

CHAPTER II

LITERATURE REVIEW

2.1 Website

When a designing a website, there are several limitations are needed that taken into account. one example of the limitations taken by designers is the selection of fonts that will be included in the website with the aim of making it easy to read by users. The limitations of the website design are a benchmark for ease of use by users. Some of these limitations include:

2.1.1 Website Anatomy

Websites are designed in such a way that it is in accordance with the needs of the target audience, specifically with the functions needed by the audience can be used optimally. The anatomy of a website refers to the various foundational navigation elements, such as header, feature area, the body, sidebar, footer, and background.

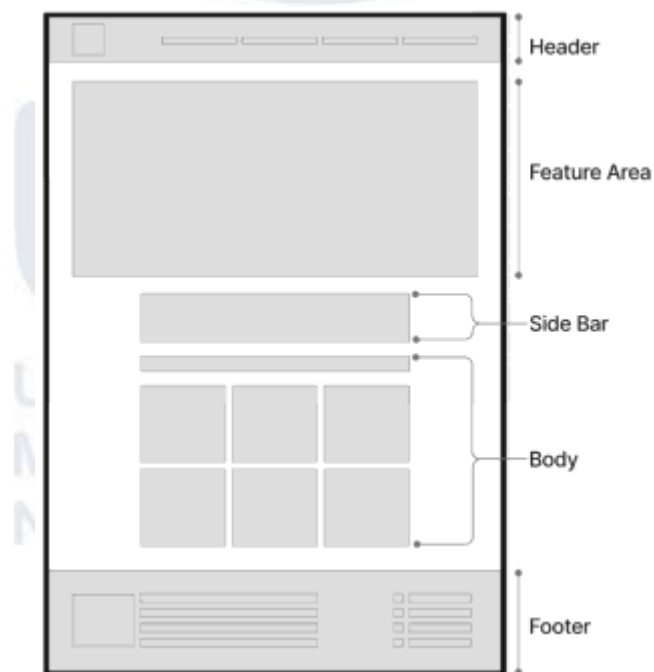


Image 2.1 Website Anatomy

Header acts as the grounding force for the user and often remains consistent throughout the entire website, often the visual unifying force. Headers often remain consistent and contains information for search engine optimization, as well as help navigation for the user.

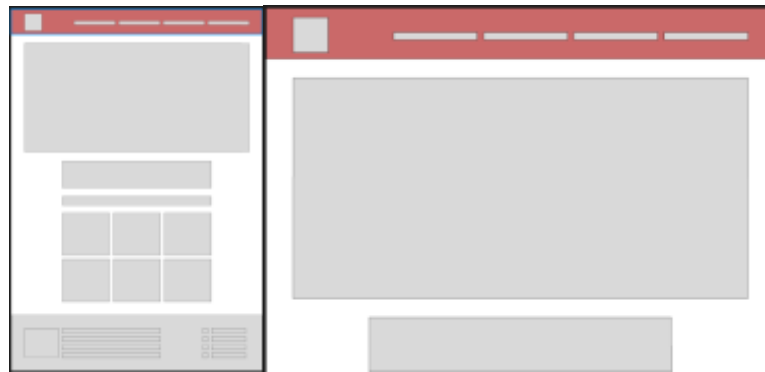


Image 2.2 Website Header

Feature area is the focal point of the entire webpage, often containing the focus or most important part of the information given in the website. This can be the most urgent of information, or the main focus of the topic of the website. It often shows up as a slideshow, so not to overwhelm the user's eyes immediately with the large amounts of information, allowing them to browse as time goes on.

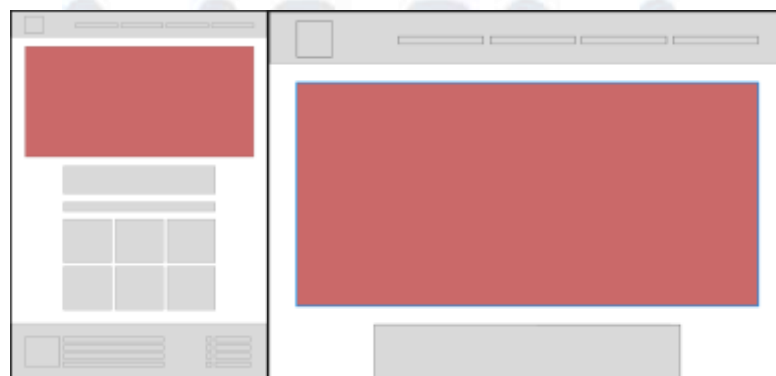


Image 2.3 Website Feature Area

Body contains the main content of the information. More often than not, this also signifies the end of the search for the user, as this is where the information the user was seeking is laid out. The body can theoretically stretch on forever, however for organization, the content itself often contains words with hyperlinks to another page, each one pertaining to a specific topic.

The optimal line length of any paragraph for ideal legibility is 52–65 characters for each row. Anything too short or too long, according to (Miller, 2011) would make it harder for the user to read. This must be kept in mind for the sizing of the website.

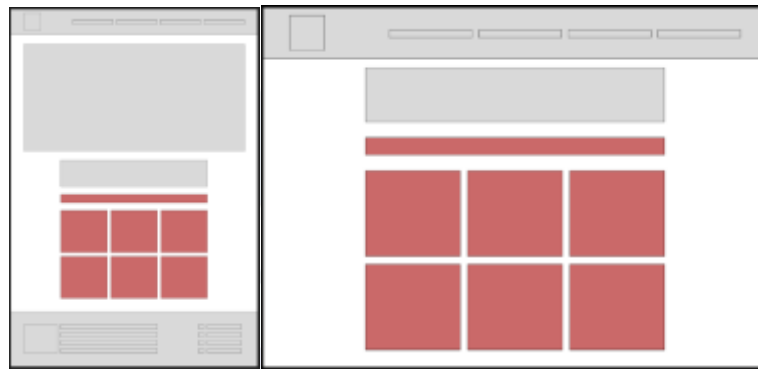


Image 2.4 Website Body

The sidebar of a website is often used for advertising purposes, however this area can also be filled with secondary information that either support or directs the user to related content. Although it's commonly seen as a vertical bar that sits right next to the body, it could also appear as a horizontal bar, akin to a banner, that sits right below the feature area, often in a place where it would not restrict the user's sight, or at in certain cases, can be dismissed rather quickly.

