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An Overview Understanding of Character's Emotion in Animated Films

Chan, Huei Lian[1]; Saad, Noorhayati[2]

The Design School, Faculty of Innovation and Technology, Taylor's University,

hueilian.chan@sd.taylors.edu.my;
noorhayati.saad@taylors.edu.my

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thedesignschool.taylors.edu.my/kreate

Abstract   *Undeniably, a character's emotion is the core of an impactful animated film. Effectively portraying emotions through animation allows the audience to connect emotionally with the characters, empathising with them throughout the plot. However, it is a challenge for animators to create authentic emotions in believable characters. Therefore, the understanding of emotion is essential knowledge to be gained. Thus, this paper reveals the critical aspects of a character's emotion by observing a 3D animated film as an example. This paper aims to learn the significance of emotion portrayal in animated films and the factors required in producing animated films that accurately portray characters' emotions, allowing the audience to perceive them. A mixed methodology research method was utilised while conducting primary research. Consequently, it has been discovered that facial expression in animation plays a vital role in characters' emotions. In addition, a good understanding of psychological theories, such as 6 Basic Human Emotion, Wheel of Emotion, and Facial Action Coding System (FACS), allows animators to study the relationship between emotion and the facial expression of the character.*

Key words   *3D Animated Film, Character Facial Expression, Emotion Psychological Theory, Audience Perception*

Introduction

A common trait that was observed through animated films created by Pixar Studio is their impactful portrayal of emotion in their animations, allowing the audience to feel and believe the story and the character's journey is authentic. Consequently, an emotional attachment is formed between the audience and the animated film. Without a compelling study of emotion, characters and story plots will most likely appear dull to the audience if emotions are not effectively conveyed. Kennedy (2013) addressed his worry regarding the struggle he has seen in animators when trying to express their character's emotions to resonate with the audience emotionally. Hence, the characters will become flat and perceived as lacking in character development due to their inability to express themselves, risking them becoming unmemorable and insignificant. To understand how a character's emotion can be portrayed well, aspects that significantly influence the character's emotion in animated films must be studied more in-depth by an animator. Figure 1 shows the cover page of the dissertation paper written as a partial requirement for the Design Research Dissertation for the Bachelor of Design in Creative Media program.

Figure 1. The Study of Emotion Portrayal in 3D Animated Films. Written by Chan Huei Lian.

Problem Statement

Highlighted by Framestore VFX Lead Animator Sebastian Nino in the SAP Design Talk, he stated that "Emotion and motion: that is the essence of any animator's work". (Waisgluss, 2019, para.5). According to Zong et al. (2020, p. 151), "the expression is the soul of the character in animation." By creating the character's expression, emotion and language ability can be presented. The simplest expression change of the character can transform the mood of the entire scene and build up their personal character development and psychological activities. Flexible facial expression is an animated film's core and most stunning part. According to Kennedy (2014), most animations fail to have effective character emotion outcomes. According to Larrson (2014), animators are frequently taught more about how to perfect their animations than what makes the animation come alive. This is why, despite being technically proficient, their animation lacks a sense of life and is thus unconvincing. According to Aneja et al. (2018), due to the characters' inability to display explicit, distinguishable facial expressions relevant to their emotional state in the plot, it is hard for the audience to connect with the characters and the storyline. According to Zong et al. (2020), character expression shaping influences not only the animated film's output but also the film's overall quality. The character's emotional expression can be considered the animation's soul. Schleifer (2010) emphasised that being authentic to the character is crucial. Uhrig (2018) stated that having a solid understanding of emotions, facial expressions, and gestures is critical. Hence, this article is written in the hope of understanding how to create an excellent emotional portrayal of characters that can draw audiences' attention. Subsequently, it is also written to understand how to build an emotional attachment with the characters and the plotline by studying and analysing aspects of portraying effective emotions in animated films.

Methodology

Invankova & Wingo (2018, p.978) stated, "Combining the two approaches can produce more scientifically sound and transferable results by synergistically integrating qualitative stakeholder engagement with quantitative outcomes to inform action/intervention planning, implementation, evaluation, and monitoring."

