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An Analysis of the Viewers' Perspective on Characters in Anime Being Misrepresented Culturally

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1 Mar. 2023

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Abstract *Japanese animation, commonly referred to as anime, has been a popular source of entertainment viewed by people of all ages for decades. The popularity of anime has increased over the years, and the west has influenced the character design of anime characters, where Japanese-originated characters tend to have Caucasian-looking features. Due to the fact of western influences, characters in anime tend to have Caucasian-looking features, even when the characters have a Japanese origin and are given Japanese names. Thus, anime characters slowly become culturally odourless and misrepresent the culture portrayed. In addition, characters of colour in anime are commonly stereotyped with stereotypical features such as big lips, small eyes, large physiques, and odd behaviours. This research discusses the impact of inaccurate cultural representation towards character design in anime. Previous works have failed to address the viewers' perspective towards the inaccurate cultural representation of character design in anime. The questionnaire survey findings revealed that cultural representation in a character design plays a significant role in anime and also gained an understanding of how viewers feel about the characters being misrepresented in an anime. Furthermore, there is hope for future improvement in the representation of cultural characteristics in anime character design.*

Key words *Anime, Character design, Anime characters, Cultural representation, Viewers*

Introduction

Character designs can vary from their physical appearance, clothing, colours, personality, and even the backstory. Undoubtedly, when watching an anime, viewers tend to focus on the character's design and, to some extent, identity with the existing character being visually portrayed on screen. However, through the success of anime becoming more well-known in the west, it began influencing the design of the characters to have more of a Caucasian-looking feature, although they were born with Japanese names and originated from Japan. In general, anime lacks characters of colour, and the overuse of white characters and the stereotypes imposed on characters of colour cause deep concern as time passes (Lei, 2018). Furthermore, the presentation of characters has improved, but problematic portrayals have remained.

The researcher stated the problem statement in the first section of this research article. Following that, a questionnaire survey was conducted as part of the methodology, with 113 responses collected. The final section summarizes the entire research article with a conclusion.

Problem Statement

Western animation influences anime greatly, as it gradually reduces bodily, racial, and ethnic characteristics to have a more foreign appearance to suit the tastes of non-Japanese audiences (Lu, 2009). Over the years, contemporary Japanese cultural references have been absent in anime. Some authors define their work as "mukokuseki," which lacks distinguishable Japanese national, racial, or ethnic characteristics (Fennell et al., 2013).

The majority of anime rarely introduces people of colour, and when they do, the characters are frequently stereotyped and have exaggerated features. This often occurs, especially with characters of African origin. It can be seen in their dressing style, behaviour, speech patterns, and activities they are engaged in (Kastiro, 2014). In addition, characters of colour in anime are often represented and seen as "otaku" obsessed with Japanese culture, where they get everything incorrectly or even try to speak Japanese in a bizarre tone.

Figure 1.1 Simon Brezhnev from Durarara!!

Cultural inaccuracies in character design in anime can impact how viewers perceive an anime and its characters. Character designs that lack important racial characteristics, that poorly convey their own culture, and are physically conveyed with big eyes and vibrant coloured hair will cause viewers to misunderstand the character's race, ethnicity, and nation.

Figure 1.2 Naruto Uzumaki from Naruto and Naruto Shippuden

Methodology

In order for the researcher to understand and achieve the research objectives and research questions in this research, a quantitative method was employed in the methodology, along with some qualitative findings, which were collected from four open-ended questions. A questionnaire survey was chosen as the research method. By distributing the questionnaire on numerous social platforms, the researcher is able to engage with more anime audiences and gather diverse responses and opinions. Furthermore, questionnaire surveys allow for the development of straightforward, concise questions while allowing the researcher to observe respondents' responses at any moment and take control over the survey environment (Evans et al., 2005). Other than the advantages of questionnaires, there are undoubtedly disadvantages as well. According to Prasanna (2022), data acquired by a questionnaire survey sometimes needs to be more accurate and trustworthy. Most of the time, rewording is required for a more significant explanation to support and utilise the data.

The questions for the questionnaire survey were structured in Google Docs, while the primary tool was carried out in Google Forms, as shown in Appendix 1. Social media platforms such as Instagram, Twitter, Facebook, Reddit, and Discord were utilised to distribute the questionnaire survey and collect a variety of responses from a wide variety of enthusiasts. It took approximately two weeks to collect a total of 113 responses. Social media is an efficient and essential platform for reaching anime fans worldwide who can answer the questionnaire and offer excellent responses. The majority of the 113 respondents are 18–24 years old, with 75.2% being female and 60.2% and 71.7% being Asian, as can be seen in table 1 below.

1.	How old are you?	Frequency (n)	Total (%)
a.	Under 18	8	7.1
b.	18-24	85	75.2
c.	25-31	13	11.5
d.	32-39	4	3.5
e.	Above 40	3	2.7
2.	What is your gender?	Frequency (n)	Total (%)
a.	Female	68	60.2
b.	Male	37	32.7
c.	Prefer not to say	8	7.1
3.	Which continent are you from?	Frequency (n)	Total (%)
a.	Asia	81	71.7
b.	Africa	0	0
c.	North America	7	6.2
d.	South America	3	2.7
e.	Antarctica	0	0
f.	Europe	19	16.8
g.	Australia	3	2.7
4.	Do you watch anime?	Frequency (n)	Total (%)
a.	Yes	80	70.8
b.	No	33	29.2

Table 1 Demographic data

A series of questions were included in the questionnaire survey to gain an understanding of anime fans' perceptions and awareness of cultural representation in anime character design. Including questions regarding the viewer's experience watching anime, whether cultural representation has influenced their perceptions about a certain anime, and whether character design is something they look for in anime. The questionnaire survey was divided into five sections that are (1) Demographic data, (2) A series of questions related to the cultural representation of character design in anime, (3) Character design in anime with overall profile (part 1), (4) Character design in anime with overall profile (part 2), (5) Overview of cultural representation in anime. The questions included multiple choices, open-ended, checkbox, and linear scale questions. In the first section, general questions were asked to get to know the respondents better. Section 2 questions the cultural representation of character design in anime. Sections 3 and 4 are about character design in anime with overall profile parts 1 and 2 while providing visuals of anime characters. The questionnaire ended with section 5, consisting of questions about the overview of cultural representation in character design in anime.

Findings and Discussion

In this section, the researcher will discuss the findings from Section 5 of the questionnaire survey, which will answer the research question about the negative impact a culturally inaccurate anime character has on viewers. Section 5 of the questionnaire survey, seen in Table 1, asked respondents about the overview of cultural representation in character design in anime.

Based on the findings, 79 out of 113 respondents found that culturally inaccurate anime characters will cause stereotype issues. Others claimed that it would fail to identify the character's culture, and as viewers cannot interpret the anime's storyline well, it may become an accidental cultural appropriation. Younger audiences develop the misconception that how the characters are portrayed in the anime is how it is in the real world. In addition, people who belong to the portrayed culture will feel that they are being poorly represented and will isolate themselves entirely. It will also alienate viewers who belong to that culture. As stated in the patterns of "Own Race Projection (ORP)" by Lu (2009), viewers tend to project themselves onto the anime character when they believe the character belongs to the same racial group as them since some people find a sense of comfort in being able to relate to the characters.

Furthermore, character designers and authors need to do intensive research on the cultures they plan to portray to avoid misrepresenting a culture, for example, by giving the characters appropriate clothing, accessories, facial features, physical appearance, and behaviour. An anime accurately represents a culture to prevent misleading audiences and, most importantly, shows a sign of respect towards diverse cultures. People from certain cultures in real life will risk being stereotyped by anime viewers because of how that culture is portrayed in anime. Characters of colour are often stereotyped with large noses, full lips, and overly dark skin, such as Mr Popo from Dragon Ball Z, which can be seen in Figure 1. However, people of colour have a wide range of facial characteristics and skin tones. This stereotypical concern has been shown to be detrimental to the cultures of people of colour.

Question 1

1. Are you concerned about the fact that characters are represented in a culturally inappropriate or inaccurate form? (1-5)
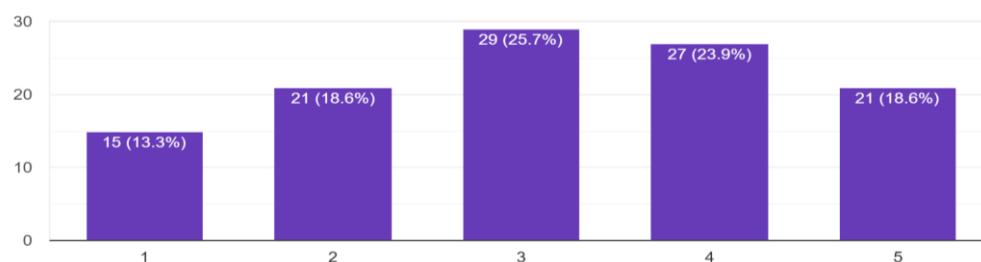
113 responses

Figure 2.1 Respondents' rate of concern about the fact that characters are represented in a culturally inappropriate or inaccurate form

Question 2

2.	What are your thoughts on the impact of culturally inaccurate anime characters? (Can select more than 1 answer)	Frequency (n)	Total (%)
a.	It will cause stereotype issues	78	69
b.	Failure of identifying the character's culture	53	46.9
c.	Not being able to interpret the storyline of the anime well	37	32.7
d.	There is no impact due to the inaccurate representation of anime characters	25	22.1
e.	Other: It may become an accidental culture appropriation	1	0.9
f.	Other: I feel nowadays people think everything is offensive and take offence to other people. So for me, I would just think it's the personality of the person instead of their culture. I think it's actually quite cool to see more other coloured people incorporated even if they are "stereotyped"	1	0.9
g.	Other: Kids might think that this is how those characters work similarly in the real world	1	0.9
h.	Other: For people belonging to that culture, it will make them feel poorly represented, or drive them away entirely	1	0.9

i.	Other: Alienating viewers who belong to that culture	1	0.9

Table 2 Respondents' thoughts on the impact of culturally inaccurate anime characters

Question 3

3. Do you think there is a need for a change in how anime characters present their respective cultures appropriately? Why?

113 responses

Yes because culture is a reflection of a community. So if culturally inappropriate, it would be wrong because they disrespect the culture

Definitely, more people are starting to watch anime so it would be a good thing if people can actually learn the cultures that are being represented accurately.

At the end of the day, it is entirely up to the author to create whatever story he wants. However, it should be in a way that is culturally sensitive and does not offend people of other culture.

Yes. Since anime is widely known and watched by people all over the world now, it's all the more important to ensure cultures are represented appropriately in media. Wrong representation will cause people of that culture in real life to be stereotyped by anime watchers due to how the culture is represented in anime.

not really. because it can be show by its personality

I just think there should be more "coloured" characters with different personalities.

because it can cause racist behavior in younger age that are watching

Figure 2.2 Respondents' opinion on whether there is a need for a change in how anime characters present their respective cultures appropriately

Question 4

4. What do you think animators and character designers could change in the character design to have a better representation of the character's represented culture?

113 responses

Various looks can be created. Animators and character designers should familiarise themselves with each character before placing them in their stories, rather than just basing of stereotypes.

In clothing

Show traditional items for that culture such as clothing and also show the cuisine of that culture

They should do more research in that particular culture before coming up with a character design

Their facial features, skin tones, voices and clothing.

Ethnic consultants is a thing, as far as i know, so that could be useful!

Get paid more. The industry has yet to pay their staff well enough to bother on trivial matters as mentioned. Given they had a better source of income, naturally they would research more into the matter.

Study and read about the culture before beginning to draw

Figure 2.3 Respondents' opinion on how animators and character designers can change in the character design to have a better representation of the character's portrayed culture

Indeed, anime characters should be represented appropriately in their respective cultures to prevent adverse impacts such as misrepresentation, misunderstanding, and stereotypes. Although character designs have improved recently, character designers and authors can be as imaginative as they like when creating a character. Conducting some studies takes little consideration of the culture they desire to portray in their work. There are no drawbacks to ensuring that marginalised groups are treated with respect and dignity. Characters can be created to include a mix of traditional and contemporary elements and cultural references. Stripping off certain non-cultural aspects of a character and giving them an accurate representation does not imply that the character loses their flavour and individuality.

Figure 2.4 Mr. Popo from Dragon Ball Z (1988)

Conclusion

In conclusion, it was concluded that having an accurate cultural representation in a character design in anime is essential for enlightening viewers about the culture that is being shown on screen. Aside from that, it encourages more people to pick up and watch more anime since they can relate to the characters and not feel excluded because their culture or the culture of others is authentically portrayed. It was discovered that preserving culture is crucial to ensuring that knowledge of it does not erode over time. Viewers believed that seeing an anime with a character who inaccurately portrays a culture was insulting and racist. A culturally insensitive anime character has the potential to hurt people's minds and mislead them about the culture. Most respondents stated that characters of colour are poorly represented, with stereotypical traits such as enormous lips, small eyes, massive physiques, and strange behaviours.

Audiences will appreciate and recognise authors and character designers who take the time and effort to thoroughly study the culture they wish to represent in their characters in advance. By accomplishing this, it would avoid any cultural appropriation that would make some viewers from that culture feel uncomfortable, offended, or alienated. If a character has been excessively stereotyped or misrepresented, there will be significant outrage and debate in the community due to stereotypical worries and misleading information about a culture. Other than that, an anime that extensively features traditional Japanese culture, including characters who truly represent Japanese culture, would aid in preventing characters from losing their cultural identity. It would also help educate individuals worldwide about that culture, preventing them from misinterpreting it.

In reflection of the possibilities of specific engagement in future research, the researcher thinks it would be interesting to interview or send out questionnaire surveys to

professionals. Such as character designers, animators, authors, comic/manga artists, and anime enthusiasts such as anime fans, cosplayers, and manga readers. Furthermore, the researcher would also like to explore and create a character design that can accurately represents a culture.

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Appendices

Cultural Representation Towards Character Design In Anime

Hi, I am a student from Taylor's University, Lakeside Campus and I am currently doing a research on the topic "Cultural representation towards character design in anime". Below is a series of questions related to the cultural representation in character design in anime.

This questionnaire survey will take you less than 10 minutes to fill out. I hope that you are able to spare some of your time to fill this questionnaire out, everything is anonymous so please be rest assured that this questionnaire is private and confidential. Thank you so much!

All images used are not for commercial use it is for academic purposes only.

1. How old are you? *

◯ Under 18

◯ 18-24

◯ 25-31

◯ 32-39

◯ Above 40

2. What is your gender? *

◯ Female

◯ Male

◯ Prefer not to say

3. Which continent are you from? *

◯ Asia

◯ Africa

◯ North America

◯ South America

◯ Antarctica

◯ Europe

◯ Australia

4. Do you watch anime? *

◯ Yes

◯ No

Section 2 of 5

Section 2: Cultural Representation In Character Design In Anime

Below is a series of questions related to the cultural representation in character design in anime.

1. Does character design affect your anime-watching experience? *

○ Yes

○ No

2. Are you aware of any anime characters that are not represented accurately through their *
culture and are stereotyped?

○ Yes

○ No

3. If you answered "no" in question 2, why do you think so?

○ I never really paid attention to the character design

○ That topic does not come to mind when watching an anime

○ I like the character for their looks

○ It does not bother me

○ Other…

4. Do you find that there are any characters in anime that are presented inaccurately in culture *
or stereotyped?

○ Yes

○ No

⋮⋮⋮

5. If you answered "yes" in question 4, please provide an example of the character name and which anime the character is from. (More than one answer can be provided)

Long answer text

6. How does a culturally accurate character in an anime help educate people about that particular culture? (Can select more than 1 answer)   *

☐ The audiences are influenced to learn more about that culture

☐ The characters will leave a strong impression on the audiences

☐ To help the audiences understand more about that culture through the character

☐ It will raise awareness about that particular culture

☐ Other…

7. Why do you think a character has to be designed to represent a culture appropriately? *

Long answer text

8. What is the importance of having a culturally accurate character in an anime? (Can select more than 1 answer)   *

☐ To preserve the tradition and culture that the particular character has

☐ They help people from that particular culture to be able to relate themselves to the character

☐ It prevents confusion about the character's culture among the audiences

☐ Other…

Section 3 of 5

Section 3: Character Design In Anime With Overall Profile (Part 1)

Character designs can vary from their physical appearance, clothing, colours, personality, and even the backstory. However, through the success of anime becoming more well known in the west, it started influencing the design of the characters to have more of a Caucasian/ white looking feature even though they are born with Japanese names and originated from Japan.

You will be given a series of images of anime characters that are shown to have Caucasian features but with Japanese origin.

1. Naruto Uzumaki from Naruto and Naruto Shippuden is representing Japanese culture inaccurately.

	1	2	3	4	5	
Disagree	○	○	○	○	○	Agree

2. Usagi Tsukino from Sailor Moon is representing Japanese culture inaccurately. *

	1	2	3	4	5	
Disagree	○	○	○	○	○	Agree

3. Ichigo Kurosaki from Bleach is representing Japanese culture inaccurately. *

	1	2	3	4	5	
Disagree	○	○	○	○	○	Agree

4. Goku in his Super Saiyan form from DragonBall Z is representing Japanese culture inaccurately. *

	1	2	3	4	5	
Disagree	○	○	○	○	○	Agree

3. ChocoLove McDonell from Shaman King is stereotyped. *

	1	2	3	4	5	
Disagree	○	○	○	○	○	Agree

4. Simon Brezhnev from Durarara!! is stereotyped. *

	1	2	3	4	5	
Disagree	○	○	○	○	○	Agree

Appendix 1 Questionnaire Survey Questions in Google Forms

Paper-Cut Culture on Modern Packaging Design

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1 Mar. 2023

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Abstract *Folk art paper-cut may be an important part of many traditional activities that people of many different ethnic groups do in their social lives. The goal of this study is to encourage the use, passing down, and improvement of paper-cut design elements in modern packaging. Papercutting may be an important part of many traditional activities that people of many different ethnic groups do in their social lives. The researcher used an online questionnaire to find out what the respondents thought, and most of them agreed that the traditional folk art of paper cutting could be used in modern design.*

Key words *Folk art paper-cut, traditional activities, modern packaging, design elements*

Introduction

Paper cutting emerged as one of the most renowned kinds of Chinese folk art. As a sort of hollow art, it has the potential to provide the person with a hollow visual experience. The hollow is also known as the window grille (Chuang Hua) because it is often used to decorate doors and windows. Based on Figure 1, folk art paper-cuts are excellent Chinese folk artworks that preserve people's love of life and hope for the future. In 2009, the UNESCO Representative List of Intangible Cultural Heritage of Humanity recognised the Chinese paper-cut as an important part of the world's cultural heritage (UNESCO-Chinese Paper-cut, 2022).

The design industry is a trend-setting industry and it is important to study how folk art paper-cuts are used in modern packaging design. Malaysian Chinese are understanding the need to integrate traditional culture and art with contemporary package design in order to revitalise and modernise the country's rich cultural history. Packaging design is a comprehensive art form and a materialized cultural carrier. The researcher is interested in studying folk art paper-cut because there is a lot to learn about how traditional designs slowly evolve into modern packaging designs.

Figure 1. Traditional folk art paper-cut.

Problem Statement

The legacy of paper-cutting in contemporary art is distinct from folk art paper cut. The folk art paper cut is defined as the art form of paper-cutting as it is often practised by traditional folk artists. The paper-cutting tradition in rural areas is often passed down from mother to daughter via oral storytelling. Various manufacturing methods and patterns employ distinct sets of graphical symbols, such as zigzags, crescents, swirls, dashed lines, curved round holes, and two consecutive patterns. Paper-cut artists are mainly literati, painters, art lovers, and art teachers in some art schools.

The purpose of packaging design is to improve the aesthetics of the packaging and meet people's aesthetic needs. In product packaging design, designers can use abstract methods to express the connotation of products. At this stage, with the development of the social commodity economy, people's requirements for the packaging design of commodities are getting higher and higher, and the external packaging design of products will greatly affect the sales of enterprise products. This is the reason that designers must pay attention to product packaging design to improve direct market competitiveness.

Hence, this study investigates how traditional paper-cutting is transformed into modern packaging design and attracts people of different ethnic groups to learn more about traditional paper-cutting, and also introduces how traditional paper-cutting can be integrated into modern packaging design. As the culture can be presented in a detached form, this study aims to encourage the application of folk art paper cut design to modern packaging design. In this study, the researcher has identified various folk art paper-cut designs that have been applied to modern packaging design and investigated how folk paper-cut can enhance packaging design.

Methodology

According to Regmi et al. (2016), research questionnaires are widely used in many academic and market research disciplines. An online questionnaire was constructed to obtain input on how individuals saw the effect of Chinese paper-cut culture on current package design. Online surveys have become more popular as an alternative to more traditional ways of getting information, like phone polls, mail-in questionnaires, or in-person interviews, which can all take a lot of time and cost a lot of money. Since so many people have access to the Internet, online surveys can gather a lot of information from a large number of people. The plan does not call for a huge number of human resources and effectively utilizes internet technology, thus it does not need a lot of funding. It also helps protect privacy and secrecy while gathering information from those who are most interested. The researcher used Google forms rather than using Google Forms to collect data since the data will first be aggregated into Google Sheets before being analysed. Using the online questionnaire, the researcher polled a more extensive sample of the population.

The online quiz is available to anybody between the ages of 18 and 65 because people over the age of 18 have been exposed to a very wide variety of packaging designs blended with folk art. People under the age of 18 are not important in this survey because they do not have a deep knowledge of packaging design and they have little exposure to folk art (Formplus Blog, 2022). The researcher wanted to discover if the popular folk art paper-cut may be included in packaging design and if it is helpful to the public. This survey requires a minimum of one hundred (100) replies.

In order to provide respondents with the opportunity to express themselves, the questionnaire included both multiple-choice and open-ended questions. Survey: Respondents may do surveys simply and conveniently in their own time, no matter where they are. For data analysis, a considerable amount of data might be collected. Questions that required respondents to handwrite responses were also manually recorded by the researchers. There were 128 responses from June 6 to June 17, 2022; graphs were used to analyze the data. The researcher highlighted answers that were repeated by the majority of respondents or more unique replies that were not cited by the majority of respondents.

A sample of the online questionnaire and responses can be found in the appendix.

Findings and Discussion

The practice of paper-cutting as a kind of folk art dates back more than 2,000 years (Ng, 2022). Based on Figure 2, there are 47.7% of the respondents believe that the folk art paper-cut needs to see a new generation of ideas because they believe it is the responsibility of the next generation to see everyone's thoughts and decisions. Folk art paper-cut is a kind of culture that ought to be inherited and developed in order to promote the art of paper-cutting. Paper-cutting has undergone more than 2,000 years of transmission, development, and evolution, making it extremely rich in methods. The process of designing packaging involves combining elements of natural science and aesthetics (History of Packaging Products, 2016).
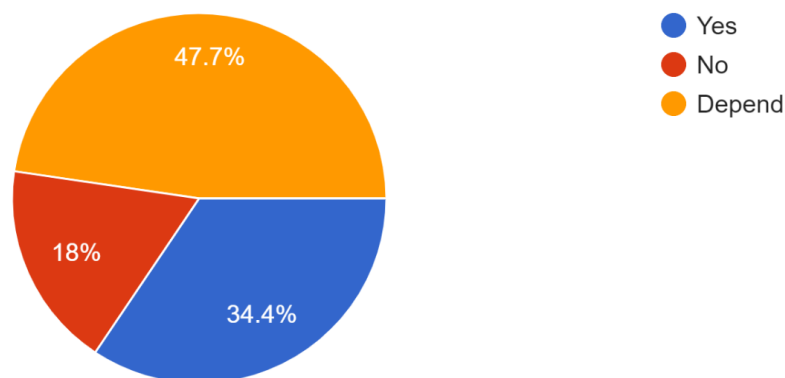
Figure 2. Data from the survey question, "Do you think that with the development of technology, paper-cut art can keep pace with the times?"

This study investigates whether packaging design can be innovative by incorporating folk art paper-cutting into packaging design (The History of Packaging | Crawford Packaging Blog, 2019). It could help retailers protect themselves during the process of moving goods and increase sales of those goods. Folk art paper-cuts can be integrated into packaging design, according to a recent survey. Packaging materials were used in ancient times to preserve and carry goods such as leaves, animal skins, nuts, and gourds. Designers should pay more attention to packaging design, such as the one shown in Figure 3.

Figure 3. Packaging with paper-cut visuals.

