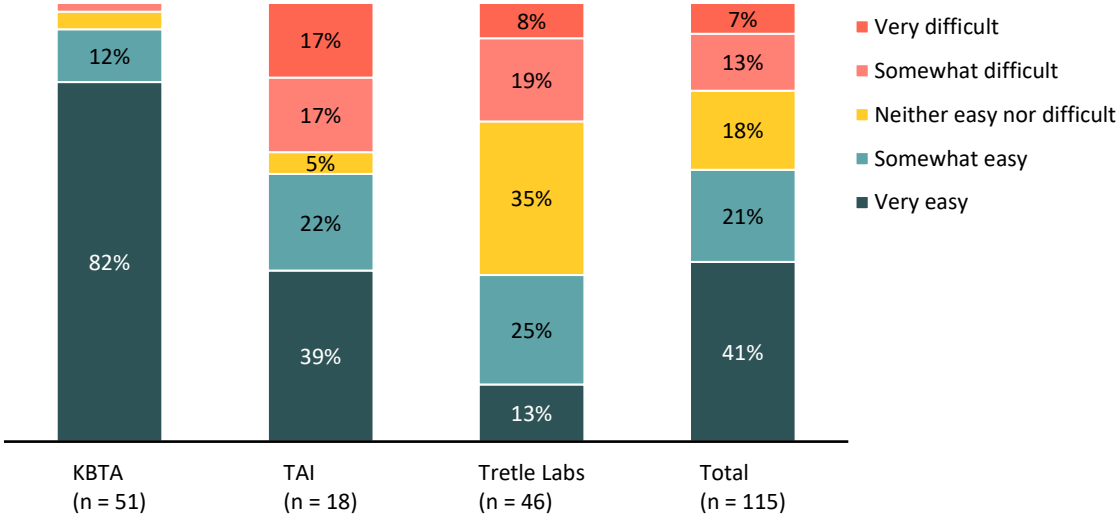


Figure 11 Q: How easy or difficult do you find using [AT product/service] independently in your day to day life?

5.3.3 Impact on Abilities, Activities of Daily Living, and Wellbeing

We sought to examine the impact of Assistive Technology (AT) on the user's ability to do specific tasks, activities of daily living and the well-being of its users. To this end, users were asked a series of questions that focused on specific areas relevant to their AT products. The majority of users report improvements in their ability to perform daily activities and wellbeing. Specifically, users report significant improvements in their confidence and self-esteem (83%) because of their AT products.

5.3.3.1 Vision:

Overall, 94% of users report improvement in indicators related to their vision because of their AT product. Improvement reports were highest among Wazi Vision users. See Figure 12.

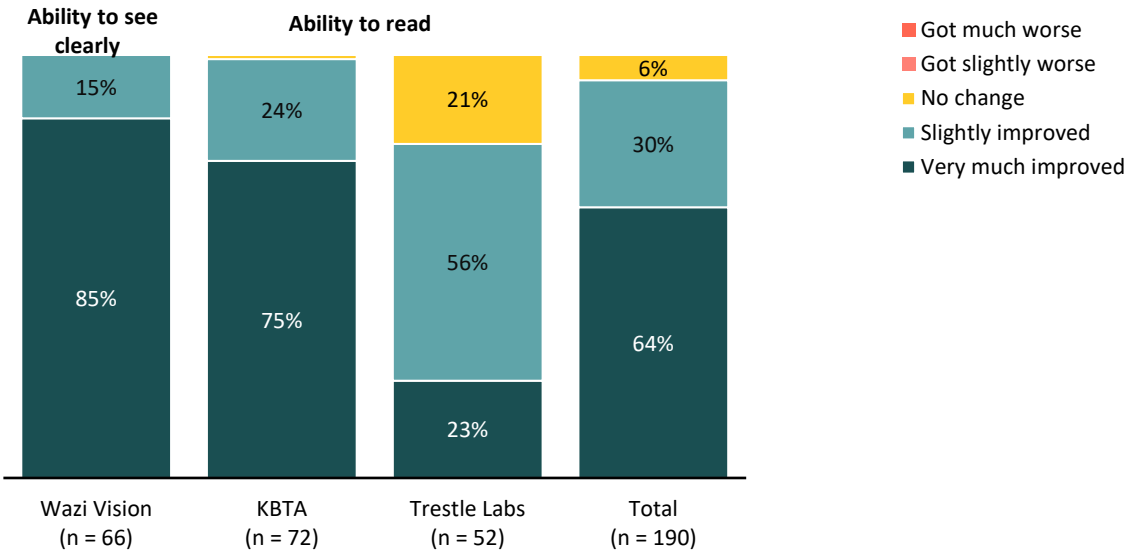


Figure 12: Q Has your vision changed because of the [AT product/service]?

