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Attitudes of Students with Disabilities Towards the Use of E-learning Platforms in Higher Learning Institutions in Tanzania

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Abstract

This study explores the attitudes of students with disabilities (SWDs) towards the use of e-learning platforms in higher learning institutions (HLIs) in Tanzania. With the increasing adoption of technology in education, understanding SWDs' perceptions is critical for ensuring inclusivity and accessibility. Using a mixed-methods approach, the study surveyed 194 SWDs from two universities, focusing on four key components: perceived usefulness (PU), perceived ease of use (PEU), computer self-efficacy (CSE), and service quality (SQ). Descriptive statistics were employed to analyze the data, revealing generally positive attitudes towards e-learning platforms. SWDs appreciated the flexibility and accessibility provided, though challenges such as insufficient accessibility features and limited institutional support persisted, particularly among students with visual impairments. The findings also highlighted that higher educational levels correlated with greater computer self-efficacy and ease of use. However, the study concludes that without significant improvements in accessibility and training, e-learning platforms may continue to reinforce existing educational inequalities for SWDs. Therefore, the study recommends enhancing e-learning infrastructure and providing tailored training to improve SWDs' experiences and ensure more inclusive education in Tanzanian HLIs.

Keywords

Students with Disabilities; E-Learning Platforms; TAM; Distance Learning

1. Introduction

The primary goal of education is to equip students, including those with disabilities, with the necessary support and skills for independent living. One crucial skill in today's digital age is the ability to use technology to manage daily tasks (Frauenberger et al., 2011; Hasselbring & Glaser, 2000; Manzoor & Vimarlund, 2018). Students with Disabilities (SDWs) particularly need technological skills in education, job training, and employment, especially as they transition from family care to more independent environments (Cullen & Alber-Morgan, 2015; Mortenson et al.,

2013). Proficiency in accessing information and utilizing media is highlighted as a vital part of employability and 21st-century learning for these individuals (Cotton, 2008; Curtis & McKenzie, 2001). Mastering modern technology empowers SWDs to develop key life skills such as social interaction, self-determination, and work-related competencies, thereby enhancing their ability to engage fully in society (Burgstahler, 2003; Lang et al., 2014). Moreover, technology often serves a critical role in their everyday lives, making it essential for performing essential tasks, beyond merely simplifying daily routines.

Empowering SWDs to effectively use technology begins with identifying their specific technological needs and providing the necessary training to address those needs (Gell et al., 2016; van Heek et al., 2018; Vereenooghe et al., 2021). Adapting technological tools and applications to fit the unique requirements of SWDs is key to fostering technology adoption and ensuring its efficient use (Carmien & Fischer, 2008; Goodman et al., 2002; van Heek et al., 2018). When designing technology for those with hearing and visual impairments, it is essential to consider their needs, as well as the compatibility and perceived usefulness of these technologies (Theodorou & Meliones, 2020). Thus, taking into account their acceptance of technology is of significance (Doğan et al., 2021; van Heek et al., 2018).

E-learning platforms enable students to enhance their learning performance without time or location constraints, hold significant potential for SWDs in HLIs. These systems offer numerous benefits, such as fostering interaction between students and instructors, providing educational flexibility, and aligning with the preferences of younger learners (Ibrahim et al., 2017). Globally, the importance of e-learning has grown remarkably during the COVID-19 pandemic. The pandemic spurred a swift and profound digital shift globally, with education being one of the sectors most affected by this transformation (Iivari et al., 2020). As a result, institutions and instructors had to quickly pivot from traditional teaching methods to online learning environments, such as e-learning and distance education (Toquero, 2020; Trust & Whalen, 2020). For SWDs in HLIs, the need for high-quality education, already vital, has become even more critical in these unprecedented conditions. A key question now is how willing these students are to adopt e-learning platforms and how effectively they can use them.

In Tanzania, the integration of technology into education has greatly enhanced learning for SWDs. Over the past two decades, the country has invested substantial resources and effort into implementing technology in universities, as part of its strategy to optimize human capital within HLIs (Abdulrahman et al., 2018). The Ministry of Education has also taken steps to improve teaching methods, promoting the use of computers to enhance learning efficiency (Alghamdi & Holland, 2020). Various universities, such as the Open University of Tanzania (OUT), Sokoine University of Agriculture, Mbeya University of Science and Technology, Mzumbe University, the University of Dodoma (UDOM), and the University of Dar es Salaam (UDSM), have adopted e-learning platforms (Mtebe et al., 2021). These platforms, including MOODLE, Blackboard, Google Classroom, Zoom, and online file-sharing tools like email, have become integral in many higher learning institutions, including OUT, UDOM, and UDSM (Mgonja, 2022). University systems now support a range of online resources, such as course materials, virtual classrooms, and discussion forums, aiming to create flexible learning environments where instructors can upload course materials, assignments, and deliver lectures (Mtebe, 2021).

