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Website development of 'Selvastics' - an educational statistics platform for students

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Abstract

This paper introduces Selvastics, an innovative online educational platform designed for individuals interested in statistics and data science. The website is accessible online via selvastics.github.io. The website is primarily based on the concept of involvement and the Elaboration Likelihood Model. When comparing to similar platforms, Selvastics distinguishes itself by offering a unique blend of user engagement, accessibility, and a strong brand identity. However, there are opportunities for enhancement, especially in content and tool integration. Selvastics presents a promising future as a go-to platform for statistical education. The platform's dedication to community-building, theoretical grounding, and continuous improvements positions it as a valuable addition to the online educational landscape.

Keywords: Website development, online education, statistics platform, data science, brand identity.

I   Table of contents

II   List of figures

1 Introduction

Statistics is a highly sought-after field in both formal education and the job market, with numerous applications in various disciplines such as psychology and mathematics. Despite its importance, statistics is often perceived as one of the most challenging subjects, with high failure rates at the university level (National Research Council, 2011). This highlights the need for effective educational approaches to help students succeed in this field. Research has shown that diverse learning needs exist within science, technology, engineering, and math (STEM) and a variety of platforms should be available to cater to a broad audience while addressing individual learning needs (AAUW, 2020; National Science Foundation, 2020).

Within this paper I develop Selvastics as an online education platform designed to address these needs in the field of statistics. The platform aims to provide rich and easy-to-understand content, ensuring accessibility for a wide range of learners. To achieve this, several concepts and models are applied in the development of the platform. This paper aims to establish a theoretical foundation with practical applications in web development and brand building, and to compare Selvastics with an existing platform to evaluate the effectiveness of the applied models.

The paper begins with a comprehensive description of Selvastics, emphasizing its unique objectives and potential offerings. A branding model is then introduced to shape the platform's identity, and the rationale behind design choices, including the logo and overall brand image, is explored in depth. Subsequent sections delve into the development of the website, including its color palette and technical elements. In the discussion, the branding model is evaluated, and Selvastics is compared to an exemplary alternative platform, analyzing the similarities and differences in content, design, and user experience. This comparison underscores the unique attributes of Selvastics and offers insights into potential areas of improvement.

2 Objectives of Selvastics

The goal is to design Selvastics as a comprehensive online resource for statistical information and analyses. It aims to set it apart from alternative platforms as a reliable and interactive source, with a strong commitment to openness, transparency, and user engagement. The platform tries to offer various services, including comprehensive statistical explanations, codes for analyses, tips and tricks and useful websites and datasets. With comprehensive guides and tutorials on statistical computation using SPSS and R, it aims to serve a wide range of users in the field of statistics and probability. Selvastics aims to cover a variety of topics, offering clear explanations of basic concepts to detailed discussions on significant research and practical application of statistical methods.

For the target audience, I aim to focus on individuals aged between 18 and 40, which includes students, educators, and professionals. Given the global emphasis on statistics in academic curricula, I have chosen English as the primary language for the platform to cater to an international user base.

The design and aesthetic choices for Selvastics aims to establish a unique digital identity. By designing the platform, I want to address the pronounced gender disparities (only 28% of the STEM workforce is female, AAUW, 2020) and ensure that Selvastics offers accessibility (Aydin, 2021) and representation for all its users. While the global gender gap in STEM is vast and challenging problem, Selvastics narrows its focus to address specific perceptions about who is considered adept in STEM (World Bank Group, 2020). Such biases often manifest subtly in curricula and educational materials, which frequently showcase a predominant image of white men. Therefore, I aim to design Selvastics in a way, that challenge and change these narratives.

Another goal is to optimize the website for mobile and tablet usage, making it a portable resource that can be accessed from anywhere. Furthermore, Selvastics want to encourage user engagement and interaction. Users can contribute to the website by suggesting improvements, reporting issues, or submitting their own tutorials or guides. This contributes to a sense of community and collaboration among users, creating a dynamic and evolving environment for statistical learning.

The long-term objective of Selvastics is to evolve into a comprehensive and widely recognized resource for individuals interested in understanding and applying data science. This will be achieved through a strong commitment to key principles, including *accessibility*, *inclusivity*, and the creation of a *unique brand identity* throughout the development process.

3 Model of effective branding

Webpage design and branding are critical components in establishing a digital identity and ensuring user engagement. Several models have been proposed to describe the application of effective branding in webpage design (for an overview see Lütjens et al., 2022).

To properly address this together with the objectives described in the previous section, I combine the concept of *involvement* (Zaichkowsky, 1985) with the *Elaboration Likelihood Model* (ELM) by Petty and Cacioppo (1986). The involvement concept is essential in understanding the depth of cognitive processing a user engages in when interacting with content. It has been instrumental in various domains, including advertising and consumer behavior, and is applied extensively in literature (e.g., Greene, 2013; Karaatli, 2015; Zaichkowsky, 1994). Conversely, the ELM stands out by offering a dual-route mechanism to persuasion, and its

implications have been explored in diverse contexts, from advertising to health communication (e.g., Guo et al., 2020; Shahab et al., 2021; Susmann et al., 2022). In combining these theories, I aim to create a unique brand identity that ensures that the platform is not only engaging and persuasive but also aligns with design guidelines and branding principles.