The pursuit of functional value is giving way to self-expression and the appraisal of aesthetic value as people's living standards continue to rise. Paper cutting is a kind of folk art that may be used in the design of packaging to enrich and beautify the packaging's look (Li, 2019). Folk art has techniques for deformation and exaggeration that can be used to make custom packaging for products. According to Zhao (2022), when combined with traditional forms of paper-cutting practised in folk art, it boosts the expressive power of contemporary graphic design. Folk art paper-cut packaging can better meet people's increasingly rich aesthetic needs, thereby enhancing the attractiveness of product packaging (Zhao, 2022).

Figure 4. Mooncake packaging design of folk art paper-cut design.

Artistic and contemporary product packaging can often arouse the interest of consumers. The design of the packaging is consistent with the philosophy of designing packaging with people in mind. Folk art paper cutting is ideal for incorporation into package design since its objective is to enhance the aesthetics of product packaging design and to fulfil the aesthetic demands of consumers. The outer packaging design of products will greatly affect the sales of enterprise products. Figure 4 is a good example of incorporating folk art paper-cut in a mooncake packaging design.

Conclusion

Folk art paper-cuts and contemporary design concepts continue to penetrate and merge with the passage of time, producing a fresh aesthetic. The blend of traditional culture and modern technology creates a fresh take on the art of paper-cutting. There are opportunities to reinvent current graphic design by identifying challenges and developing answers and ideas. This study allows the researcher to identify certain design features that might assist designers in making appropriate use of folk art paper-cut in package design and effectively draw customers' attention. An online survey questionnaire was designed to gather responses from respondents' opinions on how they personally view the impact of Chinese paper-cut culture on current packaging design. Respondents to the online survey assist the researcher in better understanding consumer preferences. An examination of the literature also indicates consumer aesthetic standards for graphic designers.

From the online questionnaire data, the researcher discovered that traditional paper-cut art in modern society will change as technology, traditions, living environment, aesthetic pursuit, social trends, design and development, and many other domains change. It is progressing toward convergence and modernisation. The traditional folk paper-cut art has been fully developed with the promotion of modern information technology, and if it is integrated into the packaging design, it can not only increase the popularity of the product but also match the visual elements with itself through its unique artistic expression. Combine and communicate product information as well as creative qualities. Consumers

not only satisfy their visual and artistic desires, but they also fulfil the goal of promoting traditional art and culture.

Based on the discussion, the researcher views that folk art paper-cut is a culture that highly depends on the type of product, the brand and its target audience. Nowadays, consumers have increasingly high expectations for packaging design. Folk art paper-cut may be included in packaging design to attract consumers because it has great visual stimulation, which is beneficial to grabbing consumers' attention. At the same time, it may pass on Chinese culture to the next generation.

While conducting the study, the researcher noticed various limitations, which will be described in this part. During the secondary data-gathering procedure, the researcher had a tough time discovering relevant papers. Many of the papers obtained by the researcher were obsolete, fresh articles must be paid for, and the majority of the articles examine whether folk art paper-cut may be integrated into product design, and research on folk art paper-cut and package design is extremely difficult to locate. The next limitation was that the researcher was unable to acquire more specific replies to the questions throughout the primary data collection phase. While some respondents answered questions that were beneficial to the study, the other respondents did not answer properly to the questions. They were just interested in a few replies. Due to time constraints, the researcher was unable to employ another strategy to gain more insights.

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Picture Credits

Figure 1. The Paper-Cut Is One of China's Most Popular and Characteristic Folk Arts-Made-in-China.com. (2012, December 6). The Paper-Cut Is One of China's Most Popular and Characteristic Folk Arts-Made-in-China.com. Retrieved December 2, 2022, from https://resources.made-in-china.com/article/culture-life/GxnJQNpjmmHX/Blessings-under-The-Sissors-Paper-cutting-/

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Figure 4. 22 Creative Die Cut Packaging Designs Inspiration – Bashooka. (2019, October 17). 22 Creative Die Cut Packaging Designs Inspiration – Bashooka. Retrieved December 2, 2022, from https://bashooka.com/inspiration/die-cut-packaging-designs-inspiration/Figure 2: Kacho, & Hoshino, S. (2020). Let's stay one Beetles apart (E. Tachikawa, N. Aoyama, & K. Ueda, Eds.). Pand Aid. https://en.pandaid.jp/hygiene/social-distancing

Appendix A

Appendix 1.1

Description and Question 1 Age

Appendix 1.2

Question 2 Are you familiar with this kind of paper cut?

Appendix 1.3

Question 3-5

6.   Please elaborate on your answer above.   (No. 5) 请在上面详细说明你的答   *
案。(No.5)

Your answer

Appendix 1.4

Question 6 Continued from Question 5

7.From 1-5, rate how much do you know about packaging design? (1 Don't know   *
at all - 5 Have a very good knowledge) 从1-5，打分你对包装设计了解多少？ （1
完全不知道 - 5 有很好的知识)

	1	2	3	4	5	
Don't know at all 完全不知道	○	○	○	○	○	Have a very good knowledge 有很好的知识

Appendix 1.5

Question 7 From 1-5, rate how much do you know about packaging design?

8. Do you think that the folk art paper-cut design is suitable to be applied to   *
packaging design? 您认为民间艺术剪纸设计适合应用于包装设计吗?

○ Yes

○ No

○ Depend

9. Please elaborate on your answer above. (No.8) 请在上面详细说明你的答案。   *
(No.8)

Your answer

Appendix 1.6

Questions 8-9

Appendix 1.7

Questions 10-11

Exaggeration in Animation to Create Dramatic Emotional Impact

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Abstract *This article explores how the principle of exaggeration is utilised in animation to create a believable and emotionally impactful animated project. While story writing plays a principal role in creating an emotional animation, audiences would not be able to empathise with the characters in these dramatic moments if the animation looked lifeless and unconvincing. Previous literature has studied the effect of exaggeration on character movements and design, but these studies primarily focus on realistic and semi-realistic 3D characters. Thus, this article intends to expand the study to semi-realistic and highly stylised 2D and 3D animations, with research in exaggeration in both characters and environment. Mix-method research has been carried out in this study, using observational studies to analyse existing animated works and questionnaires and online forum posts to gather public opinions. Findings from this research suggest that a moderate to low degree of exaggeration is optimal for evoking solemnity in highly stylised characters. In contrast, a high degree of exaggeration can induce more drama in semi-realistic characters. Exaggerating certain features in a character design to match the character's personality can also increase empathy value. Furthermore, a situation should be exaggerated through the background layout to support the character's emotion.*

Key words *Exaggeration, Emotional impact, Character design, Character acting, Background*

Introduction

Animation has been an effective medium of storytelling, as stated by Mairi Ryan in an interview with Cognitive. People are attracted to its easy-to-digest information shown through engaging and creative visuals (Cognitive, 2020). Audiences are taken on a fantastical journey in a fictitious world with imagined characters, where they eventually learn a meaningful message. However, to captivate audiences throughout the story, more than scriptwriting is needed to deliver the message successfully. Subsequently, to tell a story successfully, the audience must acknowledge a character's feelings and see themselves as the character (Hooks, 2011). Through this, the audience will be able to regard animated characters as beings with real feelings rather than mere entertainment tools.

Thus, the 12 principles of animation are essential in creating a lifelike and believable animation, especially the principle of exaggeration. This article is a part of the researcher's dissertation, where multiple visual aspects were considered in creating emotional impact in animation. However, to narrow the scope of focus, this article will only discuss the utilisation of exaggeration in animation by presenting relevant findings from the dissertation.

Problem Statement

Exaggeration is applied at a relatively low amount. According to van Rooij (2019) and Higgs (2019), exaggeration is needed to instil lifelikeness in characters and prevent them from looking mechanical. In that case, the characters will have the Uncanny Valley effect instead, when a character looks and acts too close to realism until it feels eerier to the audience. (Hammer & Adamo, 2020; Higgs, 2019; Sheldon, 2019; van Rooij, 2019).

As Higgs (2019) stated, animation often uses exaggeration to diminish the impact of what was seen on screen that would otherwise be regarded as a heavy subject in live-action, as reflected in an example from the Looney Tunes cartoon, where the character Wile E. Coyote's violent acts are often perceived as comical. This Wile E. Coyote shows that a high degree of exaggeration often ends up with a comedic result when used on highly stylised, or in other words, "cartoonish" characters. However, a high amount of exaggeration is only sometimes the best decision for every scenario. Hence, the degree of exaggeration being

applied to an animated scene must be considered to deliver the right mood. At the same time, past literature has mainly explored the effect of exaggeration in realistic and semi-realistic 3D characters. This article intends to expand on the study to consider the exaggeration of character design and character action of semi-realistic and highly stylised 2D and 3D animations. Subsequently, it explores whether other visual elements come into play in utilising exaggeration in animation to create emotional impact.

Methodology

Mix-method research has been adopted to gather data for this study. Observational studies on selected five emotional scenes from animated shows and films were done for the first phase of the data collection process. While a questionnaire containing those above five emotional scenes was distributed concurrently with a question post related to the research topic on an online forum website called "Reddit".

The selected five animated scenes used in the observational studies were each taken from four animated series, which were Arcane, Avatar: The Last Airbender, The Owl House, and Steven Universe, and an animated short film, which was Bao. Details of season and episode numbers, as well as the timestamps and location of the scenes, can be referred to in Table 1. However, only the scenes from Arcane and Steven Universe for this article will be mentioned. The scenes were analysed solely by the researcher in terms of visual aspects. However, this article will only present findings relevant to the topic of exaggeration.

Table 1 List of chosen animated show or film and timestamp details of selected scenes

Name of animated show/film	Season and episode number	Timestamp of scene
Netflix's Arcane	Season 1 Episode 3	34:39 - 37:07
Cartoon Network's Steven Universe	Season 1 Episode 45	08:26 - 10:05

The questionnaire was structured with eight sections with a mixture of quantitative and qualitative questions. Section 1 of the questionnaire consisted of demographic questions of age and gender and a question asking whether the respondents have watched animated films or shows before. Sections 2 to 6 consisted of the selected five animated scenes with a Likert scale rating of 1 to 10 to gauge the emotional impact felt by the respondents and a checkbox multiple-choice question for respondents to choose the most emotionally impactful visual aspects. Open-ended questions were also included in those sections for respondents to express the reason for their choices. Section 7 consists of questions aiming to learn about the respondent's choice of art style based on the five animated scenes and an open-ended question for them to state their reasons. Section 8 of the instrument was optional for respondents to answer as it asked them for emotional scene suggestions from animated films and shows and the reasons for their answers. The questionnaire was distributed to the general public on various social media platforms, receiving ninety-three responses, but only eighty-eight were usable for this study. However, to present a relevant data focus for this article, only the questionnaire's findings from sections 2,6, 7 and 8 will be discussed.
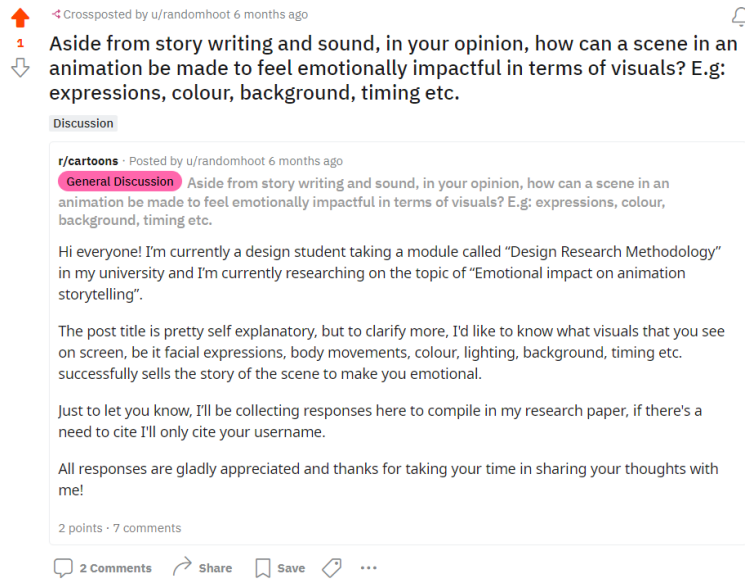
Figure 1.1 Screenshot of the post on subreddit r/animation with the full post from r/cartoons shown

The post on the online forum discussion website Reddit was a question asking for opinions on the ways to use visual aspects to create emotional impact in animation storytelling. The post was posted on the subreddit r/animation and r/cartoons, though only the one in r/animation received two responses. A screenshot of the posting on the subreddit r/animation, also containing the full post on r/cartoons, is shown in Figure 1.1.

Video links to the two scenes analysed in this article, screenshots of the questionnaire structure for sections 2,6,7 and 8, and the complete responses gathered from the sections as mentioned above in the questionnaire and Reddit post can be referred to in Appendix 1,2,3,4, respectively.

Findings and Discussion

Based on the findings gathered, the degree of exaggeration should be adjusted based on the need for a script and the stylisation of character design. Exaggeration is always needed in terms of semi-realistic and highly stylised or "cartoonish" stylisation, but the degree from low to high can vary.
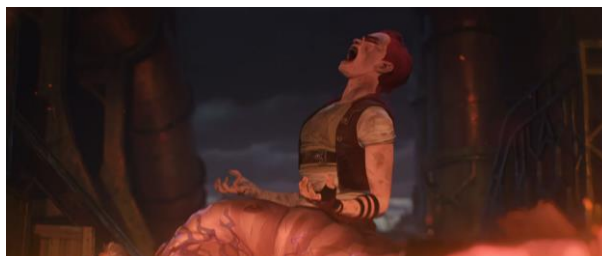
Figure 1.2 Screenshot of a scene from Arcane, showing Vi bending her back while screaming (Netflix, 2021)

Figure 1.3 Screenshot of a scene from Steven Universe, showcasing moderate level of expressions (Steven Universe Media, 2015)

Realistic characters are perceived as more believable with either high or no exaggeration, whereas stylised characters are conceived as more intelligent with little exaggeration (Hammer & Adamo, 2020). For example, the character Vi from Arcane (Brannon et al., 2021) bends her back backwards dramatically when wailing in pain (Figure 1.2), while the characters from the scene in Steven Universe (Molisee et al., 2015) are moderately exaggerated in both facial and body expressions (Figure 1.3) to present a more serious tone.
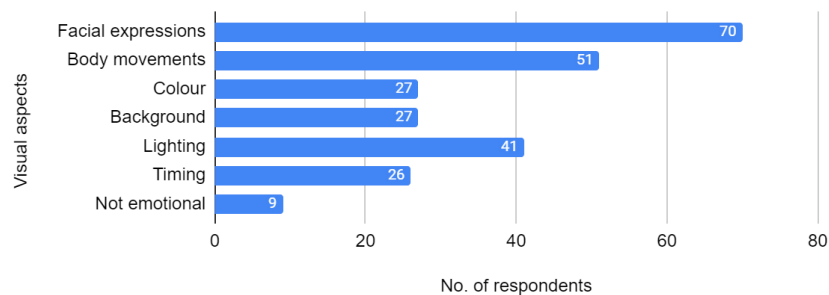
Figure 1.4 Section 2 of the questionnaire: Responses count of each emotionally impactful visual aspects chosen by respondents
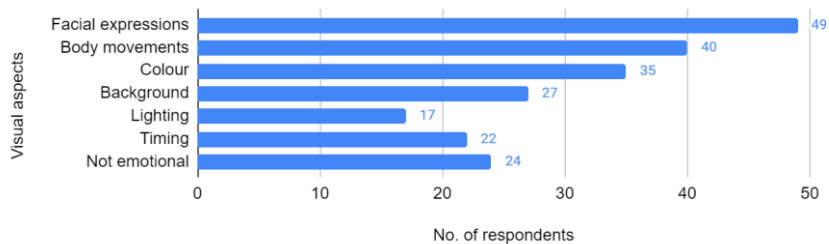
Figure 1.5 Section 6 of the questionnaire: Responses count of each emotionally impactful visual aspects chosen by respondents

Data from the questionnaire (Figure 1.4 and Figure 1.5) also suggests that facial and body expressions are the major factors in inducing empathy in viewers. Concurring to van Rooij's (2019) statement of eyes being the vital element of exaggeration in character animation, and thus why semi-realistic and cartoonish stylisations have huge eyes to express emotions, evoking empathy within the audience dramatically.

Table 2 Section 7 of questionnaire: Character styles choice in relation with respondents' demographic data

Section 7: Choice of character style				
1. After watching all the 5 videos, which character style from the videos do you prefer more?				
Character styles	**Age**	**No. of respondents**	**Gender**	**No. of respondents**
Video #1: Arcane	Below 18	1	Male	11
	18–25	22	Female	18
	26–30	4	Non-binary	1
	31–35	0		
	36–40	0		
	41–45	1		
	46–50	1		
	Above 50	1		
Total:		30		30
Video #5: Steven Universe	Below 18	0	Male	2
	18–25	5	Female	5
	26–30	1	Non-binary	0
	31–35	0		
	36–40	0		
	41–45	0		
	46–50	0		
	Above 50	1		
Total:		7		7
No specific choice of character style	Below 18	0	Male	4
	18–25	8	Female	8
	26–30	5	Non-binary	2
	31–35	1		
	36–40	0		
	41–45	0		
	46–50	0		
	Above 50	0		
Total:		14		14

Hammer and Adamo (2020) state that realism has a quality of intelligence, while stylisation is perceived as appealing. Respondents who agree mention that cartoonish characters are easier to understand. However, some oppose stating that semi-realistic characters are more impactful as they are more relatable and their detailed design gives a "serious" look, but personal preferences largely influence this. However, data from the questionnaire (Table 2) suggests that younger audiences are more inclined to cartoonish characters than older audiences. Other than that, findings show that a highly stylised character design creates believability through exaggerated elements, while semi-realistic characters evoke empathy through human likeness.

Figure 1.6 Screenshot of Melman from Madagascar 2 (DreamWorks Madagascar, 2019)

Furthermore, it is found that a character's personality indicated through its design can enhance emotions related to its characterisation, which increases empathy value. This is because exaggerations of certain character features can create a strong symbolism in the character's presentation (van Rooij, 2019). For instance, a questionnaire respondent suggested the drooping eyes of the character Melman (Figure 1.6) from the film Madagascar 2, which has a "pathetic look", encouraging audiences to empathise with him whenever he feels sad.

Figure 1.7 Screenshot of a scene from Arcane, showcasing background composition (Dray, 2021)

Exaggeration can also be applied to background compositions to enhance mood. For example, a questionnaire respondent points out that the wreckage and fire add to the chaos in the scene from Arcane (Figure 1.7). Reddit user double_dragon707 (2022) mentioned that those scene elements could be used to increase relatability. As exaggeration is a vital factor in conveying emotions in animation (Higgs, 2019), backgrounds have to be exaggerated to support a character's emotion.

This research has an explicit limitation of bias since the observation studies were done from the researcher's points of view. More professional input should be provided as findings were gathered from the general public only. Hence, future studies can build on this research with more detailed findings by gathering professional opinions and expanding the analysis on different animated works.

Conclusion

The findings of this article suggest that exaggeration is crucial in increasing believability in animation, thus creating emotional impact and evoking empathy within the audience. However, the degree of exaggeration needs to be adjusted. Based on the stylistic choice of the animated work and the need for the script. A high amount of exaggeration will lead to dramatic movements for semi-realistic characters. However, it may be comedic for highly stylised characters.

In contrast, a moderate to low amount of exaggeration is optimal. This exaggeration certainly creates lifelikeness and gives a weighty mood for both stylisations. Nonetheless, it should be noted that more than an exaggeration must be appealing, as the characters would look stiff and unconvincing.

While the audience's personal bias toward a specific character design style influences their will to relate emotionally to a character, any character design style has the potential to deliver emotional impact.

Furthermore, exaggeration in character design is crucial in enhancing emotional conveyance to the audience. Semi-realistic stylisation connects to the audience through their human likeness, while simplistic-styled characters offer more room for extreme exaggeration and a more straightforward interpretation of their expression. The character's overall look can amplify certain expressions by visually depicting the character's personality. To clarify, a character designed to look nervous or sad will heighten the said expressions, and the same concept applies to other personalities and expressions.

Other than that, the exaggeration of elements in background composition is vital in enhancing the mood delivered in an animated scene. Exaggerating a situation through the layout for the background promotes believability in the fictional animated world and encourages the audience to put themselves in the character's shoes.

Therefore, practitioners should thoroughly consider the amount of exaggeration to apply in their animation production that matches their art direction. By doing so, an emotional moment in an animated work can be brought to life. Hence, the audience can feel its impact and thus be captivated by the animation they are watching.

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Appendices

Appendix 1: Video links used for the observational studies and questionnaire

Disclaimer:

The videos used in this research are copyrighted materials where their use are not specifically authorised by the copyright owner. The researcher had thoroughly considered to include these videos in this research and intends to use them for academic research purposes only.
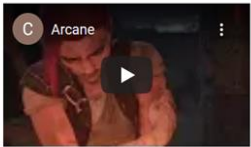
1. Netflix's Arcane Season 1 Episode 3
   https://youtu.be/RXuCE-9pAI8
2. Cartoon Network's Steven Universe Season 1 Episode 45
   https://youtu.be/N986zexi1c8

Appendix 2: Structure of section 2, section 6, section 7 and section 8 of questionnaire

Appendix 2 Section 2 of questionnaire

Appendix 2 Section 5 of questionnaire

Appendix 2 Section 7 of questionnaire   *Appendix 2 Section 8 of questionnaire*

Appendix 3: Questionnaire responses

The raw data of the responses for each section in the questionnaire can be referred to in the following Google Sheet link:

https://docs.google.com/spreadsheets/d/1xQBN8mLlT1GEO5INU6wf4Gev2WabpOtAnenTAhpXZIk/edit?usp=sharing

The responses for each section were documented in different sheets, which were labelled accordingly. An ID number was given to each respondent for ease of navigation.

Appendix 4: Online forum discussion responses

The link to the original posts can be accessed here:

Post on r/cartoons

https://www.reddit.com/r/cartoons/comments/v3819t/aside_from_story_writing_and_sound_in_your/

Post on r/animation

https://www.reddit.com/r/animation/comments/v384uo/aside_from_story_writing_and_sound_in_your/

Original responses on r/animation:

double__dragon707:

use scene elements to make it more relatable to your audience.. like if your characters are going to the trendy coffee place have the line wrap around the building or somebody give a ridiculous 'double almond caramel mocha frap no whip' order... but the idea is to get your audience to relate to the scence.. if they can say 'omg i hate that' then you are probably getting close

spliffwizard:

Well it depends on what kind of emotion you're trying to convey, the examples you mentioned all add to the feel of a scene. If you want a sad montage then your colour palette might change to a bluish tone, maybe it's raining maybe the transitions are slower and maybe your character looks deflated or helpless in their gestures. If it's an action scene there will be quick transitions, wide eyed characters, you might have close ups like a character's hand picking up a gun, then a shot of the top of a door as it opens, then a shot of keys going into the ignition of a car.

My suggestion is just experiment in the storyboard phase and watch shitloads of reference

Functionalism in 21st Century Web Design

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Abstract *An analytical journey to explore 20th century functionalist design concepts and purposes and discover how it has influenced 21st century applications on web design. Limited research surrounds the understanding of web design in reflection to design history. Hence, the study aims on exploring the historical roots beneath functionalist design and how the functionalist design concept of form follows function has been applied onto web interface design. The research methods engaged were qualitative analysis involving visual analysis of three websites: MUJI, IKEA and Crate & Barrel and face-to-face interviews. Through the collected findings, it is observed that there are influences of form follow function in web design with accordance to design elements and principles. It is shown in design elements of size, colour and space, along with design principles of proximity, contrast and alignment. The application of form follows function results in good web design while introducing the notion that form follows function, function follows future, whereby the functionalist design concept extends further into the philosophies of behavior and future-oriented reactions.*

Key words *Graphic Design, Functionalist Design, Form Follows Function, Bauhaus, Web Design*

Introduction

In the current digital age, we are stared back by a screen on a daily basis. Our daily life might consist of chats over Facebook, browsing thought Instagram, online shopping on Lazada and reading articles on Buzzfeed. Today, these are interactions we have with our screens, whereby they provide us information and we absorb them. As a Millennial heavily engaged with digital screens, the origins of layout and flow of information leaves one intrigued. The web industry is still in the phase of its youth. As designers, we continue to grasp the dynamics of web-based interaction. It is hard to find some kind of formal education that focuses on the philosophy of web based interaction, design and user experience (Difeterici, 2012). We do not realise that our so-called new ideas have roots in past concepts. Perhaps we require better understanding of how these concepts have been applied into current designs so that we can produce more innovative designs. As illustrated in Figure 1.0, the concept that we will focus on in this study is Form Follows Function and how it applies into the designs we see on screen.
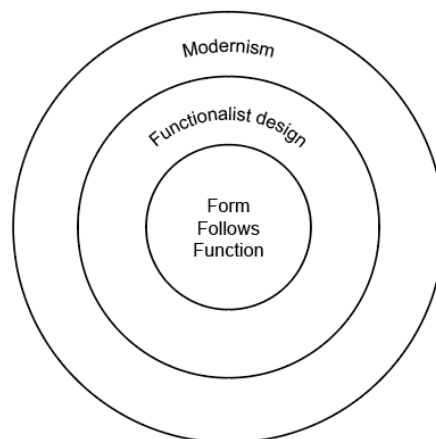

Figure 1. Form Follows Function is born out of the functionalist design movement which was emphasised within Modernism. The terms appear to be interrelated and may be applied interchangeably according to the context to which it is being used.