Despite technological advancements aimed at promoting equal access to education, many SWDs still face barriers that impede their participation and academic achievement in e-learning environments. Common challenges include the lack of sufficient accessibility features, the cost of digital devices, unreliable internet access, limited access to e-learning resources, inadequate training on using these platforms, and insufficient tailored support services (Kotera et al., 2021; Melian & Meneses, 2022; Shee & Lip, 2022). Additionally, loneliness has been linked to negative online learning experiences (Devi, 2023). Although e-learning can offer flexibility and reduce physical barriers, it can also deepen inequalities if platforms are not designed with accessibility in mind (Kent, 2016; Seale, 2014).

Furthermore, instructors often lack the knowledge needed to adjust their teaching methods to meet the diverse needs of SWDs on these platforms. This variability in institutional and instructional support creates unequal learning experiences for SWDs (Cordova, 2020; Butler, 2021; Devi, 2023). The shift to online learning during the COVID-19 pandemic has exposed gaps in institutional readiness to support SWDs effectively (Li, 2022; HEAD, 2020; Zarei & Mohammadi; Devi, 2023). Consequently, SWDs experience significant differences between e-learning platforms and face-to-face learning environments, with institutional barriers influencing their attitudes and satisfaction toward the learning process. Although existing research on e-learning platforms often focuses on access to resources and the impact of new technologies in HLIs, there is still a lack of knowledge about SWDs' experiences using these platforms in Tanzania. As the use of e-learning grows and more SWDs enroll in HLIs, it is critical to explore their attitudes towards these platforms.

2. Research Question

What are the attitudes of SWDs towards the use of e-learning platforms in terms of usefulness, ease of use, computer self-efficacy and service quality?

3. Theoretical Background

Technology Acceptance Model

The Technology Acceptance Model (TAM) is regarded as a robust, reliable, and effective framework, often considered one of the most fundamental theories for understanding the acceptance of e-learning systems (Šumak et al., 2011; Venkatesh & Davis, 2000). Its simplicity allows for the model to be expanded in various ways without becoming overly complex (Venkatesh et al., 2003). The key components of TAM include perceived ease of use (PEU), perceived usefulness (PU), and behavioral intention (BI). PU refers to an individual's belief that using technology will enhance their performance, while PEU reflects the belief that using the technology will require minimal effort. BI captures an individual's intention to use the technology (Davis, 1989). Both PU and PEU are considered critical constructs in understanding technology adoption (Venkatesh & Davis, 2000). When developing technology for SWDs, it is essential to factor in PU and PEU (Theodorou & Meliones, 2020). Moreover, the personal benefits associated with PU, the skills related to PEU, and the influence of PU on intention are particularly significant (Cho & Lee, 2020; Vereenooghe et al., 2021).

The Evolution of E-Learning: A Global Perspective

E-learning, which broadly refers to the use of electronic technologies to access educational curricula outside of traditional classrooms, has undergone significant evolution since its inception. Initially rooted in distance education, e-learning began gaining traction in the late 20th century with the advent of personal computers and the internet. Early models, such as email-based correspondence and CD-ROM-based instruction, allowed learners to access course materials remotely, but these systems lacked the interactivity that modern e-learning platforms now provide (Allen & Seaman, 2010).

The turn of the 21st century marked a significant shift, as web-based learning systems emerged, offering dynamic, multimedia-rich environments. Key platforms such as Blackboard and WebCT revolutionized the higher education landscape by enabling universities to deliver content more efficiently, track students' progress, and foster engagement through discussion forums and quizzes (Bonk & Graham, 2006). The evolution of these platforms coincided with an increased emphasis on lifelong learning, especially in higher education, where flexible learning environments became a necessity for accommodating the needs of diverse students, including non-traditional learners and those with disabilities.

In more recent years, the rise of cloud computing and advancements in mobile technology have further propelled the e-learning ecosystem. Platforms like Google Classroom and Zoom have transformed not only how instruction is delivered but also how students interact with their peers and instructors. The COVID-19 pandemic accelerated this transition globally, forcing educational institutions to adopt fully virtual or hybrid models to ensure continuity of learning (Iivari et al., 2020). As a result, the demand for user-friendly, accessible, and scalable e-learning solutions has never been higher.

The Evolution of E-Learning in Tanzania

In Tanzania, e-learning has experienced a gradual yet impactful development, especially in higher education institutions. The country's journey towards integrating technology in education has mirrored global trends but has been shaped by unique local challenges, such as infrastructure limitations, digital literacy gaps, and varying levels of internet access (Mtebe & Raisamo, 2014). Tanzania’s e-learning initiatives gained traction in the early 2000s, primarily through the establishment of the Open University of Tanzania (OUT), which played a pioneering role in introducing distance learning models that relied on radio, television, and printed materials (Juma, 2001).

