Typography and its influence on the usability of website user interfaces

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Introduction

- The International Standards Organization (ISO) defines usability as the extent to which a product can be used by specified users to achieve specified goals in a specified context of use with effectiveness, efficiency, and satisfaction (ISO, 2018).

- Usability is fundamentally influenced by the design of the user interface. The way user interfaces are designed determines how effectively, efficiently, and satisfactorily users can interact with a product.

Introduction

- One of the main components users interact with on website user interfaces is text, especially on heavily text-based websites. Consequently, one primary task users perform with them is reading (Miniukovich et al., 2019; Ling and Van Schaik, 2005).

- Based on the ISO definition of usability (ISO, 2018), in this context, the product would be a website, and one of the user's goals would be to extract and understand the information from the text (through reading) with effectiveness, efficiency, and satisfaction.
    - Effectiveness: Users should be able to accurately and comprehensively read and understand the information from the text.
    - Efficiency: Users should be able to read and understand the information quickly without unnecessary effort.
    - Satisfaction: Users should find the reading experience pleasant and engaging.

- Therefore, website usability seems to be strongly related to what is known as **readability**.

Introduction

Classic definition of readability by Dale and Chall (1948):

"In the broadest sense, readability is the sum total (including interactions) of all the elements with a given piece of printed material that affects the success which a group of readers have with it. The success is the extent to which they understand it, read it at optimum speed, and find it interesting."

Effectiveness

Efficiency

Satisfaction

Introduction

From this definition, Tekfi (1987) stated that the main functions of readability are:

- to indicate the legibility of the material;
- to indicate the ease of reading, which is due either to the interest value or the aesthetics of the writing; and
- to indicate understanding and comprehension due to the style of writing.

Legibility refers to how easily characters and words in text can be distinguished and recognized, which may affect the ease, speed, and accuracy with which information can be read and understood (Reynolds, 1979). It is determined by typographic factors such as typeface, type size, line height, line length, line spacing, wordspacing, letterspacing, kerning, and colors (Craig, 2006).

So, one part of a text's readability is determined by its legibility, which is determined by typography decisions.

Introduction

Given that website usability seems to be strongly related to readability and legibility is a fundamental part of readability, it is logical to expect that typography affects usability on a website (especially on heavily text-based websites).

However, this reasoning is based on the theoretical statements defined previously, so the question that arises is whether typography **really** affects the usability of website user interfaces in practice.

Many argue that typography does affect the usability of website user interfaces. These claims often lead to recommendations for typographic factors based on personal beliefs and opinions, professional experiences, or results from studies on the readability of printed text materials. However, it is essential to examine what empirical evidence suggests about the influence of typography on website usability.

Research Method and Questions

In this research, a literature review was conducted to investigate the extent to which typography influences the usability of website user interfaces, focusing specifically on desktop websites.

The goal is to provide a comprehensive understanding of how typography affects the usability of websites and to determine whether current practices and recommendations align with empirical evidence. This review aims to offer practical insights that can inform better typographic practices in web design, ensuring that they are grounded in robust evidence rather than solely on tradition or expert opinion.

Research Method and Questions

Research questions:

1. What typographic guidelines are commonly recommended for website usability?
2. What does empirical evidence suggest about the influence of typography on the usability of websites?
3. How do the recommended typographic guidelines compare with what empirical evidence suggests?

Results – Research Question 1

What typographic guidelines are commonly recommended for website usability?

To address this question, a web search was conducted. This search encompassed recommendations from established design systems, books, and websites specializing in web usability. The goal was to compile a comprehensive set of guidelines representing common best practices in typographic design to enhance website usability.

Results – Research Question 1

Reference	Typeface	Type size	Line spacing	Line length
Material Design (Google's open-source design system)	Default: Roboto (sans serif typeface).	Default: 16 px (12 pts).	1.5 times the type size for body text.	No recommendation.
Ant Design System	Default: sans-serif typeface used by the operating system's user interface.	Default: 14 px (10.5 pts).	1.5 times the type size for body text.	No recommendation.
Atlassian Design System	Default: sans-serif typeface used by the operating system's user interface.	Default: 16 px (12 pts).	1.5 times the type size for body text.	No recommendation.
Web Content Accessibility Guidelines (WCAG) 2.1	No recommendation.	Minimum of 16 px (12 pts).	At least 1.5 times the type size for body text.	No more than 80 characters per line.