Problem Statement

In this digital age, technology is designed to hook us along with the adoption of newer more compelling social networking platforms, tablets and smartphones (Difeterici, 2012). Web interface design was born in the digital age. It is the intentional composition of elements on a device in which a user interacts with on a daily basis.

When a product functions efficiently while being aesthetic, users will be drawn to its smooth and functional experience. This behaviour can be understood by inspecting the functionalist design concept from a historical perspective. The concept and purpose of functionalism could be seen applied in contemporary web interfaces by examining through the lens and techniques of Form follows function. Form follows function, a Bauhaus teaching, states that beauty in design results from purity of function and the absence of ornamentation (Lidwell, et al., 2003). This implies that every element within a web page has a purpose for its existence. The result is designs, or rather web interface designs, that are simple and will be more timeless and enduring, hooking you to the screen.

It is a question of the design aspects that are crucial to success (Lidwell, et al., 2003). The purpose of the web design should drive design specifications and decisions, basic important design purposes since the days of Bauhaus. This research studies the elements of shape, colour, space, imagery and typography, within three current web interface designs in the attempt to show that they stem from 20th century functionalist principles of Bauhaus.

Figure 2. Logo of the three websites visual analysis was conducted on which are IKEA, MUJI and Crate & Barrel (from left to right).

Methodology

The research methods engaged in this research was qualitative analysis involving visual analysis and face-to-face interviews. Visual analysis was conducted on three websites which are MUJI, IKEA and Crate & Barrel shown in Figure 2.0. The analysis is conducted in four systematic stages to provide visual walkthrough of the overall website while identifying and analysing key visual elements. The face-to-face interview involves two seasoned design practitioners who provided knowledge, ideas and perspectives on the research topic. These analysis methods provided the researcher the important primary data required to conduct the research.

Visual analysis provides the opportunity to examine a web interface using the lens of Form Follows Function. With the functionalist concept in mind, the researcher observes and analyses the underlying purpose of each element within the web page. Thus, able to critically review each element in relation to its functionalist attribute or the lack of. Visual analysis was conducted in stages using the basic model for analysis adapted from Collier and Collier (1986) (Leeuwen et, al., 2010). The approach of conducting the analysis in stages is to ensure clear thinking and systematic visual evaluation. The variables used to analyze the web interfaces and their stages are shown in Appendix 1.

The interviewees are Prof. Sherry Blankenship, a Taylor's University lecturer, and Ms Dora Chua, a freelance lecturer pursuing her Master's in Design at KDU University. These face-to-face interviews enable access to the insight and foresight of senior visual design practitioners to uncover underlying themes. The interview questions are listed in Appendix 2. This qualitative method is important to prevent bias to the research. The aim of the questions is to understand the origins of the methods used by today's graphic designers towards web design and how it has played a significant role in design sense. With each question, the interviewees are required to elaborate further on the concepts and purposes

of 20th century functionalist design and its influence on 21st century applications on web design.

Findings and Discussion

When dealing with how a web design appears, it is more than just a superficial layer of interface elements and their forms displaying functions. From the findings of the visual analysis, the influence of form follows function in web design can be seen best with the application of three principles of design: alignment, proximity, contrast, accompanied by three design elements: size. colour and space. Form is described in aspects of appearance such as size, colour and the organisation of space.

These elements provide effective means to draw the attention of the user. The chosen principles of design appear to be more frequently applied by web designers to deliver information systematically to ease the user's journey throughout the website. These elements and principles help shape the appearance and navigation of the web pages so that it may best serve the user and provide an efficient web experience. The practicality and seamless method of thinking behind functionalist design resonates with the delivery of proper structure and systems.

Chadgar (2015) indicates that functionalist design is timeless and greatly influences modern design today. Design is stripped to its bare essentials to highlight the function of the product. This can be seen transferred into web interface designs which are categorized by information, controls and imagery as shown in Figure 3.0. The study establishes that key interface elements exist within the controls located around the web page, the structure of information and aesthetic usage of imagery. Less elements on the page would mean their relationship with each other becomes important (Puhalla, 2011).
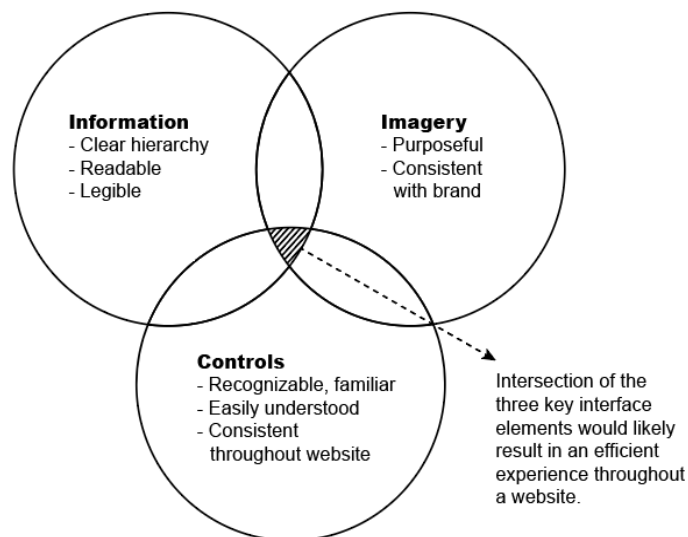

Figure 3. The key interface elements represented by information, imagery and controls plays a role in providing an efficient website experience for the user.

From the interviews, it was discussed that web interface design acts as a bridge from website to user. Professor Sherry Blankenship mentions that a website is there for information and interface design is necessary to make communication as simple as possible as it is very critical for the user. Moreover, Ms Dora shares that it is the designers role to ensure the web design works well to deliver information, to look good, simple and understandable. Both experts speak about web interface design being a means of communication and to communicate information with clarity. The functionality of a web

design takes precedence over the aesthetics. A well-designed interface is important as it directly impacts relationships with the user and the brand's profitability (Galitz, 2007). The user's perspective places importance to two main aspects of web design: content and layout. Designing requires planning, the web designer needs to first understand and simulate the user's perspective to achieve an effective web experience which suggests a meaningful relationship (Lynch, et al., 2016). The sensible application of layout and content brings meaning to the user, signifying functional design.

Conclusion

Form follows function expresses that the form of a design is to be created based on its functional requirements. The concept of form follows function is clearly implemented in the applications of present day web interface design and most likely the future as well. It is within our scope as designers to create effective and efficient web interface designs. The concept of form follows function acts as the foundation that leads to good web design. First is to identify the elements that make it ordinary and with thoughtful manipulation, the ordinary form contributes to producing innovative designs. (Puhalla, 2011). By understanding the foundations that make an effective website, it indicates room for future web design innovations.

The findings from the visual analysis indicates that the influence of form follows function in web design is shown in design elements of size, colour and space, along with design principles of proximity, contrast and alignment. The sensible usage of these elements and principles appears to deliver information systematically to ease the user's journey throughout the website. The research expresses that key interface elements which advocate form follows function are information, imagery and controls. By intelligently designing these elements in accordance with the concept, it provides an interface with clear hierarchy, readable and legible text, purposeful and consistent imagery, and easily understood controls. Thus, providing an efficient web experience in turn earning the label of good web design. Good web design increases productivity of the users on the screen (Galitz, 2007). For example, effective web design leads to ease in online shopping tasks which in turn increases profit for the brand and promises return of customers in the future. There are significant economical benefits by resolving web design issues which result in a functional website, it is rewarded by satisfied users and profitable companies (Galitz, 2007).

The findings from the interviews place importance to two main aspects of web design: content and layout. We discover the importance of organization and structure of information on a web page and the ability to communicate the brand voice through the display of the content on a website. Hence, content and layout attributes to an effective and good web design.

The limitations of this study is that much of the research is based on the observational connection of past design principles and its connection to current web design applications. The perspectives that were discussed are subject to designers' comprehension of the design principle.

Form follows function, function follows future. The changes that arrive in the future will affect the function of things, in which form will adapt and change shape according to whatever the future demands. The timelessness of the design concept extends further into the philosophies relating to behaviours and reactions towards the future. As mentioned by (Sullivan, 1896), 'form ever follows function. This is law.' Thus, this law remains valid in our digital age as we represent the Sullivan's of this generation. Web designers today will set the foundation for future web designs to come.

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Picture Credits

Figure 1. (2020). Compiled by author. Retrieved from https://www.ikea.com/my/en/ , https://www.muji.com/my/ and https://www.crateandbarrel.com/

Figures 2 & 3 (2020). Diagrams designed by the author.

Appendices

Stage	Action	Elaboration	Findings
1	General Visual Walkthrough	To observe the websites as a whole, to overtones and subtleties and discover patterns. It guides the flow of the analysis to further dive into the in depth study in the second stage. Also, to consider overall look and feel, tone and manner, and communication of brand and its presence.	The structure and application of whitespace on the web page is observed. the brand logo and navigation bar is viewed at the topmost of the website followed by the hierarchy established. The colours, typefaces and imagery used are aligned with communicating the brand personality.
2	Identifying Key Visual Elements	Construct a clear view of the elements that need to be observed. It also avoids confusion and derailment from the	Web user interface elements to be aware and analyze are input controls (such as checkboxes, radio buttons, dropdown

		research objectives. It helps focus on the research questions. Every element recognized must serve a purpose.	lists, list boxes, buttons, toggles, text fields, date field), navigational components (such as breadcrumb, slider, search field, pagination, slider, tags) and informational components (such as tooltips, progress bar, notifications, message boxes, modal windows). The visual elements analysed are size and shape, iconography, layout and composition. The application of basic web design principles of proximity, contrast, alignment, organization and consistency was analysed as well.
3	Analysis of Visual Elements	To portray the data observed in a structured manner and will be easy to understand for future references. Analysis needs to be structured to produce detailed descriptions with evidence and statistical information. The observation and analysis is categorized according to the form and its respective function on the website.	The visual elements noted are . The function of these elements on the web page are discussed followed by their relevance to 20th century functionalism concept and purpose.
4	Summary	Provides a conclusion and closure to the analysis made. Details from the structured analysis to be placed in a context that defines their significance. The conclusion is written in relation to Form and Function in web interface design. To indicate the presence of form follow function in web interface design.	The idea is there are no unnecessary elements within the page that would distract the user from their objective of visiting the website. The summary decides whether the web design interface has fulfilled the concept requirements of Form Follows Function. Based on the results and findings of the visual analysis on MUJI, IKEA and Crate&Barrel websites, it shows that 20th century functionalist design has influenced 21st century applications on web design.

Appendix 1 The four stages of visual analysis.

1.   In your opinion, what is the purpose of web interface design in the 21st century?

2.   Which aspects of a website do you think is important?

3.   As a design lecturer and a practitioner, what is your opinion regarding the practically of the Bauhaus concept of Form Follows Function?

4.   What does the concept of functionalism mean to you?

5.   How does this concept apply in contemporary web interface design?

6.   Based on the links provided, would you say these web interface designs apply the concept of Form Follows Function? And why?

7.   When we consider timeless design philosophies, in your opinion, do you think it will eventually be forgotten in the future?

Appendix 2 Questions for the face-to-face interview.

An Analysis of Visual Attributes of Believable Characters in Animation

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1 Mar. 2023

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Abstract *Characters are the narration's central focus and act as a driving force in animation. However, developing a distinctive and appealing character can be challenging while conveying its personality. Although various papers are available investigating character design, there has been relatively little research into the visual attributes towards narration believability. The character designers need a general rule of thumb to concentrate on designing effective visual attributes that can convey the characters' inner traits. Thus, characters can be perceived as believable. Hence, this study aims to determine the definition of believable characters and investigate the role and importance of visual attributes of believable characters by conducting an online questionnaire among experts and visual analysis of Disney characters. This essential study developed a guideline for character designers to concentrate on the six most crucial visual attributes while also considering how to represent the characters' personalities visually. The findings indicate that the visual attributes that contribute the most to character designing are color, shape, posture, scale and proportion, texture, and facial. These visual attributes are crucial in shaping believable characters so that the audiences can be quickly immersed in the story and feel related to the characters.*

Key words *Character design, Believability, Visual attributes, Animation, Story*

Introduction

Throughout history, fascinating animations have produced iconic characters in television and film. As Walt Disney once declared, "I love Mickey Mouse more than any woman I have ever known." A believable character will live in one's heart forever. Character design is the process of thoroughly establishing a character's physical attributes, style, personality, and qualities. It plays a crucial role in developing the overall concept and shaping the plotline.

As such, every element of a character should be carefully considered. A strong character should have adopted effective attributes so that it can appear unique and memorable and is defined as a "believable character" in this study. By conducting a questionnaire among experts and an in-depth study of secondary resources, the researcher develops her definition of "believable character" as a guideline for designers to achieve a good and convincing character. This article then delves into the visual attributes of characters and explores their roles and importance towards narration believability. After identifying the most important visual attributes from the questionnaire, visual analysis in the focus group and an observational study on Joy from Inside Out (2015) were conducted to observe the effectiveness of these attributes.

Problem Statement

An animation tells a story, and the story is told from the perspective of the characters. The character is a vital storytelling tool that could indirectly impact the audience's emotions (Arshad et al., 2018).

However, when we talk about character design, the common focus is usually on the visual aspect (Nieminen, 2017). The research study by Arshad et al. (2018) shows some failed products in the Malaysian animation industry. A huge budget local animated feature film, Oh La La (2015), spent nearly RM 4 million and failed to attract the local community. One of the reasons is because of the lack of quality in the character design. Creating a visually appealing character who is able to tell the audience about his story is fine. Without having a sense of identity, a character cannot be recognized or remembered (Khalis et al., 2016).

When a character seems convincing to the audience, even though it does not exist, it is considered a success. When a character seems convincing to the audience despite the fact that it does not exist, it is considered a success. After considering the characters'

personalities, visual attributes like basic shapes and colors should be studied to portray their personalities well in the animation. Pixar's animated film Inside Out (2015) is a good example. The main characters' distinct shapes and colors represent their specific behavior and characteristics. They may not necessarily be human figures to achieve believability. Instead, they can be in the form of animals or objects (Khalis et al., 2016). In this study, the crucial focus is on the visual aspects that aim to develop believability in animation.

Methodology

Mixed methods are adopted as questionnaires are distributed in a structured quantitative instrument, as well as a qualitative visual analysis conducted in two ways, focus group and personal observation. These methodologies are intended to identify the roles of character design in terms of visual attributes and their importance in animation narration.

The first method is an online questionnaire with a mixture of quantitative and qualitative questions conducted among six experts. This online questionnaire aimed to obtain professional opinions regarding believable characters and the role of visual attributes in character design. This questionnaire is structured in a quantitative instrument, Google Form, because of its convenience in managing the questions and organizing the collected data in various formats: summary format, question format, and individual response.

There was a multiple-choice question to identify the visual attributes contributing to a believable character. The rest of the questions were open-ended questions that were targeted to the experts in the design-related industry. The data were treated with thematic analysis. It is a typical qualitative data analysis method that focuses on the critical elements of the research objectives while analyzing the themes to identify meaning (Crosley, 2021).

The second method is a qualitative approach using a focus group to conduct visual analysis. Visual analysis is becoming more popular across various disciplines as it is an efficient and suitable method for qualitative research (Pain, 2012). This visual analysis involved two experts' opinions to ensure no biased assumptions were implemented when analyzing the Disney characters. During the COVID-19 pandemic, the focus group was carried out using an online platform called Padlet. On this online collaboration platform, digitizations of notice boards take place that can enrich educational communications (Edwards, 2022). The data collected was treated with comparative analysis by examining their similarities and differences. This visual analysis captures the emotional impact after watching the selected video clips and observing the design choices of the characters from the perspective of the experts in the industry.

Next, there is an extension of the second method, which is the researcher's observation of the visual attributes of a Disney character that was selected from the previous research method. The visual aspects to be observed on the character referred to the results of one of the quantitative questions in the first research method. This observational study was conducted after gathering data from the previous research methods to ensure that the Disney character was considered believable and suitable to be used as the research material. This research approach defines the visual attributes of believable characters. It emphasizes their roles and importance based on the interpretation from the first phase of visual analysis, which was aligned with the research objectives. The observations were evaluated, interrelated with the previous findings, and then recorded and presented in a table format.

Findings and Discussion

Based on the findings in the questionnaire, as shown in Table 1, the respondents raised a few points about defining believable characters which are visually appealing but also adapting real-life person's personalities and characteristics. This physical appearance matches the storyline and can be perceived as "real" without realizing it is a fictional character. In Table 2, the importance of characters in conveying the storyline is extensively emphasized because they are the driving force in the story. In general, the researcher has developed a new definition that believable characters are characters that have physical

appearances that are matched their role in the story and characteristics, or as opposed to their hidden personalities that can surprise the audiences, also have basic human emotions that allow them to behave and react similarly to humans in a certain extent although they are not in human form.

Online Questionnaire Section C Question 2: How do you define "believable character"?

Respondent(s)	Answer
A	It has to look visually appealing and sellable, at times even adapted from the characteristics of a real-life person.
B	You feel the character is alive, like someone you know, you can feel the character's emotion.
C	Believable characters would have a balance and contrast in visual portrayal as well as personality wise.
D	A character is believable when we accept them as 'real' . When their design or behavior is fully in line with the story that's being told.
E	I assume this is what gives the character a realistic personality. A character is believable when they are provided with goals and dreams, as well as background stories, flaws, wants and needs. Anything that is required to become a normal person like any human being. Those aspects are what is considered when developing a believable character.
F	It's one where viewers can really relate and connect to in a strong way, very convincing without realizing that it's a fictitious being created from the art form.

Table 1 The answers regarding the definition of believable character

Online Questionnaire Section C Question 4: What do you think about the role of characters in conveying a storyline?

Respondent(s)	Answer
A	The character needs to face a challenge, a dilemma and find a purpose to solve it, that carries the narrative in the story.
B	Characters are the absolute driving force in the story. Without characters there is no story.
C	The characters are the storytellers. They are the storyteller's mouthpiece and the eyes of the audience. Without them, there will be no story.

D	Super important. Every element in a movie is part of the story. The script itself is not the story. The story is being told through color, sound, character, cinematography, so in that sense, the character is the story.
E	It really depends on what type of role this is referring to. Some weak stories, we believe, can go without the character playing a part in it and the story would still flow perfectly. This in reference would normally be secondary characters that provide very little plot to the story. But some that play their role in the right situation can advance the building of the main character.
F	It is highly important.

Table 2 The answers regarding the role of characters in conveying a storyline

In addition, color, shape, posture, scale and proportion, and texture are considered the top six visual attributes in character design, as shown in Figure 1. There are several options provided, such as emotion, life, and thought process, which are considered as personality build-ups of the characters, which are out of the scope of this study. Other aspects like outfit and visual style are considered the extension or the combination of different primary visual attributes.

Online Questionnaire Section D Question 1: What visual attributes contribute to a believable character？

Q1 : What visual attributes contribute to a believable character?
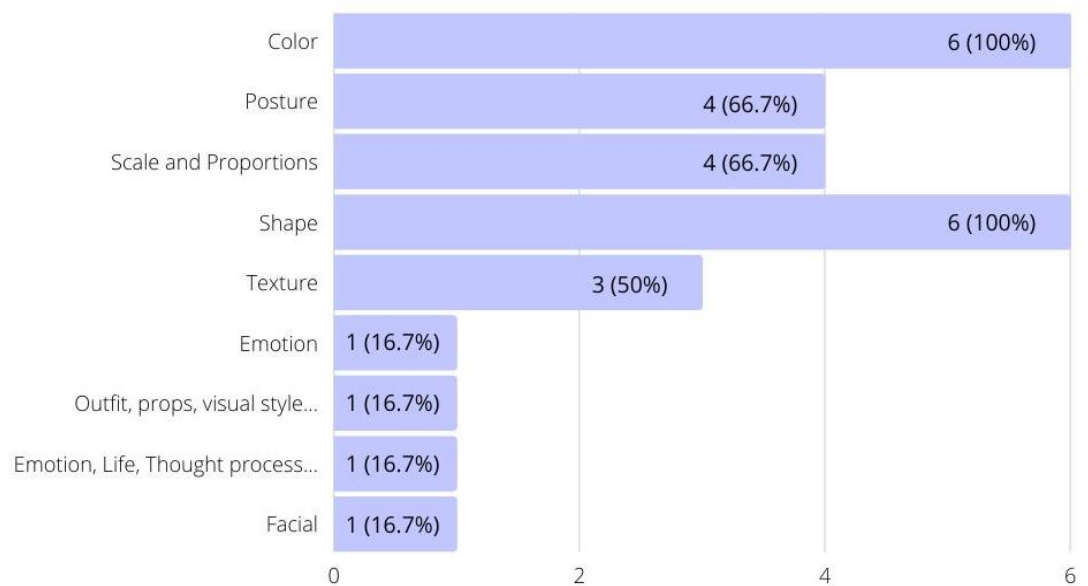
Figure 1 Horizontal bar chart of the multiple answers of visual attributes that contributed to a believable character

Subsequently, the observational study on Joy is carried out. According to the results in Table 3, the researcher determined that the selected Disney video clips are highly recognizable. Through the observations in Table 4, the researcher discovered that these visual attributes match the character's role in the story.

Visual Analysis in Focus Group, Frozen (2013) Question 1 : Have you watched the movie before? If yes, do you still remember this scene?

Respondent(s)	Answer
P	I've watched this movie before and remember this scene.
Q	Yes I have and I still remember.

Table 3 The responses to the question on whether the respondents had previously watched Frozen (2013)

In Table 4, observational study of the visual attributes of *Joy* is based on the highest votes from the experts in the questionnaire as shown in Figure 1.

Observational Study of *Joy* from *Inside Out (2015)*

Character	Joy	
Reference picture		
Visual Attributes	Color	- Warm skin tone - Blue hair - Blue eyes - Yellowish dress
	Shape	- Round head with a sharp tip of the hair - Overall shaped like a star.
	Posture	- Extending arms to the maximum - Standing with one leg - Looks like a star
	Scale and proportion	- Roughly 3.5-head proportion - Slim limbs - Big eyes and mouth
	Texture	- Hair texture – straight and short (pixie cut) - Has fuzzy texture around the edge

		- Firework-looking flower patterns on her dress
	Facial Expressions	- She has a beaming smile - showing excitement

Table 4, Observational study of visual attributes of Joy

The external looking of a character should appeal to attract people at first sight. According to Feisner (2000), human eyes are so drawn to color that they notice an object's color before the features it imparts through its shapes and lines. A great example is the color of the characters from Inside Out, which are based on their respective emotions. Joy is yellow, a warm color that fits her joyful and positive characteristics.

The second visual attribute, shape, is extensively applied to character design by mixing and matching them to produce different combinations of a character's silhouette. The formation of shapes will construct the basic posture of a character. Posture is part of the body language that adds more dynamics to the action that conveys a character's behavior. The overall shape of Joy is like a star, which can be seen through the posture of her arms extending to the maximum and standing with one leg in Figure 2.

Subsequently, the texture of a character's appearance can influence the character's overall feeling. It enhances the character's surface recognition, particularly their distinctive hairstyle and outfit. Joy has pixie-cut hair with precise strokes that appear straight and short. She also has a fuzzy texture around her edge and firework-looking flower patterns on her dress, which can be observed clearly in Figure 3.

Last but not least, the facial is a powerful visual attribute that can convey a character's emotion, increasing the character's believability in animation. The characters' emotions can be perceived easily by looking at their facial features. In Figure 4, the researcher observed that Joy's eyes are enlarged and sparkling excitedly. She clenches her hands in front of her chest, stands up straight, and widens her eyes and mouth, grinning while talking. Joy is perceived as an energetic and optimistic character.

All in all, these visual attributes work together towards the same goal, to create an appealing and unique character that still matches its inner qualities to enhance the believability of the narration. Thus, this is a significant study for creators to identify the role of these essential visual attributes as well as their importance in the believability of animation.

