



Examining the Gap between Work-Warranted and Actual Use of Screen Reading Software by Visually Impaired

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ABSTRACT

Introduction: Research on assistive technology (AT) has focused on adoption and abandonment. Little is known about whether people who use screen-reading software (SRS) use it to the extent their work requires. This study examined the gap between work-warranted and actual SRS use and how it varies with profile and SRS-use characteristics.

Methods: A total of 338 SRS users in Tamil Nadu and Puducherry, India, rated how far their work warranted SRS use and how far they actually used it. Comparing the two ratings, respondents were classified as Requirement-Matched, Above-Requirement or Below-Requirement Users. Associations with 13 characteristics were tested using Pearson chi-square, Monte Carlo exact tests and Cramér's V.

Results: Most respondents (76.6%) were Requirement-Matched Users, 13.6% were Above-Requirement Users and 9.8% were Below-Requirement Users. Eagerness to learn about AT showed the strongest association ($V = .26$), with low eagerness linked to below-requirement use. Below-requirement use was also more frequent among respondents with 2–5 years of AT use, a single training programme, a diploma qualification and NVDA as their screen reader. Above-requirement use was more frequent among respondents aged 18–25, students and those with moderate visual impairment. Gender, income, cause of impairment and self-rated computer proficiency were not associated with the gap.

Discussion: The two forms of mismatch have different correlates. Below-requirement use appears to reflect a plateau in learning rather than weak general computer skill.

Implications for Practitioners: Training providers could follow introductory SRS training with a second, work-focused stage. Employers and rehabilitation services could offer refresher training to users in their second to fifth year of AT use.

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Keywords: Above-Requirement Users, Below-Requirement Users, Requirement-Matched Users, Visually Impaired,

1. Introduction

The rapid development of digital technologies has transformed the nature of contemporary work, making computers, smartphones, digital documents, online communication platforms and web-based applications integral to a wide range of occupations. For visually impaired (VI), access to digital technology does not necessarily translate into effective participation in the workplace. The ability to interact with digital



information often depends on the availability and appropriate use of assistive technologies. Among the various assistive technologies available to VI, screen-reading software (SRS) occupies a particularly important position because it enables users to access text and other information presented on computer and digital interfaces through speech or other accessible outputs.

SRSs facilitate VI to access to documents, websites, emails, databases, office applications and other digital resources, thereby supporting them to perform their educational, occupational and routine activities. Its significance in employment is particularly important because the extent to which a VI employee can independently perform work-related tasks may depend, at least partly, on the accessibility of the digital environment and the individual's ability to use appropriate assistive technology.

However, the mere availability or adoption of SRS does not necessarily indicate that it is being used to the extent required by the individual's work. Different occupations involve different levels of interaction with computers, digital documents, software applications, online platforms and other technology-mediated tasks. Consequently, the extent to which a person's work warrants the use of SRS may differ considerably across individuals. At the same time, the actual extent to which the individual uses SRS in performing that work may also vary. These two dimensions need not coincide.

A situation may therefore arise in which the actual use of SRS is lower than the extent warranted by the individual's work. Such a situation may represent an under-utilisation gap, potentially limiting the person's ability to perform work-related activities independently or efficiently. Conversely, some individuals may use SRS to an extent greater than that warranted by their work, while others may use it approximately in accordance with the requirements of their work.

The distinction between work-warranted use and actual use provides a more nuanced approach to understanding assistive-technology utilization among VI. The difference between these two dimensions can be conceptualized as the "Work Warranted-Actual Use Gap". Studying this gap can help identify whether SRS use corresponds with the technological requirements of the work performed by VI. More importantly, examining the characteristics associated with this gap may provide insights into why individuals working under apparently similar circumstances may differ in their actual utilization of screen-reading technology.

The extent of assistive-technology use may be influenced by several individual and contextual characteristics. Demographic characteristics such as gender, age and income may be associated with access to, familiarity with and utilization of technology. Characteristics relating to visual impairment, including the period of impairment and the reason for impairment, may also be relevant because the timing and circumstances of acquiring visual impairment can influence exposure to technology, adaptation and the development of technology-related skills. Similarly, marital status and occupational characteristics may reflect differences in social, economic and work-related circumstances.

Technology-related characteristics may be equally important. The type of SRS used, duration of assistive-technology use, level of computer proficiency and participation in training programmes may influence how effectively and extensively individuals incorporate SRS into their work. These characteristics can provide an understanding of whether differences in the Work-Warranted-Actual Use Gap are associated not merely with demographic circumstances but also with users' experience, skills and interaction with assistive technology.