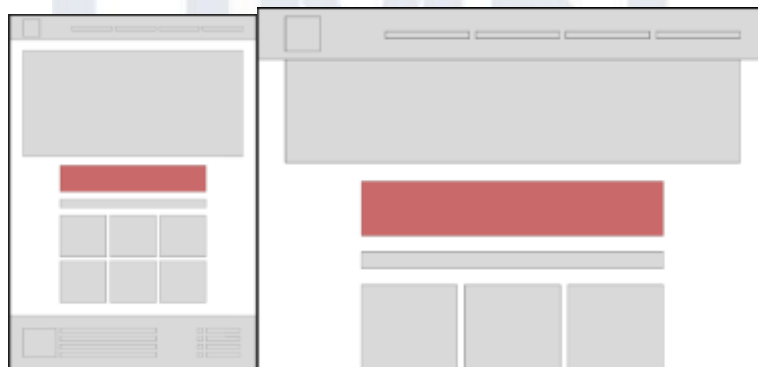


Image 2.5 Website Horizontal Side Bar



Image 2.6 Website Vertical Side Bar

The footer of a website is the signifier to the user that they have reached the end of the webpage. In current modern websites, it often resembles a mini site containing words that would boost the website in search engines, as well as help the user navigate with links that would lead to other webpages, in or out of the website. This also often contains a small drawing to help draw attention to the footer, and additional information, such as contacts and emails.



Image 2.7 Website Footer

Background of the website is the space that occupies behind the webpage content. It often contains a visual element that helps unify the entire page, adding depth and dimension, and can help set the tone for the user to read the content in. It may also act as the white space of the webpage.

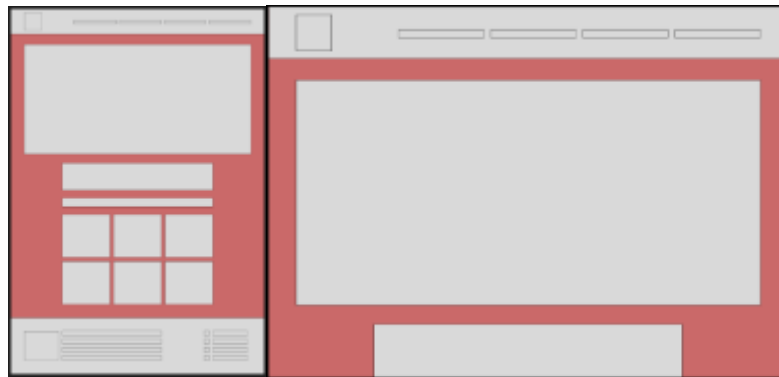


Image 2.8 Website Background

These are all the necessary components to create a webpage. Although some of the elements might differ in hierarchy or placements, most webpages would contain the header, body, background and footer at the very least.

2.1.2 Website Unity

The unity of a website is dependent on several factors, all creative a design system where the user can read and follow information, seeing the entire website as a cohesive unit, the factors of which are as follows: organization and hierarchy, white space, and grids.

It is important for website to have an effective design system. This means that a visual hierarchy, the sequencing of elements, must be set to clearly define the order of importance of the information given. There are often 3–4 caste in the hierarchy of each group, with each individual elements grouped and organized according to Gestalt Principles of Design, such as similarity, proximity, closure and continuance.

White space, or negative space, are areas where there are little to no elements. Some examples of negative spaces are margins, gutters, padding, line and paragraph spacing, and many more. Negative space helps separate a grouping of elements from one another, in other words, creating patterns, and helps make a website scannable to the user's eye.



Negative Space



Negative Space



Image 2.9 Negative Space

The grid system is one of the oldest ways to create a balanced layout, as the grids organize both the elements and space within a design. By aligning the elements to the columns of the grid, it creates a defined space that gives the appearance of an organized design. Elements of the website are placed in a clear relationship to the grid, and any elements that break out of the grid would stand out to the user, and thus placing higher in the hierarchy scale.

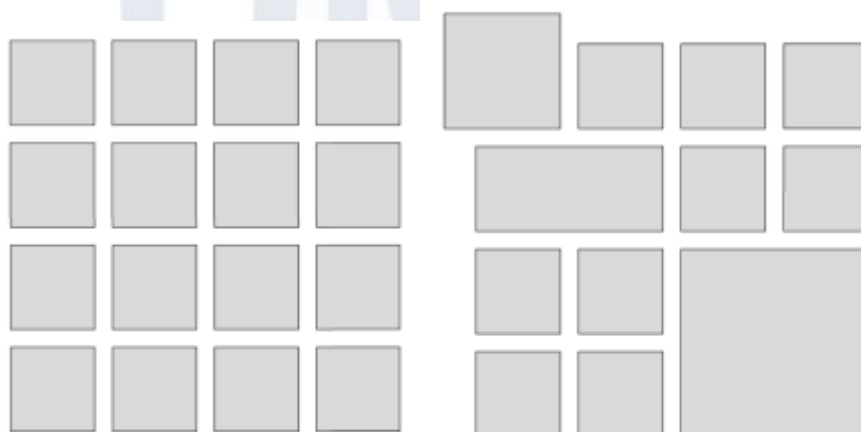


Image 2.10 Grid System and Hierarchy Scale

In general, a website can have 3 to 10 columns in a design. However, the number of columns must be thought out depending on the space available. If the number of columns is too low, it can be too limiting for the designer, while having too much columns can make it harder for the user to clearly recognize the relationships between each element.