Figure 2 Basic shapes of Joy

Figure 3 Close-up of the texture presented on Joy

Figure 4 Facial expressions and body language of Joy *in a scene of Inside Out (2015).*

Conclusion

In conclusion, this study has filled in the gap left by past research studies by exploring and investigating the factors that make the characters believable and examining their roles and importance in character design. Characters play an essential role in conveying a believable and impactful story. A good character should fulfill some requirements so that they can be perceived as believable. Firstly, their physical appearance should be intriguing and interesting that can catch people's attention at first sight, even though they are not in human form. Their visual attributes should reflect their personalities and emotions. Besides, they should possess human emotions that will affect their behavior and be affected by other characters. Fourthly, they should be given a role in the story. In short, a believable character has visual attributes that complement its role in the story and internal qualities, or in opposition to its hidden personalities that give a surprise, and also possesses

the fundamental human emotions that enable it to behave and react almost like an actual human even though it does not physically look like a human.

As the characters are essential in conveying a believable and impactful story, they should possess specific visual attributes so that they can be appealing and believable. As this study aimed to identify the role of visual attributes in character designing and their importance in delivering a believable story, the research has identified such visual attributes as the most dominant aspects of designing a believable character. Undeniably, these attributes are significant in attracting people's first impressions, conveying visual information without verbal explanation, and arousing the desired emotions in the audience. After carrying out the investigation, applying color, shape, posture, scale and proportion, texture, and facial can set up visual aesthetics that intentionally contrast with or complement the characters' personalities.

Iconic characters are aesthetically pleasing and created to have personalities and characteristics that can turn a script into a believable story. Although a character's appearance may differ from person to person, designers have successfully applied various common ideas and techniques to bring believable characters to life (Ekström, 2013). If a character is built with a strong personality but does not achieve a level of visual aesthetics, it will lose its attractiveness and identity. Joy is considered a plausible, memorable, and attractive character as it possesses visual attributes that match the role of the story. Its visual attributes, including color, shape, posture, scale and proportion, texture, and facial, effectively present its upbeat personality. Based on the primary findings, the Disney character, specifically Joy, is essential in driving the story plot that makes the movie successful.

Hence, this significant study established a guideline for character designers to focus on the characters' six most crucial external characteristics while also considering how to portray their personalities visually. This guideline encourages the designers to justify their design choices to ensure they have selected the most suitable visual attributes for their characters.

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Appendices

No.	Target Respondents (Alias)	Experience	Status
1	K.W.	Have experience working as illustrator, concept artist and character designer in various companies.	Responded
2	J.T.	Have years of experience working as illustrator, concept artist and character designer in various companies. Full time 2D concept artist in Mighty Jaxx.	Not responded
3	W.T.	Have years of experience working as art director and character designer. Have teaching experience at CGMA master academy.	Responded
4	S.L.	Have years of experience working as character designer, art director and editorial illustrator. Full time character designer at Marvel Studios.	Not Responded
5	K.M.	Have years of experience working as character designer, concept artist and creature designer. Gave master class for animation and video games students at ECV Bordeaux.	Not Responded
6	J.B.	Professional concept artist currently living in Montreal, Canada, specializing in character, creature, and prop design.	Not Responded
7	J.V.B.	Character design and storyboard artist based in Mexico City. Worked for Netflix, Warner Animation Studios, Cartoon Network LA, Nickelodeon, Ilumination, Anima Studios, Blim and Televisa.	Not Responded
8	M.R.	A concept and storyboard artist for 2D animation based in Malaysia and a freelance illustrator.	Responded
9	S.K.	Creative Director at Giggle Garage Animation Studio.	Responded
10	J.T.	A budding Visual Artist and Animator who has worked in the Creative Industry for 15 years and going, aside from just handling client works full-time or freelance.	Responded
11	N.I.	Lecturer of The Design School in Taylor's Lakeside Campus.	Responded
12	K.V.	Lead specialist (animation) of The Design School in Taylor's Lakeside Campus.	Not Responded

13	E.E.	A show creator and character designer / vis dev artist who graduated from Sheridan College's BAA Animation Program (Honours) in 2015 with her award-winning thesis film, "Wakalulu."	Not Responded
14	Y.P.	Art director, character designer, visual development artist	Not Responded
15	P.E.	A passionate 3d artist with over ten years of experience in the field of computer generated images with main focus on visual development, sculpting, texturing, shading, grooming, lighting and rendering of characters and environments.	Not Responded

Appendix 1 Target Respondents of Online Questionnaire

Section D: Visual Attributes of Characters
1. What visual attributes contribute to a believable character?   • Color   • Posture   • Scale and Proportions   • Shape   • Texture   • Other: _____
2. What are the similarities & differences of non-human characters and human characters in terms of the visual attributes?
3. What are the similarities & differences of a protagonist and antagonist (in human form) in terms of the visual attributes?
4. Based on your personal experience, how do you design a believable character?

Appendix 2 Section D of Online Questionnaire

No.	Target Respondents (Alias)	Experience	Status
1	E.F.	Have experience working as a concept artist, illustrator, animator, and motion graphics artist	Responded
2	K.A.	3D Artist at Codemasters EA	Not Responded
3	J.T.	A multimedia and motion designer	Not Responded
4	G.D.	A concept/creature designer and visual development for film, television, video games.	Not Responded
5	K.A.	An Emmy Award-winning creator, co-founder of Imaginism Studios and Schoolism, and an artist working in the movie industry.	Not Responded
6	D.S.	Toronto-based 2D Animator, Character Designer	Responded

		and Board Artist.	
7	M.R.	A concept and storyboard artist for 2D animation based in Malaysia and a freelance illustrator	No Responded
8	A.O.	An animation producer and managing director of Inspidea Studio.	Not Responded

Appendix 3 Target Respondents of Visual Analysis in Focus Group
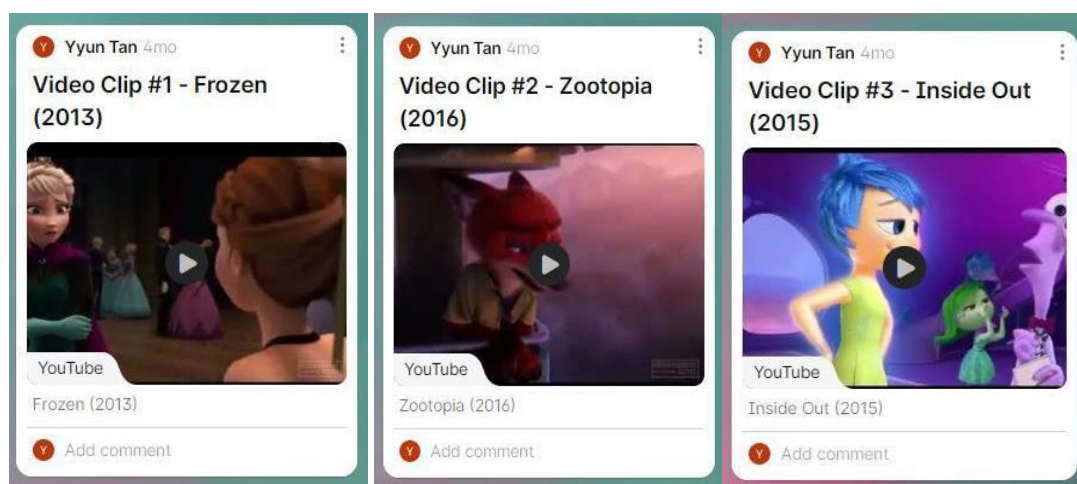
Questions (Same set of questions applied to all video clips)
1. Have you watched the movie before? If yes, do you still remember this scene?
2. How do you feel after watching this video clip? Why and what makes you feel so?
3. What have you observed in the main characters?
4. Based on question no.3, what meaning is conveyed by the design choices in this particular scene?

Appendix 4 Visual Analysis in Focus Group

Video Clip #1 *Frozen (2013)*	https://youtu.be/mrCIpElPm0U
Video Clip #2 *Zootopia (2016)*	https://youtu.be/EfaXglM4xPo
Video Clip #3 *Inside Out (2015)*	https://youtu.be/yjWZZ9WKcKc

Appendix 5 Extracted Clips for Visual Analysis in Focus Group

Appendix 6 Observational study on the selected Disney characters

The Roles and Impacts of Packaging Design Elements in Food Packaging

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Abstract *Almost all of the food we purchase or eat comes in a form of packaging. Packaging serves as a communication for the food product and brand's identity to the consumers, while the visual elements are the component consumers see on the packaging that conveys the message. Successful brand marketing heavily relies on packaging to convey its message and core values. Hence, the visual elements on the packaging are crucial to stand out and convey the right message to the consumers as it could affect their purchasing decisions. Thus, this research aims to study the roles and impacts of packaging design elements in food packaging. A few brands were selected for their packaging elements to be evaluated. An online survey containing mixed components of qualitative and quantitative questions was carried out, yielding 100 responses. The results showed that packaging design elements such as colour, typeface, graphics, and material in food packaging design play a significant role and impact on consumers. The majority of the respondents preferred warm colours, rounded typeface, food presented in photograph form, spokes-character presence, and matte material finishing on food packaging. These findings could help the food industry brands to understand the roles and impacts, and preferred packaging design elements of food packaging to consumers' perceptions and purchasing decisions.*

Key words *Food packaging; packaging design elements; consumer perception; consumer's purchasing decision.*

Introduction

In the food & beverage industry, packaging design plays a huge role not only as a way of protecting the food but how it is designed would also affect consumer purchasing decisions. Apart from the functional role of packaging, it is also a form of communication as it serves as the voice and face of the brand. Packaging is crucial in determining a product's success or failure. There needs to be a tangible link between the brand and the packaging. Packaging needs to be designed in a certain manner that remains true to the brand's personality to ensure that the brand's message and identity are still being communicated correctly to consumers.

"The average time it takes for a product to be noticed on the supermarket shelf is about one-seventeenth of a second. Thus, it is safe to say that a packaging must stand out quickly and be appealing enough for consumers to grab it." (Kotler, 2008). The way product looks is just as important as the product itself. Food is a daily essential in our everyday lives, so it would be beneficial to understand and study food packaging design.
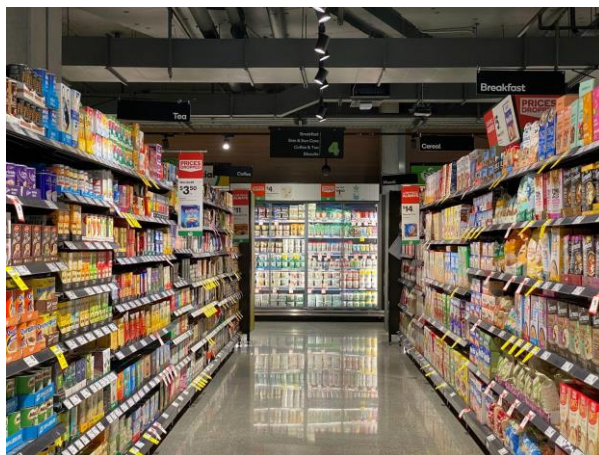
Figure 1. Food products on the grocery shelves.

Problem Statement

Packaging communicates product information. Hence, the information should not be confusing, because most consumers choose products very quickly. Some consumers who might have limited shopping time, do not usually read the labels, and are prone to making a purchase based on the packaging design. Hence, it is important for packaging to be designed clearly. According to Forbes Magazine (2014), "Eye-tracking studies show that consumers read on average only seven words in an entire shopping trip, buying instinctively by colour, shape, and familiarity of location." As people shop instinctively, it is vital to design packaging that quickly communicates what that brand is and why consumers should choose that certain brand. Besides that, shapes and sizes, materials and textures are also important in packaging design. Certain shapes or materials may be seen more on a specific product, which could allow consumers to identify the product category quickly just by looking at the packaging shape and material (Spence, 2016). Clear and unique packaging is effective. It creates an emotional bond between the brand and consumers.

There are many important aspects to consider when it comes to packaging design. Packaging function, graphic elements, information labels, shapes and sizes, materials, or textures play a big role in conveying messages the brand opts to convey to the consumers. Apart from that, rebranding the packaging design or maintaining certain elements from the usual brand packaging design, plays a major role as well and needs to be considered to maintain brand loyalty and bonding between the brand and consumers. However, not all brands have succeeded in creating and maintaining a good product design that can preserve brand loyalty, and communicate well or function effectively. Thus, this research studied how the packaging design of chosen brands has impacted consumers' perceptions and purchasing decisions.

The research questions are:

1. What are the roles of the packaging design elements used in the food packaging of chosen brands?

2. How does the packaging design used in the food packaging elements of chosen brands impact the consumer?

and the research objectives are:

1. To understand the roles of packaging design elements used in food packaging of chosen brands.

2. To understand the impact of packaging design elements used in food packaging on consumers of chosen brands

Figure 2. A consumer shopping for food products on the grocery shelves.

Figure 3. Chocolate Packaging.

Methodology

For this study, an online survey containing mixed components of qualitative and quantitative questions was carried out on the format of 5 -point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), and open-ended questions (Schoonenboom & Johnson, 2017). Quantitative research is defined as the systematic collection of numerical data and the application of statistical, mathematical, or computational approaches to investigate phenomena (Adedoyin, 2020). On the other hand, qualitative research collects and analyses non-numerical data in order to better understand the human and social environment (Adedoyin, 2020).

Using a survey method is more convenient and cost-effective for both researcher and respondents. It is also more appropriate to obtain a big amount of generalised data to collect opinions from the public. Nevertheless, it does not examine or quantify the depth of issues. With standardised questions to let respondents understand easily, questions generated may not be thorough (Adedoyin, 2020). To reduce these issues, the researcher designed the questions with open-ended questions to gain opinions from the respondents. The questionnaire includes a total of 4 sections: Section A – Demographic Questions, Section B – General Questions, Section C – Specific Questions (Chocolate), and Section D – Specific Questions (Cereal).

The target audience of this research was the general public as anyone could participate in this research. Upon that, the researcher could gain generalised data to reduce any form of biases and limitations of results from targeting only a specific group of people. In addition, food is consumed by everyone in general.

Reflecting upon the research objective of understanding the roles and impacts of packaging design elements towards food packaging design, a few brands such as Nestle, Mars Wigley, Kellogg's and General Mills Cereal were chosen to be featured in this survey as these brands serve a large recognition in the food industries. According to Laughman (2021), Nestle and Mars fall under the top 10 ranking of food & beverages companies. Whereas Kellogg's and General Mills fall under the top 11 ranking of cereal brands. (Bhasin, 2020). According to Grand View Research's (n.d.) report on snacks market size, Nestle, Mars, Kellogg's and General Mills are considered the key players operating in the snacks market. Hence these 4 brands were chosen for this study.

Findings and Discussion

1.   Introduction

The information portrayed on the packaging affects consumers' attention, perceptions, and buying decisions when purchasing a food product (Wyrwa et. al., 2017). How a packaging appeal visually influences consumers' product liking and purchase intention (Lidón et al., 2018). Similarly, in the present research, 95% of the respondents are affected by the

packaging design when purchasing a product. It is important to understand how consumers view and analyze packaging throughout the purchase decision phase as it can help to develop design and communication strategies. Visual elements such as graphics, colour, typography, as well as packaging material would be further explained in the following section.

2.   The Roles & Impacts of Visual Elements on Food Packaging Design

Colour attracts and maintains consumers' attention while purchasing food products (Schoormans & Robben, 1997). As consumers possess a colour vocabulary, a certain colour is expected on certain food products that would eventually create different impacts and purchasing intentions of consumers (Dobson & Yadav, 2012). From the data of the present research, out of 158 responses, 45 selected red and 25 selected purple as the most seen colours in chocolate packaging. Purple could be seen in chocolate packaging from well-known brands such as Cadbury and Milka creating a sense of familiarity among consumers. Red is the most mentioned colour from the findings and a research from Spence et al (2018) as the colour most associated with chocolate packaging. Remarks from the findings such as, "red looks sharper", "red is more appetizing", "red looks more appealing", and "more attractive" has indicated that red could be seen as more attractive, appealing, sharp, attention-seeking and appetizing on food packaging. Red is seen to be more suitable with chocolate packaging as it gives consumers the feeling of sweetness (Tijssen et al, 2017) and colour harmony, also indicated by a few respondents such as "red makes the chocolate feel sweeter and tastier", "colour harmony" and "red can highlight the characteristics of chocolate". Besides, a few chocolate brands such as KitKat and Hershey's use red as the packaging colour making consumers feel a sense of familiarity, indicated by responses such as "Kit Kat always used red for their packaging" and "used to the packaging". These findings indicated the strength of these 2 colours, especially red as suitable for chocolate packaging.

Figure 4. Warm colour chocolate packaging.

Furthermore, yellow and white colour is more associated with cereal products. The brain processes yellow fast making it more attention-seeking and appetizing to consumers (Tufts University Health and Nutrition Letter,1999). Vice-versa with the findings, where yellow is preferable with 56 responses out of 166 responses to more attention-seeking, appealing and appetizing indicated by responses such as "yellow colour is more attractive " and "more appetizing". According to the data from the current research and Tufts University Health and Nutrition Letter (1999), yellow evokes positive emotions such as cheerfulness, happiness, warmth, welcoming, and optimism. It is suitable to be used in cereal packaging as cereals are usually breakfast eaten in the morning, making consumers feel these positive emotions when it is eaten especially at the start of a day. Kids also prefer yellow, making it more suitable to be used in cereal packaging especially targeted children (Boyatsiz and Varghese, 1994). The findings of this research showed that 75% of respondents preferred warm colour for chocolate and 84% of respondents preferred warm colour for cereal. Overall, warm colours such as red and yellow would be more suitable than cold colours to use in food packaging as warm colours are more appetizing, appealing and attractive to consumers.

Figure 5. Warm colour cereal packaging.

Certain typefaces tend to convey certain tastes or flavours to consumers (Hyndman, 2015). Rounder typefaces are preferable to non-rounder typefaces in food products as the respondents preferred rounded typeface for both cereal and chocolate, with 85% for chocolate and 95% for cereal. Rounder typefaces are preferable in food that are associated with sweet flavours (Doyle & Bottomley, 2010; Karnal et al., 2016; Kastl & Child, 1968; Kovač et.al, 2019) or food that opt to "bring happiness" like snacks and candies, and those that target young audiences, as it conveys a more impactful emotion to consumers. This is also indicated in responses such as "font type is cute and makes me feel happy, and more relatable to chocolate that will bring us happiness". Rounder typefaces add characters to the message conveyed making it more unique, interesting, and eye-catching to consumers according to responses such as "rounded font attracts more because it shows more uniqueness whereas the non-rounded font is more basic and adds no character to the packaging design" and "make it more interesting". It is visually appealing and attention-seeking as rounder typefaces tend to be more readable and legible according to responses such as "big and sharp" and "it looks more obvious and makes the packaging pop". Good readability holds consumers' interest longer in the product (White, 2011). According to Li et.al, (2019), and the responses from the current research such as "the rounded font hold a higher resemblance to the food itself", and "it fits more with cereal and gives identity because most cereals are in rounded shape" shows that using typefaces resembling the food identity helps to convey the identity of the food to consumers and helps consumers process the information faster.

Figure 6. Rounded typeface chocolate packaging.

Figure 7. Rounded typeface cereal packaging.

Image is a crucial component of communicating appropriately and effectively in food packaging (Pensasitorn, 2015). Respondents from the current research preferred photograph food in both chocolate and cereal with 83% for chocolate and 92% for cereal. Photographed food is more suitable for visualising the appearance, taste, feel, sound, and overall identity of the food than illustrations (Kumar, 2014). A few responses such as "gives a preview of what I'd be purchasing", "more reliable", "more appetizing" and "attractive" has indicated that photographed food is more attractive, appetizing, and reliable as consumers feel more associated with the food inside the packaging.

Figure 8. Photograph food presentation chocolate packaging.

Figure 9. Photograph food presentation cereal packaging.

Spokes-characters are brand mascots or cartoon characters to represent or advertise brand services or products, helping brands to appeal in the market (Chu, 2018). In the findings of this current research, food packaging with spokes-character was preferred by the respondents with 97% for chocolate and 87% for cereal. Implementing spokes-character into food packaging design is a great way to stand out from other packaging designs (Pumhiran, 2017). Vice-versa with responses such as "could remember vividly the advertisement" and "it increases the brand presence as customers will recognize the character and relate it to the brand". Spokes-character triggers positive emotions in consumers creating authenticity and reliability, as consumers would associate the characteristics and emotions portrayed by the spokes-character with the product from the packaging design (Kleppner, 1966), also indicated by responses in the current research such as; "more interesting", "shows authenticity", and "more friendly". According to Jiang et.al (2021) and responses such as, "more attention-seeking", "since people naturally sense faces, it's just more effective and interactive.", and "it's cute", spokes-character is attention-seeking and attractive to consumers as it tends to be cute, thus the personality and characters portrayed by the spokes-character also convey familiarity and storylines which makes it interesting and help consumers to recognize the brand.

Figure 10. Spokes-character presence chocolate packaging.
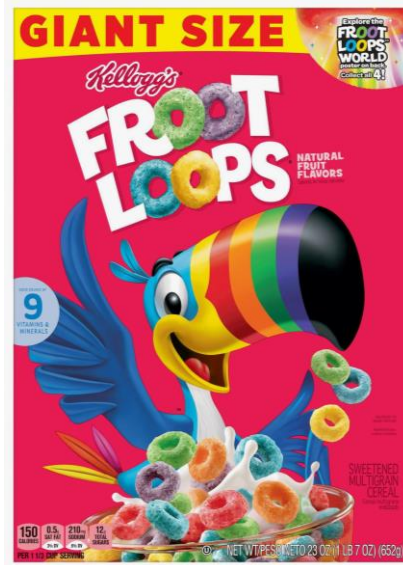
Figure 11. Spokes-character presence cereal packaging.

Material finishing like matte and glossy on food packaging may perceive certain expectations such as quality and taste preference towards the food in the packaging (Chen, 2021). Respondents from the current research preferred food packaging with matte material for both chocolate and cereal with 61% for chocolate and 56% for cereal. Matte packaging is perceived as healthier food due to its organic texture, resulting in more expensive look and higher quality in food products, hence being preferable in food packaging, and indicated in the findings from this research that has resulted that matte food packaging is more expensive and high quality in both chocolate and cereal packaging. Whereas, glossy packaging portrays a greasy and unhealthy look complying with greasy food (Ye et al., 2019) and is overly-eye catching resulting in a cheaper look, and lower trustworthiness and quality in food products (Han, 2018). Thus, matte packaging could be more suitable to be used in food products that opt to convey a more natural food or higher quality look to consumers.

Figure 12. Matte material chocolate packaging.

Figure 13. Matte material cereal packaging.

Conclusion

This research was carried out with an online survey containing mixed components of qualitative and quantitative questions was carried out, yielding 100 responses. The findings shown that packaging design is the key tool for branding and communication that influences consumers' perceptions and purchasing decisions. The findings indicated that consumers preferred warm colours such as red and yellow in food packaging, especially for chocolate and cereal, rounded typefaces, photographed food, spokes-character presence, and matte material packaging. The findings concluded that packaging design elements including; colour, typeface, and graphics such as the form of food presentation and spokes character presence have a significant impact on consumers, whereas materials have a minimal impact on consumers on food packaging design.

As this research focuses more on cereal and chocolate, the findings gained are likely to be more relevant towards snacks than food in general. This research is more specific towards snacks packaging which was chocolate and cereal that was used in the study. Though this research did not examine a wide range of food packaging, but some of the findings gained may also be applicable to other food packaging other than snacks packaging. The preferences of design elements used on the food packaging may also differ in cases such as specific kinds of flavours or textures.

In conclusion, the packaging design elements such as colour, typography, graphics and material finishing presented on food packaging are crucial in perceiving certain emotions, tastes, flavours, quality, impression, expectations, or perceptions of the food packaging, the food in the packaging, and the brand. Thus, all these messages conveyed by the packaging design elements on the packaging create different impacts that affect the perceptions and purchasing behaviour of consumers. Besides being important to communicate effectively with the packaging design elements presented on the food packaging to consumers, understanding how the packaging design elements affect consumers' perceptions and purchasing decisions serves an important role to appeal in the competitive market of food products.

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Appendices

Appendix 1 Cereal Packaging.