Results – Research Question 1

Reference (Book)	Typeface	Type size	Line spacing	Line length
“Web Typography” by Richard Rutter (2017)	No recommendation.	The starting point for paragraph text should be whatever size has been set as the default in the browser (usually 16px or 12pts).	1.4 or more, depending on the typeface and type size.	45–75 characters per line.
“On Web Typography” by Jason Santa Maria (2014)	No recommendation.	16px– 18px (12pts – 13.5 pts) for desktop websites.	A good starting point with is about 1.2–1.8.	45–75 characters per line depending on the type size.

Results – Research Question 1

Reference (Website)	Typeface	Type size	Line spacing	Line length
Learn UI Design	Sans-serif typefaces are suitable for body text.	- 14px - 20px (10.5pts – 15pts) for interaction-heavy desktop websites. - 18px – 24px (13.5pts – 18pts) for text-heavy desktop websites.	1.5 times the type size for body text.	50-75 characters per line
Accessibility Designer Guide	No recommendation.	16px – 20px (12pts – 15pts) for desktop websites.	At least 1.2 times the type size for body text.	60 - 80 characters per line (for desktop websites).
Toptal Designers	No recommendation.	16px – 20px (12pts – 15pts) for desktop websites.	1.5 times the type size for body text.	45–75 characters per line (for desktop websites).
Smashing Magazine	Sans-serif typefaces are suitable for body text.	At least 16px (12pts) on desktop websites.	1.5 times the type size for body text.	45–75 characters per line (for desktop websites).

Discussion – Research Question 1

Insights gathered from these established design systems, books, and websites specializing in web usability provide recommendations for body text on desktop websites. The type size most recommended is 16px, which aligns with the default settings of most web browsers. A ratio of 1.5 times the type size for line spacing is widely endorsed. Regarding line length, it is advised that body text should range between 45-80 characters per line. Although not all sources offer specific typeface recommendations, those that do generally favor sans serif typefaces, alleging that they have superior legibility on digital screens.

Results – Research Question 2

What does empirical evidence suggest about the influence of typography on the usability of websites?

To address this question, the search and analysis focused on the most recurrent typographic factors identified in research question 1: typeface, type size, line spacing, and line length.

Moreover, to ensure the reliability of the findings, this review included only studies that analyzed the statistical significance of their results.

Review Approach

Databases	IEEE, ACM, ScienceDirect, SpringerLink		
Search criteria	C1	C2	C3
	typography OR typeface OR “type size” OR “line spacing” OR leading OR “line height” OR “line length”	usability OR readability OR legibility	web OR website
	C1 AND C2 AND C3		
Studies retrieved	370		
Final selection after applying the exclusion criteria	21		

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Boyarski et al. (1998)	**Typeface** Serif: Times Roman, Georgia Sans serif: Verdana	Reading for comprehension task: Participants read passages in different typefaces. After each passage, they developed a test of reading comprehension. Participants completed two subjective perception questionnaires.	Objective measures: reading speed (time in seconds to read all the passages and answer the questions), comprehension score (number of comprehension questions answered correctly), effective reading speed (comprehension score/reading speed) Subjective preference measures: hard/easy to read, most pleasing to read, most sharp.	No significant differences were found in the reading speed and comprehension among the three typefaces. Georgia (Serif) was more preferred than the other typefaces.
Bernard et al. (2001)	**Typeface** Serif: Times New Roman, Georgia. Sans serif: Arial, Verdana.	Proofreading task: Participants read passages (each in a different combination of typeface and type size) and identified substitution words. Participants ranked the fonts for subjective preferences.	Objective measures: reading time (seconds), reading efficiency (derived from obtaining the percentage of accurately detected substituted words in the passages, divided by the time taken to read the passages). Subjective measures: font preference (typeface and size).	No significant differences were found in the reading time and the reading efficiency due to the typefaces. Sans serif typefaces were more preferred that serif typefaces.
	Type Size 12 pts, 14 pts			Type size significantly affected reading efficiency and reading time. A 14-point size had significantly greater reading efficiency and was read faster than a 12-point size. Based on subjective measures, a 14-point size was preferred to a 12-point.