Both quantitative and qualitative methods were conducted to identify and analyse the aspects that are important for emotional portrayal in animated films. In the first phase, an online questionnaire is designed to gather quantifiable statistical data that is targeted toward animation enthusiasts and individuals who have experience watching animated films. Subsequently, the quantitative data gathered focused on audience perception during the first phase. The second phase approach is qualitative. An email interview with an animation specialist was conducted to gather professional insights and perspectives for a deeper understanding of the topic, which is to understand the aspects essential for a better portrayal of a character's emotion in an animated film.

Quantitative Method

Through quantitative methodology, a general perception of the public is analysed according to statistical data. A general idea and direction are gained to observe the viewer's perception of the topic, with them being the primary audience of animated films, by listening to their perspectives. An animated film was selected as the primary variable in this study, which is a 3D animated short film called 'Bao' Animated Short Film. This short film was chosen because of its wide array of emotions that were portrayed in a short amount of time, allowing the researcher to identify and choose the specific scenes for the study. Interpretative questions by observing the short clips of scenes from the "Bao" 3D animated short film allows the data gathering of 112 respondents' perceptions to find out if there are significant similarities or differences in the viewers' interpretation of the scenes and character's expression discerned between the emotion variables referencing Paul Ekman's "6 Basic Emotions": happiness, anger, sadness, disgust, fear, surprise, and significance of facial parts that influence their judgement (refer Appendix 1). Respondents were also encouraged to express their opinion about their preference for the most significant factors contributing to compelling emotion portrayal based on their animation-watching experiences (refer to Appendix 2). The survey link was distributed via social media

platforms such as peers on Instagram, Facebook groups focusing on animation topics, and WhatsApp, practising both purposive and convenience sampling.

Qualitative Method

For deeper dive into the knowledge of the context through the experience of an experienced specialist in the animation field, an email interview consisting of 5 open-ended questions was conducted (refer to Appendix 3). Consequently, insights from one field insider, Malaysian Senior Concept Artist at Lil Critter Studio, Ms Maryah Rahmat, were gathered and analysed. In this interview, a more comprehensive finding about the common challenges of young animators, tips that are effective for a better workflow of portraying the believable expressions of the character, and aspects that are significantly impacting emotions are disclosed and explained.

Questionnaire Results

4a) After watching the short clip, which emotion do you think is expressed by the mother when she sees Bao bringing back his fiancee home?

112 responses

- sadness
- anger
- surprised
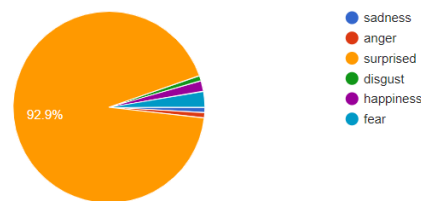- disgust
- happiness
- fear

Figure 2. Respondents' Interpretation on the Emotion Perceived on the character 'Mother' after watching short clip 4.

4c) Based on scene 4, which facial feature of the mother expressed the emotion that you identified in (4a) most significantly from your view?
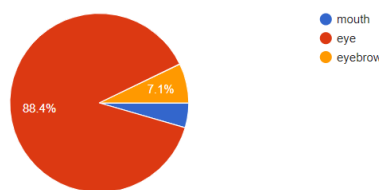
112 responses

- mouth
- eye
- eyebrow

Figure 3. Respondents' Perception on the most significant facial features which expressed identified emotion.

Findings and Discussion

Facial expression animation is one of the most critical aspects of a character's emotion in animated films. This statement is supported by both primary and secondary findings from the research. When asked why animated films emotionally influence them, survey responses demonstrated the importance of facial animation. According to the researcher's analysis through the questions regarding emotion perception in the "Bao" Animated Short Film. The respondents were observed to perceive the character's emotions to be believable

when an effective facial animation conveys emotions and messages to the audience, hence making them convinced that the character's emotions are authentic.