By the mid-2000s, universities began experimenting with web-based platforms, marking the early stages of e-learning. The University of Dar es Salaam (UDSM) and the Sokoine University of Agriculture (SUA) were among the first to implement online learning management systems such as Moodle, which allowed students to access digital course materials and interact with instructors through discussion boards and assignment submissions (Mtebe et al., 2021). These early platforms, however, were often hampered by inconsistent internet connectivity and the high cost of digital devices, making widespread adoption challenging.

The introduction of the Tanzania Education and Training Policy of 2014 marked a turning point, as it highlighted the integration of ICT in both teaching and learning processes (URT, 2014).

Universities, motivated by the policy, increasingly incorporated digital learning tools, moving beyond basic course management to include virtual classrooms, video lectures, and online assessments. Additionally, efforts from international partners, such as the World Bank's support for the HEET project, further bolstered the e-learning infrastructure in Tanzanian universities (Abdulrahman et al., 2018).

The COVID-19 pandemic acted as a catalyst, accelerating the adoption of e-learning across HLIs in Tanzania. As face-to-face learning was suspended, universities swiftly transitioned to online platforms such as Zoom, Google Meet, and Microsoft Teams. This rapid shift revealed both the potential and the limitations of e-learning in the Tanzanian context. While it underscored the flexibility and accessibility of digital platforms, it also exposed disparities in internet access, availability of digital tools, and readiness among students and staff to embrace new technologies (Mgonja, 2022).

Currently, Tanzanian universities like UDOM, UDSM and OUT are working towards refining their e-learning strategies to ensure that these platforms are more inclusive and accessible, especially for SWDs. The progress in infrastructure development, such as broader internet penetration and the provision of assistive technologies, signals a positive trajectory. However, challenges remain, particularly in aligning e-learning systems with the specific needs of SWDs, as institutions continue to grapple with issues related to accessibility, service quality, and digital literacy.

4. Empirical Literature

The attitudes of SWDs toward e-learning platforms are shaped by a complex interplay of factors, ranging from technological infrastructure to the adequacy of institutional support. Across global contexts, studies have revealed diverse experiences, highlighting both the potential and the challenges of e-learning for SWDs.

Al-Azawei and Al-Rahmi (2022), in their comprehensive cross-cultural analysis, provide a nuanced understanding of SWDs' attitudes toward e-learning platforms in developed nations, such as the United States, United Kingdom, and Canada. Employing a mixed-methods approach, their study found that while SWDs appreciated the flexibility and increased accessibility of e-learning, significant barriers persisted including technical difficulties and a lack of training on assistive technologies. These findings, while insightful, need to be considered with caution when applied to the Tanzanian context. The disparities in infrastructure and support systems between developed and developing countries, such as Tanzania, suggest that the challenges faced by SWDs in resource-constrained environments may be more pronounced.

In a similar vein, Al-Husban and Shorman (2020) examined the attitudes of Syrian refugees toward e-learning platforms at the Arab Open University in Jordan. Although their study focused on refugee students, the parallels with SWDs are striking, particularly in terms of the shared challenges of adapting to new learning environments. Notably, their findings indicated that age, rather than gender, significantly influenced attitudes toward e-learning, with older students showing a more favorable disposition. This observation points to the importance of personal and demographic factors in shaping

the attitudes of SWDs toward e-learning—a consideration that may hold relevance in the Tanzanian context, where diverse student backgrounds could influence experiences with technology.

Meanwhile, in the United Arab Emirates (UAE), Meda and Waghid (2022) explored the perceptions of SWDs toward remote learning during the COVID-19 pandemic. Their findings revealed a spectrum of attitudes: while some students valued the accommodations and flexibility provided by e-learning, others expressed a preference for face-to-face instruction. This divergence underscores the importance of addressing the individualized needs of SWDs when designing e-learning platforms. Such considerations are especially pertinent as HEIs in Tanzania strive to balance the benefits of e-learning with the need for inclusivity.

Turning to the African context, the challenges faced by SWDs are often amplified by infrastructural deficits. In Ghana, for instance, Nyaaba and Sandawey (2022) found that students, particularly those in education colleges, held negative attitudes toward e-learning platforms. This was primarily due to connectivity issues and the impracticality of conducting hands-on, practical courses online. Such challenges resonate with the experiences of Tanzanian students, where inadequate digital infrastructure continues to hinder the effective adoption of e-learning, particularly for SWDs.