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Dyson and Haselgrove (2001)	**Line Length** 25, 55, 100 characters per line (cpl).	Reading for comprehension task: Participants read passages with different line lengths. After each passage, they developed a test of reading comprehension (multiple-choice questions).	Objective measures: reading rate (number of words per second) and comprehension score .	Documents at 55 cpl were read significantly faster than documents at 25 cpl and 100 cpl. Increasing line length from 55 to 100 cpl does not improve the reading rate. The comprehension of the 55 cpl document was significantly better than the 100 cpl document. No other differences between line lengths were statistically significant.
Bernard et al. (2002a)	**Line length** 45, 76, 132 characters per line (cpl).	Proofreading task: Participants read three passages, each with different line lengths, and identified substitution words. Participants completed a subjective perception questionnaire.	Objective measures: reading time (seconds) and effective reading score (derived from obtaining the percentage of accurately detected substituted words in the passages, divided by the time taken to read the passages). Subjective measures: perceived legibility, and general line length preference.	No significant differences between the three line lengths were found in the reading time and the effective reading score. However, shorter line lengths (45-76 cpl) are preferred over larger ones.

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Bernard et al. (2002b)	**Typeface** Serif: Century Schoolbook, Courier New, Georgia, Times New Roman. Sans serif: Arial, Comic Sans, Tahoma, Verdana.	Proofreading task: Participants read passages (each in a different combination of typeface and type size) and identified substitution words. Participants completed a subjective perception questionnaire.	Objective measures: reading time (seconds) and reading efficiency (derived from obtaining the percentage of accurately detected substituted words in the passages, divided by the time taken to read the passages). Subjective measures: perceived legibility and general font preference.	No significant differences were found in the reading efficiency due to the typefaces. Regarding reading time, Times and Arial were read significantly faster than Courier, Schoolbook, and Georgia. Arial and Courier were considered the most legible typefaces (perceived legibility). Verdana was the most preferred typeface, while Times was the least preferred font.
	Type size 10 pts, 12 pts, 14 pts.			Type size did not affect reading efficiency. However, when comparing 10 pts vs. 12 pts, typefaces at the 10-pts size were read significantly more slowly than typefaces at the 12-pts size. No significant difference was obtained regarding 14-pts. Type size and typeface interaction was found for perceived legibility without a specific trend regarding type size alone. However, at the 14-pts size, only Arial was significantly perceived as being more legible than other typefaces at other sizes.
Bernard et al. (2003)	**Typeface** Serif: Times New Roman Sans serif: Arial	Proofreading task: Participants read passages (each in a different combination of typeface and type size) and identified substitution words. Participants completed a subjective perception questionnaire.	Objective measures: accuracy (percentage of detected substituted words for each typeface/size combination), reading speed, and adjusted accuracy measure (accuracy/ reading speed). Subjective measures: perceptions of typeface legibility, sharpness, ease of reading, and general preference.	No significant differences were found in the accuracy, reading speed and adjusted accuracy among the combinations due to the typefaces. Participants perceived Times at both 10-point and 12-point sizes as significantly more difficult to read than Arial. No significant differences were found in the other perception measures.
	Type size 10 pts, 12 pts			No significant differences were found in the accuracy and adjusted accuracy among the combinations due to the type size. Text at the 12-point size produced significantly greater perceptions of legibility and sharpness and had lower levels of perceived difficulty in reading than text at the 10-point size. It was also significantly preferred to text at the 10-point size.