5.3.3.2 Confidence and Self-Esteem

Overall, 82% of AT users report that their confidence and self-esteem improved because of their AT product, highlighting that AT is intrinsic to users' wellbeing. KBTA and Lugha Ishara stand out in their contribution to users' confidence and self-esteem.

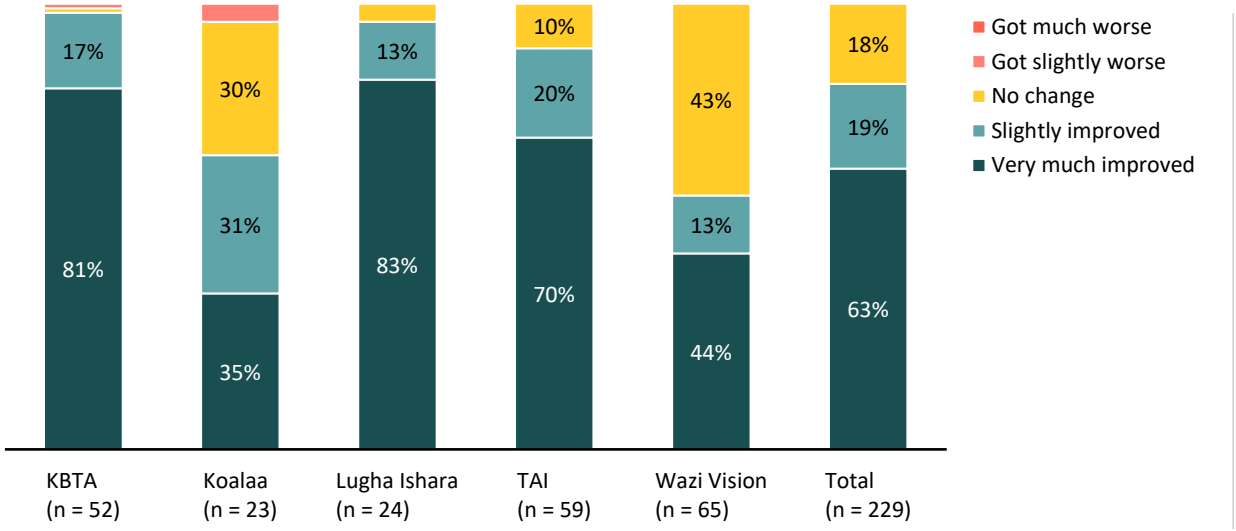


Figure 13 Q: Has your confidence and self-esteem changed because of the [AT product/service]?

5.3.3.3 Pain and Discomfort

Overall, nearly two-thirds of users report reduced pain and discomfort because of their AT product. This impact differs by the product type, as we see fewer users of Koalaa prosthetics reporting reduced pain and discomfort because of their AT product (41%) compared with Wazi's eyeglasses users (73%). 23% of Koalaa users report increase in pain and discomfort. Qualitative data from Koalaa users suggests that children find the prosthetic to be heavy, which may be linked with the discomfort reported.