Against this background, the present study examines the extent to which the work performed by VI warrants the use of SRS and compares it with their actual use in their work. The study further examines the association between the resulting Work-Warranted-Actual Use Gap and selected profile and SRS usage characteristics of

VI. By focusing on the relationship between work requirements and actual technology utilization, rather than merely on technology adoption, the study seeks to provide a more meaningful understanding of SRS utilization in the employment context.

2. Conceptual framework

This study essentially contains three central variables/dimensions:

1. **Work-Warranted Use of SRS:** This represents the extent to which the nature and requirements of the VI's work necessitate or warrant the use of SRS. This is not the respondent's actual usage. It is a measure of the technology requirement of the job from the perspective of SRS use. For instance, a VI engaged in work requiring extensive preparation of computer-based document may have a high work-warranted requirement. However, a VI engaged in work involving relatively little digital information processing may have a low work-warranted requirement. This variable therefore represents the demand side of SRS use.
2. **Actual Use of SRS:** This represents the extent to which the person VI actually uses SRS in performing their work. This is the actual utilisation side, describing the extent to which vi actually use SRS in their work.
3. **Work Warranted-Actual Use Gap:** This gap is calculated by subtracting the extent to which SRS usage is warranted by the work in which the VI are engaged and the actual extent to which they are using SRS in their work. This difference has been calculated following this process for all the 338 VI respondents selected for this study.

Hence, an attempt has been made to examine the alignment between SRS utilization and occupational requirements. Based on the relationship between the actual extent of SRS use and the extent to which SRS use is warranted by their work, the VI respondents have been classified into three groups namely Requirement-Matched Users, whose actual SRS use corresponds to the level warranted by their work, Above-Requirement Users, whose actual SRS use exceeds the level warranted by their work and Below-Requirement Users, whose actual SRS use falls short of the level warranted by their work. This process is illustrated as under:

Work warranted	Actual use	Group
5	5	Requirement-Matched Users
5	3	Below-Requirement Users
3	5	Above-Requirement Users

Accordingly, this study has identified 259 Requirement-Matched Users, 33 Below-Requirement Users and 46 Above-Requirement Users.

3. Literature Review

Research on workplace technology has long held that more use does not automatically lead to better results. Goodhue and Thompson (1995) proposed the task-technology fit model, which states that for information technology to improve individual performance, the technology must be used and must also fit the tasks it

supports. Their model separated two questions that earlier adoption research had often combined: whether people use a system, and whether that use matches what the work actually requires.

This study applies the same distinction to SRS. A VI employee may use a SRS for many hours, but that alone does not show whether the amount of use matches what the job requires.

The broader literature on person-environment fit supports this. Kristof-Brown et al. (2005) conducted a meta-analysis of 172 studies with 836 effect sizes on person-job, person-organization, person-group, and person-supervisor fit, and found that almost all credibility intervals excluded zero, showing that fit-outcome relationships held across different settings. Their work treats match between a person and job demands as a variable with real consequences, not just a matter of preference. The present study uses the same logic for AT, comparing respondents' reported use against the use they perceive their work to require.

Past research has also noted that "use" is not a straightforward variable. Burton-Jones and Straub (2006) observed that system usage, while treated as a key variable in information systems research, has received little theoretical scrutiny, lacks a widely accepted definition, and is measured with a range of unsystematic measures.

This matters here because the classification depends on two separate judgments made by the respondent, how much SRS they actually use and how much their work requires. Both need clear definitions before comparing them.

Jaspersen et al. (2005) described a pattern that closely relates to what this study calls restricted use. They reported that the functional potential of installed IT applications is underutilized, with most users applying a narrow band of features, operating at low levels of feature use, and rarely extending their use of available features. Their focus was on mainstream enterprise systems, not AT. Still, their observation that adoption does not guarantee full use at work is important for employees whose productivity relies on a SRS. The Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003) explains how people come to intend to use and then use a technology. However, it does not address whether the level of use reached matches what a particular job requires. This study examines exactly this.

3.1. Use and non-use of assistive technology

Studies of AT abandonment show that receiving a device does not guarantee its continued use. In a survey of 227 adults with various disabilities, Phillips and Zhao (1993) found that 29.3% of all devices were completely abandoned, and that abandonment was linked to four factors namely, lack of consideration of user opinion in selection, easy device procurement, poor device performance and changes in user needs or priorities. The last factor is especially relevant to employment. If a job's demands change, the amount of AT use needed may also change, and use that once matched the job may no longer do so.

Riemer-Reiss and Wacker (2000) used diffusion of innovations theory to explain why people stop using AT. Their study included 115 persons with disabilities who had received funding for 136 devices, and examined relative advantage, support, consumer involvement, trainability, changes in consumers, re-invention and compatibility as possible predictors. Among these, relative advantage was associated with whether AT use continued or was discontinued. Applied to employment, this suggests that an employee who sees little benefit from a screen reader for a specific task may use it less than the job requires, even if they have the skills to use it.