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Ling and Schaik (2006)	**Typeface** Serif: Times New Roman (12 pts) Sans serif: Arial (10 pts)	Visual search task and information retrieval task: Participants performed a visual search to find a hyperlink in the text. After that, they had to perform a series of experimental trials in which they had to indicate if a word was presented on a webpage shown on screen. Eight web pages were used, combining typefaces and line lengths.	Objective measures for the visual search task: task performance based on the speed and accuracy. Objective measures for the information retrieval task: task performance based on the speed and efficiency (number of pages visited before a correct answer was given). Subjective measures: preferences for line length and typeface.	No significant differences were found in the task performances among the two typefaces. Participants preferred Arial over Times.
	Line length 55, 70, 85 and 100 characters per line (cpl).			The visual search task performed faster with 85 and 100 cpl but was more accurate with 70 cpl. In information retrieval, line length did not affect task performance. Based on subjective measures, there was a preference for shorter lines in both tasks (70 cpl in the visual search task and 55 in the information retrieval task).
Beymer et al. (2008)	**Typeface** Serif: Georgia (12 pts) Sans serif: Helvetica (12 pts)	Reading for comprehension task using eye-tracking: Participants read stories on the screen with the eye tracker. The typographic factors were not combined. After reading, participants completed a comprehension test.	Objective measures: Eye tracking reading statistics (first-pass reading speed, regression rate, time in return sweeps, fraction of the material re-read, saccade length, and fixation duration) and comprehension score.	No statistically significant reading (based on the eye-tracking statistics) or comprehension differences were found between the two typefaces.
	Type size 10 pt, 12 pt, 14 pt (All in Verdana)			Type size affected fixation durations. The 10-pts size induced significantly longer fixation durations as compared to the 14-pts size. Type size did not significantly affect text comprehension.

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Banerjee et al. (2011)	**Typeface** Serif : Times New Roman, Georgia and Courier New. Sans serif: Arial, Verdana and Tahoma.	Reading test: Participants read aloud passages (each in a different combination of typeface and type size). Accuracy of reading (in terms of "omission" and "misreading") of about 80% was the consideration point for subject selection for further analysis. Participants ranked each typeface and size combination for general preference.	Objective measures: reading time. Subjective measures: ranking of combinations and mental workload for combinations.	Serif typefaces were read significantly faster than sans-serif typefaces. However, serif typefaces were less preferred than the sans serif typefaces. Verdana was considered by the users as the most preferred font type, followed by Arial. Regarding workload, no significant differences were found among the combinations due to the typeface.
	Type size 10 pts, 12 pts, 14 pts			Type size was found to play a role in reading time. The text presented at 14-point size was read faster than either the 10-point or 12-point text. However, there was no statistically significant difference in reading speed between the text presented in 10-point and 12-point sizes. For the type size preference 14-point size was preferred over the 12-point. Regarding workload, no significant differences were found among the combinations due to the type size.
Tavakoli and Kheirzadeh (2011)	**Type size** 10 pts, 16 pts	Scanning and comprehension: Participants scanned two passages (each at a different type size) to identify the answers to different questions and understand the main idea of the texts.	Objective measure: reader performance (answer to questions).	No significant differences were found in the reader performance among the two type sizes.

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Rello and Marcos (2012)	**Type size** 14 pts, 18 pts, 22 pts, 26 pts (Arial)	Reading using eye-tracking: Participants read small text fragments on the screen with the eye tracker. The typographic factors were not combined to maintain the variables' independence. After reading, participants completed a perception questionnaire.	Objective measure: average fixation duration (to determine reading performance). Subjective measure: relative percentage of the preferred options.	Type size affected reading performance (average fixation duration). The average fixation duration significantly decreased when the type size increased. 22 pts had the lowest average fixation duration. Participants preferred 22 points.
	Line spacing 0.8, 1.0, 1.2, 1.4			Line spacing affected reading performance (average fixation duration). Participants preferred 1.4 line spacing, which had the lowest average fixation duration.
	Line length 22, 44, 66, 88 characters per line.			No statistically significant difference was found among the fixation duration means for any line lengths. The lowest fixation duration mean was 0.174, which corresponds to 88 characters per line. Participants preferred 44 characters per line.
Ali et al. (2013)	**Typeface** Serif: Georgia and Times New Roman. Sans serif: Verdana and Arial. (12 pts)	Reading test: Participants read aloud two texts displayed on web interfaces. One text was in a serif typeface, and the other in a sans-serif typeface.	Objective measures: Reading speed (time in seconds to read the entire text) and accuracy (number of errors committed throughout the reading activity)	No significant differences were found in the reading speed and accuracy among the four typefaces.