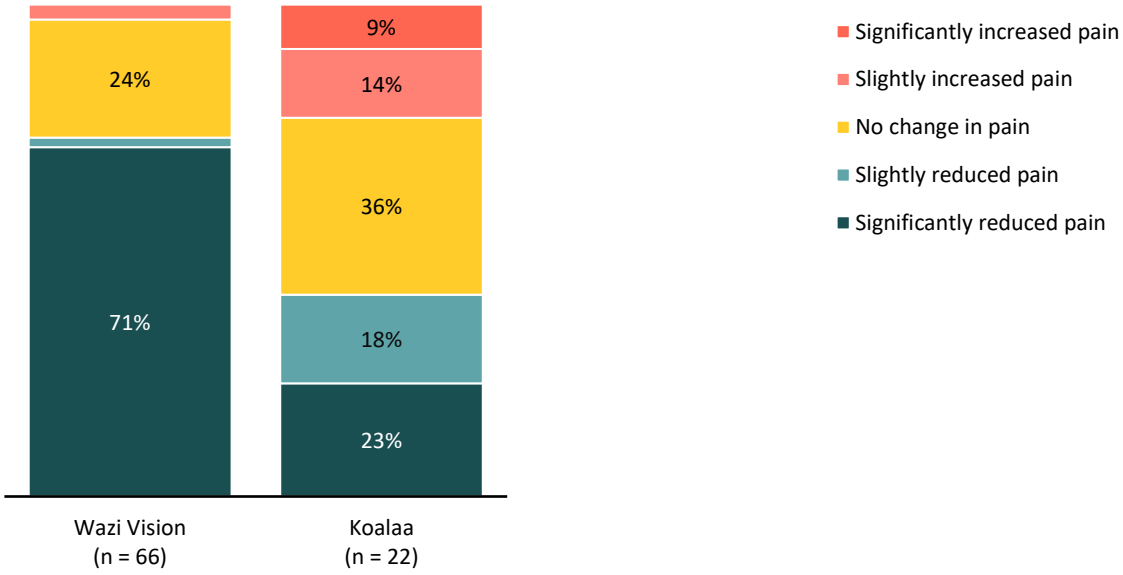


Figure 14 Q: Has using the [AT product/service] made any change in the pain or discomfort you may live in?

5.3.4 Impact on Social Ties and Relationships

To evaluate the impact of Assistive Technology (AT) on social ties and relationships, AT users were asked about their dependence on a caregiver or family member and participation in social events and gatherings. Most users report a positive impact on their social ties and relationships when using their AT. Specifically, 72% report a decrease in their dependence on a caregiver or family member, while 73% report an increase in their participation in social events and gatherings.

The use of AT has contributed to a greater sense of independence and social engagement for the users, which can have a significant impact on their overall well-being.

5.3.4.1 Dependence on a caregiver or family member

Overall, 73% of users report reduced dependence on their caregivers because of their AT product. KBTA and TAI users report the highest impact on independence.

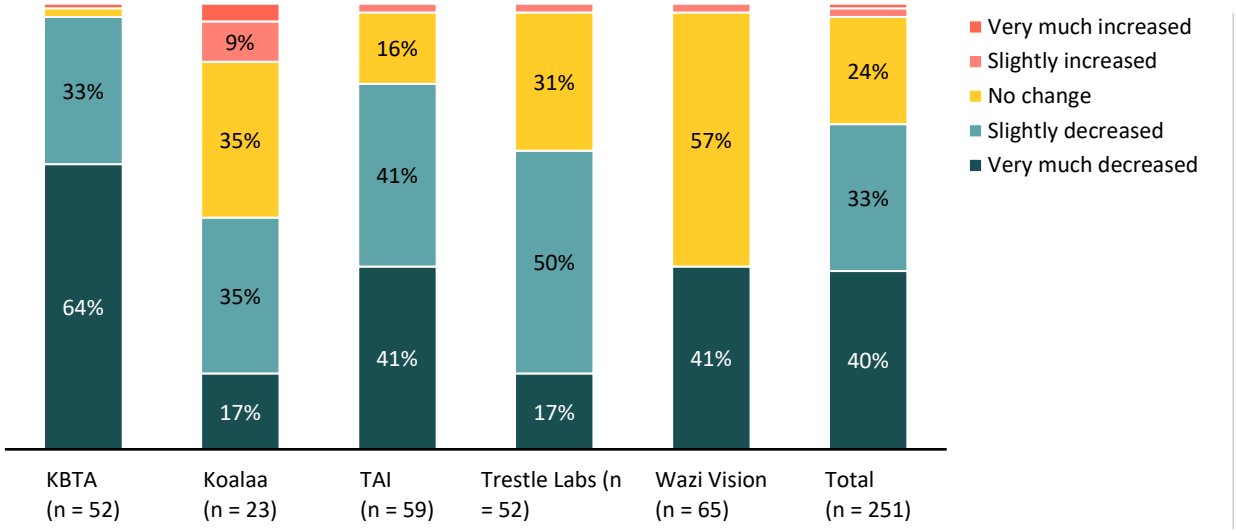


Figure 15 Q: Has your dependence on a caregiver or family member changed because of [AT product/service]?

5.3.4.2 Participation in social events and gatherings

Most users (73%) reported an improvement in their ability to participate in social events and gatherings due to their AT product (see Figure 16).