Wessels et al. (2003) reviewed research on non-use and grouped its determinants into personal factors, factors related to the device, factors related to the user's environment and factors related to the

intervention. This grouping helps explain restricted use in the present study, since reduced use may come from the person, the software, the workplace, or the way AT was provided.

Dijcks et al. (2006) conducted a Dutch survey on user satisfaction and non-use across 14 categories of AT provided by health care insurers, measuring three aspects of non-use. Their method treats non-use as having several dimensions, not as a simple yes-or-no outcome, which supports using a graded, three-group classification instead of a two-group one.

Later research from Italy links reduced use to how devices are matched and provided. In a telephone survey of 749 users of the Italian National Health Service, Federici et al. (2016) found that 134 users (17.9%) were no longer using their assigned device within seven months of receiving it, and 40% of that group reported never having used it. The authors concluded that abandonment may be due to the assignment of inappropriate devices or failure to meet user needs and expectations. Federici and Borsci (2016) related abandonment to the perceived quality of the delivery process. Together, these studies place part of the explanation for low use in the service system, not only in the individual user. Petrie et al. (2018) reviewed the state of abandonment research and its methodological limitations.

The terminology used to describe different levels of use is still being developed. Jacobsen and Layton (2025) examined how practitioners and researchers talk about the use, underuse, and non-use of assistive products. Their work supports treating underuse as a separate category from complete non-use, which matches the distinction this study makes between restricted use and no use.

3.2. The person, the device and the job

The Matching Person and Technology (MPT) framework offers an AT-specific model similar to task-technology fit. Scherer and Craddock (2002) describe MPT as a set of person-centered measures covering adult consumers' self-reported strengths and capabilities, needs and goals, preferences, psychosocial characteristics and expected benefits from technology, with separate measures for general, assistive, educational, workplace and healthcare technology use. The inclusion of a specific workplace measure shows that AT use at work is recognized as a distinct matching problem. Scherer et al. (2005) further showed that personal and psychosocial factors predict AT use, supporting the present study's comparison of the three groups by respondent characteristics.

Social context also affects how much AT people use at work. Shinohara and Wobbrock (2011) interviewed 20 people and found that some assistive devices identified their users as having disabilities, that functional access took priority over feeling self-conscious and that two common misperceptions surrounded AT use: that devices could eliminate a disability, and that people with disabilities would be helpless without them. In an office where coworkers see a SRS in use, both of these misperceptions could affect how much an employee chooses to use it, pushing use either up or down independent of the job's actual requirements.

3.3. Assistive technology use in employment

Direct research on AT use by VI employees is limited. McDonnall et al. (2024) noted that AT is essential to employment for people with blindness or low vision, yet little is known about how they use it at work, and the authors found only two earlier studies on the topic, both qualitative with five participants each. In their own survey, 314 employed people with blindness or low vision reported on the AT they used at work, their perceived skill level, satisfaction, and challenges and self-reported skill levels were moderately high to high for each type of AT. McDonnall et al. (2025) studied use of SRS by employed adults in the US and found that most participants used more than one SRS. McDonnall et al. (2023) compared employed and unemployed

people who are blind and suggested that limited AT skills may be a barrier to employment. None of these studies compared actual use with the level of use required by the job.

The two qualitative studies mentioned by McDonnall et al. (2024) describe the conditions that affect use at work. Branham and Kane (2015) studied both use and non-use of AT and accommodations among blind and low-vision employees in the US, identifying challenges such as inaccessible SRS, inaccessible hardware and office equipment and AT problems when working with sighted co-workers. Wahidin et al. (2018) examined AT adoption among Australian VI employees and found that keeping AT up to date was a main challenge.

Research on employment outcomes shows that AT skills are part of what makes employment successful. Golub (2006) studied employers' views and found that success depended on the employee having blindness skills, including up-to-date orientation and mobility, braille, and AT skills, along with strategies for when a system fails. Goertz et al. (2010) reviewed factors related to employment of VI while Wolffe and Candela (2002) analyzed employers' experiences with VI workers. Basu and Sambath Rani (2023) reviewed fourteen studies from more than 13 countries published between 1998 and 2021 and found that workplace issues including transportation, employers' willingness to hire and lack of AT were the most significant barriers to employment. Their review is one of the few in this field with Indian authorship but it did not measure use against job requirements.

3.4. Use beyond job requirements

Some employees may use AT more than their work formally requires. The literature suggests two possible explanations, which lead to different interpretations of the extended use group.