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Petrie et al. (2013)	**Line spacing** 1.0, 1.5, 2.0	Proofreading task: Participants had to find specific information on a website with information displayed using the three line spacing.	Objective measures: task completion rate, time spent reading per webpage, number of webpages visited per task. Subjective measure: participants' ratings of their preferences.	Line spacing had no significant effect on the objective measures. Participants preferred 1.5 or double line spacing.
Franken et al. (2014)	**Typefaces** Serif: Georgia Sans serif: Verdana	Reading using eye-tracking: Participants read 16 texts displayed as HTML documents (each in a different combination of typeface and type size) with the eye tracker.	Objective measures: reading speed (number of characters read per second), total fixation time, number of fixations, fixation duration (average duration of a single fixation), and saccade length.	The total fixation time, the fixation duration, and the saccade length were significantly longer for Georgia than for Verdana. The number of read characters and the number of fixations were significantly smaller for Georgia than for Verdana. Consequently, the study found that Verdana's legibility was better than Georgia's.
	Type size 12 pts, 13 pts, 14 pts, 15 pts, 16 pts, 18 pts, 20 pts, 24 pts.			The total fixation time, the fixation duration, and the saccade length significantly decreased with the increase in type size. The number of read characters and the number of fixations significantly increased with the increase in type size. Consequently, the study found that the legibility of a text increases with an increase in font size and that large font sizes (20, 24 pts) do not slow down the reading.

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Hojjati and Muniandi (2014)	**Typefaces** Serif: Times New Roman Sans serif: Verdana	Reading for comprehension: Participants were randomly assigned to read four passages on screen using different typeface and line spacing combinations. After reading each passage, they completed a comprehension test. Participants completed a perception questionnaire.	Objective measures: time taken to read and comprehension score. Subjective measure: perception of ease of reading.	Verdana was read significantly faster and had a significantly higher comprehension score than Times New Roman. Verdana double spacing was significantly preferred.
	Line spacing 1.0, 2.0			Text in double spacing was read significantly faster and had a significantly higher comprehension score than text in single spacing. Verdana double spacing was significantly preferred.

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Rello et al. (2016)	**Type size** 10 pts, 12 pts, 14 pts, 18 pts, 22 pts, 26 pts	Reading using eye-tracking: Participants read six Wikipedia articles in silence, with the same linespacing but different type sizes. The eye tracker recorded the reading. After finishing each article, the participants completed a comprehension questionnaire. Finally, the participants ranked the articles regarding legibility and comprehension.	Objective measures: mean fixation duration, comprehension score. Subjective measures: perception of legibility, perception of comprehension.	Type size had significant effects on all dependent measures. Up to a font size of 18 points, subjective and objective legibility as well as comprehension improved continuously. Beyond 22 points, there were no further effects for the objective measures and a decrease in subjective legibility.
	Line spacing 0.8, 1.0, 1.4, 1.8. (Arial)			Line spacing did not significantly affect objective and subjective legibility, but extreme spacings (0.8 and 1.8) negatively affected objective and subjective comprehension.
Screws, J. (2016)	**Typeface** Serif (128 pts), Sans Serif (108 pts)	Reading using eye-tracking: Participants read one text on Wikipedia. Half of the participants read the text in serif, and the other half read it in sans serif.	Objective measures: Words per minute, average saccade length, average fixation duration, regression percentage.	Typeface had no significant effect on any of the objective measures.