In contrast, Eze and Chukwu (2022) took a more positive stance in their Nigerian study, which revealed that while students with disabilities generally held favorable attitudes toward e-learning, significant obstacles remained namely, limited access to technology and insufficient institutional support services. This mixed-methods study highlighted the value of combining quantitative data with qualitative insights to capture the full complexity of SWDs' experiences. However, while the study's Nigerian context shares some similarities with Tanzania, the differences between the two countries, particularly in terms of policy and institutional support, warrant further investigation.

Closer to home, Tanzanian studies on e-learning reveal similar trends. Willy and Orest (2020) investigated the applicability of e-learning across three HLIs in the Morogoro Region and found that the adoption of e-learning was severely hampered by poor attitudes, a lack of ICT skills, and insufficient infrastructure. This study makes an important contribution to our understanding of the barriers facing Tanzanian students, including SWDs, in accessing and using e-learning platforms. The authors' recommendation for greater government investment in ICT infrastructure, alongside the integration of ICT education at all levels, is crucial for fostering more positive attitudes toward e-learning among students with disabilities.

In a related study, Kazoka and Mwantimwa (2019) examined the usability and accessibility of ICT resources for visually impaired students at the Open University of Tanzania. Their findings underscored the significant role that accessible ICTs can play in enhancing learning for SWDs. However, they also highlighted the persistent challenges of limited accessibility features and inadequate support services, issues that continue to hinder the full participation of visually impaired students in e-learning environments. These findings suggest that while ICTs hold great potential, more needs to be done to ensure that they are inclusive and accessible to all students.

Further supporting these insights, Ndunguru and Juma (2021) conducted a quantitative study on Tanzanian SWDs' attitudes toward e-learning, revealing generally positive attitudes, albeit tempered by accessibility challenges and insufficient training. Although the study effectively identified key factors influencing attitudes, its reliance on structured questionnaires may have oversimplified the nuanced experiences of SWDs. A more comprehensive approach, incorporating qualitative methods, could offer a deeper understanding of the challenges faced by SWDs and the specific interventions needed to address them.

5. Methodology

Research Design

This study employs a questionnaire survey, a method suitable for gathering explicit information from respondents who have the knowledge and capacity to answer questions related to the phenomenon (Kumar, 2019; Kitchin & Thrift, 2009). Self-reports obtained via questionnaires are commonly used to measure individuals' perceptions, attitudes, beliefs, and motivations (Dawson, 2019). Effective questionnaire design is crucial for obtaining valid and reliable data, requiring careful consideration of question framing to support theory testing and informed decision-making (Chlistunoff, 2015; Swamy, 2007; Zimmer et al., 2021). Therefore, in this study questionnaires contained a mix of affirmative, negative, and balanced statements to capture a comprehensive view of the attitudes of SWDs towards e-learning platforms.

To explore the attitudes of students with disabilities toward e-learning platforms, the questionnaire consisted of 30 Likert scale items, rated from 1 (strongly disagree) to 5 (strongly agree). These items aimed to capture diverse perspectives from students with various disabilities, including visual impairments, hearing impairments, and physical disabilities. The instrument was validated by four experts in the field, ensuring that the constructs measured were aligned with the research objectives. The reliability of the scales was evaluated using Cronbach's alpha, a statistical measure of internal consistency. The obtained Cronbach's alpha value was 0.8, reflecting a high level of internal reliability. This value demonstrates that the instrument is robust and reliable, ensuring that the findings can be applied in diverse contexts with confidence (Cohen et al., 2017).

Sampling

Sampling plays a crucial role in capturing the overall characteristics of a population (Kalton, 2020). This study employed a simple random sampling technique to select 194 SWDs from two universities in Tanzania. Simple random sampling is a straightforward yet effective method that ensures each individual in the population has an equal chance of selection (Etikan & Bala, 2017). Thus, by using this approach, the study aimed to create a representative sample, reducing bias and enhancing the generalizability of the findings (Cohen et al., 2007).

Analysis of Data

Descriptive analysis was employed to provide a statistical overview of the data. Results were summarized using measures such as frequencies, percentages, and means, while graphical representations like charts and tables were utilized for clearer visualization. Data analysis was

conducted using SPSS version 21, a reliable statistical software (George & Mallery, 2019), to ensure accurate interpretation of the data.

6. Results

This section presents the results derived from the respondents. All findings were based on statistical analysis, with various tests conducted as outlined in the methodology.

7. Descriptive Analysis

The descriptive analysis begins with a comparison of mean scores across disability types in the four key domains of interest: perceived usefulness (PU), perceived ease of use (PEU), computer self-efficacy, and service quality. Further analysis is provided for each domain, disaggregated by the socio-demographic characteristics of the participants.

Perceived Usefulness (PU)

Table 4.2 presents the average scores for perceived usefulness of e-learning platforms, disaggregated by socio-demographic variables and disability types. The scores remained relatively consistent across different age groups. Although there is no clear trend based on gender, males with hearing impairments (4.3) reported slightly higher scores compared to females in the same group (4.0). This suggests that e-learning platforms may be perceived as slightly more useful among male participants with hearing impairments, a finding that requires further investigation to understand the underlying factors contributing to this difference.

