

A Comprehensive Analysis of Accessibility Features in Workplace Document Tools

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ABSTRACT

Accessibility features of Workplace document tools such as Microsoft Office and Google Docs in terms of their impact on people with disabilities are researched. The paper examines the key features, including compatibility with the feature of screen readers and voice-to-text input and keyboard navigation, while discussing the issues faced. Emerging technologies like AI are described and the possible applications of such technology in improving accessibility and recommendations for further improvement.

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Introduction

Background

The study discusses the “Enhancing Inclusivity: A Comprehensive Analysis of Accessibility Features in Workplace Document Tools”. In this paper, an exploration of the accessibility features of the most common workplace document tools, which include Microsoft Office, Google Docs, and Google Sheets, is undertaken with the aim of targeting people with impaired capabilities. Software developers are focusing more and more on the accessibility of office document products, particularly as businesses strive to establish more accessible workplaces [1]. The aim of this paper is to compare the productivity and inclusiveness profiles that people with different abilities achieve through accessibility features. It also examines the disability challenges and new trends of AI and automation in enhancing accessibility, representing best practices for office document tool upgrades to make the office environment more friendly.

Research Aim

The study aims to examine the accessibility of office document tools like Google Docs, Microsoft Office, and Google Sheets, as well as other office-related applications, determining their advantages, features, challenges, future trends and solutions associated with accessibility for users with disabilities.

Research Objectives

- To evaluate the usefulness of the accessibility features that are currently offered in well-known office document applications for people with disabilities.
- To determine the typical difficulties that people with disabilities encounter while using office applications and investigate the ways in which these tools either solve or fail to solve those difficulties.
- To analyse the accessibility features advantages in improving productivity and inclusivity for users of differing abilities, focusing on certain features like screen reader compatibility, keyboard navigation and voice-to-text.

- To assess industry trends in the accessible office tools development, examining how emerging technologies like AI, automation and machine learning are intensifying the office applications accessibility.
- To present best practices and solutions for upgrading the office document tools accessibility, involving suggestions for organizations and developers executing these applications.
- To examine the accessibility’s future scope in office document tools, investigating how technological advancements and evolving standards can further empower people with disabilities in the workplace.

Literature review

In this part, the investigator will analyse the diverse published journal papers along with research articles to understand and gain in-depth knowledge about accessibility features in office documents tools and also identify challenges and potential solutions.

Accessibility Features in Popular Office Document Tools

Office document tools have developed accessibility features with Microsoft Office, Google Docs, Google Sheets, and Google Slides to be made more accessible to persons with disabilities. For instance, Microsoft Office has integrated a built-in screen reader called Narrator, dictation speech-to-text capability, and an Accessibility Checker, among others, to enable users to verify if their documents are accessible [2]. This, too, provides immersive reading modes to aid visual impairments or dyslexia by changing the size and spacing of text and font. In a similar way, Google Docs, Sheets, and Slides provide voice typing support as well as compatibility with screen readers and keyboard shortcuts in support of individuals with mobility challenges. These features ease navigation and the ability to create documents for users with disabilities on both platforms, providing a form of accessibility baseline [3].

Although these tools are available, their effectiveness also differs based on the nature of the disability. For those with visual impairment, both Microsoft Office and Google's suite of tools are compatible for use in screen readers, but the difference in the effectiveness will tend to differ from one user to another due to technical savviness or possibly the screen reader itself. While both have significantly advanced in terms of screen reader support, users may say that screen readers cannot break down complicated documents or spreadsheets, especially with advanced functions while using Google Sheets [4]. And although the real-time collaboration functionality in Docs and Slides is indeed a brilliant use of technology to most of its users, it's also pretty overwhelming for people with disabilities—users are getting constant updates and live edits, and this can be really overwhelming for screen readers, or in many cases, disjointed experiences.

