

Accessibility Analysis of AZ TechMart Website

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Introduction

This report evaluates the accessibility of the AZ TechMart website, using the WAVE Web Accessibility Evaluation Tool. The aim is to ensure the website meets accessibility standards, making it usable for everyone, including people with disabilities.

The AZ TechMart website includes key pages like Home, About, Product Enquiry, Product, and Manager Order Report. Each page was assessed to identify potential accessibility barriers that could hinder usability or limit interaction, particularly for users with disabilities.

The findings showed no critical accessibility errors across the site, demonstrating solid compliance with accessibility standards. However, minor issues, including contrast errors and alerts, were detected. This report outlines these issues and provides recommendations to make the website more inclusive and enhance the overall user experience.

Methodology

The accessibility of the AZ TechMart website was evaluated using the WAVE Web Accessibility Evaluation Tool, which provides detailed analysis of accessibility concerns that could impact users. Five main pages were reviewed:

1. Home Page (index.php)
2. About Page (about.php)
3. Product Page (product.php)
4. Product Enquiry Page (enquire.php)
5. Manager Order Report Page (manager.php)

Each page was analyzed individually to identify errors, alerts, contrast issues, and other accessibility features. The evaluation process included:

1. Running each page through WAVE to generate a detailed report of accessibility issues.
2. Analyzing the findings, including errors, alerts, contrast issues, and structural elements.
3. Documenting findings using screenshots from the WAVE tool.
4. Interpreting issues in terms of their impact on users, especially those with visual or cognitive impairments.

The findings were categorized into critical errors (requiring immediate attention) and alerts (indicating areas for improvement). The focus was on eliminating critical errors and addressing as many alerts as possible to improve overall accessibility.

Findings and Analysis

1. Accessibility Assessment Overview

The accessibility assessment used both automated tools and manual checks, focusing on critical aspects such as navigation, color contrast, non-text content, and compatibility with assistive technologies. Automated analysis was conducted with the WAVE tool, followed by manual evaluation to ensure completeness.

2. Automated Accessibility Testing Results

The WAVE tool detected several alerts and minor errors, mainly related to ARIA attributes and content structure. Although no major errors were found, alerts were flagged as opportunities for improvement, including ARIA roles, label associations, and structural enhancements.

3. WAI-ARIA Implementation and Impact

The assessment also evaluated the integration of WAI-ARIA attributes, which are crucial for enhancing accessibility in dynamic components. As per Lipautz et al. (2016), effective use of ARIA attributes can significantly improve the accessibility of modern web applications. However, improper or redundant use of these attributes can add unnecessary complexity, potentially hindering compatibility with some assistive technologies.

4. Manual Testing Findings

Manual testing was conducted to assess usability for users relying on keyboard navigation or screen readers. Issues included non-intuitive focus indicators and missing labels for form fields. As Lipautz et al. (2016) note, manual testing is essential for ensuring full accessibility, as automated tools only cover about 50% of potential issues.

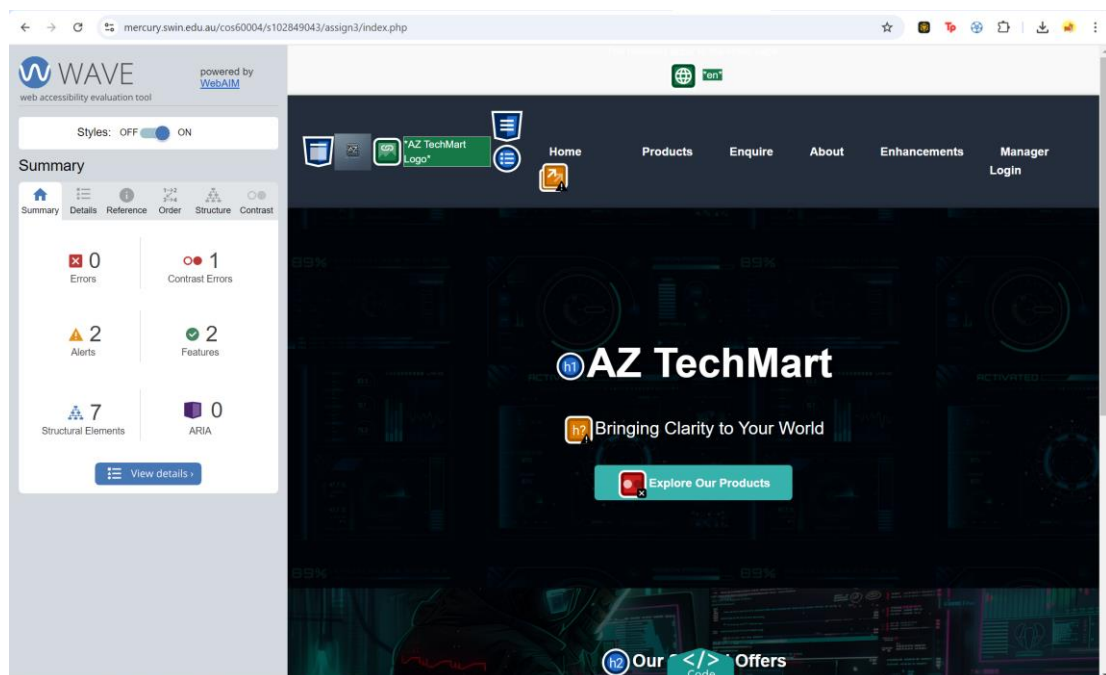
5. Analysis of Key Accessibility Elements