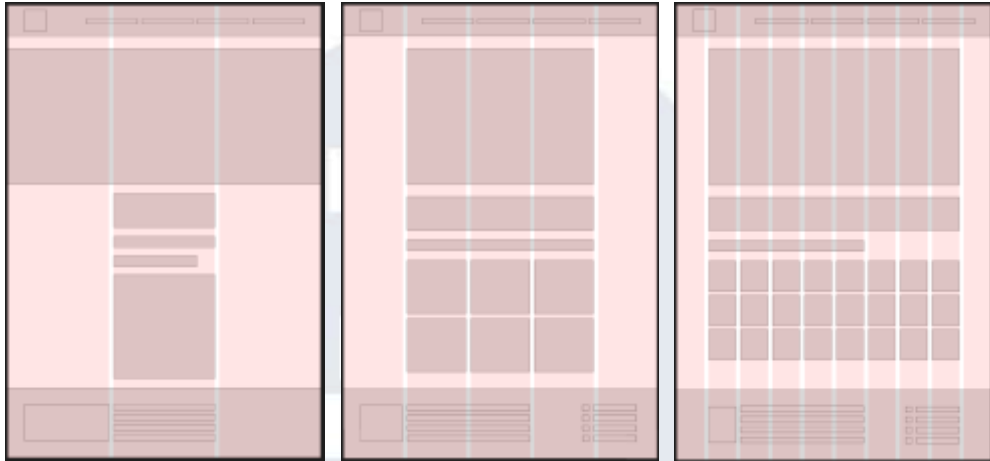


Image 2.11 Columns

The horizontal lines of the grid system, meanwhile, are known as the baseline grid, as it is where all text is aligned to make sure that the flow of the text are systematic. Because of this, the number of horizontal lines of the grid system are often dependent on the size of the text.

2.1.3 Website Elements

The elements of a website are what gives the website a sense of style. The style itself is an attempt to connect to the basic needs and sensibilities of the target demographic, achieved through the manipulation of the elements of the website. Some of the elements are as follows:

Color is one of the fundamental ways to set a mood or tone for a piece of design by appealing to a user's emotions. Color itself has meaning, and can be utilized to signify relationships between different elements. Contrasting colors can also be applied to help guide and direct the user throughout the layout. Color has 3 different properties; hue, saturation, and value. The hue refers to the coloration, or in traditional art, the pigment. The

saturation refers to the vibrancy of the color. The value refers to how darker or how lighter the color is.



Image 2.12 Color Properties

Primary colors refer to colors that cannot be made by mixing any other color and from which all other colors are derived from. There are 3 main types of primary color models that depends on the medium used. Traditionally, the primary colors of the artists' spectrum is Red, Yellow and Blue. However, in the modern era, it is more common to see RGB, or Red, Green and Blue, for any digital media, based on the human perception of colors, as humans only has 3 types of color receptors in the eye.

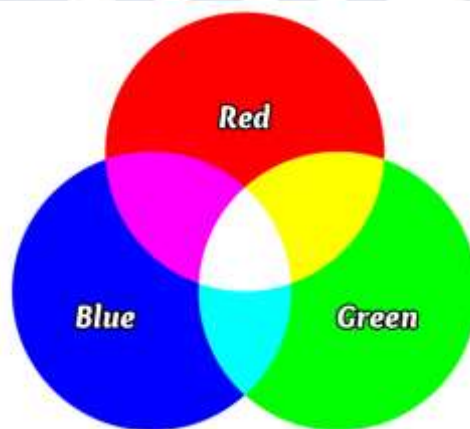


Image 2.13 RGB Color Model

In printing mediums, it is more common to see the CMYK color model, which consists of cyan, magenta, yellow and key (black). By mixing the pigments in even intervals, secondary colors are produced, which consist of red which is a combination of magenta and yellow, blue which is a combination of cyan and magenta, and green which is a combination of cyan and yellow (Beaird et al., 2020). By mixing the secondary colors even further either each other or with primary colors, it is possible to create intermediate colors, such as orange (red + yellow), or purple (red + blue).

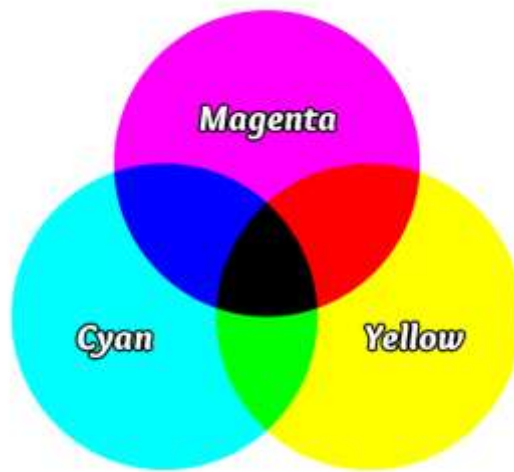


Image 2.14 CMYK Color Model

Most often, the range of colors available to the designer is represented as a color wheel, following the traditional RYB color model. The color wheel helps the designer combine and group colors, and is generally used in almost all color theories such as color schemes, color temperatures, and color modes.

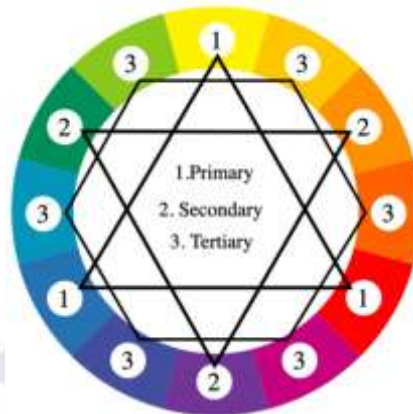


Image 2.15 Color Wheel

Source: Beaird, George & Walker (2020)

Color schemes are formulas used to create combinations of colors that are harmonious to the user's eye. There are six types of basic color schemes: monochromatic, analogous, complementary, split complementary, triadic, tetradic (double complementary), warm colors, and cool colors.