With AI-driven accessibility features such as predictive text, automated captions, and many more, users with disabilities can achieve another level of effectiveness. Automated live captions in Google Slides aid users with hearing impairments to easily follow through on presentations in real-time, a feature that is replicated in Microsoft PowerPoint through automatic live captioning and translation, thereby making meetings and presentations more inclusive [5]. However, these AI-based features are not error-free and struggle with accents, technical terms, or poor audio quality. These are important steps toward making this accessible, but there remains a lot of development work for such features to be correct and relied upon in the future.

Common Challenges Faced by Users with Disabilities in Office Applications

Despite all these progressions, office application users with disabilities may still face common challenges. Issues like the inconsistency of different screen readers across devices or platforms, hence making the effective navigation of documents would be hard [6]. This is more so on highly complex documents like spreadsheets and presentations, where visual features like graphs or charts are very hard to interpret by screen readers. In addition, computer users with certain motor impairments have problems using and modifying particular tools like Google Sheets or Excel because they are based on adequate mouse use, and voice control is also limited, even for the needs of non-keyboard or mouse usability [7].

Another issue is inconsistent access across features. Indeed, although text-based documents receive good support from tools like Microsoft Word and Google Docs, Google Slides and PowerPoint may not present and edit multimedia content in the same way; and it may be difficult for deaf users to access information based on audio if closed captioning or transcripts are not available. Accessibility with these tools is usually accomplished as an afterthought in most cases, which in turn leaves much more to be desired in terms of how such resources actually cater for users with different kinds of disabilities [8].

As much as Google and Microsoft have striven for the betterment of their accessibility, there are still gaps in completely addressing these issues. For example, there could still be an overload of information in regard to those suffering from cognitive diseases like dyslexia or ADHD when users are faced with cluttered user interfaces or complicated document structures [9]. While immersion reading modes and document view simplification are useful aids, at times the actual source of the problem is not being addressed: a bad design choice by the document author, or possibly the task in question has inherent complexity, and the tools are

lacking in helping to make that workspace fully accessible. This is an area where innovation and improvements in user-centred design are still needed.

Accessibility Features in Improving Productivity and Inclusivity

Accessibility functions in electronic resources, such as ensuring screen reader compatibility, are the levers through which productivity and inclusion will be enhanced for users with different abilities. Screen readers emit voice output, thereby describing the features on the screen to make the software and its web-based content accessible to people who are visually challenged [10]. Through it, users who are vision impaired or have low vision can move around an application or website and open documents to read, draft emails, or work with files among other things. It increased the support of popular screen readers such as JAWS and NVDA, through which a user could interact smoothly with current office tools and overcome the limitations of traditional visual interfaces presented, leading to greatly increased productivity. Another important feature which is friendly for any user with motor disabilities or who cannot use a mouse to navigate easily is keyboard navigation [11]. A large number of users interact with software using keyboards because it allows them to control and organize access to features in a much more controlled and structured way. Thus, software applications include keyboard shortcuts and focus indicators so that people can navigate menus, create content, and perform many more things without the help of the mouse. Such facilitations not only empower the people with disabilities but also efficiency enhancement for all because these facilities also provide quick ways to get things done [12].

Voice-to-text features greatly facilitate productivity among users, especially those with physical impairments, dyslexia, or a condition which makes typing considerably difficult. Users can communicate word processing applications, email, or even search fields by dictation, hence reducing the need to type [13]. Further, the recent voice-to-text technology is increasingly accurate, leading to minimal errors and greater fluidity in creating text. This means increased accessibility of tool usage for those with physical disabilities and provides an efficient alternative that is hands-free for those at times when it is inconvenient or impossible to type.

Industry Trends in Accessible Office Tools Development

The office tools market is widely improved by being accessible with newer technologies like AI, automation, and machine learning dominating the wave. Such technologies allow the tailoring and adaptation of various accessibility features. For example, AI-based screen readers become smarter and can understand complex web layouts and dynamic content to deliver better descriptions and interactions [14]. Automation improves the accessibility aspect by making repetitive steps easier to execute, giving users with disabilities the possibility of achieving more in fewer steps. The trend has made office applications more inclusive as they recognize and respond to diverse user needs in real-time.