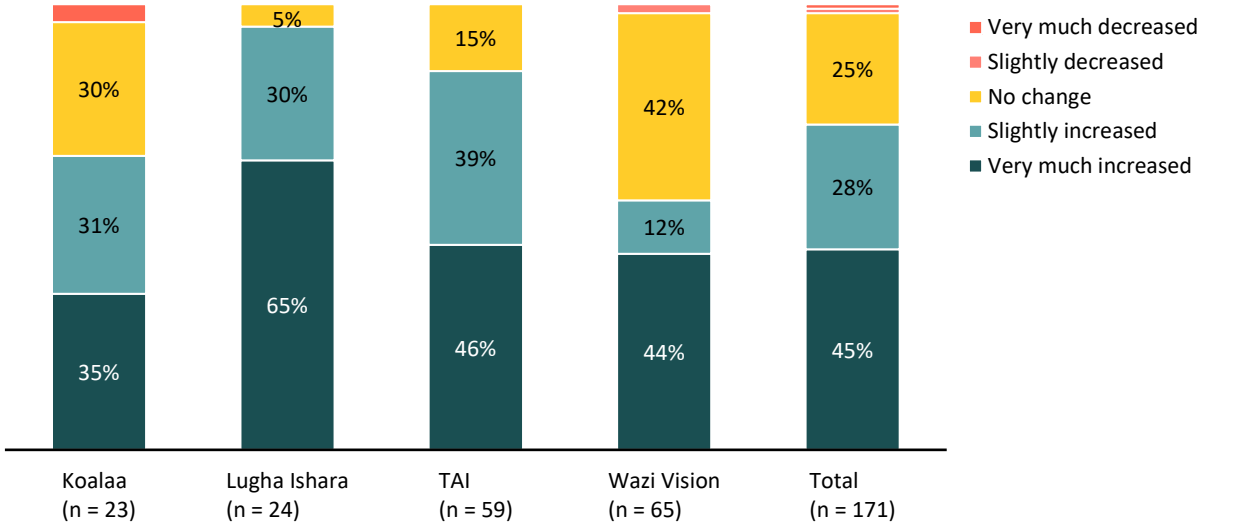


Figure 16 Q: Has your ability to participate in social events and gatherings changed because of [AT product/service]

5.3.5 Impact on Work

Assistive Technology (AT) products have had a positive impact on work, leading to improvements in the quality of work, and reducing the amount of time it takes to do typical tasks at work for most users.

5.3.5.1 Quality of Work

All KBTA users and 7 in 10 Trestle Labs users report improvements in their quality of work because of their AT product.

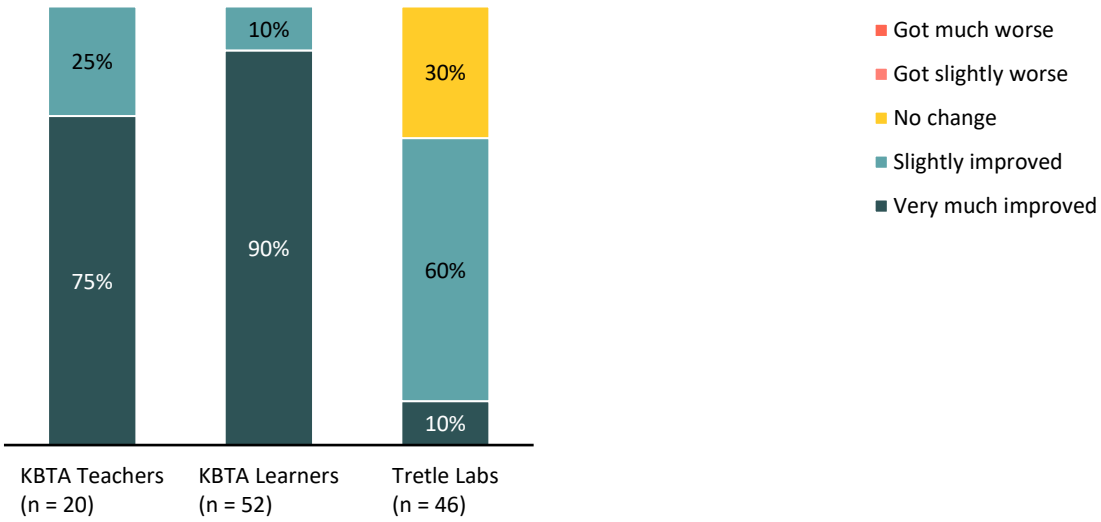


Figure 17 Q: Has your quality of work changed because of the [company] [AT product/service]?

5.3.5.2 Time Taken to Do Work Tasks

Over 3 in 5 Teachers working with Orbit Reader 20 users as well as Trestle Lab's Kibo XS users report improved efficiency at work because of their AT product (see Figure 18).