Monochromatic color scheme is a color scheme that consists of a single color combined with a tint or shade of that color. It can either be darker or lighter but the chrome of the color stays the same.

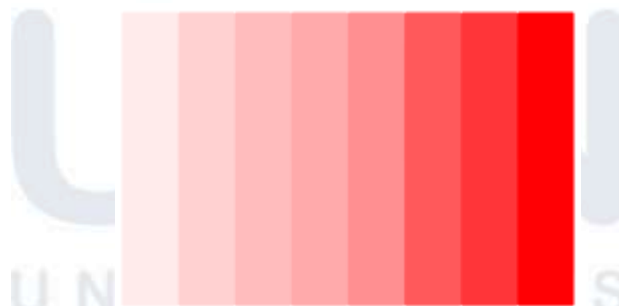


Image 2.16 Monochromatic Color Scheme

Analogous color scheme usually involves one primary color being supported by two or three colors that are directly next to each in the color wheel.

Analogous



Image 2.17 Analogous Color Scheme

Source: The Colour Wheel: Using Colour Theory In Design (2014)

Complementary color scheme usually two colors that are placed on the opposite of the color wheel, such for example, red and green, or purple with green. The theory between this color scheme is that once the colors in a complementary color scheme is placed next to each other, the visual contrast increases due to the difference in hue, and thus making it seem that the other color is more vibrant.

Complementary



Image 2.18 Complementary Color Scheme

Source: The Colour Wheel: Using Colour Theory In Design (2014)

Split-complementary color scheme follows a similar example with complementary color scheme, however, instead of straight to the complementary color, instead the designer choses the neighboring colors, such as red with a blue-green and a yellow-green, or a yellow with a blue-purple and a red-purple. Triadic color scheme involves matching three colors where three

points of an equilateral triangle could be drawn in the color wheel, such using all the primary colors, or all the secondary colors, such as red, blue, and yellow, or purple/ magenta, green and orange.

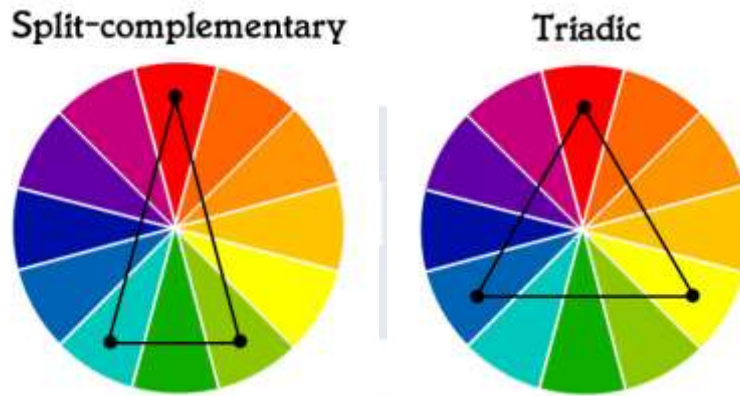


Image 2.19 Split-Complementary and Triadic Color Scheme

Source: The Colour Wheel: Using Colour Theory In Design (2014)

Square and tetradic color schemes involves matching four colors where 4 points that make up either a square or a rectangle can be drawn on the color wheel.

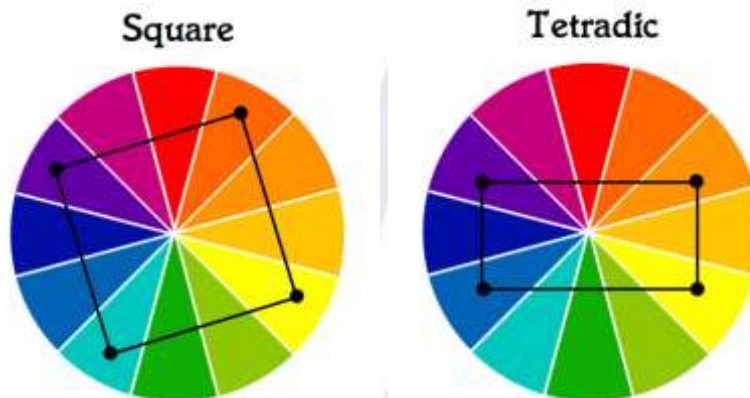


Image 2.20 Square and Tetradic Color Scheme

Source: The Colour Wheel: Using Colour Theory In Design (2014)

In addition, in the color scheme there is also the term temperature colors. Temperature colors, consisting of either warm or cool colors, are based of their association with nature and the culture of the people. As the sun and fire, both symbols of warmth, are colored red, red in turn is associated with

warmth, while cool colors are associated with water and ice, both being cooling elements. This fusion between the physical and biological sensation and perception of the color would make up the experience of the color itself, as according to Holtzschue (2017), red has the ability to stimulate hormone production and raise blood pressure, while blue has been shown to do the opposite, lowering blood pressure and reduce hormonal secretion. Red can induce excitement, passion, anger, or even hunger in the correct context, while blue can induce anxiety, sadness, or calm the emotions of the user.

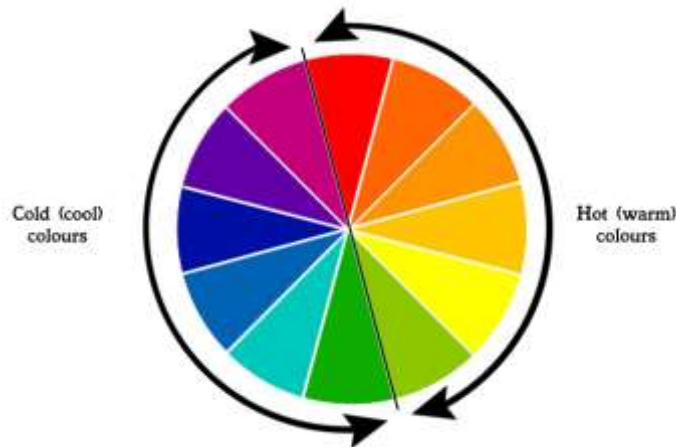


Image 2.21 Cool and Warm Color Scheme

Source: The Colour Wheel: Using Colour Theory In Design (2014)

Color plays a secondary role in recognition to the shape of the object, based on the user's individual experiences, social and cultural traditions, environmental surroundings and teachings. Color can stimulate, depress, or otherwise alter moods of the user. The usage of color to invoke emotions from the audience is also known as color psychology.