3.1   General model assumptions

In the context of web design, visitors find content relevant and interesting, when they are more likely to be involved and engage with the website. In this context, involvement is defined as "a person's perceived relevance of the object based on inherent needs, values, and interests" (Zaichkowsky, 1985, p. 342). In high involvement scenarios, where decisions have significant personal or financial implications, users engage in a detailed and systematic evaluation of messages. They delve deep into content, weighing the advantages and disadvantages, often seeking additional information before forming an opinion or making a decision (Zaichkowsky, 2010). Contrarily, in low involvement situations, where decisions have fewer personal implications, users typically do not invest the same analytical effort into content as seen in high involvement scenarios. Instead, they are more susceptible to other type of cues, that might not necessarily pertain to the content's core message but can influence perception and decision-making (Petty & Cacioppo, 1984; Zaichkowsky, 2010).

The ELM explains how persuasion occurs through two routes: the central route and the peripheral route (Petty & Cacioppo, 1981, 1986). The *central route*, akin to the high involvement processing, is characterized by diligent and analytical processing of information. Users engage via this route are likely to be influenced by the strength and quality of arguments presented. They are more likely to remember the message, agree with it, and allow it to influence their subsequent behavior (Petty & Cacioppo, 1986). For a user to be influenced by central cues, they must be motivated and able to think about the message. These cues are most effective when the audience is involved, interested, or has prior knowledge about the topic. Examples of central cues include (Chaiken, 1980; Petty & Cacioppo, 1984):

- Statistical data or research findings supporting a claim.
- Logical arguments that directly relate to the main message.
- Expert testimonials that provide in-depth insights into the topic.

The *peripheral route*, on the other hand, operates when the user is either not motivated or unable to process the information deeply. Here, persuasion is achieved through peripheral cues, which might not necessarily be related to the actual content of the message. They often appeal to emotions, aesthetics, or credibility, and are especially effective when the audience is either not

motivated or unable to process the central message deeply. Examples of peripheral cues include (Chaiken, 1979; Petty & Cacioppo, 1984):

- The attractiveness or likability of a spokesperson or endorser.
- The number of arguments presented, regardless of their quality.
- Background music, visuals, or other aesthetic elements of the presentation.
- Symbols of credibility, like a doctor's white coat or a university's emblem.

While these theories provide a robust framework for understanding user engagement and persuasion, the practical aspects of webpage development cannot be sidelined. In the following, I establish a theoretical basis for the choice of color.

3.2 Framework for color choices

The choice of color is not just about aesthetics. Colors evoke emotions, set the mood, and can significantly influence user perceptions and behaviors (Valdez & Mehrabian, 1994). In web design, it is essential to use color conservatively. Lidwell and colleagues (2003) suggest a limited palette of approximately five colors, ensuring that the design remains visually digestible at a single glance. Further, aesthetic color combinations can be achieved in various ways, such as using adjacent or opposing colors on the color wheel. The saturation level of colors also plays an important role. While saturated colors attract attention, desaturated colors, which come across as friendly and professional, are preferable when the focus is on performance and efficiency (Lidwell et al. 2003). A color wheel is presented in Figure 1.

In the broader context of branding, the choice of color becomes even more relevant. Brand elements such as logos and other design features should also blend into the overall color choice of the brand. For instance, a brand logo is not just an icon or image, it is a "visual representations of a brand's identity and play a crucial role in shaping consumer perceptions and establishing brand recognition" (Mohamed & Adiloglu, 2023, p. 33). Lidwell et al. (2003) delve deeper into this, introducing the idea of *symbolic representation*, where images encapsulate abstract concepts, actions, or objects. However, they are only effective when the images contain well-established and easily recognizable objects. This is consistent with Wheeler (2017) and Woodside (2010) who emphasizes simplicity and relevance in designs features.