Survey Questionnaire & Results:

No.	Question Statements	Responses Options	Justifications	Results
Section A: Demographic Questions				
1	Gender	• Male • Female	*To understand the background of respondents as different gender may show different perceptions and opinions.*	Male (16%) Female (84%)
2	Age	• Below 18 years old • 18 - 22 years old • 23 - 28 years old • 29 - 34 years	*To understand the background of respondents as different age groups may show different perceptions and opinions. According*	Below 18 years old (19%) 18 - 22 years old

		old • 35 – 45 years old • 44 – 55 years old • 55 above	*to Neo (2019), the ages of 55 to 73 prefers snacks with lower fat, calories and sugar. Younger consumers ageing from 18 – 22 years old and 23 – 28 years old prefer snacks that are mood-enhancing, brain-boosting and gluten-free.*	(66%) 23 – 28 years old (13%) 29 – 34 years old (1%) 35 – 45 years old (0%) 44 – 55 years old (1%) Above 55 years old (0%)
3	Nationality	[Short Answer]	*To understand the background of respondents as different nationalities may show different perceptions and opinions.*	Malaysian (98%) Korean (1%) Indonesian (1%)
4	Field of Study / Occupation	• Design related • Non-design related	*To understand the background of respondents as designers and non-designers may show different perceptions and opinions.*	Design related (75%) Non-design related (25%)
Section B: General Questions				
5	Have you ever purchased any food products because of the packaging design?	• Yes • No	*To understand the importance of packaging design to respondents. According to (Harun, 2020) packaging is one of the most important aspects of consumers' decision making when it comes to purchasing*	Yes (91%) No (9%)

				a product.	
6	You consider the packaging design when it comes to purchasing food products.	• 1- Strongly Disagree • 2- Disagree • 3- Neutral • 4- Agree • 5- Strongly Agree	*To understand the importance of packaging design to respondents.*	1- Strongly Disagree (3%) 2- Disagree (2%) 3- Neutral (32%) 4- Agree (47%) 5- Strongly Agree (16%)
7	Do you recognize any of these food brands presented below? **Nestlé** *Figure 1* **MARS WRIGLEY** *Figure 2* *Kellogg's* *Figure 3* **General Mills** *Figure 4*	• Nestle • Mars Wrigley • Kellogg's • General Mills	*To understand if respondents recognize any of these chosen food brands.*	Nestle (96) Mars Wrigley (6) Kellogg's (67) General Mills (7)
8	Based solely on the visual aspects, which packaging design element is the most important aspect for you to consider when it comes to purchasing a food product?	• Colour • Typography • Graphics • Material • Others:__	*To understand the level of importance of packaging design elements in respondents' decision making of purchasing a food product. According to*	Colour (32%) Typography (10%)

				Graphics (44%)
			Harun (2020) and Kovač et.al. (2019), these 4 elements are the few main visual elements on food packaging."	Material (10%)
				All (2%)
				Depends (1%)
				Composition (1%)
9	When it comes to purchasing food products, do you usually purchase them because of the brand or because of the packaging design?	• Packaging Design • Brand • Others:__	*To determine the importance of packaging design compared to brand or other aspects.*	Packaging Design (22%)
				Brand (70%)
				Both (2%)
				Price (1%)
				Overall (1%)
				Food Quality (1%)
				Ingredients (1%)
				Taste (1%)
				"A bit of both? Successful branding often has efficient designs that catch the eye."
Section C: Specific Questions - Chocolate				

10A	Based on your observation, what colours other than brown are usually seen on chocolate packaging?	[Short Answer]	*Spence's et al. (2018) stated that red colours are mostly associated with chocolate packaging.*	Red (45) Purple (25) White (19) Yellow (17) Gold (15) Blue (13) Black (10) Green (6) Silver (3) Orange (2) Pink (1) Beige (1) Bronze (1)

10B	Which chocolate packaging colour tone attracts you more?
	
	  Figure 5
	
	  Figure 6
		• Figure 5 (Warm Colour)
		 • Figure 6 (Cold Colour)
			Packaging with a warm colour scheme is preferable compared with other colour schemes (Rebollar et al., 2012).	Figure 5 – Warm Colour (72%)
				
				 Figure 6 –Cold Colour (28%)

10C	Based on your answer above, state your reason why?	[Long Answer]	*Packaging with a warm colour scheme is preferable compared with other colour schemes (Rebollar et al., 2012). To see why respondents prefer that particular colour tone.*	"Knowing that it's kitkat, the red is much more iconic and eye catching, and adding to it is the familiarity of taste associated with a normal kitkat. The light cyan blue packaging feels more like an energy bar than a normal chocolate bar." "Red looks more appealing" "Colour harmony and it looks more soothing to the eye" "Colour red is more bright and so attracts my eye better than the blue packaging" "Warm colour of chocolate packaging give me a sense of energy"
11A	Which chocolate packaging font style attracts you more to purchase the product? ![smarties logo] *Figure 7* ![SMARTIES logo] *Figure 8*	• Figure 7 (Rounded Font) • Figure 8 (Non-rounded Font)	*Previous research studies done by other researchers such as Kovačević, et al. (2022) that studies on the effects of sans serif vs handwritten, and Kovač et.al (2019) that studies on the effects of text typeface vs display typeface. According to Kovač et.al (2019) rounded typefaces are usually associated with sweet flavours. To determine if respondents prefer rounded fonts over non-rounded fonts.*	Figure 7 - Rounded Font (85%) Figure 8 - Non-rounded Font (15%)
10C				

11B	Based on your answer above, state your reason why?	[Long Answer]	*According to Kovač et.al (2019) rounded typefaces are usually associated with sweet flavours.*	"The chocolate product is rounded itself, thus the rounded font is more suitable and also feels more welcoming and fun."
				"Rounded font gives more character to the packaging and it suits the packaging shape more than the non-rounded font."
				"Smarties is a brand that has been around for a while and it's very likely to be marketed to much younger audiences, so the rounded type feels much more welcoming and almost youthful, might just be a relation to childhood nostalgia. The italicized font feels too stiff and business-like; too adult and too dull. Doesn't really match the overall image of fun and colours of the product itself."
				"Font type is cute and make me feel happy. More relatable to chocolate that will bring us happiness."
				"The non-rounded font looks smarter and sharper, in this sense looks quite "stressful" to me"
12A	Do you prefer the food on the packaging to be presented in photography or illustration form?	• Figure 9 (Photograph strawberry) • Figure 10	*A study done by Kovač (2019) shows that consumers prefer photograph*	Figure 9 - Photograph strawberry (83%)

		(Illustration strawberry)	*food compared to illustration food.*	Figure 10 – Illustration strawberry (17%)
	Figure 9 *Figure 10*			
12B	Based on your answer above, state your reason why?	• More appetizing • More reliable • Others:_	*According to Kovač (2019) photograph food stimulates appetite.*	"More appetizing, More reliable, Since we can't see how it looks like, I believe the images help customer to see how it looks like." "Could easier visualise the product" "More appetising" "More reliable" "Looks more attractive"

13A	Does chocolate packaging with spokes-characters attract you more to purchase the product?
	
	  Figure 11
	
	  Figure 12
		• Yes
		 • No
			To determine if respondents prefer chocolate packaging with spokes-characters or without.	Yes (97%)
				
				 No (3%)
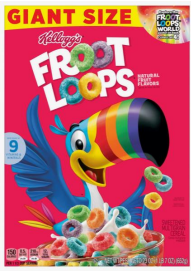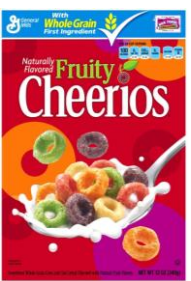
| 13B | Based on your answer above, state the reason why? | • More attention-seeking
• More interesting
• Others:__ | *According to Jiang et.al (2021), spokes-characters give consumers an impression of cuteness, hence enhancing the attractiveness of the packaging design. It is also a way to create a dynamic storyline to the brand and would attract consumers' attention."* | "More interesting, M&Ms are known for their characters therefore placing them on packaging would easily spot the brand without having to read the whole packaging, it also shows authenticity."

"More attention-seeking, More interesting, It increases the brand presence as customers will recognise the character and relates it to the brand"

"It has it own mascot and this design look more friendly. The figure12 too much empty space"

"Much more eye catching and since people naturally senses faces, it's just more effective and more interactive in a way."

"Could remember vividly the advertisement." |
| 14A | Based solely on the packaging material, would you prefer matte or glossy chocolate packaging?

Figure 13

Figure 14 | • Figure 13 (Matte Packaging)
• Figure 14 (Glossy Packaging) | *According to Han (2021) consumers prefer matte packaging over glossy packaging in the case of chocolate and granola packaging.* | Figure 13 - Matte Packaging (61%)

Figure 14 - Glossy Packaging (39%) |

| 14B	Which packaging material gives off a more expensive look or better quality to the packaging?	• Figure 13 (Matte Packaging) • Figure 14 (Glossy Packaging)	*According to Spence (2021) matte packaging enhances the expensiveness and quality of food packaging.*	Figure 13 – Matte Packaging (78%) Figure 14 – Glossy Packaging (22%)
15A	Does this packaging inform you that it is a strawberry flavoured chocolate? *Figure 15*	• Yes • No	*To see if this packaging design successfully informs respondents the right flavour.*	Yes (100%) No (0%)
15B	If answered "Yes", what is the main element from the packaging that makes you think that is a strawberry flavor?	• Colour • Typography (Text) • Graphics • Material • Other:__	*To see what is the main element that informs respondents the flavour of the chocolate.*	Colour (36%) Typography – Text (2%) Graphics (62%) Material (1%) All above (2%)
	Section D: Specific Questions – Cereal			
16A	Based on your observation, what colours are usually seen on cereal packaging?	[Short Answer]	*To find out what colours are usually associated with cereal packaging based on consumers observation and perceptions.*	Yellow (56) White (45) Red (20) Blue (19) Brown (11)

			Orange (5) Beige (3) Green (3) Black (2) Primary colours (1) Depends on target market (1)
16B	Based solely on the colours, which cereal packaging colour attracts you more to purchase the product? *Figure 16* *Figure 17*	• Figure 16 (Warm Colour) • Figure 17 (Cold Colour)	*Packaging with a warm colour scheme is preferable compared with other colour schemes (Rebollar et al., 2012).*	Figure 16 – Warm Colour (84%) Figure 17 – Cold Colour (16%)
16C	Based on your answer above, state your reason why?	[Long Answer]	*Packaging with a warm colour scheme is preferable compared with other colour schemes (Rebollar et al., 2012). To see why respondents prefer that particular colour tone.*	"More appetizing" "Warm Colour packaging looks more appetising compare to cool tones colours." "Yellow and red was represented to warm color which actually

				will attract more consumers attention to it compare to blue color packaging and somehow the blue color background will a bit of un-appetizing when it came to some food packaging design."
				"It's more welcoming and inviting to pick up off a shelf. I think they should stick with the color and add the different opacities of circles seen in fig 16"
				"With the name "cheerios" it just invokes a happy feeling and I'd associate that with a bright and warm colour like yellow. It seems much more inviting and positive to see in the morning if I were to buy it."
				"Cold colors seem unnatural on cereal because it reminds the public of food coloring which isnt really appeasing. Yellow and cereal go well together."
				"I think bright colour packing suits cereal more, maybe because cereal are meant for breakfast"
17A	Which cereal packaging font style attracts you more?	• Figure 18 (Rounded Font) • Figure 19	*Previous research studies done by other researchers such as Kovačević, et al.*	Figure 18 – Rounded Font (95%)

		(Non-rounded Font)	*(2022) that studies on the effects of sans serif vs handwritten, and Kovač et.al (2019) that studies on the effects of text typeface vs display typeface. According to Kovač et.al (2019) rounded typefaces are usually associated with sweet flavours. To determine if respondents prefer rounded fonts over non-rounded fonts.*	Figure 19 - Non-rounded Font (5%)
	Figure 18 *Figure 19*			
17B	Based on your answer above, state your reason why?	[Long Answer]	*According to Kovač et.al (2019) rounded typefaces are usually associated with sweet flavours.*	"Rounded Font attracts more because it shows more uniqueness whereas the non-rounded font is more basic and adds no character to the packaging design." "It is less rigid and more friendly, especially to the younger target audiences" "more kid like font which matches the cereal" "Non-rounded font seems a bit serious when it happens to certain food packaging design especially I think it not really suitable to this kind of food packaging design that aiming to kids audience." "Looks more like a food product and also cereal's shape is

				more rounded"
				"Coco pops is a cereal mainly advertised to children and is much more associated with fun and exciting themes. The rounded type once again is just much more inviting and brings out more of the bubbly, happy energy and image of the brand."
				"It helps to convey the message directly: the product must be made in round shape."
18A	Does cereal packaging with spokes-characters attract you more to purchase the product? *Figure 20* *Figure 21*	• Yes • No	*According to Chu (2018), children prefer cereal packaging more with spokes-characters presented.*	Yes (87%) No (13%)
18B	Based on your answer above, state your reason why?	• More attention-seeking • More interesting • Others:__	*According to Jiang et.al (2021), spokes-characters give consumers an impression of cuteness, hence enhancing the*	"More attention-seeking" "More interesting"

		attractiveness of the packaging design. It is also a way to create a dynamic storyline to the brand and would attract consumers' attention.	"Too much graphic and quite confusing (affect the information to be carried out for first impression)" "More interested in the food, having bigger illustration of food compared to the character would be better" "The cartoon seems to be a little bit redundant…" "The character is too distracting" "Actually I like the figure 21 more .camparing with figure 20 it more simplifying"
19A	Do you prefer the food on the cereal packaging to be presented in photography or illustration form? *Figure* 22	• Figure 22 (Photograph Cereal) • Figure 23 (Illustration Cereal)	*A study done by Kovač (2019) shows that consumers prefer photograph food compared to illustration food.*	Figure 22 – Photograph Cereal (92%) Figure 23 – Illustration Cereal (8%)

Figure 23				
19B	Based on your answer above, state your reason why?	• More appetizing • More reliable • Others:__	_According to Kovač (2019) photograph food stimulates appetite._	"More appetising" "More reliable" "Photograph graphics are more attractive" "Gives a preview of what I'd be purchasing" "More appetizing, Attractive packaging from first impression"
20A	Based solely on the packaging material, would you prefer matte or glossy cereal packaging? _Figure 24_ _Figure 25_	• Figure 24 (Matte Packaging) • Figure 25 (Glossy Packaging)	_According to Han (2021) consumers prefer matte packaging over glossy packaging in the case of chocolate and granola packaging. In the case of cereal, cereal pouch packaging is used as a sample, as in general cereal paper boxes are matte. To identify if respondents prefer matte or glossy cereal pouches packaging._	Figure 24 - Matte Packaging (56%) Figure 25 - Glossy Packaging (44%)

20B	Which packaging material gives off a more expensive look or better quality to the packaging?	• Figure 24 (Matte Packaging) • Figure 25 (Glossy Packaging)	*According to Spence (2021) matte packaging enhances the expensiveness and quality of food packaging.*	Figure 24 - Matte Packaging (70%) Figure 25 - Glossy Packaging (30%)
21A	Does this packaging inform you that it is a honey flavoured cereal? *Figure 26*	• Yes • No	*To see if this packaging design successfully informs respondents the right flavour.*	Yes (99%) No (0%)
21B	If answered "Yes", what is the main element from the packaging that makes you think that is a strawberry flavor?	• Colour • Typography (Text) • Graphics • Material • Other:__	*To see what is the main element that informs respondents the flavour of the cereal.*	Colour (6.1%) Typography -Text (20.2%) Graphics (72.1%) Material (1%) All above (1%)

Questionnaire Responses Data:

Section A: Demographic Questions

Q1. Gender
100 responses
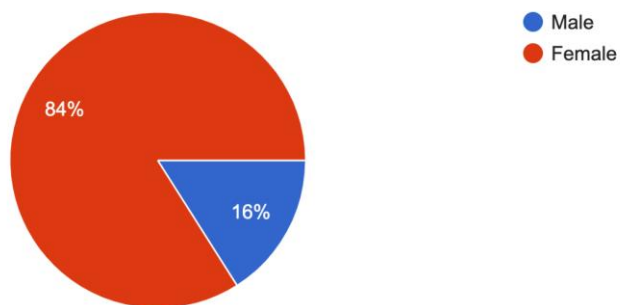
Graph 1. Gender

Q2. Age
100 responses
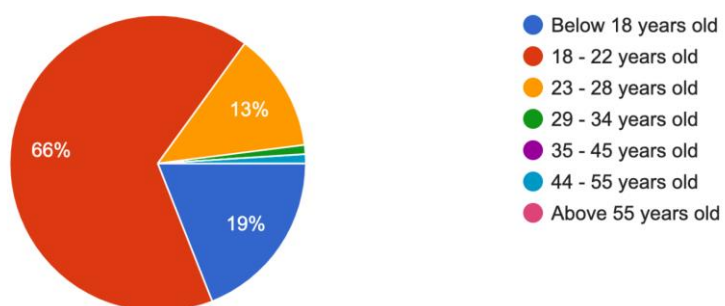
Graph 2. Age

Q3. Nationality
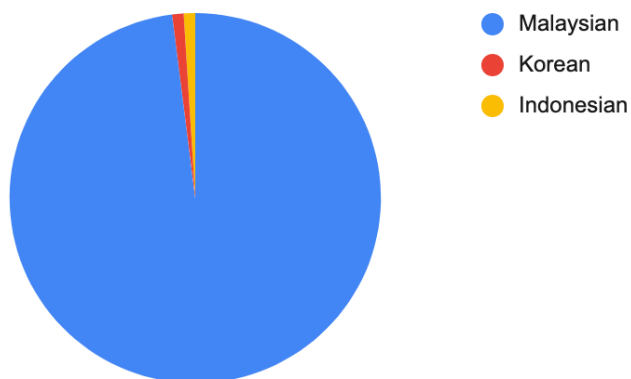
Graph 3. Nationality

Q4. Field of Study / Occupation
100 responses
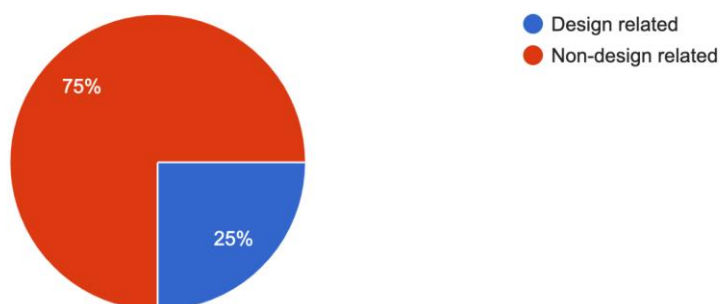
Graph 4. Field of study / occupation

Section A: General Questions

Q5. Have you ever purchased any food products because of the packaging design?
100 responses
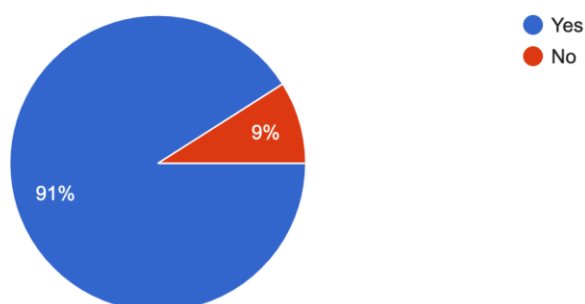
Graph 5. Importance of packaging design

Q6. You consider the packaging design when it comes to purchasing food products.
100 responses
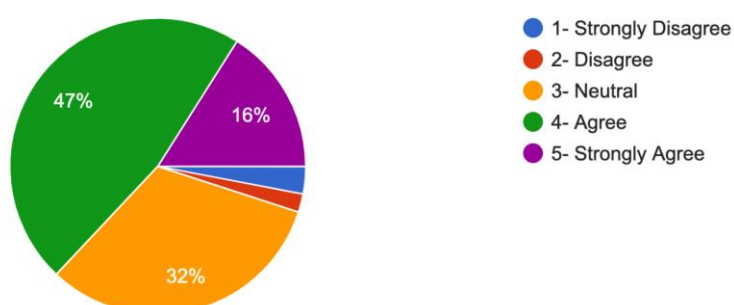
Graph 6. Importance of packaging design in Likert-scale.

Q7. Do you recognize any of these food brands presented below? (you may choose multiple options)

100 responses
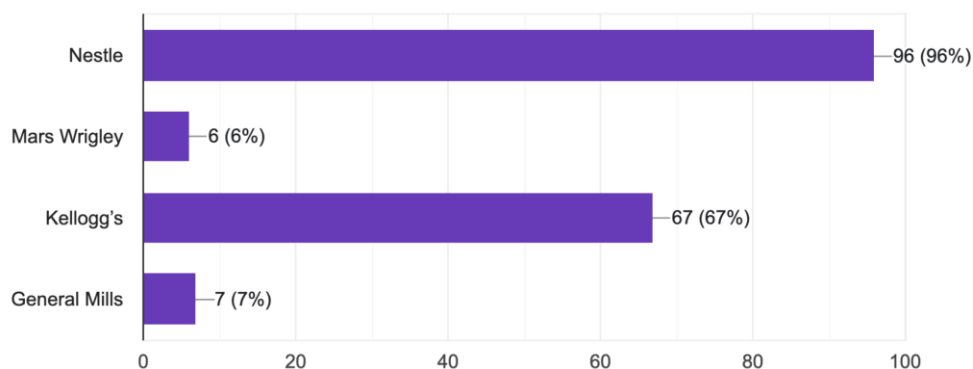
Graph 7. Recognition of chosen food brands.

Q8. Based solely on the visual aspects, which packaging design element is the most important aspect for you to consider when it comes to purchasing a food product?

100 responses
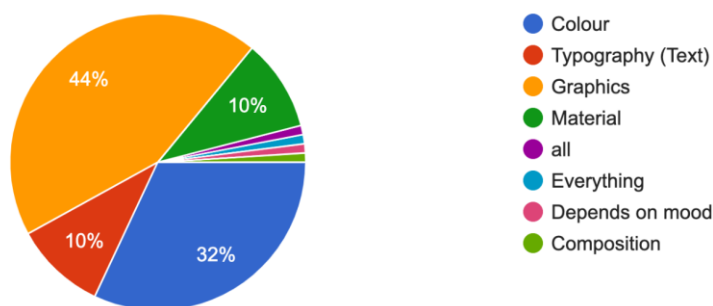
Graph 8. Importance of packaging design elements.

Q9. When it comes to purchasing food products, do you usually purchase them because of the brand or because of the packaging design?
100 responses

- Packaging Design
- Brand
- Both
- Price
- Overall
- A bit of both? Successful branding often has efficient designs that catch the eye
- FOOD QUALITY
- The ingredients are the determining fa…
- Taste

Graph 9. Importance of packaging design vs brand.

Section C: Specific Questions - Chocolate

Q10A. Based on your observation, what colors other than brown are usually seen on chocolate packaging?
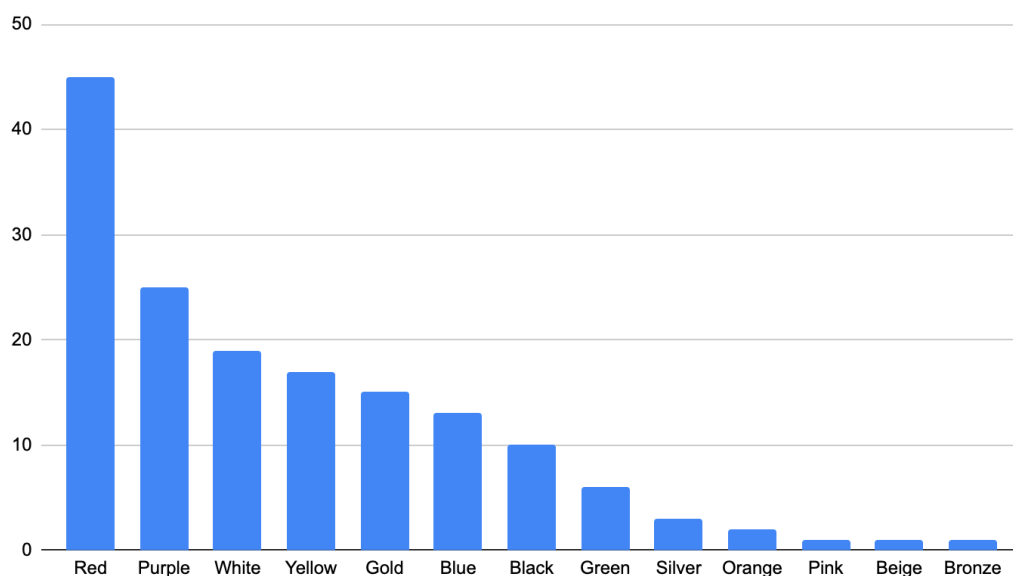
Graph 10. Most common colours used for chocolate packaging.

Colours (n)
Red (45)
Purple (25)
White (19)
Yellow (17)
Gold (15)
Blue (13)
Black (10)
Green (6)
Silver (3)
Orange (2)
Pink (1)
Beige (1)
Bronze (1)

Table 1. Most common colours used for chocolate packaging.