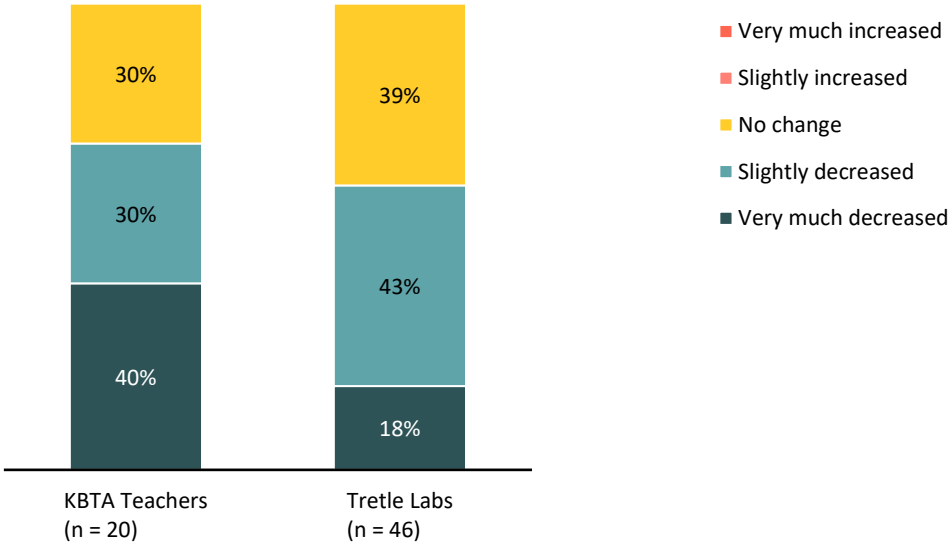


Figure 18 Q: Has the amount of time it takes for you to do a typical task at work changed because of the [company] [AT product/service]?

6. The Human Stories Behind the Data

This section features stories of individuals and their journey with their AT. To protect the privacy of the respondents, all names have been changed.

6.1 Empowered by Innovation: Eunice's Life-Changing Experience with the Orbit Reader 20

Eunice, a visually impaired learner, has been using the Orbit Reader 20 distributed by KBTA for over six years. She finds the device very easy to use independently and has not experienced any challenges while using it.

By using the Orbit Reader 20, Eunice has seen significant improvements in her quality of life, confidence, and self-esteem. She no longer feels as dependent on others and can read any curriculum books and study materials with ease. Additionally, Eunice has seen improvements in her schoolwork quality and ability to get along with peers.

When asked what specifically about the Orbit Reader 20 would cause her to recommend it to a friend or family member, Eunice cites several factors such as its speed, efficiency, exam-taking capabilities, and portability.

6.2 Blind no more: The Inspiring Story of Jim and the Kibo Xs Device

Jim is a 47-year-old male in India who has been using the Kibo Xs device by Trestle Labs for 24 months. He finds the device helpful for blind individuals, as he does not need to depend on anyone else to access and use it. However, he fully financed the product and finds the cost to be somewhat of a burden, and the value for money poor. Despite this, he cannot easily find a good alternative to the Kibo Xs device, and he can always use it whenever he needs to. He is a promoter of the device and would recommend it to others.

Jim's quality of life and quality of work has improved. He can now read the content he wishes to read without the help of anyone, and his dependence on a caregiver or family member has very much decreased. His ability to read any curriculum books and other study materials has very much improved.

6.3 Alice Finds Inclusivity and Support at Lugha Ishara's Hangout Hub

Alice is a 30-year-old mother of a deaf child who attends sessions at Lugha Ishara's Hangout Hub. This is the first time Alice has accessed this type of service, and she is impressed with Lugha Ishara's Hangout Hub. She says she cannot think of a good alternative to the inclusivity hub that also offers support to deaf or hard-to-hear children and their guardians.

Alice finds the Lugha Ishara deaf community to be very accommodating. The Hangout Hub is like a small special school where all deaf children learn and interact with one another without any discrimination. She appreciates the group sizes and the support offered, which makes her feel less alone.

Alice's quality of life has significantly improved since she started attending Lugha Ishara's Hangout Hub. Her child is more outgoing and confident, able to relate to the outside world and engage in social activities without shying away. Her child even creates conversations when he meets with other deaf children.

Alice suggests that the Hangout Hub could be improved by starting more classes for parents. She feels that the time allocated for parents is not enough. She also finds the sign language classes to be quite expensive and not affordable for many parents. Alice suggests that more sessions for parents without children present could be of great help, and allowing parents to learn separately from the children would result in better communication.