The first is that extended use reflects time spent working around inaccessible systems. Lazar et al. (2007) had 100 blind users keep time diaries of their web use. The most common causes of frustration were page layouts that produced confusing SRS feedback, conflicts between the SRS and applications, poorly designed or unlabeled forms and images without alt text. Participants usually kept trying to solve problems instead of giving up, and reported losing an average of 30.4% of their time to these situations.

If a similar share of working time is spent navigating inaccessible content, an employee may report using a SRS more than their tasks alone would require. Branham and Kane (2015) finding that blind employees must create their own workarounds for inaccessible workplace technology supports this explanation.

The second explanation is that extended use has a cost. Tarafdar et al. (2007) studied ICT users across organizations and found that technostress was inversely related to individual productivity and directly related to role stress.

Karr-Wisniewski and Lu (2010) defined technology overload, and later research drawing on their work describes it as occurring when ICT use exceeds individuals' information processing and communicative capabilities. Both studies focused on mainstream workplace technology, not AT, and neither involved VI employees. They are relevant as theory, but this study does not assume that extended use is harmful. The label "extended use" is chosen to remain neutral until the data show whether this group has better or worse outcomes than the matched group.

3.5. Use below job requirements

The restricted use group consists of employees whose AT use is less than their work requires. The abandonment literature (Phillips & Zhao, 1993; Riemer-Reiss & Wacker, 2000; Wessels et al., 2003) and post-adoption IT research (Jasperson et al., 2005) both describe this pattern. Research on employment-related barriers suggests that the environment can be a cause. Reuschel et al. (2023) tested the accessibility and

usability of online job applications for SRS users and found serious barriers on large employers' sites. When workplace systems are designed without considering SRS users, an employee may use AT less because some tasks cannot be completed with it, not because they lack the skill or motivation.

For this reason, the label "restricted" is only appropriate if the restricted group can be linked to barriers such as inaccessible software, limited training, or lack of employer support. McDonnall et al. (2023) suggested that limited AT skills may be due to lack of access or training points to one possible link that can be tested with this study's data.

3.6. Measuring the use gap

This classification compares two ratings from each respondent, actual use at job and use required by the job. Congruence research has discussed the weaknesses of this approach. Edwards (1994) critiqued the use of difference scores in organizational research, and later work building on that critique notes that congruence was often measured as the algebraic, absolute, or squared difference between two variables, and that difference scores have many methodological problems. The present study uses the comparison to create three descriptive groups, not as a continuous predictor, and treats the classification as based on respondents' own perceptions. Outcome differences between groups can be tested with established AT outcome measures such as the Psychosocial Impact of Assistive Devices Scale (Jutai & Day, 2002).

4. Research Gap

Several gaps may be identified based on the prior literature reviewed. Task-technology fit research (Goodhue & Thompson, 1995) and person-job fit research (Kristof-Brown et al., 2005) established that the match between use and requirements matters, but neither has been applied to AT use by VI employees. AT research has focused mainly on abandonment and complete non-use (Federici et al., 2016; Phillips & Zhao, 1993), with little attention to employees who use AT, but at a level different from what their jobs require. The only large survey of workplace AT use among people with blindness or low vision (McDonnall et al., 2024) measured skill, satisfaction and challenges, not whether use matched job requirements. Most evidence comes from the US, Australia and Europe.

This study has tried to address these gaps by surveying 338 VI in Tamil Nadu and Puducherry and the extent to which their work warrants the use of SRS and the extent to which the VI are actually using SRS in their work has been obtained in Likert's five-point scale with the scale ranging from "Nil Extent to Very Large Extent" and based on the differences between the extent of SRS usage warranted by the work and the actual usage of SRS in work, the VI has been segmented into three groups namely, Requirement-Matched Users, Below-Requirement Users and Above-Requirement Users. Finally, the association between the profile and SRS-usage characteristics of the VI has been explored.

5. Research Objectives

1. To assess the extent to which the work performed by VI warrants the use of SRS,
2. To assess the actual extent of SRS use by the VI in their work,
3. To gauge the gap between extent of SRS use warranted by the work and the extent to which SRS is actually used by the VI in their work,
4. To explore the association between the gap of SRS usage and the profile and SRS-usage characteristics of the VI.

6. Methodology

Nature of Research	Descriptive
Nature of Data	Primary
Research Instrument used	Structured questionnaire
Study Population	VI engaged as students/scholars, or engaged in Government or private service
Sample Frame	Tamilnadu and Puducherry
Sampling technique	Snowball Sampling
Sample size	338
Analytical software used	SPSS
Analytical tools used	Frequency, Percentage, Chi-square Analysis and Correspondence Analysis

7. Characteristics of the VI Surveyed and its Association with the Gap in SRS Use

The association between the Work-Warranted-Actual Use Gap and the different profile and SRS usage characteristics has been explored using Chi-square Analysis and the outcome is displayed in Table 1.