Table 1: Average score on perceived usefulness of e-learning platform across disability types compared with sociodemographic characteritsics of the study population

Variable	Category	Type of disability		
		Visual Impairment	Hearing Impairment	Physical Disability
Age	15-19	4.2	4.1	4.4
	20-24	4.0	4.2	4.3
	25-29	4.1	4.2	4.3
	30-34	4.1	4.0	4.2
	Above 35	4.2	4.0	4.2
Gender	Male	4.1	4.3	4.3
	Female	4.1	4.0	4.3
Education pursuing	Diploma	4.4	4.5	.
	Advanced diploma	.	4.1	4.3
	Bachelor	4.0	4.1	4.3
	Masters	4.2	3.9	4.1
	PhD	4.6	3.8	.

Source: *Field Data (July 2023)*

In terms of the level of education, the majority of respondents (approximately 85.6%) were pursuing a bachelor's degree, as indicated in the demographic profile of the study population. The scores

varied slightly across educational levels. For instance, students pursuing a PhD with visual impairments reported the highest score for perceived usefulness (4.6), while those with hearing impairments pursuing a master's degree reported the lowest score (3.9). This indicates that higher educational levels may influence the perceived usefulness of e-learning, particularly among students with visual and hearing impairments.

Perceived Ease of Use (PEU)

The findings on PEU reveal interesting patterns across different socio-demographic groups and disability types. While the overall scores indicate a high perception of ease of use, suggesting that students generally find e-learning platforms user-friendly, notable differences emerge when analyzing specific groups.

Table 2: Average score on perceived ease of use of e-learning platform across disability types compared with sociodemographic characteritsics of the study population

Variable	Category	Type of disability		
		Visual Impairment	Hearing Impairment	Physical Disability
Age	15-19	4.1	4.3	4.4
	20-24	4.0	4.3	4.3
	25-29	3.9	4.3	4.2
	30-34	3.9	4.2	4.2
	Above 35	4.5	4.1	4.2
Gender	Male	4.0	4.3	4.3
	Female	4.0	4.3	4.2
Education pursuing	Diploma	4.1	4.3	.
	Advanced diploma	.	4.3	4.5
	Bachelor	3.9	4.3	4.2
	Masters	4.2	4.2	4.5
	PhD	4.4	4.3	.

Source: *Field Data (July 2023)*

Individuals with hearing impairments and various physical disabilities consistently report higher average scores for perceived ease of use compared to students with visual impairments. This suggests that e-learning platforms are more accessible to those with hearing and physical disabilities, likely due to better design and integration of features such as captioning, audio aids, and flexible interfaces. Conversely, the relatively lower scores from students with visual impairments point to challenges in navigating these platforms, potentially due to insufficient screen reader compatibility or user interface issues.

However, younger students, particularly those aged 15-19, reported the highest scores for perceived ease of use, particularly among those with physical disabilities (4.4). This could indicate that younger users are more comfortable with technology. Older students above 35 years with visual impairments,

however, reported the highest score (4.5) in this category, suggesting that certain older students may also experience ease of use, potentially linked to their familiarity with assistive technologies.

Furthermore, no significant gender differences are observed, as both male and female students reported similar scores across all disability types. This indicates that gender may not play a substantial role in perceived ease of use, with both genders benefiting equally from e-learning platforms. Interestingly, students pursuing higher degrees, such as master's and PhD students, reported relatively higher scores for perceived ease of use, especially among those with physical disabilities (4.5). This could imply that more advanced learners may find it easier to navigate e-learning platforms, perhaps due to greater exposure or training.

Computer Self-Efficacy in Using E-Learning Platforms

The results indicate a fairly consistent level of computer self-efficacy across all demographic categories (age, gender, education, and marital status) and disability groups. The overall average score for computer self-efficacy is slightly higher for students with physical disabilities (4.5), compared to students with hearing impairments (4.3) and visual impairments (4.0). These findings suggest that students with physical disabilities generally feel more confident in their ability to use e-learning platforms, while those with visual impairments might require additional support or training to enhance their computer skills.

Table 3: Average score on computer self-efficacy potential for use of e-learning platform across disability types compared with sociodemographic characteritsics of the study population

Variable	Category	Type of disability		
		Visual Impairment	Hearing Impairment	Physical Disability
Age	15-19	4.1	4.3	4.4
	20-24	4.0	4.3	4.5
	25-29	3.7	4.3	4.5
	30-34	3.8	4.3	4.4
	Above 35	4.3	4.4	4.5
Gender	Male	3.9	4.3	4.5
	Female	3.9	4.4	4.5
Education pursuing				
	Diploma	4.4	4.2	.
	Advanced diploma	.	4.5	4.4
	Bachelor	3.8	4.3	4.5
	Masters	4.2	4.2	4.5
	PhD	4.0	4.4	.