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Dogusoy et al. (2016)	**Typefaces** Serif: Times New Roman Sans serif: Arial	Proofreading using eye-tracking: Each participant proofread two six-page articles written in serif and sans serif typefaces to find misspelled words on the screen. The participants were asked to say the misspelled words aloud.	Objective measures: accuracy (misspelled words found in total), task completion time, total fixation duration, and number of fixations.	Typeface had no significant effect on any of the objective measures.
Chatrangsan and Petrie (2019)	**Typefaces:** Serif: Times New Roman Sans serif: Arial	Reading for comprehension: Participants read six short texts presented on screen, each with a different combination of type size and typeface. After reading each text, participants completed a comprehension test. Finally, participants completed a perception questionnaire.	Objective measures: reading time and number of correct answers to comprehension questions. Subjective measures: ease of reading (rating), tiring of reading (rating) and the most preferred combination of typeface and size.	Typeface did not significantly affect reading time but significantly affected comprehension scores. All participants answered significantly more questions correctly in Arial. Typeface significantly affected the ease and tiring of reading. Arial was considered easier to read and less tiring than serif Times New Roman.
	Type size 14 pts, 16 pts, 18 pts.			Type size significantly affected reading time and comprehension scores. The 18-point text was read significantly quicker than the 14-point or 16-point text, and participants answered significantly more questions correctly in 18 pt than in 14 or 16 pt. Type size significantly affected the ease of reading and tiring of reading. The 18-point type size was the easiest and the least tiring to read, and the 14-point size was the least easy and the most tiring.

Results – Research Question 2

Source	Typographic Factors	Method	Criteria for Legibility/Comprehension	Findings
Vecino et al. (2022)	**Typeface** Serif: Roboto Serif Sans serif: Roboto	Purchase task and reading for comprehension task: Participants completed a full purchase task with the website and read the details page of a specific product. Half of the participants were shown the website with Roboto Serif, and the other half were shown the website with Roboto. After that, participants completed a comprehension test and a usability questionnaire.	Objective measures: purchase task completion time, reading speed (time to read the product description), and reading comprehension score. Subjective measures: user experience based on a questionnaire to measure the website's usability.	There were no significant differences in user typeface preference and usability between Roboto and Roboto Serif. There were also no significant differences in reading comprehension of texts written in serif or sans serif in the same font family, and the same was true for task completion time.
Vecino et al. (2024)	**Typeface** Serif: Roboto Serif Sans serif: Roboto	Purchase task and reading for comprehension task using eye tracking: Participants completed a full purchase task with the website and read the details page of a specific product. Half of the participants were shown the website with Roboto Serif, and the other half were shown the website with Roboto. After that, participants completed a comprehension test and a usability questionnaire.	Objective measures: eye-tracking measures and reading comprehension score. Subjective measures: user experience based on a questionnaire to measure the website's usability.	There were no statistically significant differences in reading comprehension or the eye-tracking measures related to legibility. There were no significant differences in user typeface preference and usability between Roboto and Roboto Serif.

Discussion – Research Question 2

Typographic factor	Number of studies
Typeface	15
Type size	10
Linespacing	4
Line length	4

Typographic factor combination	Number of studies
Typeface + Type size	6
Typeface + Line length	1
Typeface + Linespacing	1
Type size + Linespacing	1

Discussion – Research Question 2

- Most studies focused on whether the typeface is serif or sans serif to determine if it improves the legibility and comprehension of text on desktop screens. Most of these studies found that, from the perspective of objective measures, typeface does not significantly affect the legibility and comprehension of text displayed on desktop screens. However, considering subjective measures, sans serif typefaces are generally preferred and perceived as more legible.

- In terms of usability, typeface does not seem to affect effectiveness (measured through reading accuracy and comprehension test scores in the studies) or efficiency (measured through reading time and eye-tracking measures in the studies). It only seems to affect satisfaction (measured through participant perceptions and preferences in the studies).

Discussion – Research Question 2

- Most studies found that, according to objective measures, text legibility on desktop screens improved when the type size increased. Subjective measures confirmed these results, showing that subjective legibility was higher for larger type sizes. However, no significant improvements were observed beyond a type size of 22 points, despite two studies analyzing the effect of 26-point size on legibility. This suggests a turning point where very large type sizes make reading more difficult. This behavior is expected, as increasing type size results in fewer words per line, leading to more frequent eye jumps, scrolling, and a loss of overview.