Lugha Ishara's Hangout Hub has increased Alice's ability to participate in social events and gatherings. Alice is now confident in her ability to communicate with her child, and her child's ability to get along with peers has improved. Alice is a strong promoter of Lugha Ishara's Hangout Hub and will continue to promote it because of the remarkable support offered to the deaf community.

6.4 Bill's Life Transformed by SafariSeat Wheelchair Donation

Bill received his SafariSeat wheelchair as a donation from TAI Limited. The wheelchair has significantly improved his quality of life. He has become an avid promoter of the wheelchair and recommends it to others. The SafariSeat wheelchair has given him the freedom to move around at any time and participate in social events and gatherings. He has also seen improvements in his physical health, adding weight and building muscle.

Bill relies heavily on his SafariSeat wheelchair and would be very disappointed if he could no longer use it. He is grateful for the hand that gave him the gift and loves the wheelchair. However, Bill believes that the brakes on the SafariSeat wheelchair could be improved. He found the placement of the brakes challenging to maneuver, especially when going up and down hills. He suggested that the manufacturers should investigate this and make adjustments to improve the wheelchair's safety.

6.5 Wazi Vision Eyeglasses Improve Francis' Quality of Life

Francis is a 45-year-old resident of a village in Uganda who was experiencing difficulties with his vision. He had tried other eyeglasses in the past, but found the perfect solution with Wazi Vision eyeglasses, which he fully financed himself and rates as good value for money.

Wazi Vision eyeglasses meet all of Francis' needs from such a product. The eyeglasses give him clear vision and comfort while being pocket friendly. The glasses are stylish and available in different designs that fit his style and personality. The eyeglasses have also significantly reduced his pain and discomfort he felt with other products previously, likely because Wazi eyeglasses are designed specifically for African users and account for a variety of face and bone structures. They also enabled Francis to participate in social events with ease.

Francis' quality of life has significantly improved since he began using Wazi Vision eyeglasses. He can now read and work on his laptop without any difficulties, and he feels proud of his new look. His confidence and self-esteem have increased, which has positively impacted his social life. He would be

disappointed if he could no longer use the product and recommends it to others for its value for money, comfort, styles, and design.

Wazi Vision eyeglasses have provided Francis with a solution to his vision problems, enhancing his quality of life and social activities. The product has exceeded his expectations, and he highly recommends it to others who may be struggling with their vision.

6.6 Lucy's Experience with Koalaa's Upper Limb Prosthetic

Lucy is a user of Koalaa's Upper Limb Prosthetic, which she relies on to perform daily tasks.

Lucy has faced a few challenges while using Koalaa's Upper Limb Prosthetic. The false hand is not the same as her hand, and the color of the prosthetic does not match her skin color. She also needs a prosthetic that would serve her for a more extended period, especially when she wants to attend social programs.

Despite the challenges, Koalaa's Upper Limb Prosthetic has met most of Lucy's needs. Although there are a few areas that need improvement, the product is the best of what is available to her, as she says she cannot find a good alternative to it. The prosthetic is easy to use and fits her well. Although it has not reduced her pain, it has not increased it either. This product has significantly improved her quality of life and confidence and enabled her to participate in social events and gatherings.

7. CONCLUSION

7.1 Actionable Insights for AT Companies

Emerging AT companies can use this data to inform product design, marketing, channels of user acquisition, and communicating their impact to their investors.

1. **Resolve user challenges:** 40% of users report challenges with their AT, and 87% of these challenges are unresolved. AT companies can do more to minimize instances of challenges and resolve them if they arise.

2. **Cement your value proposition:** Improved functioning, comfort, and independence consistently come up as drivers of user satisfaction and AT impact and product design specific issues are reported as pain points and challenges by user. Leverage user-voices to identify specific goals to improve AT offering and cement value proposition among users.

3. **Set intentional impact goals and measure them periodically:** Improving gender and income inclusivity, improving user satisfaction, improving impact on independence, and reducing pain and discomfort among users are some suggestions for goals AT companies can have and track over time based on the findings from their Lean Data studies.

4. **Unlock the power of user stories and word-of-mouth:** Identifying and incentivizing promoters can create organic channels of customer acquisition for AT companies. Further, sharing user stories on

social media can help you communicate how transformational the offering is, as reported by a user themselves.

5. **Share your impact more widely:** Findings from the Lean Data study can help emerging and ready-to-scale AT companies showcase their impact to existing and potential investors and have data to back the decisions companies are looking to make.