Q10B. Which chocolate packaging color tone attracts you more?
100 responses

● Figure 5 (Warm Colour)
● Figure 6 (Cold Colour)
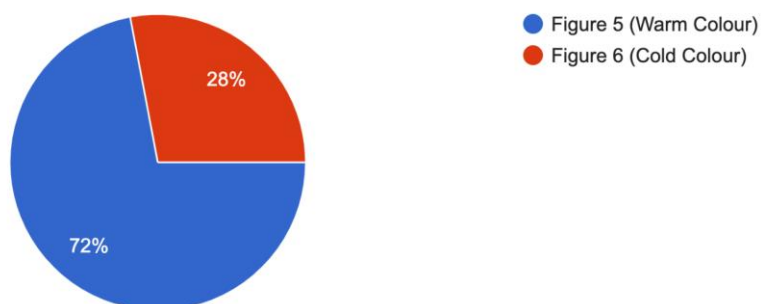
Graph 11. Warm vs cold colours – chocolate.

Warm Colour Keywords (n)	Cold Colour Keywords (n)
Attractive (12)	Attractive (5)
Eye-catching (10)	Appealing (4)
Appetizing (8)	Cool (3)
Familiar (8)	Special (2)
Delicious (6)	Captivating (1)
Suitable (4)	Not so sweet (1)
Sharp (4)	Rare (1)
Soothing (2)	Colourful (1)
Resemble Chocolate (2)	Rare (1)
Sweet (2)	Colourful (1)
Less Colourful (2)	Different (1)
Welcoming (1)	Eye-Pleasing (1)
Hearty (1)	Contrasted (1)

Energetic (1)	Calm (1)
Mature (1)	Energy Bar (1)
Decent (1)	Weird (1)
Convincing (1)	Unappetizing (1)
Vivid (1)	Off (1)
Bright (1)	Not Suitable (1)
Harmony (1)	
Vibrant (1)	
Simple (1)	
Nicer (1)	
Exciting (1)	
Joyful (1)	
Plain (2)	

Table 2. Warm vs cold colours keywords – chocolate.

Q11A. Which chocolate packaging font style attracts you more?
100 responses

● Figure 7 (Rounded Font)
● Figure 8 (Non-rounded Font)
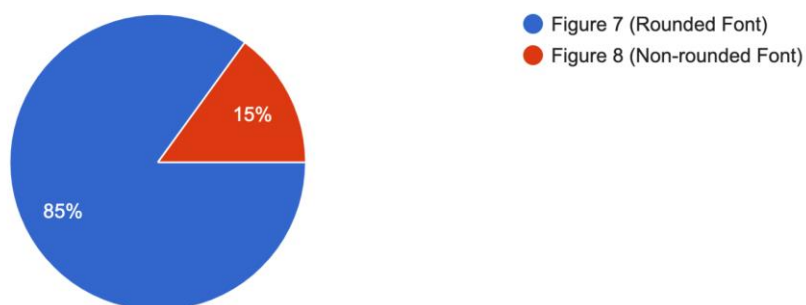
Graph 12. Rounded vs non-rounded font – chocolate.

Rounded Font Keywords (n)	Non-rounded Font Keywords (n)
Cute (17)	Attractive (2)
Big (12)	Special (1)
Resemblance Product/Chocolate (8)	Neat (1)
Fun (8)	Classy (1)
Eye-Catching (6)	Expensive (1)
Easier to Read (5)	High Quality (1)
Suitable (4)	Advance (1)
Clearer (4)	Clearer (1)
Attractive (3)	Visually un-crowded (1)
Friendly (3)	Vintage (1)
Welcoming (3)	Energy Bar (1)
Nicer (3)	Stiff (1)
Sharp (2)	Stressful (1)
Tasty (2)	Serious (1)
Bold (2)	
Comforting (2)	
Characteristic (1)	
Smart (1)	
Urging to purchase (1)	
Comforting (1)	
Outstanding (1)	

Interesting (1)	
Playful (1)	
Obvious (1)	
Pops (1)	
New (1)	
Lively (1)	
Appropriate (1)	
Easy to Remember (1)	
Casual (1)	
Expressive (1)	
Inviting (1)	
Relaxing (1)	
Sauve (1)	
Happy (1)	
Youthful (1)	
Pleasant (1)	
Neat (1)	
Soft (1)	
Approachable (1)	
Fashionable (1)	
Too Big (1)	

Table 3. Rounded vs non-rounded font keywords – chocolate.

Q12A. Do you prefer the food on the packaging to be presented in photography or illustration form?

100 responses

● Figure 9 (Photograph Strawberry)
● Figure 10 (Illustration Strawberry)
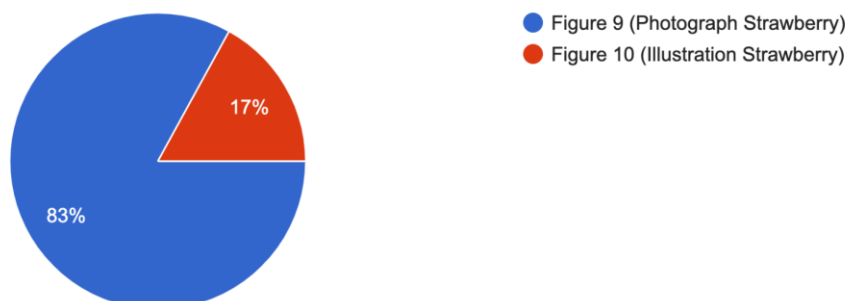
Graph 13. Photograph vs Illustration food presentation– chocolate.

Photograph Food Keywords (n)	Illustration Food Keywords (n)
More appetizing (60)	More appetizing (9)
More reliable (34)	More reliable (4)
Help to visualize product (2)	Attractive (2)
Pretty (1)	Complex (1)
Appealing (1)	
Less Messy (1)	

Graph 4. Photograph vs Illustration food presentation keywords– chocolate.

Q13A. Does chocolate packaging with spokes-characters attract you more to purchase the product?

100 responses

● Yes
● No

97%
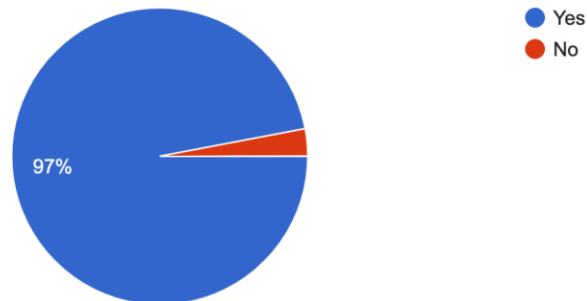
Graph 14. Spokes –character presence – chocolate.

With Spokes-Character Keywords (n)	Without Spokes-Character Keywords (n)
More attention-seeking (83)	More interesting (1)
More interesting (52)	Personal Preferences (1)
Brand recognition (2)	Empty (1)
Friendly (2)	
Brand presence (1)	
Attracting (1)	
More effective (1)	
Remember vividly (1)	
More interactive (1)	
Authenticity (1)	
Appetizing (1)	

Table 5. Spokes –character presence keywords – chocolate.

Q14A. Based solely on the packaging material, would you prefer matte or glossy chocolate packaging?
100 responses

● Figure 13 (Matte Packaging)
● Figure 14 (Glossy Packaging)

39%

61%
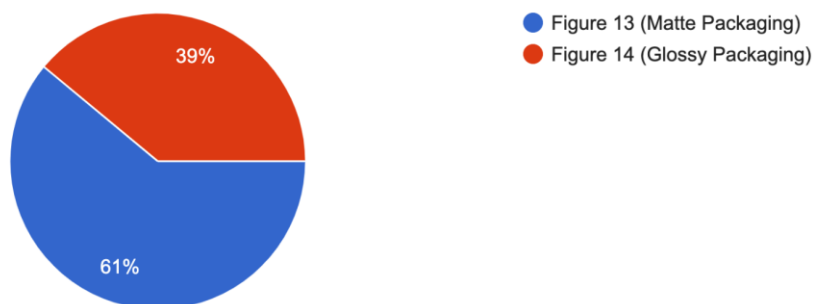
Graph 15. Matte vs glossy material– chocolate.

Q14B. Which packaging material gives off a more expensive look or better quality to the packaging?
100 responses

● Figure 13 (Matte Packaging)
● Figure 14 (Glossy Packaging)

22%

78%
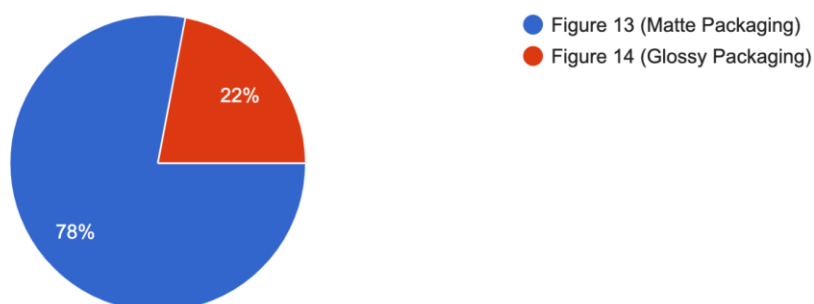
Graph 16. Matte vs glossy material quality – chocolate.

Q15A. Does this packaging inform you that it is a strawberry-flavored chocolate?
100 responses
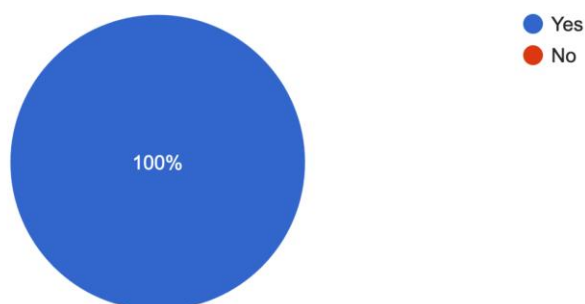
Graph 17. Impact of presented packaging – chocolate.

Q15B. If answered "Yes", what is the main element from the packaging that makes you think that is a strawberry flavor?
100 responses
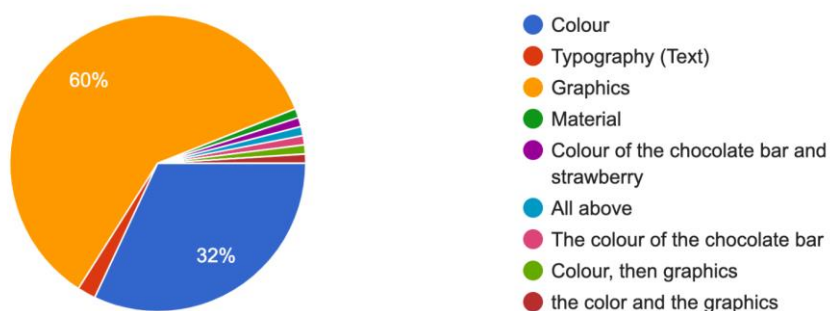
Graph 18. Impact of visual elements of presented packaging – chocolate.

"Yes" Responses Keywords (n)
Graphics (62)
Colour (36)
Typography (2)
Material (1)
All (1)

Table 6. Impact of visual elements of presented packaging – chocolate.

Section C: Specific Questions – Cereal

Q16A. Based on your observation, what colours are usually seen on cereal packaging?
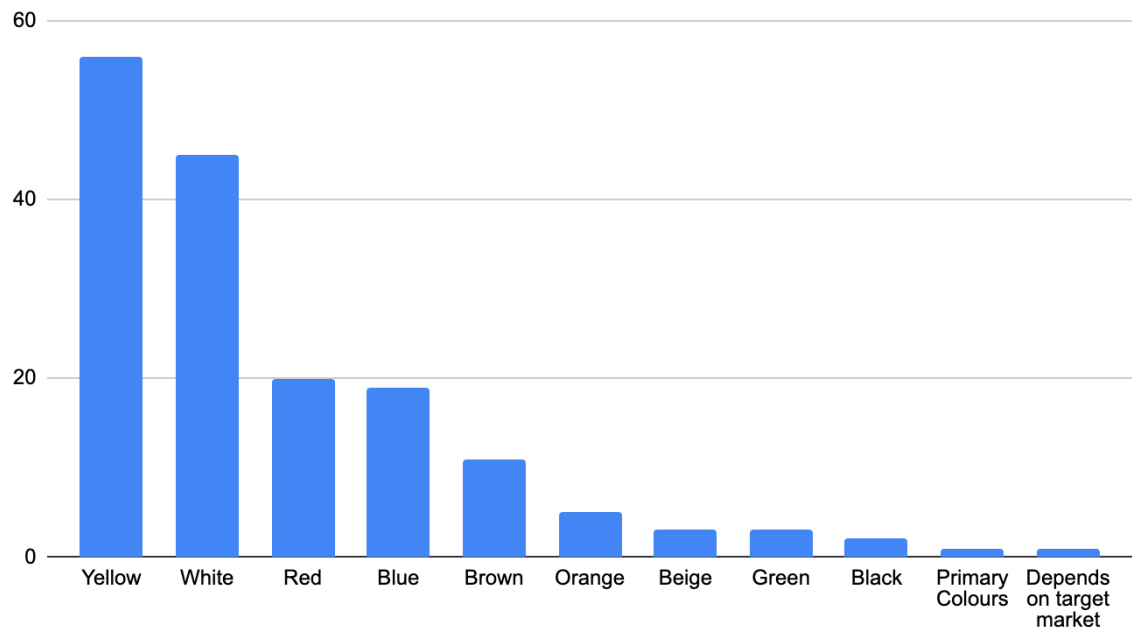
Graph 19. Most common colours used for cereal packaging.

Colours / Keywords (n)
Yellow (56)
White (45)
Red (20)
Blue (19)
Brown (11)
Orange (5)
Beige (3)
Green (3)
Black (2)

Primary Colours (1)
Depends on target market (1)

Table 7. Most common colours used for chocolate packaging.

Q16B. Based solely on the colours, which cereal packaging colour tone attracts you more to purchase the product?
100 responses

● Figure 13 (Warm Colour)
● Figure 14 (Cold Colour)
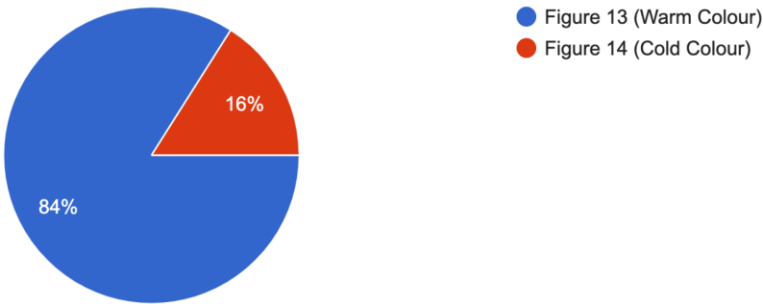
Graph 11. Warm vs cold colours – cereal.

Warm Colour Keywords (n)	Cold Colour Keywords (n)
Appetizing (15)	Graphic Elements (3)
Attractive (10)	Unappetizing (3)
Healthier (9)	Does not resemble cereal colour (2)
Delicious (9)	High quality (2)
Bright (7)	Attracting (1)
Resembles cereal colour (6)	Comforting (1)
Heartwarming (5)	Tasteless (1)
Appealing (4)	Interesting (1)

Eye-catching (3)	Different (1)
Suitable (2)	Grumpy (1)
Nicer (2)	Design (1)
Attention seeking (2)	Personal colour preference (1)
Welcoming & Inviting (2)	Unnatural (1)
Contrast (1)	Unappealing (1)
Energetic for breakfast (1	
Resembles cereal (1)	
Hungry (1)	
Colourful (1)	
Interesting (1)	
Fresher (1)	
Happy (1)	
Positive (1)	
Convincing (1)	
Normal (1)	

Table 8. Warm vs cold colours keywords – cereal.

Q17A. Which cereal packaging font style attracts you more?
100 responses

● Figure 15 (Rounded Font)
● Figure 16 (Non-rounded Font)
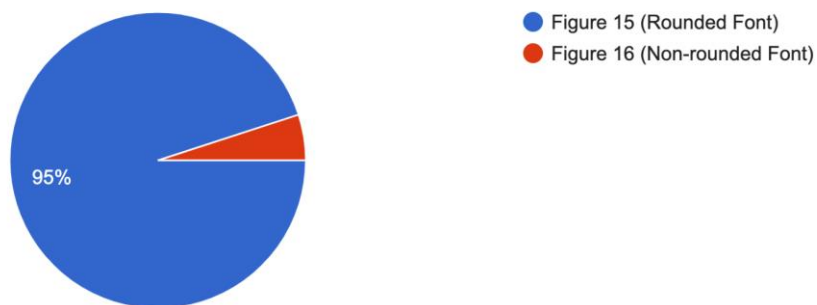
Graph 21. Rounded vs non-rounded font – cereal.

Rounded Font Keywords (n)	Non-rounded Font Keywords (n)
Interesting (12)	Boring (2)
Attractive (12)	Authentic (1)
Cute (10)	Original (1)
Resembles the food (8)	Expensive (1)
Clear / Vivid (4)	Clearer (1)
Eye-catching (3)	Classic (1)
Attention seeking (3)	Un-attractive (1)
Tasty (3)	Basic (1)
Better (2)	Not suitable (1)
Characteristic (2)	Serious (1)
Friendly (2)	
Easy to understand / Conveys message directly (2)	

Appetizing (2)	
Appealing (2)	
Creative (2)	
Pop (2)	
Happy (2)	
Fun (2)	
Can imagine cereal dipped into milk (1)	
Soothing (1)	
Lively (1)	
Kid like font (1)	
Milky (1)	
Unique (1)	
Affinity (1)	
Harmonised (1)	
Appropriate (1)	
Lettering (1)	
Casual (1)	
uitable to the graphics (	
Pretty (1)	
Less boring (1)	
Comfortable (1)	
Dimension (1)	
Inviting (1)	
Bubbly (1)	

Table 3. Rounded vs non-rounded font keywords – cereal.

Q18A. Does cereal packaging with spokes-characters attract you more to purchase the product?
100 responses
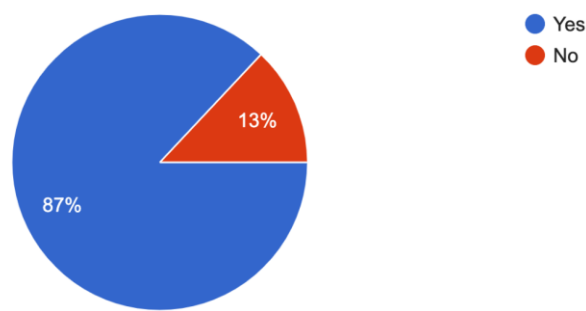
Graph 22. Spokes –character presence – cereal.

With Spokes-Character Keywords (n)	Without Spokes-Character Keywords (n)
More attention-seeking (74)	More interesting (4)
More interesting (44)	More attention-seeking (2)
More fun (1)	Simplified(1)
Looks tastier with bird (1)	Refreshing (1)
Cute (1)	Well focused (1)
Convincing (1)	Straight forward (1)
Distracting (1)	
Redundant (1)	
Too graphical (1)	
Confusing (1)	

Table 10. Spokes –character presence keywords – cereal.

Q19A. Do you prefer the food on the cereal packaging to be presented in photography or illustration form?

100 responses

- ● Figure 19 (Photograph Cereal)
- ● Figure 20 (Illustration Cereal)

92%

8%
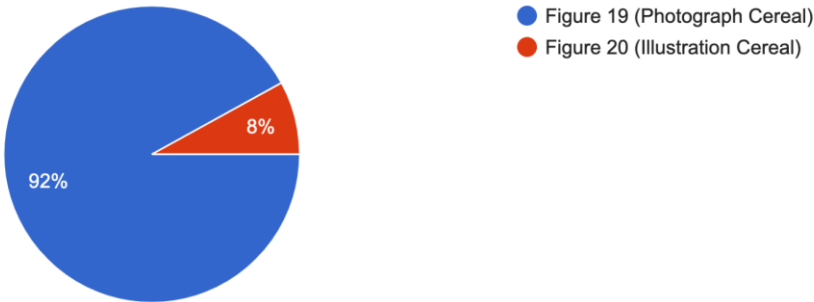
Graph 13. Photograph vs Illustration food presentation– cereal.

Photograph Food Keywords (n)	Illustration Food Keywords (n)
More appetizing (60)	More appetizing (9)
More reliable (34)	More reliable (4)
Attractive (2)	Outstanding (1)
Gives a food preview (1)	
cute (1)	

Graph 11. Photograph vs Illustration food presentation keywords– cereal.

Q20A. Based solely on the packaging material, would you prefer matte or glossy cereal packaging?
100 responses

● Figure 21 (Matte Packaging)
● Figure 22 (Glossy Packaging)

44%

56%
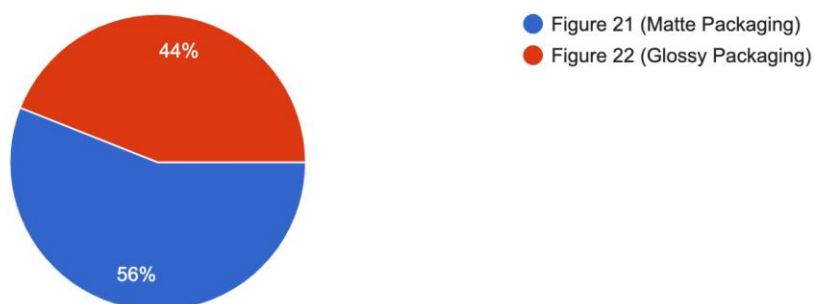
Graph 24. Matte vs glossy material– cereal.

Q20B. Which packaging material gives off a more expensive look or better quality to the packaging?
100 responses

● Figure 21 (Matte Packaging)
● Figure 22 (Glossy Packaging)

30%

70%
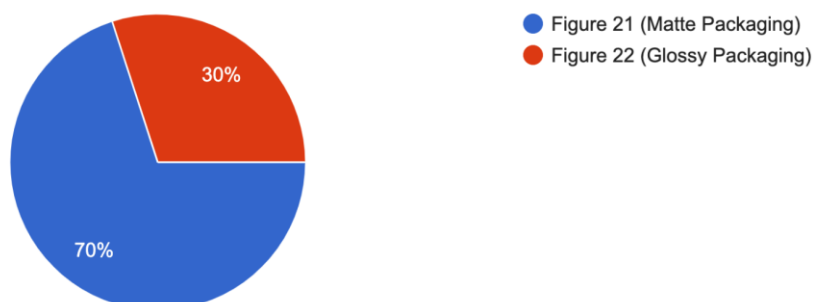
Graph 25. Matte vs glossy material quality – cereal.

Q21A. Does this packaging inform you that it is a honey-flavored cereal?
100 responses

● Yes
● No

99%
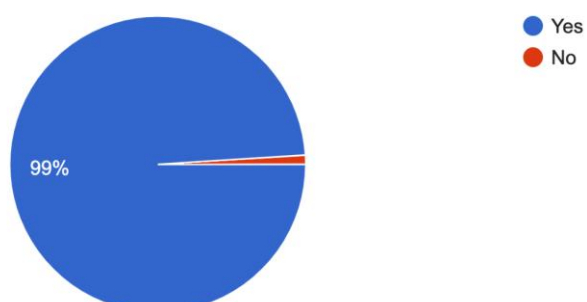
Graph 26. Impact of presented packaging – cereal.

"Yes" Responses Keywords
Graphics (72)
Typography (20)
Colour (6)
Material (1)
All (1)

Table 12. Impact of visual elements of presented packaging – cereal.

Interactive User Experiences: The Scenario of Lacking Accessibility for the Blind in Malaysian Museums

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1 Mar. 2023

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Abstract *The current setting of accessibility in most Malaysian museums does not provide an inclusive environment for blind users, as most displays are solely for visual enjoyment, directly denying blind visitors. This study aimed to investigate the inadequacy of the UI/UX design and interactivity in art museums that may create poor accessibility for blind users. Upon visiting and conducting ethnographic observational studies, the findings of this research displayed the absolute lack of consideration for blind visitors in exhibits, in both accessing the exhibit information and interacting with it. The research findings noted a staggering disparity in the ability to interact, navigate, and access the exhibits between those visitors with visual impairments and those who do not. An extreme gap was discovered in the current situation compared to an ideal holistic scenario. Users with disabilities are not given equal opportunities to experience art, culture, and education in a public environment. Therefore, this research is intended to evaluate or witness if there are gaps in user interaction and accessibility for blind visitors. Indeed, the gap needed to be covered for equal opportunity.*

Key words *Museum Accessibility; Blind, Interactive Spaces; Multimodal Interactions; Universal Design*

Introduction

Although Malaysia is considered a developing country, it was discovered that it did not provide a fundamental right that blind people should have equal access to quality experiences and opportunities to participate in creative innovations, the arts, and culture. Lim (2020) states, "In Malaysia, there are 39,475 people who are blind or partially visually impaired, but the restrictions and lack of accessibility in museums, exhibitions, and installations cause inconvenience to this community". Regardless of the percentage of blind users, it should not be an excuse not to provide an essential human right. They are still individuals who deserve to experience art and history in the same way that sighted people can.