- 🚦 **Navigation:** Some landmarks and skip links could be added to enhance the efficiency of keyboard navigation. Clear navigation structures help ensure better usability for users relying on assistive technologies.
- 🚦 **Non-Text Content:** Some images lacked appropriate alt text. As emphasized by Lipautz et al. (2016), empty alt attributes for decorative images prevent unnecessary interruptions for users of assistive technologies.
- 🚦 **Color Contrast:** Low contrast between text and background colors was identified, which can hinder readability for users with visual impairments. Correcting these issues is key to providing an accessible experience for all users.

Detailed Findings by Page

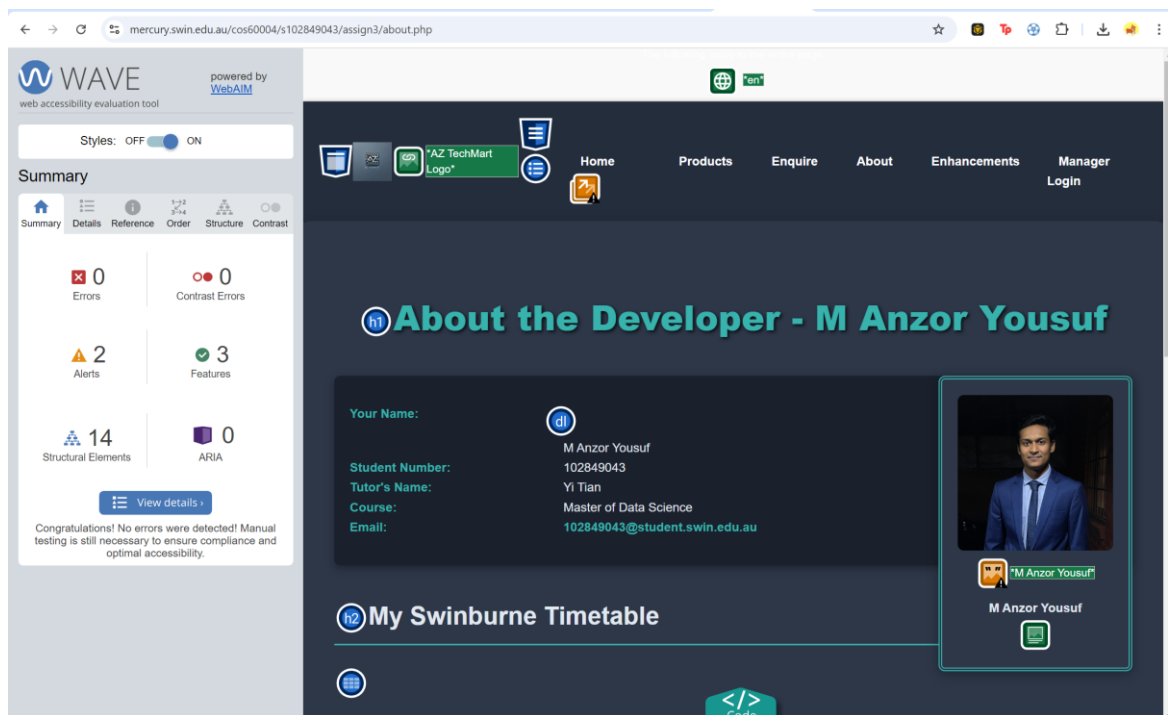
1. Home Page (index.php)

- ✚ Errors: None detected.
- ✚ Contrast Issues: One issue affecting readability for users with visual impairments.
- ✚ Alerts: Two alerts regarding ARIA usage and label associations.
- ✚ Features: Properly used headings and landmarks that facilitate better screen reader navigation.
- ✚ Analysis: The Home Page is well-structured with no critical errors. Addressing the contrast issue will enhance readability for users with low vision, while resolving ARIA alerts will improve screen reader interactions.