- In terms of usability, type size seems to affect effectiveness (measured through reading accuracy and comprehension test scores in the studies), efficiency (measured through reading time and eye-tracking measures in the studies), and satisfaction (measured through participant perceptions and preferences in the studies).

Discussion – Research Question 2

- The analysis of the four studies on line spacing reveals mixed results regarding its impact on text legibility on desktop screens. Two studies did not find a significant effect on objective legibility. However, two others did observe an effect, with one favoring a spacing of 1.4 and the other 2.0. Regarding subjective legibility, there was a slight preference for larger line spacings, with two studies favoring 2.0, one favoring 1.4, and another 1.5.

- These findings suggest that while there is no clear consensus on the optimal line spacing for improving objective legibility, subjective measures indicate a preference for larger spacings.

- In terms of usability, it is not clear if line spacing affects effectiveness (measured through comprehension test scores in the studies) or efficiency (measured through reading time, task completion time, and eye-tracking measures in the studies). It only seems to affect satisfaction (measured through participant perceptions and preferences in the studies).

Discussion – Research Question 2

- Studies show that extremely short or long line lengths do not improve objective or subjective legibility. A general trend suggests moderate line lengths (around 44-76 characters per line) improve text legibility and comprehension on desktop screens.

- In terms of usability, line length seems to affect effectiveness (measured through reading accuracy and comprehension test scores in the studies), efficiency (measured through reading time, reading rate, and eye-tracking measures in the studies), and satisfaction (measured through participant perceptions and preferences in the studies).

Results – Research Question 3

How do the recommended typographic guidelines compare with what empirical evidence suggests?

- Typeface: Aligning with the empirical evidence regarding subjective legibility, recommendations from some design systems, books, and usability websites tend to favor sans serif typefaces. These recommendations appear to be based primarily on user preferences and perceptions, as empirical evidence shows that, from the perspective of objective measures, typeface does not significantly affect the legibility and comprehension of text displayed on desktop screens.

Results – Research Question 3

How do the recommended typographic guidelines compare with what empirical evidence suggests?

- Type size: According to the design systems, books, and usability websites reviewed, the most recommended default type size for body text on a web desktop is 16 px (12 pts). However, empirical evidence has demonstrated that compared with larger type sizes, 16 px (12 pts) is less legible. While 16 px is a useful reference point, setting a higher default type size could be beneficial since empirical studies suggest that text legibility improves with larger type sizes, specifically between 18 pts and 22 pts.

Results – Research Question 3

How do the recommended typographic guidelines compare with what empirical evidence suggests?

- Line spacing: Recommendations from design systems, books, and usability websites establish a line spacing ratio of 1.5 times the type size. This aligns with the empirical evidence regarding subjective legibility, which suggests a preference for larger line spacings (between 1.4 and 2.0).

- Line length: The design systems, books, and usability websites reviewed recommend line lengths between 45 and 80 characters per line. This recommendation aligns with the empirical evidence, suggesting a moderate line length between 44 and 76 characters per line.

Conclusion

- This research presented a literature review to examine how typography affects the usability of website user interfaces and to determine whether current practices and recommendations align with empirical evidence.
- This study's findings suggest that:
  - The typeface, type size, line spacing, and line length choices on desktop websites significantly affect user satisfaction, a key factor in usability.
  - Type size and line length choices significantly affect effectiveness and efficiency, which are key usability factors; however, more studies are required to determine if line spacing also affects these factors.
  - Type size and line length are the typographic factors that most affect the usability of desktop websites. On the other hand, the typeface is the typographic factor that least affects the usability of desktop websites.

Conclusion

- Based on the empirical evidence and recommendations from design systems, books, and usability websites, typography seems to affect the usability of website user interfaces. Common best practices in web design mostly align with the empirical evidence, at least for the four typographic factors analyzed in this study.

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Thanks for your attention.

Do you have any questions?