Figure 1

Color wheel
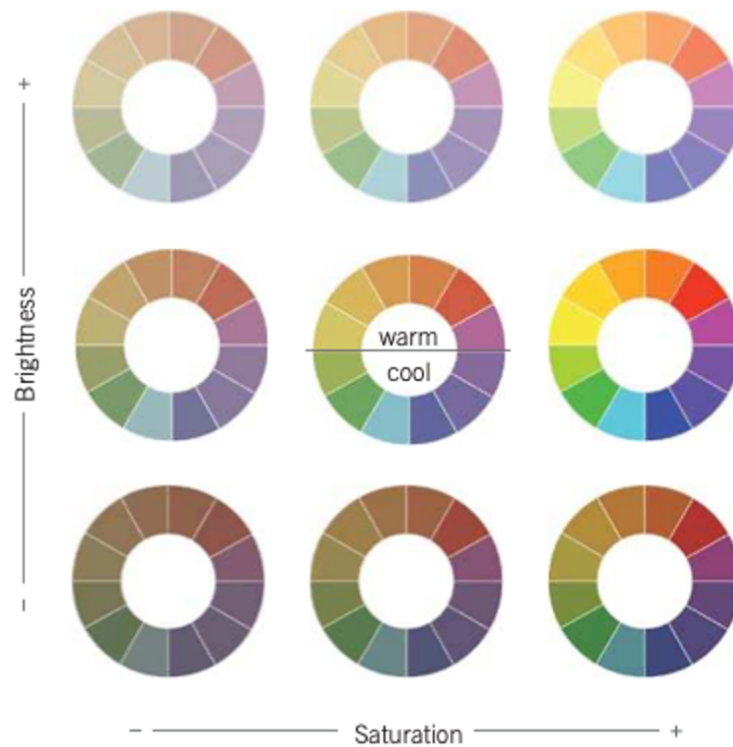
Note. The color wheel presented here illustrates the interplay between saturation and brightness. Saturation refers to the intensity or purity of a color, with colors at full saturation being vivid and those with low saturation appearing more muted or grayish. Brightness, on the other hand, pertains to how light or dark a color appears. A color with high brightness will appear lighter, while one with low brightness will appear darker. This representation is adapted from Lidwell et al. (2003, p. 39).

4   Application of the branding model to Selvastics

This chapter focuses on the application of the established branding model to the Selvastics platform. I will discuss the development steps taken on the website and thereby highlight how the theory informs and improves a digital brand presentation. I will begin with an examination of color choices and the development of the color palette. This will be followed by a focus on the logo creating and branding. The chapter concludes with a description of the website's development and its technical components.

4.1   Color creation

Colors on Selvastics aim to be both functional and psychologically impactful. The importance of color in web design, especially in terms of viewer emotions and overall trust, has been emphasized in recent studies (Kikuchi et al., 2022). The chosen colors are black, white, and two distinct shades of blue, along with purple. The color choices also align with the peripheral cues

of the ELM and thereby serve as subtle persuasive elements. A detailed description of each color is provided in Chapter 4.1.2, and a visual representation can be found in Figure 2.

4.1.1 Brightness and saturation

The selected colors for Selvastics prioritize the accessibility objective and therefore, uses shades of colors, that are less harsh. This choice is rooted in the understanding that a darker background can reduce eye strain and enhance focus, a principle supported by research on the impact of color contrast in human-computer interaction (Wu, 2012).

The goal was to avoid using colors like pure black (i.e., HEX: #000000), because it is challenging to find something that is true black in real life (Taylor, 2012). As everyday objects might appear black, they have some amount of light reflecting off them, making them dark gray. More specifically, the light often has a tint, in which the dark grey appears as colored-dark gray. Furthermore, a significant disparity in color brightness, such as white (100% brightness) against black (0% brightness), creates intense light levels that overstimulate the eyes when reading text. This overstimulation makes the eyes work harder to adapt to the brightness (IJsselsteijn et al., 1998). Additionally, using a pure black background with white text can lead to halation, where white letters bleed into the black background, especially affecting users with astigmatism (blurred vision due to the irregular shape of one or both eyes, Griffin & Eberly, 1971). These considerations influenced the brightness and saturation of all chosen colors, which are described individually in the following chapter.

4.1.2 Color palette

The Selvastics website employs a carefully curated color palette to enhance user experience and convey its academic nature. *Dark gray* (i.e., HEX: #444444) is used for text on a white background, ensuring the change in brightness is not as drastic. It offers a pronounced contrast and visibility of text and other elements. This approach also prevents overstimulation of the retina and allows users to read for extended periods without discomfort (UX Movement, n.d.). *White* (i.e., HEX: #FFFFFF) is predominantly utilized in the header menu. Its clean and minimalist presence against the black background not only enhances readability but also imparts a sense of clarity and precision, attributes essential for an academic platform (Lidwell et al., 2003). Additionally, two shades of blue serve distinct purposes. The *darker blue* (i.e., HEX: #2E456F) accentuates recent updates, adding a layer of emphasis. In contrast, the *light shade blue* (i.e., HEX: #3B566E), which is identical with the logo's color (see Chapter 4.2), is designated for button elements. This color choice subtly underscores the website's mission of delivering trustworthy statistical data, with blue often being associated with trustworthiness and reliability (Cerrato, 2012). Lastly, *purple* (i.e., HEX: #5D5B79), a color often linked with

creativity and wisdom, is used to introduce visual intrigue and spotlight specific components (Cerrato, 2012). Its inclusion is a nod to the innovative and insightful nature of the content presented, reflecting the importance of color in digital platforms and its impact on creativity and insight (Horlo & Mintii, 2018).