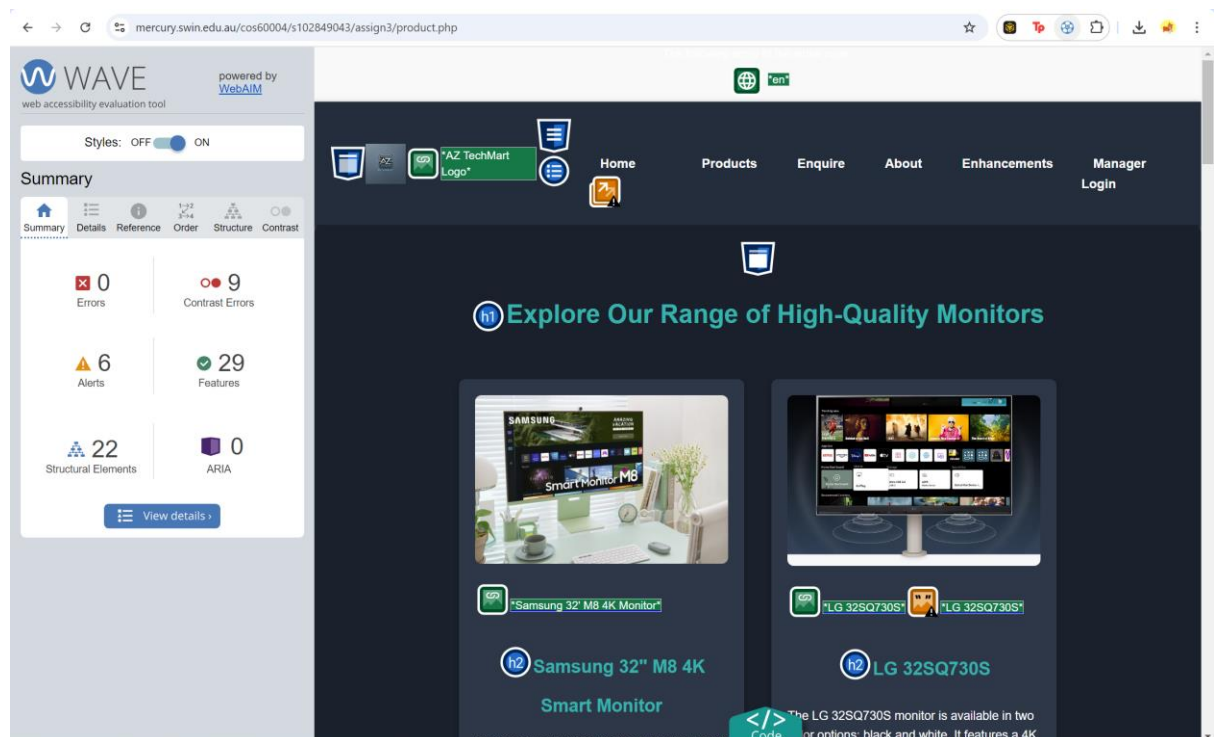
2. About Page (about.php)

- ✚ Errors: None detected.
- ✚ Contrast Issues: None detected.
- ✚ Alerts: Two alerts related to semantic HTML elements.
- ✚ Features: Effective use of headings and lists helps organize information logically for assistive technologies.
- ✚ Analysis: The About Page is accessible, with no major issues. Addressing alerts related to semantic HTML will further enhance usability for users relying on assistive devices.