On the other hand, observed through the email interview with Malaysian senior concept artist Ms Maryah Rahmat has expressed that facial expression is essential in presenting compelling emotion. Because it helps a character to physically show their sentiments, assisting the audience in comprehending and feeling empathy with the character (refer to Appendix 4). Aligned with secondary findings, Zong et al. (2020) explained the basic features of facial expression shaping, including exaggeration, a vital technique among animation principles that allows the audience to interpret the character's emotions more easily by emphasising them.
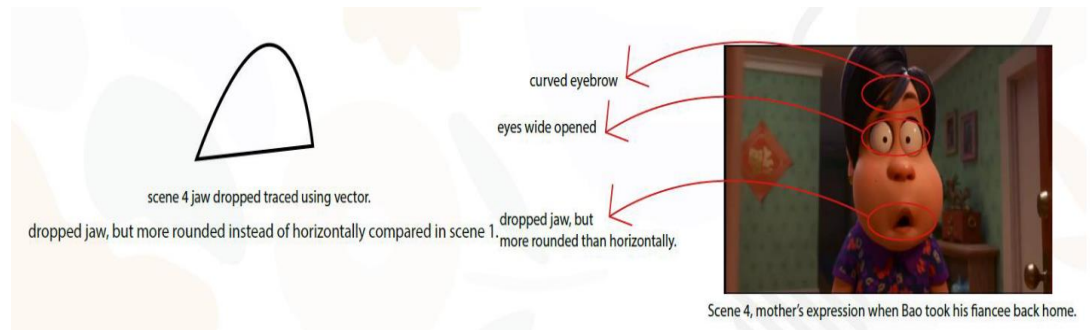

Figure 4. Observational study on Facial movements shown in short clip 4 based on Paul Ekman's description of the "6 Basic Emotions".

Take the observational study on facial movements shown in short clip 4 (Figure 4); for instance, it is observed that the visual of the facial movements shown by the character 'Mother' follows the characteristics that psychologists discussed. According to Figure 2, the pie chart shows that 92.9% of the respondents (104 out of 112) perceived the emotion shown to be "Surprise". Aligned to psychologist Paul Ekman, human eyes would be wide open when being surprised, with jaws dropped and our eyebrows raised. Moreover, the eyebrows are raised but show more curves than seen in fear. The upper eyelids and jaws are also more relaxed when expressing surprise (Ekman, 1993). Figure 3 shows the statistical data of respondents' perception of the most significant facial feature that expresses the chosen emotion, "Surprise". This result aligns with the survey respondents, which perceive "Eye" as the most significant facial feature that influences their judgement on the emotion perception in this scene.

Besides that, studying the psychological aspects is essential. This is because the fundamentals of facial expression animation work closely with psychological knowledge and understanding. Hence, it is crucial for animators to learn the basics of how emotion works and how the movements of the facial features of a character affect its accuracy. For instance, the 6 Basic Emotions by Paul Ekman sets a benchmark for animators to distinguish and identify the primary emotions of the characters, which assists in learning the basic facial feature movements required to animate to achieve certain expressions of emotion. This insight also aligns with the researcher's observation of survey responses regarding the interpretation of emotion and the most significant facial feature.

Meanwhile, Sloan et al. (2009) used all six primary emotions as variables in their research to observe the audience's perception by monitoring the authors' animation of facial movement and recognising the emotion exhibited by the character. It is also discovered that the Facial Action Coding System (FACS) was significantly utilised in various authors' research in animating complex and accurate facial expressions. For instance, Ahn and Chung (2017) performed an extensive case study in identifying the changes in facial muscle shape and wrinkles synthesised on the system and recorded the numerical value of the expressions shown by the characters in the animated film "Inside Out" using FACS, which was proven to be statistically significant.