Although recent technologies and interactive exhibits are becoming increasingly popular in Malaysia and its museums, accessibility and usability for people with visual impairments, have barely improved. This scenario leads to a poor user experience for those with complete blindness, partial blindness, colour blindness, and other visual issues. The gap between accessibility and Malaysian art exhibits for blind people in museums has been determined to be a notably negligent and significant issue for user satisfaction and experiences. Thus, this article will highlight the lack of consideration in Malaysian museums that offer accessibility, interactivity, and navigation.

Problem Statement

In providing and facilitating high-quality experiences for blind people in art museums in Malaysia, it is vital to research more on design suggestions that are more suitable to these users. Research shows that "blind and visually impaired people still face challenges to experience and understand visual artworks independently at art exhibitions" (Quero et al., 2021, p. 297). Enabling blind people to appreciate and understand art in a manner similar to how sighted people can do so may increase their interaction capabilities, satisfaction, and motivation to visit museums more frequently. By doing so, access and opportunities for visitors would be equal, allowing the blind to commingle freely with all other users.

Unfortunately, it is evident that there is a complete lack of research and design implementation for blind users' accessibility to museum exhibits. As said by Mesquita and Carneiro (2016, p. 373), there are insufficient studies that investigate the accessibility of museums to visually impaired visitors, giving them limited opportunities and a small

number of systems to improve their experience truly. Therefore, this research paper intends to illustrate the actual, current setting of accessibility for the blind in Malaysian museums, the limitations it imposes on the blind, and its negative impact on this group of users.

Methodology

Mixed methods were utilised in this study, first to conduct a quantitative online survey questionnaire to understand and investigate the current level of accessibility and interactivity in museums for blind users. Furthermore, it could be improved by researching their needs and preferences for engaging more fully with exhibits and artworks. Secondly, a qualitative observational study was conducted in three museums to investigate what features have been installed for ease of access for blind users, how they may better interact with exhibits, and what is lacking and not inclusive. "Mixed methods research draws on the potential strengths of both qualitative and quantitative methods, allowing researchers to explore diverse perspectives and uncover relationships that exist between the intricate layers of our multifaceted research questions." (Shorten & Smith, 2017, p. 74)

The online questionnaire survey was chosen to be able to gain an understanding of the blind communities' opinions all over the world and also the general public's views on this topic. It aimed to investigate how the current level of accessibility and interactivity in museums affects blind users and how it could be improved by researching their needs and preferences for engaging more fully with exhibits and artwork. The benefits of choosing this research method are not limited to "Improving the visual appeal and graphics of surveys by using a font size appropriate for the respondents. Ordering items logically without creating unintended response bias and arranging items clearly on each page can increase the response rate to electronic questionnaires." (Ponto, 2015, p.168).

Observational studies were chosen as the second research method to collect qualitative data due to their ability to obtain first-hand data. The reason is that the researcher could experience and investigate first-hand and immediately collect data on the current situation of accessibility for blind users in local museums. This research discovered how large the gap is between achieving accessibility and interactivity and the current state of Malaysian museums. The research was conducted in three museums. Hence, the National Museum of Malaysia, the National Textiles Museum and the Petrosains, and the Discovery Centre.

Furthermore, to investigate what features have been installed for ease of access for blind users, how they may better interact with exhibits, and what is lacking and not inclusive. Additionally, to compare and contrast the data collected from each institution. It was deemed that direct data collecting was necessary as museums have deployed a number of methods to increase the accessibility of the exhibition contents to support the participation of blind and visually impaired people, but "Unfortunately, these methods have limitations" (Quero et al., 2021, p.297). Finally, the researcher can immediately note elements and features as they are observed.

Both designed questions for the research instruments, the online questionnaire survey and notes from the observational studies are attached in Appendix 1 and 2.

Findings and Discussion

The more prominent findings were shocking in the conducted research (Refer to Appendix 3). The observational studies of three museums were carried out to investigate first-hand and receive unbiased, unfiltered primary data regarding the local scene for accessibility in Malaysian Museums. The results displayed that there was, in fact, zero consideration and implementation of such systems, designs or policies that would allow the blind to enjoy the experience.

The first two museums focused more on displaying exhibits and conveying information via reading flat physical plaques. In contrast, the third museum emphasized a more hands-on experience, allowing more interaction from all sorts of visitors. The summarized notes from the first two museums regarding accessibility to information are that there was no audio

content or aids, a lack of braille implementation, no trained museum personnel, and no specialized tours. In terms of navigating the museums, there were no railings around hazardous areas, no railings around exhibit display cases, zero indicators for slopes or elevated floor changes and no tactile maps. Lastly, there were no tactile options for interaction with exhibits, zero physical specimens and no braille for conveying art information.

All three museums did not contain any systems with a form of audio support. There were little to zero exhibits with audio aids that could be implemented. In the rare instances that there was some form of audio content, the exhibit's information could be conveyed via the sense of hearing. Especially in Petrosains, The Discovery Centre, the ability to construct physical objects using a sense of touch with the audio direction was a top-rated attraction. The interaction, physical and mental, between users and the museum exhibits, was highest in this institution.

The solution to this issue would firstly involve raising awareness of the current setting of accessibility, following that investigating the needs and expectations, design requirements and lastly, the experience that blind Malaysian individuals have currently. Finally, it would be educating why it is an issue and its negative implications against the local blind community and then actual implementation to achieve true user satisfaction.

The primary and secondary research helped form a critical understanding and response to the research questions. The comparisons between the two types of research highlighted the similarities of what blind visitors' needs and expectations are but had greatly differing designs and systems that have been implemented. The most significant and noted difference is how much consideration has gone into the design of local museums compared to international ones. In this manner, Malaysian museums have much to learn and implement from European institutions that have put great effort and research into this field. It would be near impossible to solve these issues without garnering enough attention and monetary reasons to prioritize the need to make museums and public spaces more accessible and interactive for blind individuals.

Conclusion

The research objectives and questions to explore methods of improving interactive museum experiences for blind visitors and study effective quality design for their satisfaction were answered by the gathered data. At the same time, surprising discoveries were also collected, which expanded beyond the boundaries of the research. In conclusion, many points of significance were discovered throughout this research from both primary and secondary sources.

From the primary data collected, it can be reaffirmed that museums in Malaysia do not accommodate blind visitors. This is supported by the observational findings that blind visitor-friendly systems are not implemented in museums to help guide and accommodate blind users. Furthermore, it was discovered that few tactile options were available for interaction with blind users. It is evident that blind visitors are not being prioritised, and museums have evidently shown that through their lack of consideration during exhibition planning and user experience design. This author believes further in-depth research and development should be placed as solutions remain heavily untested and unrefined. There is still no single, efficient, and satisfying solution implemented in museums in Malaysia, where non-inclusive designs run rampant, leaving blind users unconsidered. In the subsequent research stage, it was further discovered that there was zero accessibility for blind people to comprehend exhibit information and no interactable options for these visitors to experience the artworks.

Each of these points shows that further research and action must be pursued to resolve the exacerbating issue of non-inclusive UX design in Malaysian museums for blind visitors. This problem continues to ruin this audience's social, educational, and cultural experiences, amongst many more potential possibilities they may have accomplished with appropriate design and consideration. Ideally, all art museums in Malaysia should have exhibits that are inclusive for blind users, such that an enjoyable experience can be achieved for blind users

as well. However, as of now, these objectives still need to be fulfilled. There is a lack of systems to allow blind users to interact with exhibits and even access information regarding the artefacts on display. Hopefully, this dissertation will help convince and start the movement to improve the poor interactivity and accessibility in Malaysian museums.

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Appendices

No.	Question	Rationale	Options
1	Are you a blind user or a person with blind relatives/friends?	To be able to differentiate the data received between these two groups and to correlate with following questions for a more in-depth data analysis	• Blind User • Person with blind family/friends
2	What is your age?	To understand the age group difference and gain an understanding on whether age affects the results.	• Under 18 • 18-24 • 25-34 • 35-44 • 45-54 • 55-64 • Over 64
3	For your ethnicity, how would you describe yourself?	To understand whether the difference in ethnicity groups correlates to subsequent collected data.	• White • Black • African American • Asian • Native Hawaiian or Other Pacific • Islander
4	Which country are you from?	To understand whether the difference in nationality correlates to subsequent collected data.	• [Short answer]

*Required

Table 3.1 Participant Demographics Questions

No.	Question	Rationale	Options
5	Have you visited a museum before?	Qualifying question for the rest of the questionnaire To give proper data from their experiences in museums To view how many participants have visited a museum before	• Yes • No

| 6 | If not, would you be interested in visiting a museum and why? | To learn the reasons of respondents who answered no on the previous question and why or why not they would want to visit a museum | • [Short answer] |

*Required

Table 3.2 Qualifying Questions for Survey

No.	Question	Rationale	Options
7	How many museums have you visited before?	Reflects the scope of their knowledge and comprehension of the current topic of study and their experiences when responding to the following questions Different museums will reflect a variety of answers, increases their pool of knowledge to the different museums	• 1 • 2 • 3 • 4 • 5 • 5+
8	How frequently do you visit museums?	To correlate the relationship between the frequency of visiting museums and the corresponding answers given from the number of museums visited.	• Once a week • Once a month • Once a year • A year+
9	How was your previous experience(s) with museums?	To gain an understanding of the respondents' current feelings and thoughts from their previous experiences.	• Very Satisfied • Satisfied • Neutral • Unsatisfied • Very Unsatisfied
10	Please explain your rating	To acquire more details as to why the respondents gave such a response.	• [Long answer]
11	Are there any features, details or systems that you are satisfied with or find	A simple yes or no question to whether there are any features that need to be improved on or be kept.	• Yes • No

	acceptable at museums currently?		

No.	Question	Rationale	Options
12	Please elaborate on your answer if yes	A further elaboration of the previous question if the respondent answered "Yes". To investigate what respondents, like in museums, such that an idea of what improvements can be done for the blind.	• [Long answer]
13	Is there anything you find to be lacking with museums current level of accessibility for the blind?	A specific question to pinpoint on the research problem.	• Yes • No •
14	Please elaborate on your answer if yes	To receive data from the public such that a direction of what the respondent's idea of main issue for the blind is if answered "Yes" on the previous question.	• [Long answer]

*Required

Table 3.3 Previous Museum Experience Questions

No.	Question	Rationale	Options
15	What senses do you notice you use more often when engaging outside?	To gain an understanding of what senses other than sight are highly used by the respondents. Based on the statistics, senses that the respondents use more commonly other than sight can be collected, and a better understanding of what interactive method should be focused on to further accommodate the blind.	• Sense of Touch • Sense of Hearing • Sense of Smell • Sense of Taste • [checkboxes]

16	What is the reason for it? Please explain how or why you engage better with this specific sense(s)	A reasoning to the choice of sense, corresponding to why it is more often used to give an idea on what type of product would need to be made.	• [Long answer]
17	What features would you like to see implemented in museums for better interactivity with artworks and exhibits for the blind?	A direct question such that the result can be used to compare to the product and analyse whether the product helps in solving the issue.	• [Long answer]
18	What elements would you like to be implemented for better accessibility for blind users?	To fulfil research objective one To gain an understanding of what users would want to be implemented in the museum other than features.	• [Long answer]

*Required

Table 3.4 Respondent Preferences and Suggestion for Accessibility in Museums Solutions

Appendix 1 Survey Questions

No.	Question	Rationale	Noted Criteria
1	Are there any implemented features for ease of accessibility for blind users?	To get a base understanding on what is provided by the museums in terms of aiding the blind in their tour of the museum.	• Braille availability • Accessibility to art information
2	Are there any options for blind users to interact with exhibits better?	To get a base understanding on what systems museums implement to create a more interactive environment for blind users.	• Braille availability • Accessibility to interact with exhibit

3	What navigation features are observed to be lacking for blind users in museums?	To investigate what inefficient systems may cause issues for blind users when navigating museums.	• Guided + indicated pathways and railings • Ability to walk unhindered and safely • Availability of navigation app
4	What are the additional notes and observations?	To consolidate dissimilar information from the previous questions for extra data analysis and to note additional data collected that is not specified in the research questions.	• Extra information related to the area of research that cannot be defined by the above questions

*Required

Table 3.6 Observed Notes about Selected Museums

No.	Question	National Museum of Malaysia Answer	National Textiles Museum Answer	Petrosains, The Discovery Centre Answer
1	Are there any audio aids or content for blind people that can be used?	No	No	No
2	Are there any tactile/touchable options or methods for blind users to interact with?	No	No	No
3	Are there any specialised tours led by museum staff members for blind people?	No	No	No

Table 4.18 Museum Personnel Answers

Appendix 2 Notes from Observational Studies

Type of respondent	Frequency (n)	Percentage (%)

| Blind User | 36 | 70.6 |
| Person with blind relatives/friends | 15 | 29.4 |

Table 4.1 Answers to Type of Participant

Age of respondents	Frequency (n)	Percentage (%)
Under 18	1	1.9
18-24	10	19.2
25-34	15	28.8
35-44	0	0
45-54	14	26.9
55-64	9	17.3
Over 64	3	5.8

Table 4.2 Respondents Ages Answers

Ethnicity of respondents	Frequency (n)	Percentage (%)
White	19	36.5
Black	5	9.6
African American	3	5.8

Asian	24	46.2
Native Hawaiian or Other Pacific Islander	1	1.9

Table 4.3 Respondents Ethnicities Answers

18. Which country are you from? (Optional)
52 responses
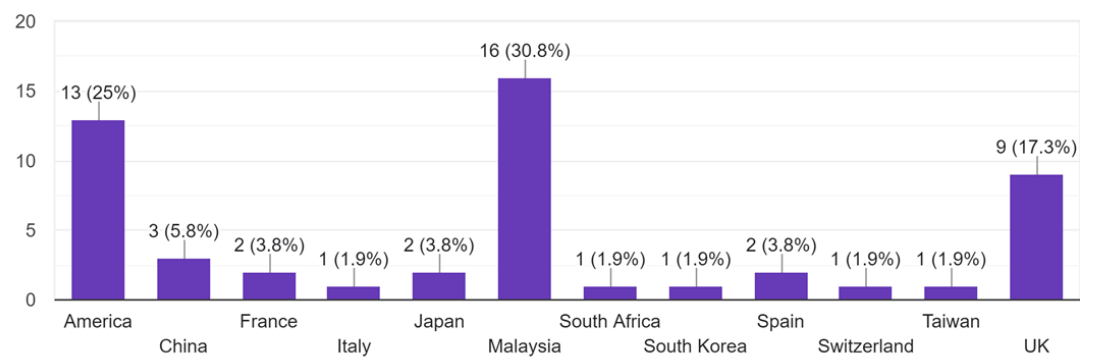
Figure 4.4 Respondents Countries of Origin Answers

Visited a Museum Before	Frequency (n)	Percentage (%)
Yes	51	98.1
No	1	1.9

Table 4.5 Qualifying Question Answers

Number of visited museums	Frequency (n)	Percentage (%)
1	5	9.6

2	3	5.8
3	7	13.5
4	9	17.3
5	10	19.2
5+	18	34.6

Table 4.6 Number of Museums Visited by Respondents Answers

Frequency of visitation	Frequency (n)	Percentage (%)
Once a week	0	0
Once a month	6	11.5
Once a year	15	28.8
A year+	31	59.6

Table 4.7 Frequency of Museum Visitations by Respondents Answer

Experience with Museums	Frequency (n)	Percentage (%)
Very Satisfied	2	3.8
Satisfied	9	17.3

Neutral	12	23.1
Unsatisfied	19	36.5
Very Unsatisfied	10	19.2

Table 4.8 Respondents Previous Museum Experiences Answers

Common Themes	Statements	Suggestions
Independent Experience	• "Without any assistance from my family or friends, I find that I get quite left out and can't do anything" • "I was able to navigate around the museum properly but couldn't really interact with the art. The audio descriptions felt stale and boring and didn't explain more about the art beyond its history and creator."	• "I want to be able to interact more with exhibits"
Lack of accessibility and interactivity	• "I liked museums before I became blind but I experience a lot of accessibility barriers like difficulty navigating and experiencing the artworks" • "I experience a lot of accessibility barriers like difficulty navigating and experiencing the artworks"	• "It was an okay experience only because the museum workers were really great at guiding me." • "It was difficult to visualise the exhibits based only on museum staffs' descriptions"
Sighted friends and family members	• "They are a fun outing option with my family but can be difficult to go to by myself"	• "It is very fun to go with my family as an outing but comparatively less enjoyable when I go alone. It is difficult to listen to the guided staff explanations about the artwork and can be boring if they don't know how to narrate properly. Some of the audio aids provided similarly are poor quality and lacking in excitement"

Table 4.9 Respondents Previous Museum Experiences Answers Elaboration

Are there acceptable features?	Frequency (n)	Percentage (%)
Yes	30	57.7
No	22	42.3

Table 4.10 Answers to Positive Museum Features

Common Themes	Statements	Suggestions
Audio Content and Aids	• "A number of UK Museums have narrative recordings for exhibits. But also, staff who can talk through the exhibits. Familiarity with the exhibits helps."	• "There are options to listen to the audio explanations of the artwork and its history which was enjoyable for me"
Trained Museum Personnel	• "There were some staff members that I think were trained to help guide me and it made it easier to get around but I was a little awkward because I have minor social anxiety" • "The trained staff are very kind and polite and do their best to assist me"	• "I like that there is sometimes museum staff that is trained to assist me" • "The trained personnel were great at their job and making me feel included but comparatively the staff that wasn't trained or briefed were significantly more quiet and less engaging with me"
Tactile and Interactable options	• "Some museums have tactile books with braille of their layout available for me to get a better understanding of the space and what exhibits are there"	• "I like the interactable touchable options for the artworks"
Navigation	• "The design of the museums pathways was easy to follow especially with a navigation app"	• "I like the navigating apps that is available at some museums that help guide me throughout the building"

Table 4.11 Answers to Positive Museum Features Elaboration

Is there anything lacking?	Frequency (n)	Percentage (%)
Yes	50	96.2

No	2	3.8

Table 4.12 Answers to Negative Museum Features

Common Themes	Statements	Suggestions
Audio Content and Aids	• "Not all the museums I've been to has the voiceovers explaining about the things there and they're just usually written down on a plaque/info board" • "The audio content provided is often outdated and poorly written which makes engaging with artworks boring and lacking in quality experience"	• "Every museum should have an audio explanation of each exhibit. Not only would it be better inclusion for blind people like myself but people who prefer not to have to read can also enjoy it"
Braille	• "Audio aids, interactable art, and braille is very lacking." • "I find that museums are more vision friendly. While I do know it is because history lies in the artifacts and physical material, it is important to note that not everyone has the blessing to have vision. I have not noted much Braille in my time when going to museums, and I know many (art museums, mostly) focuses on the overall aesthetic look before anything."	• "Perhaps braille explanations of art and the floorings could be altered to be made into a more blind people friendly aspect of the museum"
Tactile and Interactable options	• "The accessibility is terrible; I wish that the museums have ways to let blind people interact with the exhibits like 3D printed versions or other touchable items"	• "There should be more options of things to do that blind people can attempt like interactive activities which are blind friendly"
Navigation	• "The design of the museums pathways was easy to follow especially with a navigation app" • "Lack of accessibility with navigation and the ability to engage with artworks and terribly prepared audio content that barely explains the art" • "It was hard to navigate and there was zero support for a blind visitor"	• "Hand rails. Most of the items are stored in glass boxes/ display areas with only the rope separators. The blind can hit them really easily."

Table 4.13 Answers to Negative Museum Features Elaboration

13. What senses do you notice you use more often when engaging outside?

52 responses
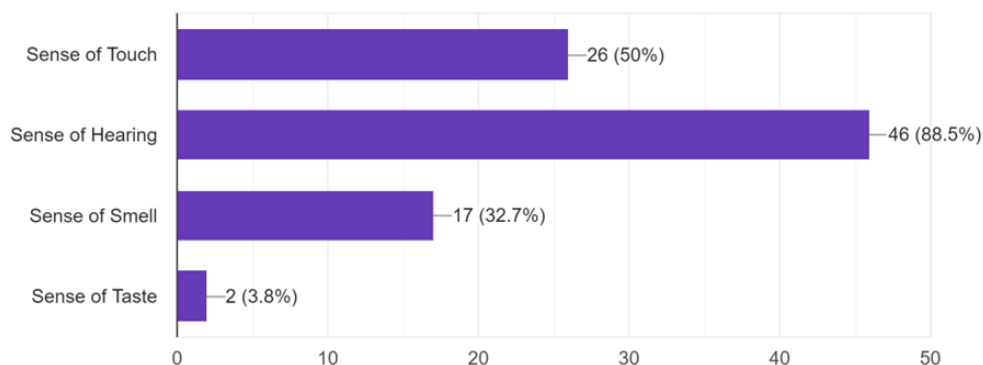
Figure 4.14 Answers to Respondents Preferred Senses

Common Themes	Statements
Hearing	• "I have poor sight. I have blind relatives. They have "trained" me to value listening out for sounds of traffic and so on and to use touch to gauge the space I am in." • "For hearing, I would say that it provides my family member a lot of contexts of what is happening, especially if the words used are descriptive and help them build a picture in their head." • "I was taught by my blind relatives to utilise my hearing and touch more in my daily life and I find it easier to use these sense as I am used to it. I use hearing to gauge the situation I am in and touch for a more in-depth understanding"
Touch	• "I understand things better through tactile learning and I like listening to stories about them" • "I am a tactile learner that also prefers listening to understand what I am engaging in" • "I like touching the objects to get a good understanding of what they 'look' like" • "because I can feel the texture of the object"
Smell	• "Hearing and smell are my strongest senses in comprehending the space and situation I am in"

Table 4.15 Answers to Respondents Preferred Senses Elaboration

Common Themes	Suggestions
Braille Availability	• "More braille to read about the artwork and better audio details about it so I can feel better connected" • "In a loud and crowded environment, books with tactile features and/or braille would be much more helpful than audio aids." • "Braille, ramps, basically blind friendly items"

Tactile Features and Options	• "A tactile or touchable version of the artwork that I can touch and perhaps audio aids that not only explain what the artwork looks like but it's history and who the artist is and even what their intention was" • "3D printed art or something I can touch with my hands as I think that I can better comprehend and visualise it"
Higher Quality Standard for Audio Content	• "Better audio contents about the artwork so I can feel better connected and immersed in the museum like other sighted people can experience" • "Good quality audiobooks that explain more than the history and artist but also how the artworks actually look"
Trained Museum Staff	• "Better Staff awareness. A staff member who can narrate an exhibit and talk about specific visual details – someone with an expressive visual vocabulary – is invaluable. It really is about poor sight needing to be guided so that the same interactivity as excellent sight." • "Better trained museum personnel. In a way that they know how to better describe the artworks with good expressive vocabulary"

Table 4.16 Respondents Suggestions for Interactivity with Artwork and Exhibits

Common Themes	Suggestions
Safe Pathways	• "Specific walkways for us. It would be better for us to navigate and especially if there are guide dogs. It would be better for both of our safeties" • "There are many things that can be done to improve this, such as increasing the amount of safe tactile pathways, railings, braille plaques and bettering the quality of the audio content for exhibits as well as briefing the museum staff. It would be nice if there were specific museum staff that can attend to us in the event of anything negative happening." • "Helpful indications on where are off limits or dangerous to walk through."
Railings and Ramps	• "Railings for walking safely and braille for reading where audio guides are not available" • "More braille, indicated ramps with railings, or even a navigation app that can track my movement through the museum" • "Ramps and handles so I can navigate around better"
Navigation Systems and Apps	• "maybe a navigating app that provides auditory explanations of the space" • "More navigation apps that can sense where you are in the museum and use audio aids to show you where to go"

Table 4.17 Respondents Suggestions for Accessibility for Blind Users

Appendix 3 Questionnaire Survey Results

Figure 4.25 National Textiles Museum Exhibit Case

Figure 4.22 National Museum of Malaysia Informational Wall

Figure 4.26 Petrosains, The Discovery Centre Touchable Exhibition Pieces and Information Plaques