Table 1: Association between Work-Warranted-Actual Use Gap and Profile and SRS Usage Characteristics of the VI

Characteristic	Category	Below Requirement Users (n = 33)	Above-Requirement Users (n = 46)	Requirement-Matched Users (n = 259)	Total	Pearson Chi-Square
		n (%)	n (%)	n (%)		
<i>Demographic characteristics</i>						
Gender	Male	23 (10.7)	32 (14.9)	160 (74.4)	215	.768
	Female	10 (8.2)	14 (11.5)	98 (80.3)	122	
	Others	0 (0.0)	0 (0.0)	1 (100.0)	1	
Age	18–25 years	8 (14.8)	14 (25.9) ^a	32 (59.3) ^b	54	.050
	26–35 years	9 (7.6)	16 (13.4)	94 (79.0)	119	
	36–45 years	9 (9.9)	8 (8.8)	74 (81.3)	91	
	More than 45 years	7 (9.5)	8 (10.8)	59 (79.7)	74	
Educational qualification	School	2 (6.7)	7 (23.3)	21 (70.0)	30	.008
	Degree	16 (13.8)	19 (16.4)	81 (69.8) ^b	116	
	Diploma	8 (19.5) ^a	2 (4.9)	31 (75.6)	41	
	Postgraduate	7 (4.6) ^b	18 (11.9)	126 (83.4) ^a	151	
Monthly family income	Below Rs. 25,000	15 (13.9)	17 (15.7)	76 (70.4)	108	.387
	Rs. 25,000–50,000	9 (7.8)	14 (12.2)	92 (80.0)	115	
	Above Rs. 50,000	9 (7.8)	15 (13.0)	91 (79.1)	115	
Marital status	Married	16 (7.8)	22 (10.8)	166 (81.4) ^a	204	.001
	Unmarried	15 (11.5)	23 (17.6)	93 (71.0)	131	
	Separated	2 (66.7) ^a	1 (33.3)	0 (0.0) ^b	3	
Profession	Government service	13 (8.1)	24 (15.0)	123 (76.9)	160	.078
	Private service	12 (13.6)	5 (5.7) ^b	71 (80.7)	88	
	Student/scholar	8 (8.9)	17 (18.9)	65 (72.2)	90	
Characteristic	Category	Below Requirement Users (n = 33)	Above Requirement Users (n = 46)	Requirement-Matched Users (n = 259)	Total	Pearson Chi-Square
		n (%)	n (%)	n (%)		
<i>Impairment characteristics</i>						
Cause of visual impairment	From birth	18 (8.5)	27 (12.8)	166 (78.7)	211	.453
	Accident	3 (12.0)	6 (24.0)	16 (64.0)	25	
	Disease	12 (11.8)	13 (12.7)	77 (75.5)	102	
Level of visual impairment	Fully blind	17 (7.8)	22 (10.1) ^b	179 (82.1) ^a	218	.001
	Moderate	8 (16.0)	15 (30.0) ^a	27 (54.0) ^b	50	
	Severe	8 (11.4)	9 (12.9)	53 (75.7)	70	

<i>SRS-use characteristics</i>						
Period of AT use	Less than 2 years	0 (0.0)	2 (20.0)	8 (80.0)	10	.001
	2-5 years	14 (24.6) ^a	9 (15.8)	34 (59.6) ^b	57	
	5 years and more	19 (7.0) ^b	35 (12.9)	217 (80.1) ^a	271	
Screen reader used	JAWS	1 (2.4)	3 (7.1)	38 (90.5) ^a	42	.041
	NVDA	27 (12.7) ^a	27 (12.7)	158 (74.5)	212	
	Others	5 (6.0)	16 (19.0)	63 (75.0)	84	
Eagerness to learn more about AT	No extent	4 (66.7) ^a	0 (0.0)	2 (33.3) ^b	6	<.001
	Little extent	3 (27.3) ^a	2 (18.2)	6 (54.5)	11	
	Moderate extent	8 (23.5) ^a	7 (20.6)	19 (55.9) ^b	34	
	Large extent	9 (13.4)	10 (14.9)	48 (71.6)	67	
	Very large extent	9 (4.1) ^b	27 (12.3)	184 (83.6) ^a	220	
AT training programmes attended	Nil	8 (9.4)	11 (12.9)	66 (77.6)	85	.001
	One	19 (19.8) ^a	15 (15.6)	62 (64.6) ^b	96	
	Two or more	6 (3.8) ^b	20 (12.7)	131 (83.4) ^a	157	
Computer proficiency	Beginner	6 (14.0)	5 (11.6)	32 (74.4)	43	.222
	Intermediate	19 (7.7)	37 (15.0)	191 (77.3)	247	
	Advanced	8 (16.7)	4 (8.3)	36 (75.0)	48	