The color choices primarily follow an analogous color combination (uses colors that are next to each other on the color wheel) for the overall appearance on the webpage (Figure 2A). However, complementary color elements (colors that are directly across from each other on the color wheel) are also incorporated for specific features (Figure 2B, see Selvastics robot in Chapter 4.3). In relation to the ELM model, the analogous colors address the central route, engaging visitors who are highly involved. Conversely, the complementary colors align with the peripheral route, targeting visitors with lower involvement through distinct color coding.

Figure 2

Selvastics color palette
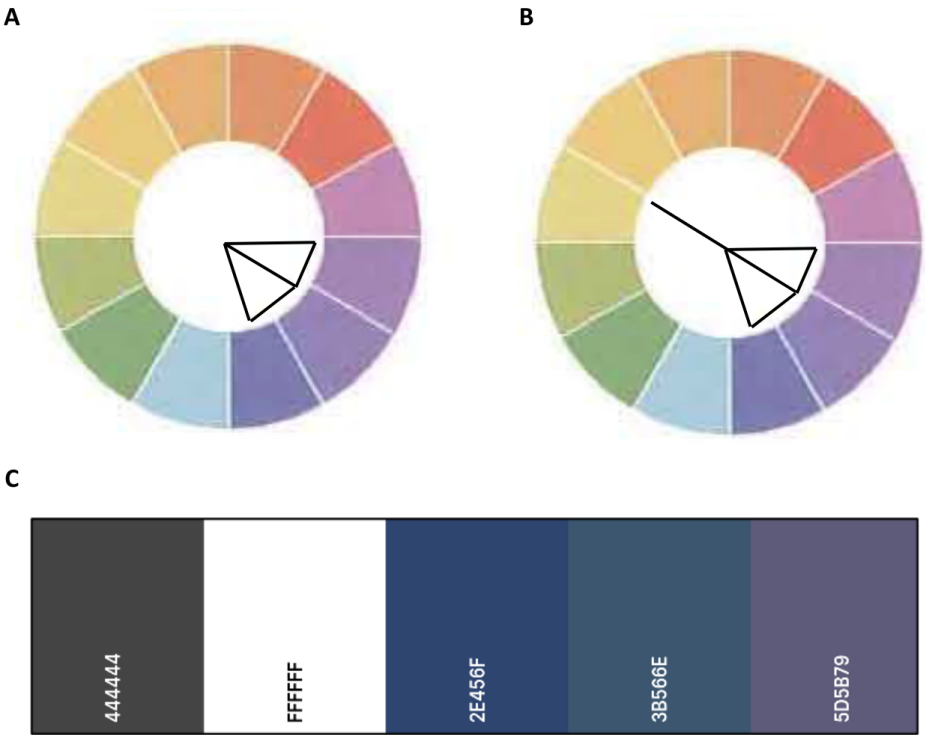
Note. **A** represents the analogous colors utilized on the website. **B** integrates these analogous colors with an additional complementary element, forming the complete color wheel for the Selvastics page; this element is elaborated upon in Chapter 4.3. Lastly, **C** exhibits the color palette, with each shade labeled by its specific HEX code.

4.2 Logo development process

The design of the Selvastics logo reflects the platform's core principles and the essence of its services. The name "Selvastics" is a combination of my last name, "Selva", and the word

"Statistics", symbolizing the personal commitment and the academic discipline that form the foundation of the platform. The initial idea for the logo was to replace the "S" in Selvastics with an S-curve shaped distribution, thereby implementing field related elements into the brand name and logo (i.e., symbolic representation, Lidwell et al., 2003). However, during the design process, it became evident that the S-curve was challenging to incorporate in a way that allowed the word to be read clearly. After consideration of the initial logo design indicated a tendency to read the word as "elvastics", which led to a revision of the design concept. The revised logo design retained the S-curve, but also included the full brand name "Selvastics". However, this resulted in a perception of a double "S" (S-curve and the first "S" in Selvastics) when reading the brand name. After some consideration, I decided that the icon should still represent a distribution, but not necessarily the S-curve. I then turned to Namecheap (n.d.), a platform for image and font suggestions. On the platform, I search for the keyword's "distribution" and "statistics-curve", which led to the current Selvastics logo (presented in Figure 3).

Figure 3

Selvastics logo

Note. The logo is integrated into the website with dimensions of 1086x176 pixels and a file size of 45 KB.

The final Selvastics logo uses the font "Tsanger Yun Hei W03" (Whatfontis COM SRL, n.d.) and features the previously introduced *light shade blue* color, in which the icon (a distribution with two peaks) is colored. The logo effectively highlights the underlying principles of the platform, providing a recognizable image that associates the word "Selvastics" with the fields of statistics, probability, and data science. The design elements of the logo resonate with the theoretical underpinnings, as the meaningful integration of the website name caters to high involvement users who would appreciate the depth and significance. Simultaneously it serves as a peripheral cue, drawing in low involvement users.