Conclusion

This article addressed the overall understanding of the character emotion in animated films and the aspects that play a significant role. Throughout the article, it is repeatedly shown that forming an emotional connection between an animated film and its viewers is the key to creating a memorable animated film. We first need to understand the key aspects that influence the result to achieve this. The overall finding shows that facial expression animation is often associated and supported with the knowledge of psychological theories, such as 6 Basic Emotion by Paul Ekman, Facial Action Coding System (FACS), Wheel of Emotion, etc. The particular reason for this is to produce convincing and authentic emotions that can create a spark of life in the characters. This allows the audience to empathise and become emotionally attached to the character's journey and background, despite them being fictional. Correspondingly, facial expression animation plays a significant role in the characters' emotions in animated films. It allows a character to physically show their sentiments, allowing the audience to comprehend and feel them. Understanding psychological theories, such as the 6 Basic Emotions by Paul Ekman, and Facial Action Coding System (FACS), allows animators to understand better the character's psychological emotion in alignment with the facial expression movement.

Both enthusiasts and amateur practitioners could benefit from the insights gathered in this research, as this research provides the basic knowledge of the crucial aspects that influence the emotional portrayal in animated films which gives the opportunity for researchers to look into character emotions with the fundamental psychological theory such as "6 Basic Emotions" and to understand audience's perceptions towards characters' emotion. The overall finding allows the practitioner to understand the importance of crafting the real basic emotions of the characters before diving into more complex expressions.

However, it is undeniable that this study has its limitations. For instance, restricted access to potential samplings may have impacted the research's overall findings. It is also observed that the conclusions gathered were not clearly aimed at 3D animation in the technical aspect, despite the fact that the proposal of this paper was initially directed toward 3D animated films; instead, the information gathered can also be used in 2D animation. For example, in Paul Ekman's "6 Basic Emotions", as in this case, the research data leans toward basic knowledge that can be practised in both 2D and 3D animation, as they are more associated with the psychological relationship with facial expressions animation. Furthermore, as reviewed by Professor Dr Takashi Ohta, Tokyo University of Technology, the study would be more convincing if clips from different animated films were compared to survey the respondents on characters' expressions (refer to Appendix 5).

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Appendices

Appendix 1: Online Questionnaire Question Design on Emotion Identification of "Bao" Animated Short Film.

5/15/22, 5:25 PM   Effective Portrayal of Emotion in 3D Animated Films.

Emotion expression interpretation on short clips in "Bao".

Please watch the short clips (only about 10 seconds each) and answer the questions based on your interpretation and how you feel about it.

According to Paul Ekman, the six basic emotion expressed by human, they are : sadness, anger, surprise, disgust and happiness. (Ekman P, Biehl M, Matsumoto D, 1997)

Scene 1 (Watch before answering the next question).

http://youtube.com/watch?v=O8B-PGnKfo4

7.   1a) After watching the short clip, which emotion do you think is expressed by   *
     the mother when she witness the chinese bun, bao that she made came 'alive'
     out of nowhere?

     Mark only one oval.

     ( ) sadness

     ( ) anger

     ( ) surprise

     ( ) disgust

     ( ) happiness

     ( ) fear

8.   1b) Based on your answer in question 1a, on the scale of 1 to 4, in 1 being the   *
     least and 4 being the most, how intense do you think the emotion is expressed?

     Mark only one oval.

                    1   2   3   4

     least intense ( )   ( )   ( )   ( ) highly intense

5/15/22, 5:25 PM   Effective Portrayal of Emotion in 3D Animated Films.

9. 1c) Based on scene 1, which facial feature of the mother expressed the emotion *
    that you identified in (1a) most significantly from your view?

    Mark only one oval.

    ( ) mouth

    ( ) eye

    ( ) eyebrow

    Scene 2 (Watch before answering the next question).

    http://youtube.com/watch?
    v=WJwXEfJQtmA

10. 2a) After watching the short clip, which emotion do you think is expressed by *
    the mother when she hugged the little Bao?

    Mark only one oval.

    ( ) sadness

    ( ) anger

    ( ) surprised

    ( ) disgust

    ( ) happiness

    ( ) fear

11.   2b) Based on your answer in question 2a, on the scale of 1 to 4, in 1 being the least and 4 being the most, how intense do you think the emotion is expressed?

Mark only one oval.

	1	2	3	4	
least intense	◯	◯	◯	◯	highly intense

12.   2c) Based on scene 2, which facial feature of the mother expressed the emotion that you identified in (2a) most significantly from your view?