Color psychology is a field of science that analyzes the emotional and behavioral impacts of colors (Beaird et al., 2020). Colors can invoke emotions, and can be treated like a language, where each color may have a different meaning or interpretation depending different factors, such as biological responses, cultural associations, current trends, and personal

experiences (Holtzschue, 2017). Some of the global interpretations of colors are as follows:

A. Red

Red is often associated with beauty, blood, Christmas, comfort, courage, excitement, heat, love, passion, and strength. Inversely, red is also associated with negative meanings, namely aggression, anger, battle, cruelty, danger, death, failure, hunger, and stop. Seeing the color red, as stated earlier, can induce a higher heart rate and blood pressure (Malewicz & Malewicz, 2024).

B. Orange

The color orange is associated with creativity, social, refreshing, activity, uniqueness, energy, enthusiasm, stimulation, community, health, optimism, spirited, cheerful, adventurous, constructive, warm, and affection. In addition, orange is often used as in warnings due to its bright contrast, being associated with rude, loudness, low class, cheap and carelessness, and other such negative associations. In spite of this, orange is considered a generally energetic and optimistic color due to orange's association with the sun.

C. Yellow

The color yellow often invokes positive emotions because it is considered a bright color. The positive psychological meanings of yellow are intellectual, wisdom, optimism, idealism, joy, friendship, hope, imagination, fun, curiosity, spirituality, and enlightenment. The negative psychological meanings of yellow are jealousy, cowardice, deception, attention, warning, illness, and envy (Malewicz & Malewicz, 2024).

D. Green

Green is associated with nature, money, growth, healing, success, harmony, honesty, health, peace, balance, calming, abundance, and trust. In addition, it is also associated with negative concepts, namely as greed, envy,

nausea, poison, corrosion, disease, and lack of experience. Green is the most sensitive color for humans due to the abundance of green and green shades that humans can differentiate, making it a color that invokes action (Malewicz & Malewicz, 2024).

E. Blue

Blue has positive psychological meanings as knowledge, wisdom, peace, contemplation, faith, loyalty, justice, expansiveness, intelligence, tranquility, cleanliness, security, power, confidence, and success. In addition, there are also negative meanings, namely sadness, depression, apathy, coldness, immorality, confusion, and detachment. The color blue is very often used in branding because as it is associated with trust and serenity.

F. Purple

Purple is often associated with luxury, nobility, elegance, imagination, wisdom, inspiration, spirituality, mysticism, and sensitivity. In addition, it is also associated with negative concepts, such as madness, cruelty, arrogance, immaturity, sorrow, selfishness, and greed. Purple is the rarest color found in nature, hence the association with wealth, as only wealthy people and royalty were allowed to use purple, and with how rare it was, it was considered a mysterious color (Malewicz & Malewicz, 2024).

G. Black

Black, in the modern era, is often associated with authority, elegance, simplicity, luxury, professionalism, dignity, seriousness, solitude, mysteriousness, and stylishness (Holtzschue, 2017). In addition, it also has negative associations, such as fear, evil, secrecy, submission, sorrow, burden, regret, emptiness, and rebellion. Black is a neutral color that only appears in the absence of light, or when a pigment that appears when all primary color pigments are theoretically mixed in equal amounts (Malewicz & Malewicz, 2024).

H. White

White is usually associated with positive concepts, such as perfection, purity and cleanliness, virtue, innocence, gentleness, holy, simplicity, truth, and peace. However, it could also be associated with fragility, isolation, weakness, blindness, surrender, and death. White is a minimalist color and is most suitable for creating a clean and wide-looking design, usually often used as a background (Malewicz & Malewicz, 2024).

On a macro-level, intended or not, all designs have a texture. The font used for the text, the images embedded on the design, and other visuals can give an overall subconscious texture to the user. This can be utilized, as the usage of a tactile experience may help the user to connect in a much deeper level to the contents of the page.

Imagery and iconography are important elements in a website design. According to Miller (2011), the first thing users do when entering the webpage is to scan through the page rather than read through them. This means that they would rather categorize the elements visually rather than actually processing the information written in the contents. It is advised by Miller (2011) to avoid long stretches of texts, and rather replace descriptions with images that can convey the same meaning. However, it is also important not to misuse images, as it may also impede the user experience.

Scale refers to the contrast between relative sizes of the elements in the design. By manipulating and adding small elements throughout the design, the designer can achieve a sense of drama. Additionally, the bleeding or breaking off large elements can heighten the sense of scale in the design. This can also help create a clear sequence or hierarchy of elements of which the user can follow.

Depth and Dimension are one of the ways to give a website visual interest. By overlapping design elements, or adding gradients. This gives an

illusion of realism as well as change the tactile experience to the user, drawing the user into the design.

Animation is the repeat sequence of various images. In website design, the animation can play different parts, such as the focal point of the entire web page, or even as small as the change in the button when the user is hovering or clicking it as a form of feedback. By using animation, the designer can also layer information that would otherwise clutter the page. However, it should also be noted that the designer is warned against using too much repetitive animation as it can distract the user.

Variability is an important element in design. Using the same elements over and over again can cause the entire website to feel dull. Although it can work to create a consistency throughout the website, it can also make the user feel bored and disinterested if becomes repetitive. To avoid this, it is important to give variability in the design assets and other elements, from sizes or colors, so to keep the design from being too monotone.