4.3   Brand message development

Selvastics' brand message, "Statistics and Data Analysis Tutorials", was deliberately chosen to convey a clear and focused educational mission. This message communicates the platform's primary objective but also sets the tone for a structured learning journey. To further enhance this journey and provide users with a sense of continuity and guidance, further features are introduced. Drawing inspiration from platforms like Duolingo (n.d.), where subscribers are

consistently accompanied by their mascot, Duo the owl, Selvastics aspires to create a similar bond with its users.

In line with this aspiration, the "Selvastics robot" has been introduced. The Selvastics robot aligns with the ELM's peripheral cues. This visual companion, with its unique design and presence, appeals to users' emotions, ensuring they feel a sense of connection and support as they navigate through the platform. The image-concept was inspired by the Ponce Lab, which utilized an image generated with DALL-E (Open AI, 2023). Their companion reflects two elements of their day-to-day work environment (mathematical explanation of visual processing and rhesus macaque, Ponce Lab, n.d.). Likewise, I used DALL-E and iterated several key aspects of Selvastics into prompts, which resulted in the image presented in Figure 4.

Figure 4

Selvastics robot
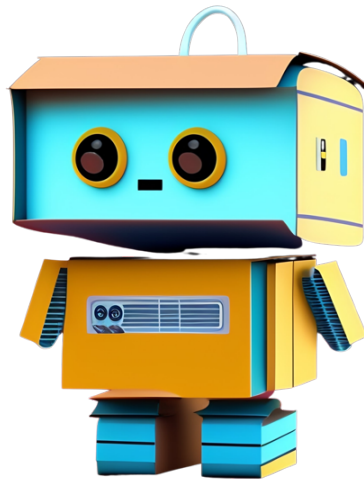
Note. This image, inspired by the Ponce Lab and generated using DALL-E (Open AI, 2023), serves as a constant companion for users, symbolizing support, continuity, and the platform's core ethos. The Selvastics robot is integrated into the website with dimensions of 2048x3072 pixels and a file size of 3.5 MB.

Additional visual elements were sourced from Canva (n.d.), where stock images were selectively chosen and subtly modified. A primary objective behind these image selections was to convey a sense of community. This was achieved by featuring individuals from diverse cultural backgrounds. To maintain the theme of community, images always depicted at least two individuals. Furthermore, to ensure gender balance, images predominantly featuring males were counterbalanced with those majorly showcasing females (note that the terms "male" and "female" are used here to denote the general perception of the respective genders, without intentionally confining gender to just two categories). The design and choice of banners reflect the concept of involvement and the ELM principals. For high involvement users, the content of the articles and the detailed imagery provide a systematic evaluation. In contrast, the visual appeal and design aesthetics of the banners serve as peripheral cues, engaging low involvement

users and ensuring a holistic user experience. An overview of the banners is presented in Figure 5.

Figure 5

Selvastics blog article banners
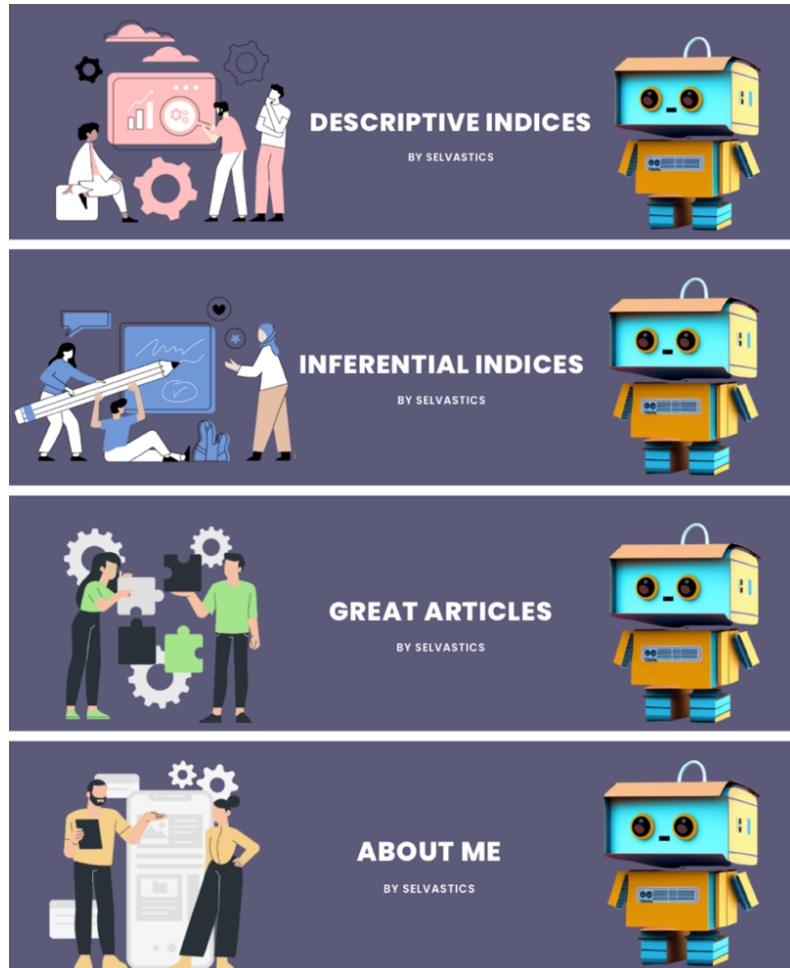
Note. Each Selvastics blog page banner features the consistent presence of the "Selvastics robot", a unique Canva stock image and a text element that indicates the page content. Elements within each banner operate independently in terms of responsiveness. As the window size changes, each element adjusts based on its distinct responsive attributes.