Mark only one oval.

◯ mouth

◯ eye

◯ eyebrow

Scene 3 (Watch before answering the next question).

http://youtube.com/watch?v=yZo4B5aJwRk

13.   3a) After watching the short clip, which emotion do you think is expressed by   *
       the mother when she sees Bao leaving with his friends by car?

Mark only one oval.

( ) sadness

( ) anger

( ) surprised

( ) disgust

( ) happiness

( ) fear

14.   3b) Based on your answer in question 3a, on the scale of 1 to 4, in 1 being the   *
       least and 4 being the most, how intense do you think the emotion is
       expressed?

Mark only one oval.

	1	2	3	4	
least intense	( )	( )	( )	( )	highly intense

15.   3c) Based on scene 3, which facial feature of the mother expressed the   *
       emotion that you identified in (3a) most significantly from your view?

Mark only one oval.

( ) mouth

( ) eye

( ) eyebrow

5/15/22, 5:25 PM   Effective Portrayal of Emotion in 3D Animated Films.

Scene 4 (Watch before answering the next question).

http://youtube.com/watch?
v=A5wpB7GYHDE

16.   4a) After watching the short clip, which emotion do you think is expressed by   *
       the mother when she sees Bao bringing back his fiancee home?

       Mark only one oval.

       ◯ sadness

       ◯ anger

       ◯ surprised

       ◯ disgust

       ◯ happiness

       ◯ fear

17.   4b) Based on your answer in question 4a, on the scale of 1 to 4, in 1 being the   *
       least and 4 being the most, how intense do you think the emotion is
       expressed?

       Mark only one oval.

                          1   2   3   4
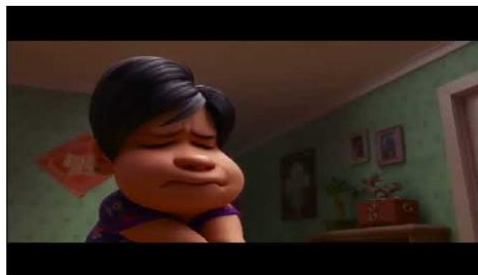
       least intense   ◯   ◯   ◯   ◯   highly intense

18.   4c) Based on scene 4, which facial feature of the mother expressed the   *
      emotion that you identified in (4a) most significantly from your view?

Mark only one oval.

( ) mouth

( ) eye

( ) eyebrow

Scene 5 (Watch before answering the next question).

http://youtube.com/watch?
v=FSjNWMqpwSA

19.   5a) After watching the short clip, which emotion do you think is expressed by   *
      the mother when she reacts by pulling Bao to stop him from leaving with his
      fiancee?

Mark only one oval.

( ) sadness

( ) anger

( ) surprised

( ) disgust

( ) happiness

( ) fear

Appendix 2: Online Questionnaire on Audience Preference of Aspects that Influences Emotional Portrayal in animated films.

5/15/22, 5:25 PM   Effective Portrayal of Emotion in 3D Animated Films.

Skip to section 7 (Thank you for your Participation!)

Emotionally Influenced by animation.

24.   2) If yes, please describe your experience or reason on why you get influenced *
       emotionally or connected with the character or the story when watching
       animation.

25.   3) What are often the main factor(s) that allows you to resonate with the   *
       emotions expressed by the character or the story itself? In your own
       preferences, rank the aspects from the most to least by number (1st to 5th),
       1st being the most influential, and 5th being the least influential.

       Mark only one oval per row.

	1st	2nd	3rd	4th	5th
Facial Expressions	◯	◯	◯	◯	◯
Body Language	◯	◯	◯	◯	◯
Colour Scheme	◯	◯	◯	◯	◯
Background Music	◯	◯	◯	◯	◯
Story Plot	◯	◯	◯	◯	◯

Appendix 3: Email Interview Question Design

Email Interview with Animation Specialists.

Dear animators and specialists, my name is Chan Huei Lian and I am a Bachelor of Design (Hons) in Creative Media student (Major in Animation) from Taylor's University and I am currently taking Design Research Methodology which requires me to conduct a research about my chosen topic : The Effective Portrayal of Emotion in 3D Animated Films.