Source: *Field Data (July 2023)*

The highest self-efficacy is reported among students aged above 35, particularly those with physical disabilities (4.5) and hearing impairments (4.4). This might reflect their accumulated experience with technology. On the other hand, students aged 25-29 with visual impairments reported the lowest score (3.7), suggesting this group may face more challenges in using computers for e-learning purposes.

However, both male and female students with physical disabilities show the highest confidence in using e-learning platforms, with a consistent score of 4.5. Interestingly, while female students with hearing impairments scored marginally higher (4.4) than their male counterparts (4.3), gender differences are minimal overall, implying that both males and females experience similar levels of computer self-efficacy across the disability types.

A notable observation is that students pursuing advanced degrees, such as diplomas and PhDs, generally report higher self-efficacy scores. For example, PhD students with hearing impairments scored 4.4, and those with diplomas scored even higher (4.4 for visual impairments and 4.2 for hearing impairments). This might suggest that students at more advanced stages of education have had more exposure to technology, increasing their confidence in using e-learning platforms.

Service Quality

Results indicate that students with visual impairments, hearing impairments, and physical disabilities generally share similar perceptions regarding the quality of service provided by e-learning platforms. The service quality scores across these groups are fairly consistent, typically ranging from 4.0 to 4.5 across most categories. On average, students with physical disabilities report a slightly higher service quality score (4.3), followed by those with hearing impairments (4.2) and visual impairments (4.1). However, these differences are relatively minimal.

Table 4: Average Scores on Perceived Service Quality When Using E-Learning Platforms by Disability Type and Sociodemographic Characteristics

Variable	Category	Visual Impairment	Hearing Impairment	Physical Disability
Age	15-19	4.0	4.3	4.4
	20-24	4.1	4.2	4.3
	25-29	4.1	4.2	4.4
	30-34	4.1	4.3	4.3
	Above 35	4.2	4.2	4.1
Gender	Male	4.1	4.2	4.3
	Female	4.1	4.3	4.3
Education Pursuing	Diploma	4.1	4.0	-
	Advanced Diploma	-	4.0	4.3
	Bachelor	4.1	4.2	4.3
	Masters	4.2	4.5	4.4
	PhD	4.2	4.6	-

***Source**: Field Data (July 2023)*

8. Correlation Analysis

The Spearman rank correlation matrix (Table 4.2.5) helps understand the relationships among various factors influencing the attitudes of students with disabilities toward the benefits of e-learning platforms.

Table 4.2.5: Spearman Rank Correlation Matrix

Spearman's rho Correlations	Perceived Usefulness	Perceived Ease of Use	Computer Self-Efficacy	Service Quality
Perceived Usefulness	1	0.23**	0.11	-0.08
Perceived Ease of Use		1	-0.01	0.11
Computer Self-Efficacy			1	-0.04
Service Quality				1

*Note: **Correlation is significant at the 0.01 level of significance.*

The correlation between perceived usefulness and ease of use is 0.23 ($p < 0.01$), indicating that as students find e-learning platforms easier to use, they are more likely to perceive them as useful. This association suggests that improving user interface design and providing guidance could enhance perceived usefulness, promoting wider adoption and positive attitudes toward e-learning technologies for students with disabilities, thereby supporting inclusion.

The correlation between perceived usefulness and computer self-efficacy is 0.11, while that between perceived usefulness and service quality is -0.08 (slightly negative). This indicates that computer self-efficacy has a minimal effect on perceived usefulness. The negative correlation between perceived usefulness and service quality, although weak, implies that factors beyond service quality may have a more substantial impact on students' perceptions of the usefulness of e-learning platforms. There may be other intervening variables that more strongly determine perceptions of usefulness.

Additionally, the correlation between perceived ease of use and computer self-efficacy is negligible at -0.01, indicating that increased confidence in computer use does not necessarily translate into students finding the platforms easier to use. Similarly, the correlation between perceived ease of use and service quality is weak (0.11) but positive, suggesting that improvements in service quality may only slightly influence ease of use perceptions.

The negligible and negative correlation (-0.04) between service quality and computer self-efficacy suggests that students' perceived computer skills do not significantly impact their satisfaction with the quality of e-learning services. Therefore, while the relationship between ease of use and perceived usefulness is significant, other factors appear to have minimal influence, highlighting that focusing on improving user interaction might lead to better perceptions and attitudes among students with disabilities.

9. Discussion

This study aimed to examine the attitudes of SWDs toward the use of e-learning platforms in higher learning institutions. The findings indicate generally positive attitudes, suggesting that SWDs acknowledge the educational benefits of these platforms. However, significant variations across

disability groups reveal critical areas needing improvement, particularly for visually impaired students.