4.4 Website development

The development of Selvastics required careful consideration of various hosting platforms. Initially, several hosts such as Strato (n.d.) and WordPress (n.d.) were evaluated. However, these platforms did not offer the level of code-based web development that was necessary. The need for greater control over the website's development and the ability to make direct code modifications, led to GitHub (n.d.) as the preferred hosting platform. Additionally, GitHub offers free hosting for open-source projects, which was another deciding factor.

Consistent with recommendations by Cocquebert et al. (2010), the development of Selvastics began with the implementation of a template as a starting point. I used the Edu Meeting Template (Templatemo, n.d.) which provided a set of basic CSS functions that were repurposed for new elements on the website. Most of the website's transformation was achieved through extensive HTML modifications, with the aim to create a unique identity for Selvastics while retaining beneficial code attributes from the template.

The entire website, including the source code of the website and the essays, has been developed on GitHub and is publicly accessible, allowing for collaboration and iterative development as changes and updates can be viewed by anyone (see GitHub deployments online). The code has been modified using Visual Studio Code (Microsoft, n.d.) and synchronized with GitHub Desktop (GitHub, n.d.). While there have been 70 commits published to the repository on GitHub, most changes were made offline. This is because changes on GitHub take several minutes to implement, making online commits inefficient when testing multiple solutions to a problem. Once a set of changes was finalized offline, they were then pushed to GitHub. To ensure compatibility across different browsers and devices, the inspect element function on Google Chrome (Google, n.d.) was used. This allowed for the application of format optimization (e.g., small window usage), ensuring a great user experience across various devices.

For visual content, AI-generated stock image gallery from Lexica (n.d.) were used. This was chosen to avoid potential copyright issues, as the copyright laws concerning AI-related services are yet to be definitively established (Chesterman, 2023). Additional graphic design needs were addressed using Canva (see Chapter 4.3). The utilization of these type of images is a nod to the peripheral cues. These images, with their unique aesthetics, serve to engage users who might not delve deep into the content but are influenced by the visual appeal and perceived credibility of the platform.

The current homepage provides an overview of the website's offerings, with available guides and tutorials which are regularly updated. The platform's future plans include guides for more languages such as Python, with the intention of reaching a more diverse audience and democratizing access to data science education.

4.4.1 Technical website elements

Selvastics is developed as a statical website. The source code for the website is composed of JavaScript (73.1%), HTML (21.1%) and CSS (5.8%). Most of the JavaScript set custom functions and control responsive design techniques, e.g., to ensure optimal compatibility across devices. Further, CSS (together with some HTML inline CSS codes) were used for responsive

elements (e.g., hamburger menu) which appear when the window size is reduced, facilitating further easement on navigation and enhancing the user experience. To render mathematical formulas on the website, MathJax (Cervone, 2012), a JavaScript display engine, was integrated. MathJax facilitates the display of mathematical notation written in LaTeX (and other) notation and ensures it is consistently displayed across various web browsers.

For the management of Selvastics, I subscribed two free backend services. To gain insights into user behavior and track visitor numbers, Google Analytics (Google, n.d.) has been integrated into the website. The data procured through this service aids in understanding the website's performance, thereby informing decisions to improve user experience and engagement (Omorogbe, 2023). To handle form submissions by visitors, I have incorporated Formspree (Formspree, n.d.). This service enables the easy integration of custom contact forms without necessitating server-side code. Upon a visitor submitting a form, Formspree processes the data and sends an email containing the form's content to the specified email address. By implementing these technical elements, Selvastics provide an enjoyable experience for users across various devices and platforms. The website's technical design reflects its commitment to accessibility, user engagement, and high-quality education, mirroring the platform's objective of being a comprehensive and accessible knowledge repository.

5   Discussion

In this chapter, I will conduct a comprehensive analysis of the Selvastics platform. I will examine the theoretical foundational and further compare features and functionalities on Selvastics with an alternative platform. Lastly, I and address the limitations encountered during the development.

5.1   Evaluation of the branding model

The application of a single grounding theory often proves insufficient, especially when addressing the multifaceted nature of consumer behavior and brand perception. In my approach, I did not rely solely on one foundational theory, instead, I utilized the concept of Involvement together with the ELM. This, in combination with other relevant concepts, led to a comprehensive branding model tailored to address the specific needs and objectives I initially stated.