7.2 Actionable Insights for AT Investors

Investors can use this data to make informed decisions about investing in the AT space. Investors in the AT space should focus on companies that are innovating and developing new products to meet the needs of the growing underserved market, have a strong competitive advantage, prioritise user satisfaction and engagement, and are focused on delivering efficiency gains to users.

1. There is a unique value proposition of AT products, with 85% of users reporting that there are few satisfactory alternatives available on the market. This suggests that AT products have a strong competitive advantage, and that there is significant potential for growth and scalability in the space. The right financing and investment in market identification can help AT companies become market leaders and compete effectively.

2. AT users express a high degree of impact with AT products, with 4 in 5 users reporting improvements in their quality of life. 88% of users who report that their quality of life improved very much would be very disappointed if they could no longer use their AT products. This suggests that impact is key to making an offering indispensable for users, and investors should evaluate the impact focus of AT companies to identify scalable businesses.

3. The data underscores the importance of ongoing engagement with users to track progress and address ongoing challenges. Investors should look for companies that prioritise user feedback and are actively working to improve their products and services over time.

7.3 Future of AT Impact measurement

The future of AT impact measurement requires companies to continue innovating and improving their products and services, while also prioritizing ongoing engagement with users to track progress and address ongoing challenges. By using the module suite on their own and repeatedly listening to users, companies can build more effective solutions that meet the evolving needs of people with disabilities and make a meaningful impact on their lives.

This report indicates the positive impact of AT on the lives of people with disabilities, and it underscores the importance of companies that provide these products in promoting accessibility and improving quality of life. The data also highlights the importance of measuring the impact of AT products over time, as well as the need for companies to repeatedly listen to users to track progress and address ongoing challenges.

Looking ahead, it will be important for companies in the AT space to continue innovating and improving their products and services to meet the evolving needs of their users. Companies should also prioritise ongoing engagement with users, seeking feedback and insights on an ongoing basis to ensure that their products and services are meeting the needs of their target market.

To support these efforts, companies can use the module suite on their own to measure the impact of their products and services, as well as to identify areas for improvement. The suite provides a range of metrics that can be used to evaluate the effectiveness of AT products, including Net Promoter Score (NPS), user satisfaction, and the impact on quality of life and work productivity.

By using these metrics to track progress over time, AT companies can better understand the impact of their products and services, identify areas for improvement, and refine their offerings to better meet the needs of their users. Moreover, by repeatedly listening to users and seeking their feedback on an ongoing basis, AT companies can build more meaningful relationships with their users and develop more effective solutions that truly make a difference in their lives.

Appendix A: Participant quotes

A.1 quotes from users describing how their quality of life has improved.

"Before I received eyeglasses from Wazi Vision I used to get extra light in order to read something but now my sight is better I can read my Bible without needing an extra light so my life is better I even gained the confidence of reading to a crowd without fear of missing out of any word I wasn't able to see."– Wazi Vision, 32-year-old, Female

"With the help of the orbit reader device, my class performance has very much improved compared to before. Secondly, I don't have to depend on other people when taking notes or reading since I can do it on my own. The device has enabled me to interact with other students and teachers freely in the classroom and also gain more confidence in learning like other learners."– KBTA, Female learner

"I can walk faster than before and I don't need a walking stick, so it helps me walk easily without dependence. This way I get to travel around with my friends and to work more conveniently than before since I can walk freely."- Koalaa, 37-year-old, Male

"Before, when I didn't have a wheelchair, I was highly dependent on my family and community to assist me in moving around. Now I feel like I am part of the normal society because I used to feel secluded, now I depend on myself and go anywhere I want without any problem."– TAI, 54-year-old, Male

"My child has highly improved in his communication skills. He is able to sign a prayer before eating. He has started mingling with others without shying off. He is very confident with himself and communicates freely with his siblings, they have their own language whereby they understand each other very well as they play together. He is happier."– Lugha Ishara, Female parent

"My quality of life has improved because I am able to read notes and documents in my own free time. Kibo Xs makes reading very easy, which is why it's taking me less time to access important notes on my own."– Trestle labs, 24-year-old, Male

A.2 Quotes from Promoters describing what they value about their AT products/services

"The eyeglasses are comfortable and the style is extremely good which makes me feel proud while in a crowd or when someone asks me where I got them from."– Wazi Vision, 40-year-old, Male

"The Orbit reader 20 device does not use paper. This means you don't have to overspend on purchasing the papers for typing and this helps to save. The device is very fast and more effective compared with the Braille machine, especially when using it to make and read notes. Third, a visually impaired learner can also use the device to do an exam which also gives it advantages over the other devices. Apart from class work, I can also use it in church especially making notes without having to have some kind of earring or earbob in. I also like obit reader because is very portable compared with the Braille machine and one can use it everywhere."– KBTA, Male learner