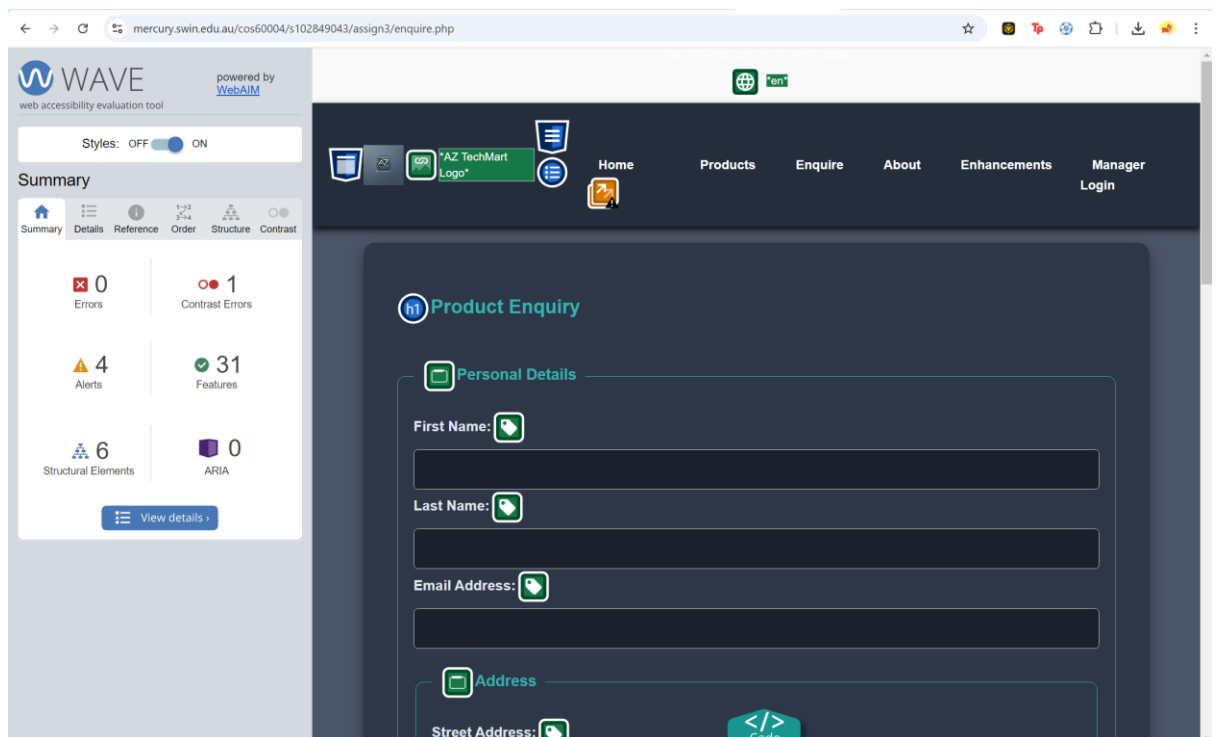
3. Product Page (product.php)

- ✚ Errors: None detected.
- ✚ Contrast Issues: Nine issues, mainly due to low contrast between text and background colors.
- ✚ Alerts: Six alerts regarding redundant links and ARIA roles.
- ✚ Features: Descriptive alt texts for product images were used effectively.
- ✚ Analysis: The Product Page requires improvements in color contrast to accommodate users with visual impairments. Alerts suggest streamlining link usage to reduce redundancy and make navigation easier.



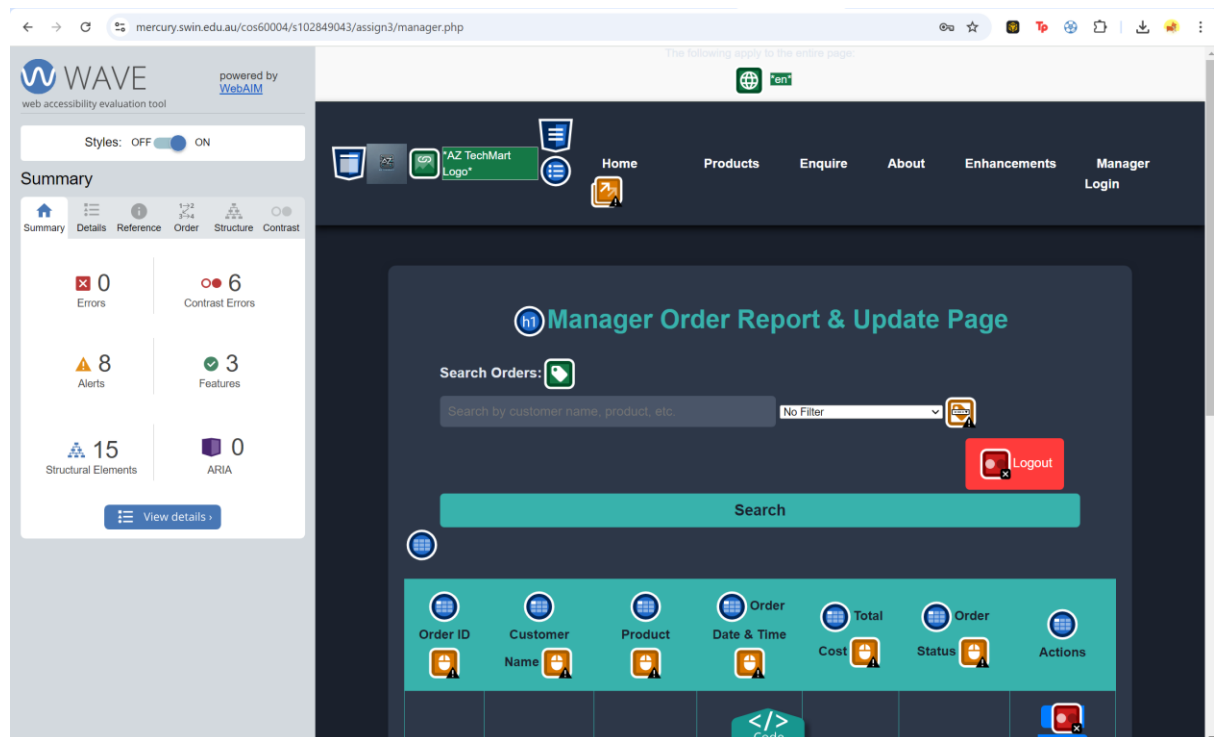
4. Product Enquiry Page (enquire.php)