The resultant branding model served as a robust theoretical framework, which allowed for a structured and coherent web development process. This ensured that the branding and web development were not only theoretically grounded but also practically applicable. However, every model and development process come with its set of assumptions and challenges. In the

context of website development, numerous assumptions were made, particularly concerning user involvement. Catering to a diverse audience and addressing their unique involvement processes is a difficult task. The inherent variability in user behavior means that while certain elements of the website might resonate with one segment of the audience, they might not have the same impact on another. This unpredictability underscores the importance of empirical studies and user experience reports. This type of data, which is not present at this point in time, allows to evaluate the effectiveness of branding efforts and the overall web development.

In conclusion, while the combined approach of the involvement concept and the ELM model offers a solid foundation for branding and web development, continuous evaluation and more data is needed to ensure the effectiveness and relevance of the platform. Given these inherent uncertainties and the lack of data, I propose a comparative analysis between Selvastics and StatistikGuru in the following chapter. StatistikGuru, as an exemplary alternative platform, can offer insights into areas of improvement for Selvastics and highlight the strengths and weaknesses.

5.2 Comparison between Selvastics and an alternative platform

When comparing both websites, StatistikGuru presents a more streamlined and minimalist landing page, focusing primarily on its core offerings without overwhelming the visitor with additional content (see Figure 6A and Figure 6B). In contrast, Selvastics offers a more comprehensive landing page, showcasing studies for participation, links to articles, and a displayed contact form. The approach to user interaction also varies between the two platforms. While both websites offer a contact form, StatistikGuru's is less conspicuous, potentially creating a barrier for users seeking to communicate or inquire. Selvastics, on the other hand, prioritizes user engagement with a more accessible and straightforward contact form.

The Logo of StatistikGuru (Figure 6C) is not presented within the landing page, but as a tab icon. This is not visually present and therefor does not contribute to the overall brand image. Further, the StatistikGuru Logo is very simple. It is not an indicator for the content presented on the page. On the other hand, the Selvastics Logo activate specific associations with probability and statistics, suggesting a more defined purpose for its platform.

In terms of aesthetics, StatistikGuru employs a predominantly white color scheme with sporadic colored elements, exuding a professional aura. However, it appears that the color choices were not grounded in a specific theory or idea, unlike Selvastics, which has a carefully curated color palette based on psychological and user experience principles. Another notable distinction lies in the monetization strategy of StatistikGuru. While it offers free content and explanations, it

charges for personal statistical consultation and evaluation. This model can create a perceived distance between the platform and its users, especially when essential information is gated behind a paywall. Functionality-wise, StatistikGuru has an edge with its additional tools like the effect size calculator. Such tools, while currently absent in Selvastics, would enhance its utility and appeal to a broader audience. These service tools also potentially create a greater involvement to the webpage, indicating that visitors revisit the page. While Selvastics currently lacks these features, integrating them could significantly boost its usability and broaden its user base.

Despite these differences, it's essential to recognize the unique strengths of each platform. On the one hand, StatistikGuru, with its professional demeanor and advanced tools, provides in-depth statistical guidance, at a high level of professionalism and academic accuracy. Selvastics, on the other hand, emphasizes community-building and user engagement. While StatistikGuru may appear superior in certain aspects, Selvastics brings a unique blend of community engagement, theoretical grounding (regarding web design), and user-centric design. The goal is not to surpass or replicate alternative pages like StatistikGuru. Instead, the long-term objectives of Selvastics are fundamental to complement the existing educational offerings in the domain of statistics.

Throughout the development process and subsequent comparison with StatistikGuru, Selvastics' dedication to *accessibility* (by meticulously selecting color schemes and incorporating alt text), *inclusivity* (using diverse imagery and a conscious effort to address gender disparities in STEM), and *brand uniqueness* (by its logo design and the innovative introduction of the Selvastics robot) has become evident. As the platform evolves, Selvastics mission continues to address diverse learner needs and thereby add value to the educational environment of students, researchers, and data enthusiasts.