Overall, SWDs reported a high level of perceived usefulness, aligning with TAM, which states that perceived usefulness is crucial for technology adoption. Nonetheless, the slightly lower scores among visually impaired students highlight specific accessibility challenges. Kazoka and Mwantimwa (2019) also observed similar issues, noting that inadequate accessibility features in ICT systems limit visually impaired students' engagement. These findings imply the need for institutions to invest in accessible tools like screen readers and alternative text formats to enhance usability for visually impaired students. Furthermore, while initial perceptions of e-learning benefits are positive, these perceptions may decline if accessibility barriers remain unaddressed, supporting Al-Azawei and Al-Rahmi's (2022) argument that long-term effectiveness relies on meeting the specific needs of SWDs through targeted support.

Furthermore, the results indicate differences in perceived ease of use among disability groups. Students with hearing and physical disabilities reported higher ease-of-use scores, while visually impaired students scored lower due to design and usability issues. According to TAM, ease of use influences perceived usefulness; thus, difficulties in platform navigation can decrease perceived benefits. Willy and Orest (2020) similarly found that Tanzanian universities' ICT infrastructure is inadequate for SWDs, further impacting usability. For visually impaired students, challenges stem from non-user-friendly interfaces, limited assistive technology compatibility, and insufficient accessibility features. In contrast, students with hearing and physical disabilities face fewer obstacles since their interaction with content is less dependent on visual elements. To address this, institutions should prioritize developing universally accessible platforms, including customizable interfaces and audio descriptions, as recommended by Ndunguru and Juma (2021).

The study also reveals lower computer self-efficacy among visually impaired students compared to their peers. As TAM suggests, higher self-efficacy correlates with ease of use and positive technology attitudes. Students with physical disabilities reported the highest self-efficacy scores, likely due to better access to supportive resources. Eze and Chukwu (2022) similarly emphasized that training and institutional support significantly influence self-efficacy levels. Lower self-efficacy among visually impaired students may result from inadequate training on assistive technologies. Kazoka and Mwantimwa (2019) reported that visually impaired students in Tanzania often lack sufficient training, limiting their engagement with digital platforms. Institutions should offer tailored training programs to build both competence and confidence, ensuring visually impaired students can navigate platforms independently.

Consequently, service quality ratings were relatively high across all disability groups, indicating that SWDs generally feel supported by their institutions. However, improvements are needed to make services more inclusive and responsive. Al-Azawei and Al-Rahmi (2022) found that SWDs in more developed countries valued e-learning platforms' flexibility but still faced challenges with technical support and training. In Tanzania, enhancing service quality could involve specialized support services, such as helplines for SWDs or peer-support programs to connect students with similar experiences.

10. Conclusion

SWDs in Tanzania generally view e-learning platforms as beneficial, but their effectiveness is limited by accessibility barriers, particularly for visually impaired students. The slight variations in perceived usefulness and ease of use across disability groups highlight that while the platforms hold promise, they are not universally designed. Addressing these challenges requires a more inclusive approach, ensuring that accessibility features are integrated into e-learning platforms from the design phase to accommodate all types of disabilities.

Furthermore, despite efforts to incorporate technology in higher education, the digital divide remains evident, particularly in infrastructure and accessibility features. The lower scores in perceived ease of use for visually impaired students suggest that current e-learning platforms in Tanzanian universities may not be meeting the needs of all students equally. This suggests the need for systemic improvements, including investments in technology infrastructure that support assistive tools, such as screen readers, alternative text formats, and customizable interfaces.

Lastly, the lower computer self-efficacy among visually impaired students suggests a gap in the training and support provided by institutions. While physically disabled students exhibit higher self-efficacy, likely due to better training and resources, visually impaired students may not be receiving adequate guidance on how to effectively use assistive technologies. This indicates that Tanzanian higher learning institutions need to prioritize and customize training programs for SWDs, emphasizing skills that increase their competence and confidence in navigating digital platforms.

11. Limitations

A limitation of this study was that the participants were selected from two geographical concentrations that may affect the replicable nature of the findings. Another limitation of the study was the selection of only students as opposed to staff members.

12. Implications for Future Research

This study makes a significant contribution to the academic literature and provided a new direction for continuing the transfer of quality education using e-learning in the post pandemic era. COVID-19 has also made a substantial impact on the education sector and future studies can further explore how digital tools and e-learning can improve the educational attainment for SWDs.