Below are questions to the topic of the research. Kindly answer the questions as completely as possible. Your participation in this interview means a lot to me.

*Required

1.   1) In your opinion, why is it important to portray emotion effectively in creating   *
     an animated film?

2.   2) How will the portrayal of emotion influence the building of emotional   *
     attachment between the audience and the animated film?

3.   3) In your opinion, what are the important aspects that are crucial to influence   *
     the effectiveness and accurateness of emotion portrayal in animated film?

4.   4) From your perspective, what are the challenges faced among animators,   *
     especially freshly graduated animators in effective emotion portrayal in
     animated film?

5.   5) What would you suggest or recommend to young animators out there in   *
     improving on getting better at portraying emotions accurately in their
     animations?

Appendix 4: Interviewee Question 3 response.

3) In your opinion, what are the important aspects that are crucial to influence the effectiveness and accurateness of emotion portrayal in animated film?

1 response

Facial expression is obviously a big importance in terms of portraying emotion. What the character is exhibiting allows the audience to feel. Having more slanted eyebrows can create anger in a character that can build fear to the audience or the seriousness of the situation. Having the pupils dilate or constrict can portray whether the character admires or detests one another which sends information to the audience of the character's interest. However, facial expression isn't the only aspect that are crucial in portraying emotion effectively. The right music can transport an audience into mirroring the emotion even further. The right beat or rhythm can sway the audience into believing they're in love, or they're in trouble, or even as simple as being content. Another important aspect would be body language. A simple shrug can emit so many emotions, sending information to the audience that the character is feeling sluggish or upset. A slight tilt of the chin upward can portray that the character is proud and strong. These elements combined can drive the audience into the direction the director wants them to feel.

Appendix 5: Paper Review for KREATE 2022.

Reviewer #1: Prof Dr Takashi Ohta, Tokyo University of Technology

1. Paper Title: An Overview Understanding of Character's Emotion in 3D Animated Films

(1) As the author wrote in conclusion, the research does not seem specific to 3D animation. If so, it would be better to describe this work as a survey of characters 'emotions in animation works by observing 3D animation as examples.

(2) The research will be more persuasive if you survey multiple character face expressions from different contents.

(3) You have to mention each figure in the main text. Explaining it in the caption is insufficient and does not consolidate with the manner of academic writing.

(4) Better (must) to put the questionnaire's results in the main text, as an independent section, before the section for the findings and discussion.

The Preliminary Findings of UI/UX Design for the User Engagement of Food Delivery Applications in Malaysia

Lew, Se Win[1]; Saad, Noorhayati[2]

The Design School, Faculty of Innovation and Technology, Taylor's University

sewin.lew@sd.taylors.edu.my; noorhayati.saad@taylors.edu.my

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09 Sep. 2022

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thedesignschool.taylors.edu.my/kreate

Abstract *The market for food delivery applications in Malaysia has rapidly expanded as they allow users to receive food more conveniently. User engagement is essential to the long-term survival of food delivery applications in today's market. Hence, this study will reveal the role of UI/UX design in engaging users in food delivery applications (FDAs) because there is still a lack of user engagement in the UI/UX design of FDAs in Malaysia. Meanwhile, the research will examine whether UI/UX design improves interactions between FDAs. Four food delivery applications in Malaysia, Grab, Foodpanda, Pop Meals, and EASI, were chosen for this research. Nonetheless, this shows a gap in the study because Pop Meals only serves meals from its restaurant while others operate with various restaurants. Mixed methods are used in this research, with a questionnaire for quantitative and observational studies for qualitative methods. Thus, a few UI/UX design essentials have been discussed to study user engagement in UI/UX designs, a few UI/UX design essentials, such as ease of use, clarity, efficiency, conciseness, consistency, and attractiveness. The results showed that an ideal UI/UX design could increase FDA user engagement, but the popularity of FDAs is likewise essential.*