Automation in office tools is also penetrating into workflows that support access. The automation system will determine automatically when a user may require certain accessibility features and can alter the interface correspondingly. Applications may even offer automatic activation of screen readers, text size scaling, or voice commands depending on user behaviour or preferences [15]. Therefore, it will adapt to allow people with different abilities without requiring someone to adjust each setting to operate the software properly. This is an increasingly dynamic result since these technologies are burgeoning, and the rising

ecosystem of tools that are designed to collaborate dynamically with each other, as well as different users, to serve both inclusivity and productivity.

Machine learning extends accessibility even more to include some degree of predictability and support for features. For instance, predictive text, and grammar correction, via machine learning can aid people with impaired cognition or those who find difficulty writing. The technology learns to understand the user's writing style makes contextual suggestions and improves fluency in writing [16]. For example, an application of machine learning and voice-to-text accuracy could be embedded within systems that could integrate real-time transcription tools for deaf or hard-of-hearing users. Office tool innovations had to advance toward smarter, more intelligent interpretations of accessibility standards, not just meeting them but also anticipating needs for usage in an inclusive work environment [15].

Best Practices and Solutions for Upgrading Office Document Tools Accessibility

- To adequately update office document tools in terms of accessibility, organizations and developers must embrace a user-centered approach and engage best practices throughout the development lifecycle [17]. Among these solutions is accessibility requirements that would work with other assistive technologies such as screen readers, magnifiers, and speech recognition software.
- Developers should construct tools to be WCAG and Section 508 compliant, well-established frames of reference for accessing digital content [18]. This will mean the use of semantic HTML and ARIA attributes-the Accessible Rich Internet Applications-to produce such documents that will be read correctly by the screen readers [19]. That might enable organisations to place such kinds of standards within their development process in order to deliver office tools that can be used by more people.

The Future Scope of Accessibility in Office Document Tools

The future of office documents becoming accessible is bright, not only because of further improvements in technology but also due to the continuing evolution of accessibility standards. It will continue to further empower the users with disabilities in the workplace. Office tools will become more adaptive and more intuitive in their utilization owing to AI power [19]. This can be demonstrated by the improvement in features such as text-to-speech and speech-to-text functionalities through improvements in language processing and making adjustments in real time based on user preference or behavior. At any given time, machine learning algorithms can also examine user interactions to suggest the best accessibility option, and the software automatically decides and adjusts to the needs of the individual. This dynamic personalization will transform the workplace: office tools become more responsive and user-friendly for people of all abilities.

Theoretical Frameworks Technology Acceptance Model

The Technology Acceptance Model, in the context of understanding how people with disabilities, as well as able-bodied users, relate to using office document tools such as Microsoft Office, Google Docs, among other applications, may be very instrumental. TAM identifies two key drivers that affect the acceptance of technology: perceived usefulness and perceived ease of use [20]. These factors, within the accessibility area, can be employed for measuring up to what extent users with all kinds of needs can correctly understand the accessibility features of office tools of this kind, such as screen

readers, voice commands, keyboard shortcuts, and all. The more these accessibility features are useful and intuitive for work by users with many kinds of disabilities, the more likely they will use them and continue using them in the long term.

TAM can also provide guidance on how to increase these applications' accessibilities for developers and organizations. This can be achieved by emphasizing how easy accessibility features are (for example, how accessibility features in navigation help users with mobility issues, simplification of navigation, or increasing accessible capabilities when it comes to work-related activities-from documents that one can read easily to a screen reader for visually impaired users) [20]. This will encourage wider adoption through such organizations. TAM-based understanding of user acceptance brings out exactly where improvement is needed in providing any accessibility to a person, and hence it supports the objective of creating more accessible office environments.

Conclusion

The study shows tremendous strides have been made in all areas of making office document tools, such as Microsoft Office and Google Docs, with huge scope for increasing accessibility and usability for users with disabilities. There is still room for improvement in dealing with complex documents and ensuring flawless screen reader functionality. AI and machine learning are part of the emergence of new technologies which are quite promising as enhancements to further improve accessibility. The use of user-centred design and best practice ensures that organizations and developers are creating more inclusive, adaptive tools that suit the needs of the target group of individuals.

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