Note. N = 338. Percentages are computed within each category (row percentages), so the three groups add to 100 for every category. Pearson Chi-Square = asymptotic significance (2-sided) of the Pearson chi-square test. For characteristics significant at the 10% level, superscript a marks a cell over-represented and superscript b a cell under-represented relative to independence (adjusted standardized residual of 1.96 or more in absolute value). Below-Requirement Users = actual SRS use below the level warranted by work; Above-Requirement Users = actual use above that level; Requirement-Matched Users = actual use equal to that level. SRS = screen-reading software; AT = assistive technology.

Table 1 suggests that bulk of the VI with differing profile and SRS Usage characteristics are Requirement-Matched Users. Larger number of VI without any eagerness to learn more about the AT they are using are Below-Requirement Users followed by Requirement-Matched Users while there are no Above-Requirement Users. However, in the case of VI using NVDA, the number of Above-Requirement Users and Below-Requirement Users are exactly the same.

The number of above-requirement users exceed the number of below-requirement users in the case of both the male and female VI, VI aged 18-25 years, 25-35 years and 45 years and more, VI with schooling education, degree and post-graduation or more as educational qualifications, VI with differing family monthly income, married and unmarried VI, VI who are scholars/students and Government servants, VI who have inherited their visual impairment right from birth and due to disease or accident, VI with full, moderate and severe visual impairment, VI using AT for less than 2 years as well as for 5 years or more, VI using JAWS or other SRS, VI with large and very large eagerness to learn more about their AT, VI who have not attended any training programmes or two or more training programmes and VI with intermediate proficiency in operating computers.

However, the number of Below-Requirement Users exceed the number of Above-Requirement Users in the case of VI aged 35-45 years, VI with Diploma educational qualifications, separated VI, VI engaged in private service, VI using AT for a period of 2-5 years, VI with little and moderate eagerness to learn more about their AT, VI who have attended a solitary training programme, VI who are beginners in computer proficiency or those possessing advanced proficiency in operating computers.

8. Nature of Association between Work Warranted-Actual Use Gap and Profile/SRS Usage Characteristics with Significant Association

The Work Warranted-Actual Use Gap is substantially associated with age, monthly family income, profession, marital status, educational qualifications, level of visual impairment, period of AT usage, Eagerness to Learn

More about AT and the number of training programmes attended by the VI. The nature of such association has been explored using Correspondence Analysis and the outcome is depicted in figures 1-9.

Fig 1: Age

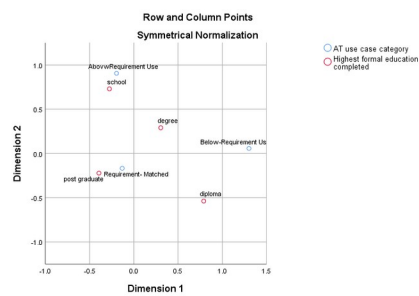


Fig 2: Education

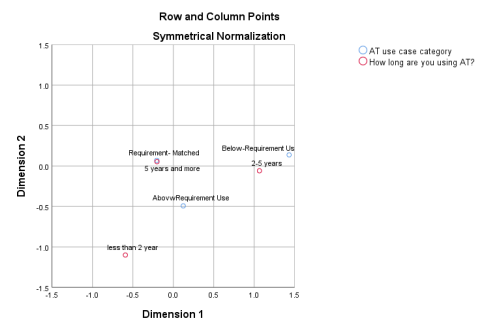
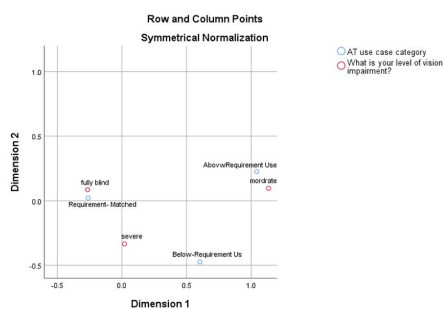
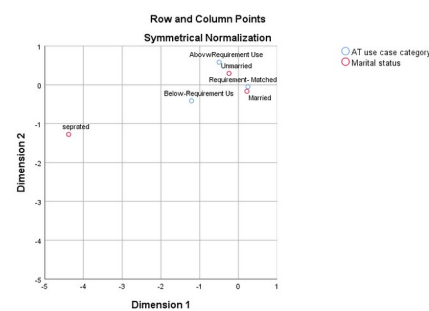
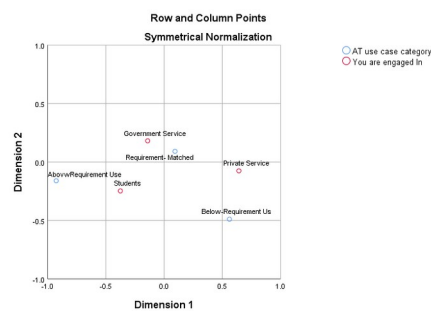
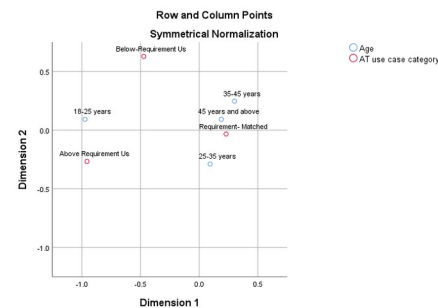