- ✚ Errors: None detected.
- ✚ Contrast Issues: One issue detected.
- ✚ Alerts: Four alerts concerning form labels and grouping.
- ✚ Features: Descriptive form labels are used but could be better organized for improved accessibility.
- ✚ Analysis: The Product Enquiry Page is mostly accessible but would benefit from better form control grouping and enhanced contrast to assist users relying on keyboard navigation or screen readers.



5. Manager Order Report Page (manager.php)

- ✚ Errors: None detected.
- ✚ Contrast Issues: Six issues affecting buttons and text elements.
- ✚ Alerts: Eight alerts mostly concerning ARIA roles and label associations.
- ✚ Features: Effective use of headings and landmarks aids screen reader navigation.
- ✚ Analysis: The Manager Order Report Page needs adjustments to improve contrast and correct ARIA role usage, ensuring better accessibility for visually impaired users and those using assistive technologies.



Recommendations

Based on the findings from the WAVE evaluation and insights from relevant literature, the following actions are recommended to improve accessibility:

1. Improve Color Contrast

- Pages Affected: Home Page, Product Page, Product Enquiry Page, Manager Order Report Page.
- Issue: Low contrast affects readability for visually impaired users.
- Recommendation: Update the color scheme to ensure sufficient contrast for all text and interactive elements. WCAG 2.0 guidelines recommend a minimum contrast ratio of 4.5:1 for standard text (Zhao, 2015). Improving contrast will enhance readability and ensure compliance with accessibility standards.

2. Implement WAI-ARIA for Enhanced Accessibility

- Pages Affected: Product Page, Manager Order Report Page.
- Issue: Improper or redundant ARIA roles were found.
- Recommendation: Apply WAI-ARIA standards to improve accessibility of dynamic components, such as pop-ups. Proper role definition will improve interaction for users relying on assistive technologies (Mikovec et al., 2009). Correct ARIA implementation ensures compatibility and enhances navigation for users with disabilities.

3. Optimize Forms for Accessibility

- Pages Affected: Product Enquiry Page.
- Issue: Inadequate form labels and groupings could confuse users relying on screen readers.
- Recommendation: Use <fieldset> and <legend> tags for logical grouping of form elements. Ensure each input field has a properly associated label to improve navigation for screen reader users (Mikovec et al., 2009). This will facilitate more efficient use of forms for users with disabilities.

4. Integrate Accessibility During the Design Phase

- General Recommendation:
 - Issue: Accessibility enhancements are often added post-development, which is inefficient and costly.
 - Recommendation: Integrate accessibility principles, such as color contrast and ARIA roles, during the initial design phase. As Gregory (2019) emphasizes, incorporating accessible elements early reduces the need for significant post-development modifications and ensures compliance from the start. This proactive approach will create reusable components and prevent accessibility issues from arising.

Summary of Priority Improvements

- Color Contrast: Addressing contrast issues across all pages is a top priority, directly impacting readability for users with visual impairments.
- ARIA Implementation: Proper ARIA role usage for dynamic components will enhance accessibility, particularly for screen reader users.

- Form Improvements: Optimizing form elements with logical groupings and labels will facilitate easier navigation for users relying on assistive technologies.
- Early Integration of Accessibility: Designing with accessibility in mind from the beginning ensures fewer modifications later and more consistent compliance.

Conclusion

The AZ TechMart Website was evaluated for accessibility using the WAVE tool, with findings showing no critical errors, indicating solid compliance with accessibility standards. However, minor issues such as color contrast problems and ARIA-related alerts were detected. Addressing these will make the site more inclusive and user-friendly, especially for those with disabilities.

By improving color contrast, refining ARIA roles, and optimizing form labels, AZ TechMart can achieve a higher level of accessibility, ensuring effective interaction for all users. Accessibility should be viewed as an ongoing commitment, benefiting both the business and its users while ensuring equal access for everyone.

Reference list

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