2.1.4 Typography

Typography is the art or technique of arranging letter and text elements with the aim of making them easy to read and their meaning can be conveyed clearly, while retaining their own aesthetic value from other types. Typography has two functions, namely as text or writing that will be read by the user, as well as an image with its own meaning and impression. In Visual Communication Design, typography has a role as a visual language, namely a language that can be felt by the sense of sight. Typography is an important part of the website as it often represents the main content and what the majority of the body is showcasing. It can either enhance the message, tone, and aesthetics of the website, or reduce it if the designer chose the wrong font. (Miller, 2011)

Fonts are a design of a collection of characters that usually consist of letters, numbers, symbols, punctuation marks, and accent marks, while typeface is a collection of variations of font types that usually consist of letter

weight (light, medium, bold), letter width (condensed, regular, extended), and letter angle (roman, upright, italic). In general, they are often referred and mistaken as each other in the current era (Hyndman, 2016).

The two main characteristics that a designer must keep in mind when choosing the font for their design is as follows:

1. The readability, or the attractiveness of the type in question to the target audience. This is entirely dependent on the visual style of the font chosen, and whether or not it resonates with the user.
2. The legibility, or the clarity of the type, which represents how easily the target audience can capture and understand the message given as a text. The size, letter spacing, line length, and other such factors can contribute to the ease of discerning the text.

There are many types and fonts being created to this day, and still is being created. However, many of the types still fall under the following categories:

1. Serif: The main characteristic of Serif type letters is that they have additional lines, dots, or extensions at the end of the corner of the letter, as originally in ancient times, writers found that flicking the quill or pen at the end of the corner of the letter, which created a small perpendicular extension at the corners, gave a more complete and even appearance to the text itself. That image still persists to the modern day, as these types of fonts are still being used for printed media due to the formal look of the type, while not sacrificing any legibility.

Times New Roman



Image 2.22 Times New Roman

2. Sans-Serif: The etymology of the word "Sans" is derived from French, which means "without", In essence, Sans Serif is the letters without Serif, or in this case, a typeface without any additional strokes or decorations that is normally seen in Serif typefaces. This typeface is often seen as more modern, as it's often used in digital interfaces (Hyndman, 2016).



Image 2.23 Helvetica (Above) and Inria Sans (Below)

3. Script: Script typefaces are styled to that aims to look as close as it can to authentic handwriting. Script comes in styles ranging from very casual to formal. Some types of Script come as individual letters, but sometimes the letters are connected to feel as if it's been written with a pen or brush.
4. Decorative: Decorative typefaces are styled to stand out and, as the name implies, decoration, with highly stylized font types that attract

attention with swirls or some other gimmick. This is the most varied font types due to the sheer possibility of various decorations the typeface might have. Decorative letters should be used sparingly, for one or two words, but is not recommended to be used for the website's body content, as the gimmick of the fonts might make it hard to read due to hardware limitations (Malewicz & Malewicz, 2024).

2.1.5 Illustration

Illustration is the visual representation of a concept that is re-created and designed as an alternative to a more unique appearance. When utilized correctly, illustrations should be able to convey a message to the audience in a more unique and creative manner that equals or surpasses the message given in the original concept or reference photo, allowing the viewer to digest information in a faster and engaging manner.

The fundamentals of illustration encompass several key elements that contribute to effective visual communication. According to (Zeegen, 2020), visual storytelling is essential in conveying narratives through sequences of images, engaging the audience and enhancing understanding, acting as a visual aid for the audience. Color theory also plays a crucial role in illustrations, as each color may evoke specific emotions and mood depending on the context it is set in. Composition of the illustration elements are vital, as it can establish balance and harmony, guiding the viewer's eye throughout the artwork. The usage of value and contrast is important for creating depth and visual interest, helping to establish a sense of dimensionality, with textures and patterns to add complexity and realism to the illustration, enriching the overall visual experience. Together, these fundamentals form the foundation of effective illustration, allowing artists to communicate complex ideas and emotions effectively. Some of the main following fundamentals are as follows:

1. Line Art refers to the versatile technique used in illustration that relies on the usage of lines to create shapes, forms, and textures in

an artwork to create a variety of moods and atmospheres. It enables designers to create a range of styles and effects, from loose and expressive to precise and detailed.

2. Perspective and depth refer to the creation of a sense of space and distance in an artwork. It is a fundamental aspect of illustration, as it enables artists to create a sense of realism and immersion. Effective perspective and depth are crucial in illustration, as they can create a sense of scale and grandeur.
3. Texture and pattern refer to the use of visual elements to create a sense of tactility and visual interest in an artwork, adding depth and complexity to the composition of the illustration. Effective use of texture and pattern is crucial in illustration, as it can create a sense of realism and immersion, or a sense of style that can be catered to the intended audience.
4. Style and aesthetic refer to the unique visual language and sensibility of an artist or artwork. Different styles can appeal differently to the audience depending on the topic, mood, time, media and overall context. For example, flatter illustrations with bright colors would appeal more to younger children, while realistic and more detailed styles would appeal more to an older audience.
5. Anatomy and proportion refer to the study of the human body and its proportions. It is a fundamental aspect of illustration, as it enables artists to create believable and realistic characters and figures, creating accurate and convincing artworks to the user. If the figure is not drawn in a logical manner that relates to a known anatomy of a creature or figure, it can evoke a sense of unease on the user.
6. Atmosphere and mood refer to the emotional and sensory qualities of an artwork. It is a fundamental aspect of illustration, as it enables artists to create immersive and engaging artworks that evoke emotions and sensations in the viewer, often utilizing the usage of various colors to evoke various emotions.

7. Visual hierarchy refers to the arrangement of visual elements in a composition to create a clear order of importance. Effective visual hierarchy is fundamental aspect of illustration, as it guides the viewer's eye through the artwork and create a sense of clarity and focus, ensuring that the message or narrative is communicated in a clear and concise manner (Zucker, 2013).