Fig 7: Type of SRS Used

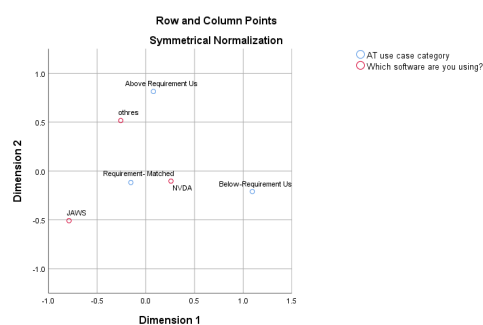


Fig 8: Eagerness to Learn More about AT

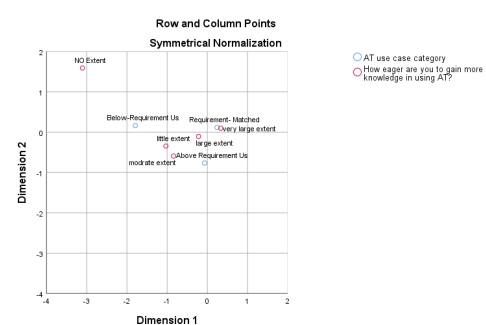
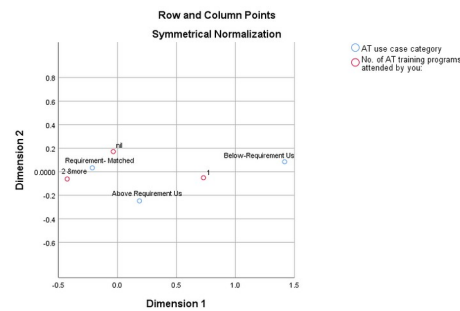


Fig 9: No. of AT Training Programmes Attended



Figures 1-9 suggests that VI who have attended only one AT training programme, VI with little eagerness to learn more about their AT, VI using AT for a period of 2-5 years, VI engaged in private service, VI with severe visual impairment and VI possessing Degree and Diploma as their educational qualifications are Below-Requirement Users. VI who have attended 2 or more AT training programmes, VI who have not attended any training programme, VI with very large extent of eagerness to learn more about their AT, VI using NVDA, VI using AT for a long period of 5 years or more, VI engaged in Government service, VI with full blindness, married VI, VI possessing post-graduation or more as their educational qualifications and old-aged VI aged 45 years and more are Requirement-Matched Users while VI with moderate and large extent of eagerness to learn more about their AT, VI using SRS other than JAWS and NVDA, VI using AT for less than 2 years, students/scholars, moderately visually impaired, Unmarried VI, VI possessing school-level educational qualifications and VI aged 18-25 years are Above-Requirement Users

8. Discussion of Results

Mismatch is the exception in this sample, but its two forms have different correlates. Below-requirement use goes with learning and experience: 2–5 years of use, a single training programme, low eagerness to learn, a diploma qualification and NVDA. Above-requirement use goes with youth, student status and moderate impairment. Treating both as one misfit group would hide this difference. The pattern fits the task-fit reasoning of Goodhue and Thompson (1995) and the graded view of non-use in Dijcks et al. (2006).

The below-requirement profile suggests a plateau in learning. Users with 2–5 years of experience, or with one programme behind them, know enough SRS to get through daily work but may lack the commands their jobs need. Jaspersen et al. (2005) observed the same plateau in enterprise systems, where users settle on a narrow band of features. Users with more experience or repeated training appear to move past it, consistent with McDonnall et al. (2023), who linked limited AT skills to limited access to training.