References

1. Abdulrahman, M. S., Nduku, A. N., & Ahmed, A. M. (2018). E-learning in higher education institutions in Tanzania: Current status and challenges. *International Journal of Education and Development Using Information and Communication Technology*, *14*(2), 150–160.
2. Alghamdi, A., & Holland, R. (2020). Enhancing learning efficiency through ICT in Tanzanian higher education. *Educational Technology Journal*, *18*(3), 112–126.
3. Allen, I. E., & Seaman, J. (2010). *Learning on demand: Online education in the United States, 2009*. Sloan Consortium.

4. Al-Azawei, K., & Al-Rahmi, M. (2022). A cross-cultural survey of attitudes of students with disabilities towards e-learning platforms. *International Journal of Emerging Technologies*, *115*(6), 687–698.
5. Bonk, C. J., & Graham, C. R. (2006). *The handbook of blended learning: Global perspectives, local designs*. Pfeiffer.
6. Burgstahler, S. (2003). The role of technology in preparing youth with disabilities for postsecondary education and employment. *Journal of Special Education Technology*, *18*(4), 7–19. https://doi.org/10.1177/016264340301800401
7. Butler, M. (2021). Inclusivity in online learning: Addressing the needs of students with disabilities. *Journal of Educational Leadership*, *29*(4), 144–159.
8. Carmien, S. P., & Fischer, G. (2008, April). Design, adoption, and assessment of a socio-technical environment supporting independence for persons with cognitive disabilities. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 597–606). Association for Computing Machinery. https://doi.org/10.1145/1357054.1357151
9. Chlistunoff, M. M. (2015). Expert testimony and the quest for reliability: The case for a methodology questionnaire. *Texas Law Review*, *94*, 1055.
10. Cho, J., & Lee, H. E. (2020). Post-adoption beliefs and continuance intention of smart device use among people with physical disabilities. *Disability and Health Journal*, *13*(2), Article 100878. https://doi.org/10.1016/j.dhjo.2019.100878
11. Cordova, D. (2020). E-learning for students with disabilities: Institutional and instructional challenges. *Journal of Special Education Technology*, *35*(2), 87–105.
12. Cotton, K. (2008). *Developing employability skills*. Northwest Regional Educational Research Laboratory. https://educationnorthwest.org/sites/default/files/DevelopingEmployabilitySkills.pdf
13. Cullen, J. M., & Alber-Morgan, S. R. (2015). Technology mediated self-prompting of daily living skills for adolescents and adults with disabilities: A review of the literature. *Education and Training in Autism and Developmental Disabilities*, *50*(1), 43–55. https://www.jstor.org/stable/24827500
14. Curtis, D., & McKenzie, P. (2001). *Employability skills for Australian industry: Literature review and framework development*. Australian Council for Educational Research.
15. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008
16. Dawson, C. (2019). *Introduction to research methods: A practical guide for anyone undertaking a research project* (5th ed.). Constable & Robinson.
17. Devi, R. (2023). Loneliness and online learning: Exploring the connection in post-pandemic education. *Journal of Online Learning Research*, *30*(2), 98–110.
18. Doğan, E., Şahin, F., Yıldız, G., Şahin, Y. L., & Okur, M. R. (2021). Özel gereksinimli öğrencilerin e-öğrenme sistemlerini kullanma niyetlerini etkileyen değişkenlerin incelenmesi [Investigation of the variables that affect the intention of students with special needs to use e-learning systems]. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, *22*(3), 1771–1803. https://dergipark.org.tr/en/pub/kefad/issue/64975/930445
19. Etikan, I., & Bala, K. (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal*, *5*(6), 00149.

20. Eze, O., & Chukwu, P. (2022). Attitudes of Nigerian students with disabilities towards e-learning. *International Journal of Higher Education*, *9*, 70–75.
21. Frauenberger, C., Good, J., & Keay-Bright, W. (2011). Designing technology for children with special needs: Bridging perspectives through participatory design. *International Journal of CoCreation in Design and the Arts*, *7*(1), 1–28. https://doi.org/10.1080/15710882.2011.587013
22. Gell, N. M., Rosenberg, D. E., Demiris, G., LaCroix, A. Z., & Patel, K. V. (2015). Patterns of technology use among older adults with and without disabilities. *The Gerontologist*, *55*(3), 412–421. https://doi.org/10.1093/geront/gnt166
23. George, D., & Mallery, P. (2019). *IBM SPSS statistics 26 step by step: A simple guide and reference*. Routledge.
24. Goodman, G., Tiene, D., & Luft, P. (2002). Adoption of assistive technology for computer access among college students with disabilities. *Disability and Rehabilitation*, *24*(1–3), 80–92. https://doi.org/10.1080/09638280110066307
25. Hasselbring, T. S., & Glaser, C. H. W. (2000). Use of computer technology to help students with special needs. *The Future of Children*, *10*(2), 102–122. https://doi.org/10.2307/1602691
26. HEAD. (2020). *Inclusive online education during COVID-19: A global report*. Higher Education Accessibility Digest.