Figure 6

Comparative visualization of Selvastics and StatistikGuru
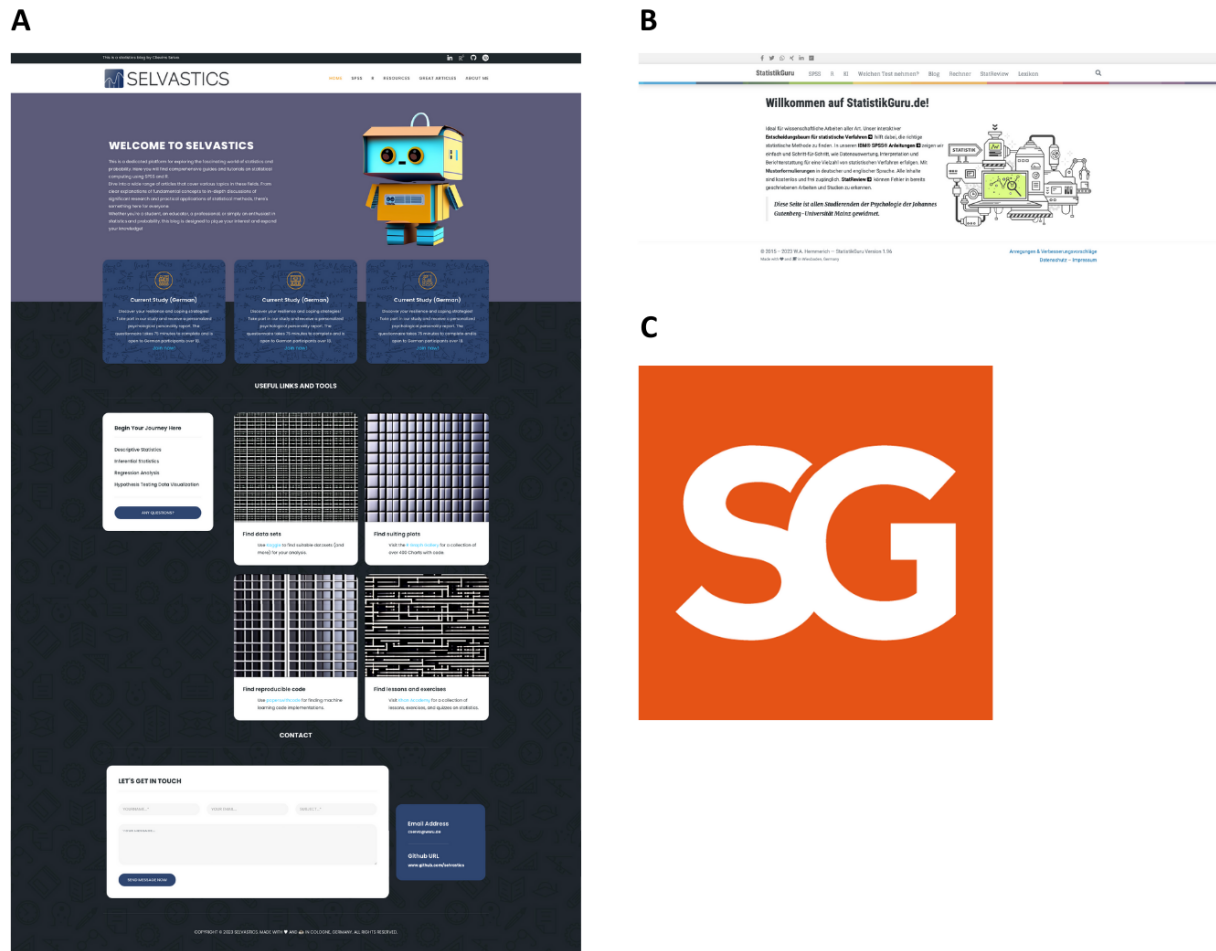
Note. The figure is segmented into three distinct areas. Area **A** showcases the landing page of Selvastics, offering a glimpse into its design and initial user experience. The **B** area displays the landing page of StatistikGuru, providing a direct visual comparison in design and user interface with Selvastics. Lastly in area **C**, an emphasis is placed on StatistikGuru's branding with a presentation of its logo. For a clearer and more detailed view, visit StatistikGuru online at https://statistikguru.de.

5.3 Limitation

In the development of Selvastics, several constraints were encountered. One primary limitation was the reliance on unpaid services, such as hosting on GitHub, free backend services, and AI-generated art. While this approach was essential to keep the platform free, it did impose restrictions on the capacities and services that could be offered. Furthermore, the Selvastics robot, as it stands, does not offer the advanced functionalities seen in platforms like Duolingo. The Selvastics robot needs more intricate coding and development, as well as research on its effect on user experience. Another challenge is the fluctuant policies of AI resources, which can introduce uncertainties in content availability and usage rights (Chesterman, 2023). Additionally, website security and user data protection are significant concerns, as my

knowledge in these areas is limited. As a result, these critical aspects have not been prioritized, and future iterations of Selvastics will need to address these security concerns.

5.4 Directions for future

As Selvastics continues to evolve, there are several areas of focus to enhance its offerings and user experience. A primary objective will be to expand the platform's content, particularly articles that contribute to the diverse needs of statistics enthusiasts. The Selvastics robot, with its current limitations, presents an opportunity for further research, especially in understanding the user experience and its impact on learning outcomes. This research will guide the intricate coding and development needed to elevate the robot's functionalities (e.g., the Selvastics robot can function as a chatbot). Additionally, the emerging moral dilemmas associated with AI resources, which are still subjects of ongoing discussion and lack clear consensus, will be further explored. This is to ensure that ethical considerations remain at the forefront of content creation and usage. It is necessary to pursue this sensitive issue and, if required, consider alternative types of imagery. Finally, there is a compelling case to be made for the development of a Selvastics mobile application. This would not only increase accessibility but also offer a more user-friendly experience in the long run.

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This paper has not been submitted in the same or similar form to any other authority and has not yet been published. I agree to have this paper checked in order to rule out potential similarities with other works.

Münster, September 18th, 2023

Clievins Selva