The eagerness result can run in either direction. Low interest may lead users to leave needed functions unlearned, or repeated difficulty at work may dampen interest. The cross-sectional data cannot separate the two, though Riemer-Reiss and Wacker (2000), who found that perceived relative advantage predicted continued AT use, lend some weight to the second.

The JAWS–NVDA contrast may reflect support rather than software. JAWS is licensed and often reaches users through employers or institutions that also provide training; NVDA is free and more often self-taught. A cross-tabulation of screen reader by profession and training would test this.

Above-requirement use has other explanations. For students and young respondents, study and personal use easily exceed coursework demands. Respondents with moderate impairment may do some work tasks visually, rating the SRS requirement low, or may lose time switching between residual vision, magnification and speech. Lazar et al. (2007) showed how much time inaccessible content costs screen-reader users, and

such time would register as use above requirement. The label Above-Requirement is therefore kept neutral until outcome data are available.

In the private sector, the few Above-Requirement Users may reflect tightly defined tasks, and the higher Below-Requirement share may reflect inaccessible workplace software of the kind Branham and Kane (2015) reported. The absence of an income effect is plausibly explained by NVDA, which removes licence cost as a barrier.

9. Implications

9.1. Theoretical implications

Adoption models such as UTAUT (Venkatesh et al., 2003) explain whether people use a technology, not whether their level of use fits their work. Nearly a quarter of respondents (23.4%) had adopted SRS yet used it at a level their work did not warrant, so the fit of use deserves its own place in AT research.

Because under-use and over-use have different correlates, they cannot be treated as opposite ends of one scale with a common cause. The findings also extend the workplace matching logic of the Matching Person and Technology framework (Scherer & Craddock, 2002): the match depends less on who the user is and more on how the user learned and was supported. General computer skill and SRS-specific skill behaved differently here and should be measured separately.

9.2. Practical implications

For training providers, one programme appears insufficient. Respondents with one programme were more often below requirement (19.8%) than those with none (9.4%), while those with two or more rarely were (3.8%). A first programme may raise expectations of SRS without building the skill to meet them.

For rehabilitation professionals, users with 2–5 years of experience need follow-up. They are no longer treated as beginners and rarely receive formal support, yet a quarter of them fall short of what their work requires.

For employers, particularly in the private sector, inaccessible internal software and forms push employees to work around SRS. Reuschel et al. (2023) found such barriers even in the online job applications of large employers.

For users with moderate impairment, the high Above-Requirement share calls for assessment of whether the extra use is productive or reflects time lost switching between methods. For NVDA users, the majority, cost is not the barrier; advanced training and documentation for work applications, especially in regional languages, are the likelier gaps.

9.3. Policy implications

The Rights of Persons with Disabilities Act, 2016 requires reasonable accommodation in employment, which in practice often means supplying a computer and a screen reader. These findings suggest that software alone does not produce the level of use a job needs and that follow-up training belongs within accommodation. Device distribution schemes could include at least one follow-up session and record whether recipients use the device as their work requires. Phillips and Zhao (1993) and Federici et al. (2016) showed that devices are often provided without later checks on use; below-requirement use is a milder form of that problem.

10. Suggestions

10.1. To training institutions and NGOs

AT training could run in two stages: basic operation first, then a stage built around each participant's actual work tasks, such as documents, spreadsheets, e-mail, web forms and employer software. Advanced NVDA modules in Tamil and English, short enough to repeat, would suit working users. Success could be judged by whether participants complete their listed work tasks with SRS, not by attendance.

10.2. To employers

Employers could test internal software and forms with a screen-reader user before rollout, sponsor refresher training every two to three years, and name a contact for AT problems so that employees resolve them rather than work around them.

10.3. To rehabilitation professionals and government agencies

Follow-up contact at around two and five years of use, focused on whether use matches current work, would reach the users most likely to fall short. For users with moderate impairment, assessment could assign SRS, magnification and residual vision task by task. Distribution schemes could report follow-up training and use at work alongside devices distributed.

10.4. To visually impaired users

Users could list the tasks their work requires and note which they do with SRS, which another way and which they avoid; the list shows what to learn next. Experienced users, 80.1% of whom were Requirement-Matched in this sample, could mentor newer users through associations of visually impaired persons.

10.5. For future research

A multinomial logistic regression entering all significant characteristics together would show whether age, profession and marital status act separately. Outcome measures such as the Psychosocial Impact of Assistive Devices Scale (Jutai & Day, 2002) would show whether above-requirement use helps or costs users. Because the classification rests on self-ratings, objective usage records, supervisor ratings of work requirement and a longitudinal design would strengthen it.

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