2.1.6 Buttons

The main purpose of buttons is to fit more functionality into a smaller area (Malewicz & Malewicz, 2024). There are many types of buttons, with most of them functionally divided into 4 types: Call-to-Action, Primary, Secondary, and Tertiary.

Call-to-Action Buttons (CTA), often designed to be as visually different than any other buttons, are the buttons made to be visible right away and catch the attention of the user. It could be an entirely different contrasting colour, contain images, or visually bigger than the rest of the buttons. Either way, it is the buttons that are higher in the hierarchy scale compared to the rest. Designers often use the CTA as a “catch-all” button at the bottom of a long page, and there’s generally only one CTA in a single webpage so not to detract the attention from it and risk creating a Primary Button instead.

Primary Buttons are buttons for “positive” actions, such as OK, Save, or Download buttons. These buttons can appear in multiple instances in one webpage, unlike the CTA buttons, and can be used as the main navigation points in a website.

Secondary Buttons are often a safe choice for a designer when choosing a button for a design. It is not as flashy as primary buttons, but not as weak in presence as a tertiary button. It is most likely the most commonly seen button in the website.

Tertiary buttons are weaker in presence compared to all other buttons. It's usually smaller and easier on the eyes of the user. It's often used for small, optional actions for the user.

Visually, there are 5 elements in a button that are must be considered when creating a button: Outlines, Fill, Icons, Border Radius, and Details.

Outlines, Fill and Icons can determine the visibility of the button in the webpage, as well as the hierarchy of the buttons in the webpage itself, determining which button is the Primary, Secondary, and Tertiary buttons, as well as the active and non-active state of the button.

Fill of the button is the main colour of the button. The color of the fill must be designed to fit the needs of the button itself. CTA buttons, for example, often has much brighter and contrasting fill color compared to the rest of the buttons. The fill can also indicate the state of the button, whether or not it is active, inactive, or in hover mode.

Outline buttons, sometimes known as ghost buttons, are icons or buttons that are only made up of an outline of the shape. They are typically used for less significant operations as they are less visually competitive with primaries and CTAs. They often function as tertiary buttons or the "disabled" stage of a button (when the button has no function anymore in that particular webpage, either due to the user already interacted with it, or the user is unable to interact with the services of the button). Because a ghost button draws less attention than a button with a solid fill, it is often used as secondary or tertiary buttons. The thickness of the outlines and level of detail of the icons can determine the hierarchy of the buttons itself.

2.1.7 Icons

Icons are small images and iconography that symbolize a functionality of something in the website, often being used in tandem with buttons. Generally speaking, icon's perceived value is increased when it has a written label next to it to give it meaning in the specific context of the webpage,

as having a lot of buttons with just the icon is best avoided due to misunderstandings, as some of most well-known symbols if they interpret them differently.

2.1.8 User Interface (UI)

User Interface, or the interface in which the user uses to interact with the program or the device, is a crucial element in website design, as effective interface design can generate positive feelings of success, competence, and mastery, ideally feeling natural and effortless to use by the user. The usability of the interface, or the experience of the user with the website (Miller, 2011), are measured by the following, set by ISO 9242 standards (Shneiderman, 2010):

1. **Learning Curve:** How long does it take for a new user to master the interface? The shorter the period needed for the user, the easier and the more usable the interface is.
2. **Performance Speed:** This does not necessarily mean the attenuation between the software and hardware of the user's devices, but more so the amount of time for the user to take for a completion of a task. How long does it take for the user to do a certain action? How many steps are needed to take from start to finish to complete a single task? Ideally, the main tasks relevant to the website should be able to be completed with as few steps as possible.
3. **Rate of Errors:** What kind and how many errors do the users make when interacting with the UI of the website? Is it a miss click of a button due to distance between the two icons being too short, or is it the color of the button that made them think it was another? Is this error reoccurring, or is it easily fixed over time? It is important to check the errors through usability testing, as any error can potentially increase the performance speed, or even cause a decrease in retention.

4. Retention Over Time: How well does the user retain the necessary information? How long do they remember it? The ease of use of the website can contribute to the user's willingness to use the website, and in turn, how well they absorb the information.
5. Subjective Satisfaction: The satisfaction of the user themselves. Depending on the target demographic, their tastes can change drastically, and the topic itself can shape their own expectations on the interface. A child would prefer a much more minimal and colorful interface compared to an adult who is researching for business or even medical topics.

Usability is directly related to how easy for the user to navigate through out the website, and thus there are elements of how to create a User Interface easier to navigate through. Navigation often utilizes the linking of various aspects of the site to one another. The main navigation of the site refers to the primary set of links that a user clicks to get to the most important part of the site, or the main body of the site. Commonly, designers would implement a bar that displays five to seven options, the general amount of options of what people are capable of perceiving, across the upper part of the page. The other options will be broken down further into subgroups, added as sub-navigation in the primary set of links. (Miller, 2011)

2.1.9 User Experience (UX)

User Experience (UX) refers to how users feel when using the product. In theory, all designers strive to get as close to the hypothetical best scenario when a user is interacting a product or service, with as little errors and problems the user might have with the product as possible to create the most positive experience for the user, as it can affect the level of user loyalty. (Deacon, 2020) In UX, there are several elements and principles in creating a positive experience that is in accordance to the user's needs, namely as follows: User Focus, Business Focus, Digestibility, Clarity, Familiarity, Data-Informed Design, Validation, Consistency, and Technology Flexibility.

A. User Focus

The main goal of every designer is to ensure the user satisfaction and fulfilment, namely by focusing on the needs, expectations, motivations, and problems of users. This principle is the most important principle, as it is what the basis of the design itself is targeted towards.

B. Business Focus

Good UX can be created by balancing business goals and user goals. The business might refer to a brand that the designer is working with, or it might refer to the competition between the designer and other existing products. Either way, a balance should be considered when creating a design due to the limitations of the business and the competition that surrounds the designer.