"I have been using the prosthetic for some time now and it makes it easier for me to walk and do my daily activities much easier than before so I would recommend this to everyone who needs a prosthetic."- Koalaa, 32-year-old, Female

"Aaaah! This one! 10 over 10. I swear to God this wheelchair is very nice when climbing the hill and it gives me money because I do acrobatics in the streets. I have the freedom to go anywhere and at any time."– TAI, 39-year-old, Male

"Since we joined Lugha Ishara, my child is able to communicate very well using sign language, he has gained a lot of confidence to the point of doing house chores and playing outside with other children. Before he was very closed and shy. Am very impressed with how he has improved, and we can foresee a bright future for our son."– Lugha Ishara, Female parent

"I like the Kibo Xs, it is a good device with many features like you can upload scanned content in any format and it is easy to carry anywhere you go. It is very convenient to use."– Trestle labs, 27-year-old, Male

A.3 Quotes from Detractors describing what they dislike about their AT products/services.

"KBTA should reduce the many braille cells on the Orbit Reader as they are confusing and also introduce a way the orbit reader can autosave notes to avoid loss in case the device goes off due to power."– KBTA, Female learner

"The limb didn't fit my son perfectly and he can't wear it because he feels some heaviness in his hand."- Koalaa, Male

"The front tires are really weak and are not good for rough roads. They make life difficult because once they get spoilt using the wheelchair becomes hard."– TAI, 38-year-old, Male

"I have not been able to participate many times because of the distance, I come from Nandi County and my child is very young. Am the only one who has been able to participate but the impact has been very minimal because there has not been consistency. – Lugha Ishara, Female parent

"The subscription amount is very expensive. The device is unable to adjust scanning pages, the scanning mat is suitable for A4 sizes and if I use the legal size or a page size that is a bit longer than it is difficult to fix the page in the scanning mat."– Trestle labs, 23-year-old, Male

A.4 User quotes describing the challenges they have experienced with their AT products/services.

"I cannot walk while wearing them because the lenses are strong, I just use them for reading."– Wazi Vision, 43-year-old Female

"Some of the set books and revision books like Biology and Business books are the old edition, the orbit reader is not upgraded hence missing a lot of information. Also, at times it does lose some dots and the reading flow becomes very difficult."– KBTA, Female learner

"The main issue I faced was that after wearing for a few months my left arm started paining a lot and my hand used to get twisted due to the prosthetic and it was too tight for my arm."– Koalaa, 35-year-old, Male

"Pushing two pedals co-currently can be challenging because of the different level strengths on the left and right hand. When breaking the wheelchair becomes unstable one might fall." – TAI, 45-year-old, Male

"My main challenge is that we at times feel we remain on the basic's signs i.e., alphabets and common expressions, for a long time. At times the instructors are not available hence resulting to some fall out in the program."– Lugha Ishara, 35-year-old, Female parent

"The device scans both side of a book at once and mix matches the data. I don't know whether the problem is from my side while keeping the book or the device functions like that. Also I tried to cover with blank paper on other side of but still the problem exists."– Trestle labs, Female

A.5 User quotes giving suggestions for improvement for their AT products/services.

"The frames should have variety of lenses to give a client limitless options."– Wazi Vision, 38-year-old, Male

"Modify the gadget to have pictures and drawings in future. The garget software cannot be able to support drawings and pictures which I find a very disadvantage to learners."– KBTA, Female teacher

"Improve on the prosthetic to make more functional like making the lower limb to fold and unfold more electronically."– Koalaa, 43-year-old, Male

"They should bring the tricycle because you cycle it frontwards like the normal bikes. It has two tires at the back and one at the front with a chain connected to the hand pedal which makes it less tiring when using it as you pedal frontwards."– TAI, 32-year-old, Male

"Hangout hub can be improved by starting more classes for parents, I feel the time allocated is not enough. Going for sign language classes is quite expensive and not affordable to many of us. Therefore, if we can have more sessions for parents without the children it could be of great help to us. Also, allow the parents to learn separately from the children which make us attain more knowledge which will result to us communicating better with our children.."– Lugha Ishara, 30-year-old, Female parent

"Reduce the subscription fees. Kibo Xs can also have develop features such that if we put papers in the device, it has to convert the document automatically we just sit and access the output."– Trestle labs, 40-year-old, Female.