Figure 4.30 National Museum of Malaysia Information Plaque behind glass display case
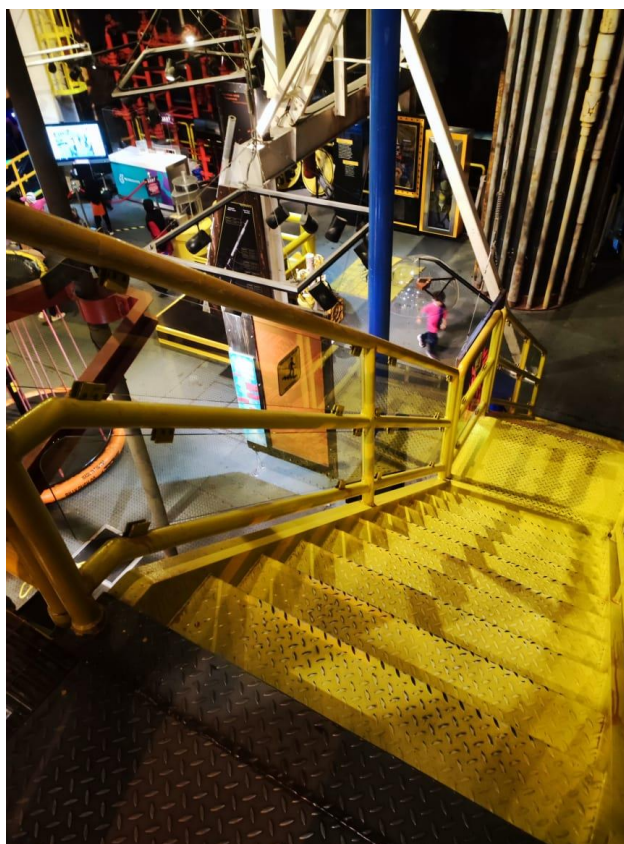
Figure 4.42 Petrosains, The Discovery Centre Stairwell with railings

Appendix 4 Museum Sample Displays

Covid-19: Creating SOP Awareness & Educating the Public Through Graphic Design

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Abstract *The COVID-19 pandemic has resulted in a tremendous loss of lives around the world and poses an unparalleled threat to public health, food production, and many industry workplaces. This change lead to the result of new measures such as the SOP which stands for Standard Operating Procedure and it is set by the Director General of Health to spread prevention against the Covid-19 virus within the locally infected area. Individuals are to comply with the SOP such as social distancing, wearing a mask, and maintaining clean hands while carrying out activities on both indoor and outdoor premises. The SOP also acts as Malaysia's national recovery plan and a transition phase to the Endemic. This research examines how visuals in design can create SOP awareness and educate the public about Covid-19. The main idea and goal of this research are to identify the most effective way that visual communication in graphics and visuals could positively affect the audience's mindset so they abide by the SOP. To answer the research questions, the public's reaction towards different SOP-related visuals was gathered using the primary research method of a survey by a questionnaire which is supported by previous literature review. The gathered findings are then dissected and discussed. The results show an incline in the response towards the strong and weak visuals, whereas more respondents have a positive response towards the visuals shown with a stronger representation of imagery and color. The results also showed a clear preference from the respondents towards the visuals shown. With that finding translated into solutions, SOP awareness can be created through visuals in designs, therefore educating the public about Covid-19. From a general perspective, this study puts emphasis on the need to take into account the limitations faced as only selected and specific designs were studied.*

Key words *Graphic Design, SOP-related visual, COVID-19, SOP Awareness, Visual Communication.*

Introduction

The focus of this paper is to explore how impactful visuals can creat sop awareness and educate the public about Covid-19. When communicating with a medium, different people with various tastes for aesthetics will feel and react differently. The imagery, colors, and typography in graphics design etch their way into everything, as when effectively used, can garner the attention of the audience for a better change such as getting together to fight against the pandemic. Presently in public health, social distancing, also called physical distancing, is a measure aimed to prevent the transmission of an infectious disease by limiting contact. The visual is a means of communication, and it acts as a translator to people, it works as a guide and a signpost that tells you a message like as shown in Figures 1 and 2, and in this case, to practice SOP daily. It creates SOP awareness and educates the public. Graphics and visuals as communication tools tell a story that is relevant and

necessary in this pandemic. It connects the designer and the viewer with an important message.

Figure 1. SOP-related visual "FACE MASKS REQUIRED" by Carnelian Laboratory.

Problem Statement

A measure aimed to prevent the transmission of an infectious disease by keeping individuals physically apart and limiting their contact. According to the UN (2020), they believe that creatives such as graphics and visuals have "the power to change the world" and—via their Global Call Out To Creatives—implores the global design community to translate "important public health messages into work that engages and informs people across multiple cultures, languages, groups, and platforms."When making an earnest appeal to change the behaviors of individuals and communities, visual communication of the ones like Figure 3 is essential for creating an emotional reaction from the spectator and motivating particular social behaviours. Although during the pandemic, we would hope to communicate verbally on spreading SOP awareness like wearing your mask, however with the use of graphics and visuals, The spreading of awareness would be more effective than a verbal reminder from a stranger, which could be dangerous. (Turnbull, 2020). Visual imagery has always been critical in reaching out to society's most vulnerable individuals. Speaking in visuals teaches the illiterate that minority cultures accept the majority's suggestions, and the disadvantaged become a part of society. To effectively prevent the spread of the virus in this unique global circumstance, public health messages must be delivered to every corner of the globe in every language and culture. That is the reason and the purpose of this research that hopefully bring forward to a target audience with success. Therefore, the objective of this paper is to identify the most effective way that visual communication in graphics and visuals could positively affect the audience's mindset so they abide by the SOP. The research question works towards answering the research

objective by asking "What is the most effective way that graphics and visuals could positively affect the audience's mindset to abide by the SOP?".

Figure 2. Pedestrians walk past a British government health information advertisement highlighting new restrictions amid the spread of the coronavirus disease (COVID-19), London, Britain, December 19, 2020. REUTERS/Toby Melville.
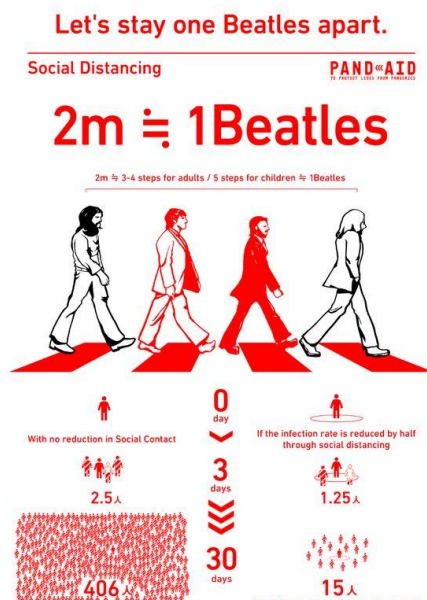
Figure 3 SOP -relatedvisual "Let's stay one Beatles apart" by Pand aid.

Methodology

To discover a better way to understand the public's mindset in order to spread awareness, a survey with a 3-part questionnaire was designed.

Research Design

With directions towards answering the research question and objective, the survey is distributed as a 3-part questionnaire to acquire all aspects such as from the respondents' backgrounds to their personlised opinions on SOP-related visuals. In order to achieve accuracy and avoid false responses, the age group was limited to the working age group, which in the country of Malaysia is of age 19 to 64 (Shah, 2020). With that, those who fit or are near the age group would be most suitable as effective target audience for this survey.

The first part consists of general questions aimed to understand the background of the respondents, this is to ensure the relevancy of their answers as well as support them. Part 2 consists of multiple choice questions regarding the imagery and colors of SOP-related visuals, the respondents' reacted emotions upon viewing the images shown will be focused on. The results of this section provided possible answers for the effectiveness or ineffectiveness of SOP-related visuals on the public. Part 3 consists of short answer questions regarding the respondents' views about the SOP-related visuals, like "Do you believe visuals could positively affect the public's mindset to abide by the SOP?" and "What would you prefer to see in an effective SOP-related visual?". These questions aim to solidify their opinions as respondents as it allows them to have personalized input in the survey.

Survey Distribution

For better accuracy and reliability from the survey results, multiple distribution attempts were made through online platforms for the survey to be spread widely for more variety in respondents. During the attempts, the survey was shared through relevant social media and communication platforms such as Instagram, Facebook, Whatsapp, and Discord. The attempts were successful as they obtained a total of 76 respondents in 11 days, and with respondents of all ages and occupations across the four chosen online platforms, the range of opinions was wide and comprehensive to fulfill the purpose of the survey. On the day the Google Form survey was finalized, the first attempt was to send it out through an Instagram story, which garnered over 100 views. For the next attempt on Discord, it is the next most suitable and engaging communication platform to distribute a survey in a researcher-student community, and a total of 13 responses were acquired from this attempt. The third attempt was made in sharing the survey with two Facebook groups, this attempt widened the age group of the survey respondents as 72% of 50- to 64-year-olds use it (Morrison, 2021). The final attempt was made at a widely used communication app, Whatsapp. This attempt focused and ensured only confirmed respondents as the message for the survey was only sent to the group chat of close family and friends of the researcher. A confirmed total of 19 respondents were recorded from this attempt.

A sample of the questionnaire is found in Appendix A.

Findings and Discussion

From evaluating the survey responses, it is observed that respondents from the younger age groups such as those under 19, from 19- 24, and 25- 35 years old of which 70% are female, took the survey more than the rest. The respondents are typically students or employees who have seen or are familiar with SOP-related visuals. From the responses of part 2, the most percentage for reaction towards the stronger SOP-related visual is "Interested" at 62.5%, whereas the most percentage of reaction toward the weaker SOP-related visual is "Uninterested" at 56.3%. The few other reaction options are "inspired", "demotivated", "guided", "lost", and etc.. In part 2, the respondents shared that not only appropriate colours in an SOP-related design is effective, but also the straightforward and impactful imageries as they aid in their understanding of a design's information as well. From the responses, it can be said that elements like eye-catching colours and straightforward imagery are more attractive so it can prompt the viewers to take action and therefore educate the public.

To curate better designs for the public, is to first understand how visual communications like the ones in findings become a key during the pandemic. It is proven to raise SOP awareness and educate the public as they are applied in all activity areas of daily life, holding a crucial role towards the public as a valuable method of conveying a message. From part 1 of the survey, 85% of respondents agree to the statement that a change in colour, imagery, and text can change the way they perceive SOP-related designs. According to Bateman (2010), there can be strong effects from the inclusion of visual embellishments in charts. However, only with straight-to-the-point and impactful design choices will the message be properly conveyed and understood. This is proven in the survey conducted regarding SOP-related visuals where the respondents prefer to look at SOP-related designs

that can be described with words such as "straightforward", "impactful", "appropriate", and "eye-catching".

Next, imageries and colours are analyzed as the main aspects of effective SOP-related visuals. According to Esposito (2020), images in graphic design help to bind text to layout and can clarify information by adding context and evoking relationships. In support of this statement, 47.7 % of respondents in the survey believe that the imagery employs and promotes memorability due to the clear message provided, which might promote successful transmission of awareness to the public, thereby compensating for the lack of knowledge. The same goes to colours where it is as important as the imageries because colours have various individual association. In the survey, 64.5% of the respondents found the colours on the visual shown as appropriate and effective, however it is important to find the most effective way to show colours to the readers as 16.2% of the respondents used descriptions such as "distracting", "unclear", and "oversaturated" on the visual shown to them. It is the colour that draws attention or the other way around where the choice of colour can repel the viewers' attention (Cobe, 2022). This implies that colour is an important instrument for influencing the mindset of the public when it comes to sop-related designs.

The survey results can be found in Appendix B.

Conclusion

This research sought to identify the way visuals in design can create SOP awareness and educate the public about Covid-19. To do that, the most effective way that visual communication in graphics and visuals could positively affect the audience's mindset is researched, not only that is also knowing that doing this will suffice the current lack of awareness in our society. By bringing forward the findings from secondary research, it helped to form the foundation when designing the questionnaire. The accumulated information is conducive to the solutions of the current research problem. This questionnaire that was designed for a survey was open for 2 weeks and over 81 respondents were recorded.

The two main aspects of effective SOP-related visuals were analyzed, and from the findings, imagery and colors were focused on. Their most important and effective aspects were eventually concluded to help discover the best way the public could respond to an SOP-created design. Finally, analysis on using the findings to spread awareness among the public during the pandemic is analyzed, the strong and weak SOP-related visuals are focused on to conclude the most effective way to make up for the lack of awareness in our society, during the pandemic.

Following that, a mocve to connect to the public is made via a survey questionnaire. From there, the result is able to uphold the statement that impactful designs are important and make a difference, and it is rather thriving and thus far still effective at spreading awareness that positively affects the audience's mindset to abide by the SOP. With the collected findings, it is concluded that imagery and colours that accommodates and improves to the public's preference has the ultimate ability to spread awareness and educate the public. In the end, executing the important aspect and presenting it to the public for a cause of awareness will be the ideal way to fight the lack of it in our society.

When discussing the subject of boosting awareness with visual communication using SOP-related visuals, easy-to-understand and comprehend visuals as well as straightforward colours should form a collaboration and be utilised in an SOP-related visuals in order to work towards spreading awareness in hopes of educating the public. Along with prior discussions, it is for designers to remember that too much of what is good is not always beneficial for the general public because an overload combination of visual greatness could cause one to stray away from transmitting a message. This is because it cannot adequately transmit the vital message that positively alter the audience's mindset to interpret and learn.

To conclude the discussion above, graphic design as a visual communicator is discussed to discover its capability during the pandemic as well as what designs are impactful and important in order to assist. Not just that, it is concluded that impactful imageries and

appropriate colours are effective when applied in a SOP-related design, aiming to spread awareness and educate the public.

Throughout the research, there were limitations faced as only selected and specific designs were studied, featuring only a few design styles in the questionnaire. This led to insufficient dissected information which when brought over to discussion, was lacking for an extensive discussion section.

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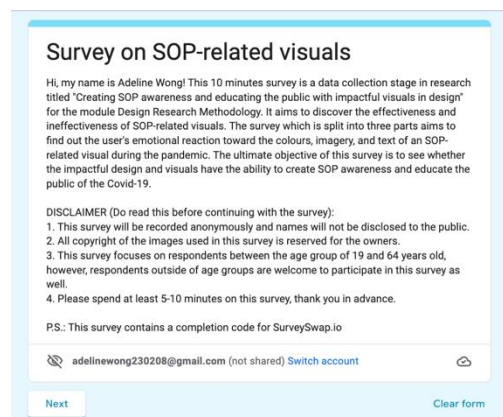
Picture Credits

Figure 1: Carnelian Laboratory. (2022). Face Mask Required [Poster]. Carnelian Laboratory. https://images.squarespace-cdn.com/content/v1/544beae5e4b0f3ba72ed509a/1615353924245-R189HQLEJL3OD3LRFQT2/elizabeth-mcdaniel-QXjHXEBrLXE-unsplash.jpg?format=300w

Figure 2: Kacho, & Hoshino, S. (2020). Let's stay one Beetles apart (E. Tachikawa, N. Aoyama, & K. Ueda, Eds.). Pand Aid. https://en.pandaid.jp/hygiene/social-distancing

Figure 3: Melville, T. (2020, December 19). Pedestrians walk past a British government health information advertisement highlighting new restrictions amid the spread of the coronavirus disease (COVID-19), London, Britain, December 19, 2020. REUTERS/Toby Melville. Reuters.

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Appendix A

Google Form survey: Description page

Appendix 1 Screenshot of Google Form survey (Description page)

Google Form survey: General Questions

Appendix 2 Screenshot of Google Form survey (General questions page)

Google Form survey: Multiple Choice Questions

Appendix 3 Three Screenshot of Google Form survey (Multiple-choice questions page)

Google Form survey: Short Answer Questions

Appendix 4 Screenshot of Google Form survey (Short answer questions page)

Appendix B

SECTIONS	NO.	QUESTIONS	MEDIA USED	ANSWERS
Section 1: General Questions	1	What is your age? • 19-24 years old • 25-34 years old • 35-44 years old • 45-54 years old • 55-64 years old • Other		
	2	What is your gender? • Female • Male • Other		
	3	What is your occupation? • Employed • Unemployed • Student • Retired • Other		

Section 1: General Questions	4	Are you familiar with SOP-related visuals like this one? • Yes, I have seen them. • No, I am not aware of them. • Maybe, I am not too sure.		
	5	Do you believe that viewers can perceive posters like this differently based on their change in colours, imagery, and text? • Yes, I believe so. • No, I believe it makes no difference.		

SECTIONS	NO.	QUESTIONS	MEDIA USED	ANSWERS
Section 2: Multiple Choice Questions	6	Upon viewing the images above, what are some emotions or feelings you would use to describe your reaction? (multiple answers allowed) • Interested • Uninterested • Laid-back • Tense • Inspired • Demotivated • Focused • Unfocused • Guided • Lost • Memorable • Insignificant		
	7	Upon viewing the images above, what are some emotions or feelings you would use to describe your reaction? (multiple answers allowed) • Interested • Uninterested • Laid-back • Tense • Inspired • Demotivated • Focused • Unfocused • Guided • Lost • Memorable • Insignificant		
Section 2: Multiple Choice Questions	8	Upon viewing the images above, do you think the information was clearly conveyed with the use of colors? • Yes • No		
	9	If yes, which aspect of it made you think so? (multiple answers allowed) • The colours used are appropriate • The colours used allow a better understanding of the content • The colours used are straightforward • The visuals and imagery on the chart • The colours used increase memorability of the content • Other…		

SECTIONS	NO.	QUESTIONS	MEDIA USED	ANSWERS
Section 2: Multiple Choice Questions	10	If no, state a short reason why		It was hard to read the texts Would see death rate as red - the colours are all over the place and it makes it hard for me to read/focus on the text. The orange was the only information that wasn't clearly conveyed Colors are too saturated (except for the orange) and the black and the specific shade of red don't really click what is SOP btw? it might help your survey if you explained the acronym I would think green to mean that the rates are lowering the colour scheme was not very apparent, apart from the black maybe. But the text was just to small in comparison to the colour
Section 2: Multiple Choice Questions	11	Upon viewing the images above, do you think that Covid-19-related information can be conveyed clearly through the use of imagery and visuals? • Yes • No		
	12	If yes, which aspect of it made you think so? (multiple answers allowed) • The imagery used increases memorability • The imagery used allows better understanding of the design's content • The imagery used are straightforward • The imagery used can grab the attention of viewers • Other…		
Section 2: Multiple Choice Questions	13	If no, state a short reason why		Too many use of colors The image is too complicated Too wordy, looks like too many things going on, lazy to read Not entirely clear what images are trying to convey at first glance, a lot going on Too much words in a singl picture. Poster should be short and simple The layout is messy and there typography is hard to read. too crowded, need more straightforward instructions The cuti sekolah the image can't conveyed the message There's no focus info convey

SECTIONS	NO.	QUESTIONS	MEDIA USED	ANSWERS
Section 2: Multiple Choice Questions	14	Upon viewing the images above, what aspect(s) of the design helped to create SOP awareness and educate the public of the Covid-19? (multiple answers allowed) • The appropriate colours used on the design • The text/ message on the design • The straightforward imagery used on the design • The visibility of the design • Other…	Please keep 2 m distance	 The appropriate colours used on the design — 40 (52.6%) The text/ message on the design — 42 (55.3%) The straightforward imagery used on the design — 57 (75%) The visibility of the design — 43 (56.6%) We are all so familiar with the vectors of two people standing… — 1 (1.3%) none — 1 (1.3%)
	15	After answering the above questions, do you think SOP-related designs have the ability to create SOP awareness and educate the public of Covid-19 based on its change in colours, imagery, and text? • I believe they do make a difference • I believe it does not matter • Other		 91.3% ● I believe they do make a difference ● I believe it does not matter ● I'm in the middle because to me, although it does help but after some time, people care less about it ● I still don't know what SOP means ● I have no idea what SOP means

SECTIONS	NO.	QUESTIONS	ANSWERS
Section 3: Short Answer Questions	16	Do you believe by using visuals, it could positively affect the public's mindset to abide by the SOP? Elaborate your answer by stating how	yes , by using colors and images to make the viewers to remember the poster It could affect the public mindsets cause in a way colors and designs are what grabs the attention of the public Yes, able to caught someone's attention easily It depends. Perhaps in the beginning it portrays as a reminder. But after 2 years they seem redundant n repetitive. Yes, but elders and those with bad eyesight might accidentally ignore them Yes, as people are more attracted to visuals than monochrome texts Yes, it emphasis the message to the reader. So it is easier to understand Yes Yes Yes. I believe that using visuals allows for easier understanding. No matter the age or understanding of the language, people are able to get a general idea of the SOPs by looking at visuals which help guide them if they are ever wondering what is right or wrong. Leaning towards yes, as strong colors especially will attract attention and if the use is appropriate it can be a clearer warning etc Yes. They will focus on it and following the rules. Yes, as great visuals will be able to grab their attention better while people will just ignore posters and signs with ugly and unimpressive ones. No

			Yes. A good example is in lifts, people would not stand far from one another if there was no distancing sticker on the ground.
			yes it can as it might motivate the reader
			Because it is straightforward and easier to understand and digest in a short time
			Yes. Because visuals can make the message more impactful and leave a lasting impression on viewer's mind
			Yes, more attractive and interesting
			Yes, because I think most people are interested in visuals than a huge amount of text(?)
			It visualizes and conveys the written message better, creating impressions that can be remembered easily by the viewers
			No not necessarily, i think it makes gettig the SOP instructioms and point across but do i think people are gonna follow SOP just because they see a bunch of silly little pictures? No.
			people tends to see visual first then only text
			Maybe, some people are attracted because of the colours and easy to read words
			Yes. Graphics that are bright and bold and easy to understand are often remembered more.
			Make it easy, make it accessible, spread it around, use anything which might subliminally influence people to be ok to comply
			yes because its attractive
			Yes, people don't often remember words, but when they see a visually captivating image, they'll remember it

			Yes, they can remember better
			maybe
			Visualise is much more easier to understand
			yes. because it will make better communication with the audience although they don't understand the language
			Yes, by using clear and concise visuals/instructions
			Yes, increase awareness by reminding
			Yes, just make sure the visuals get straight to the point
			agreed
			Agreed
			Yes, but keeping simples and straightforward visuals will better enhance the visibility and focusness of the information
			Yes definitely. It increases urgency of the issue but using imagery to describe the situation.
			As a reminder and warning to the public
			Yes, as i think that frequent exposure to simple designs reminds you to act in a certain way
			Yes I believe so. As i said it depends on the awareness of each individual but using visual, people might get interested and could change their mind to positive.
			I think that visuals are a good way to engage someones mind with the context of said poster/image etc.
			Yes, better visuals can influence the public to understand the steps to abide SOP and the severity of the situation.
			Yes, by being clear and concise

SECTIONS	NO.	QUESTIONS	ANSWERS
Section 3: Short Answer Questions	17	What kind of imagery/ graphic elements in an SOP-related visual would prompt you to take action and create more awareness in you?	Color image Colour Yes The general logo (normal), easy to understand, and the right usage of color Bright colours, large visible coherent text and appropriate images. Just showing what i need to do Perhaps appropriate use of colours that would grab the attention of viewers Colourful Simple images are more memorable Simple and clear wording Real life images Video related to awareness Colour and graphic Something related to the spread of the virus, like visuals of someone coughing in a crowd, someone putting their hands on unclean surfaces, etc. simpel catchy messages Visual I think minimalist, "less is more" is more significant, as it does not overcrowd your attention and pulls the attention to only the image and the little visual elements
			Straightforward and easy to understand one colour and graphics universal pictograms More on numbers and statiscal graphics to see how fast and how much Covid-19 is spreading. Avoid using too many colors as it resulted in complication, main focus would be diminished well-made, informative, bold, simple signs The graphic that explicitly tells you how far distancing is and such. More informational than just "DONT DO THIS" and no instructions on what we SHOULD do Clear and simple diagram especially with appropriate colour and "short phrases" maybe something that show alert easy to understand the ones shown Warning signs, the use of the colour red. colourful imagery Yes, an image of hurting animals would make me want to take action more than an image of happy animals (if that makes sense). The striking and contrasting colour would catch my eye which then leads me to take action Colourful images or pictograms would prompt me to take action Colourful ones Color

			Simple
			Simple and easy to understand
			Colors or designs that are interesting or have fun colors
			Typography, image and color effects a lot
			Colourful with charactor
			Eye-catching colours
			Masks, human symbol of social distancing, illustrations depicting the severity of covid (symptoms, side effects, consequences etc.)
			graphic
			Sharp colors and clear image

Appendices

Appendix 1. Test. Image 150 dpi. Caption set in 9pt italics, Merriweather Sans. To align the caption with the image, use the "increase indent" in Home menu.