C. Digestibility

The content of the design must be clear, simple, and unambiguous, so that users can digest the content well. It is recommended that the information given to the user gets divided so not to overwhelm the user with a lot of body text with no context, as it may confuse the user. If the user is unable to understand the main message of the contents and get confused, it would hinder in the user experience.

D. Clarity

Similarly to digestibility, a good design should be clear and easy to understand, with instinctive navigation so that users are not confused in accessing the website, while also not having any ambiguous icons or buttons that might confuse the user into making errors. Clarity essentially refers how much and how accurate is the information gathered by the user at a first glance, based on instinctive understanding and experiences, and if the design is not clear enough, it might breed confusion between the users and the design.

E. Familiarity

Familiarity can be considered a side principle to clarity. Although creative and unique designs may help with user retention, if the layout or design of the website does not feel familiar or instinctual to the user, it can confuse the user itself and steepen the learning curve. More often than not, users are

F. Data-Informed Design

Data-informed design helps the designer in achieving their long-term goals and providing the target audience with a positive user experience and user engagement. This principle uses various qualitative or quantitative data taken from different sources such as user testing, business competitors, or analysis results as data to be considered when creating the design.

G. Validation

The main purpose of this principle is to ensure that the design has achieved its initial objectives, with the design being validated through rigorous user testing once a playable prototype is created. This is usually done by expert review, cognitive exploration, or usability testing, in order to collect data and form a picture of the overall user experience.

H. Design Consistency

A successful UX should provide a consistent experience so that users get used to the website quickly without any stress or confusion. Consistency can help build trust and credibility between the user and the designer. In websites, this may refer to the repeating design elements, a consistent color palette used throughout all webpages.

I. Technology Flexibility

As time goes on, technology will continue to improve and change to fit the trends of the user. A good UX should be able to adapt to the

technological trends of the user, being able to be accessed even in different hardware components.

2.2 Early Onset Allergy

Allergies is a reaction caused by the body due to a hypersensitivity to what is normally harmless substances in the surrounding environment. This substance is now referred to as an allergen. The symptoms depends on the type of allergy, but commonly it manifests as sneezing, rashes, hives, abdominal pain, and anaphylaxis in worst case scenarios. The symptoms might differ from person to person, as well to the type of allergies (NHS.UK, 2022). Early On-set Allergies refers to allergies that appears in children, specifically in young toddlers and infants.

2.2.1 Type of Allergies

As the type of allergen that the body can interact with varies, there are also many types of allergies in return. The most common type of allergies that appear in Indonesia, according to Soegiarto et al., (2019) are as follows:

1. Skin Allergies

Skin Allergies is the immune system reaction on the skin when a substance that the body is hypersensitive to come into contact with the body. This reaction is also known as contact dermatitis or eczema, manifesting as hives and angioedema, or rashes, swelling and inflammation within the skin.

2. Rhinitis Allergy

Rhinitis Allergy is the immune system reaction of the body when the body inhales something that the body is hypersensitive to. This can be pollen, dust, or other substances, and manifests as cold-like symptoms, such as itchiness in the nasal area, nasal congestion, sneezing, sore throat, and others. It usually occurs when you breathe in something you are allergic to, such as dust, animal dander, or pollen.

3. Food Allergy

Food Allergy is the immune system reaction of the body when it ingests certain substances, or groups of food. This can be peanuts, cow's milk, and so on. The body will then manifest various symptoms, from difficulty breathing, hives, rashes, swelling in the throat area, digestive problems, and severe anaphylaxis, or even organ failure if proven to be fatal.

There are many other types of allergens, such as Drug Allergies, Latex Allergies, Insect Allergies, and many more. However, most allergies manifest in a similar way, though the severity and symptoms might differ from person to person.

2.2.2 Prevention

At the current moment, there is no known cure to allergies, as allergies are simply an abnormal immune response of the body itself. Many medical professionals would simply warn against any contact with the suspect allergens to prevent the reaction from happening in the first place (Sulistyorini et al., 2025).

2.2.3 Treatment and Medication

Allergies are often specialised to the individual at hand, and although many people may share similar allergies, the way it affects them can differ from person to person. Treatment of an allergic reaction usually involves medication to suppress the reaction or reduce the symptoms itself.

According to Mayo Clinic (2024), there are many types of allergy medications that are available to the public as over the counter medicine. Most of the medications contain one or more of the following substances:

1. Antihistamines
2. Corticosteroids
3. Mast cell stabilizers
4. Leukotrienes, etc.

The medicine itself can come in form of pills that needs to be injected, shots, or even salves. Common over the counter medicines are Cetirizine (Zyrtec), Loratadine (Claritin), Fexofenadine (Allegra), Xyzal (Levocetirizine), and others.

2.3 Relevant Research

Allergies are not new, nor is it an uncommon condition. It comes to no surprise that there are already exiting research on the problem at hand.

Table 2.1 Relevant Research

No.	Research Title	Author	Research Results	Novelty
1	Allergies	NHS	A webpage that dedicates itself to explaining the basics of allergies for the general public.	The author strives to create a website that goes more in depth on allergies, tailored specifically to the parents in Indonesia for their children.
2	Allergy medications: Know your options.	Mayo Clinic	A webpage that dedicates to give information on various medicine for allergies, explaining what each type of medication does to the body.	The author plans to expand and differentiate each type into its separate pages, and explain more about the allergies so it is easier to digest for the target audience.
3	Alergi	dr. Rizal Fadli, Halodoc	A webpage that focuses on introducing allergies for the general public.	The author plans to tailor the information to discuss the effects of the allergies on children, while also adding illustrations as visual aid.

The existing websites reviewed can generally be categorized into two distinct types. The first type consists of medically oriented platforms designed primarily for healthcare professionals, offering in-depth clinical information, research findings, and other scientific papers. The second type includes general health-focused websites or applications intended for the broader public. However, these tend to provide only minimal or surface-level information on allergies for children. As a result, there remains a gap in parent-focused resources that bridge the divide between professional-level content and general health advice.