Key words

UI/UX Design, user engagement, public awareness, food delivery applications

Introduction

People nowadays cannot live without their mobile phones since they serve an important role in making our lives easier, with applications being the essential component in allowing us to customize our phones. Food delivery applications (FDAs) are becoming increasingly popular as we move into the mobile commerce era. According to Jamin et al. (2021), the use of mobile devices has resulted in a great deal of innovation and the development of mobile applications such as FDAs. The imposition of lockdown following the pandemic also spurred the growth of food delivery applications in Malaysia. Therefore, to sustain in the competitive market, user engagement plays a vital role because it assesses whether users find value in the product or service. As the FDAs industry grows, multiple UI/UX design problems are spotted in Malaysia's food delivery platforms as more and more developers are joining this market without taking the design part seriously. As a result, the researcher would like to find out the influence of UI/UX design with their essentials on the user engagement of FDAs. In this study, four of Malaysia's food delivery applications are chosen to be examined, which include Grab, Foodpanda, Pop Meals and EASI.

Problem Statement

Demand for delivery orders has risen 30 percent in Malaysia, especially after the movement control order (MCO) (Bernama, 2020). With that, food delivery applications (FDAs) are growing dramatically because more and more people use them to buy food. In this case, UI/UX design will play a key role in improving user satisfaction and engagement with certain FDAs. After that, it will cause an increase in the number of users towards specific FDAs (Dharti, 2019).

In comparison to the pre-internet and e-commerce era, most consumers have a greater chance to switch brands or discontinue using FDAs than ever before (Swadsri, 2018). Nonetheless, it is proven that user engagement on FDAs is not significantly determined by user satisfaction but by trust, perceived task-technology fit, social influence, as well as performance expectancy (Zhao and Bacon, 2020). The current issue is not how to expand by gaining new users but how to keep existing users satisfied with the FDAs and services.

As the demand increases, the service provider will struggle to focus on the quality of services, including the UI/UX design of FDAs to improve user engagement. Such issues will continuously decrease user engagement and demand for FDAs in the long run (Jamin et al., 2021).

As food delivery platforms become more popular, the well-designed UI/UX will aid FDAs in attracting and maintaining users' attention. People will consider more appealing designs to be more intuitive than those considered less aesthetically pleasing. Therefore, the primary purpose of this research is to study the role of UI/UX design in improving the interaction between FDAs (Grab, FoodPanda, Pop Meals and EASI) and their users, as well as the importance of UI/UX design in assisting FDAs to maintain competitiveness.as well as the importance of UI/UX design in assisting FDAs to maintain competitiveness.

Methodology

The objective of this research is to study the role of UI/UX design in improving the interaction between FDAs as well as to help FDAs to maintain competitiveness. A mixed method is implemented in the research, which includes a questionnaire and observational studies. The questionnaire is a quantitative method, and the observational study is a qualitative method.

A survey questionnaire was chosen as the first method. The five Likert Scale was used to study the essentials of UI/UX design from the four selected food delivery applications and the user engagement with UI/UX design for food delivery applications. A Google Form was used as the instrument to collect responses from participants because it can be provided online, and participants can answer the questionnaire following their availability. The questionnaire was open to Malaysians of all age groups to answer. There were a total of 16 questions in this questionnaire. The first part of the questionnaire was the demographic study which was to gain a better understanding of the respondents' backgrounds. The next question was for eligibility screening, which was used to confirm whether the respondent used a food delivery application. Users of food delivery applications were directed to another part with two questions to determine their familiarity with food delivery applications. The main section will be followed by four questions and six sub-questions in which respondents will be asked about the UI/UX design of Grab, Foodpanda, Pop Meals, and EASI based on design keywords. This questionnaire used phrases like easy-to-use, straightforward navigation, and efficient to rate UX design essentials. Keywords such as concise, consistent, and attractive were used to evaluate the UI design of food delivery applications. The final section addressed user engagement in UI/UX design issues for food delivery applications designed to answer research questions. As part of this questionnaire instrument, an open-ended question was asked to assess what improvements may be performed for existing food delivery applications in Malaysia.
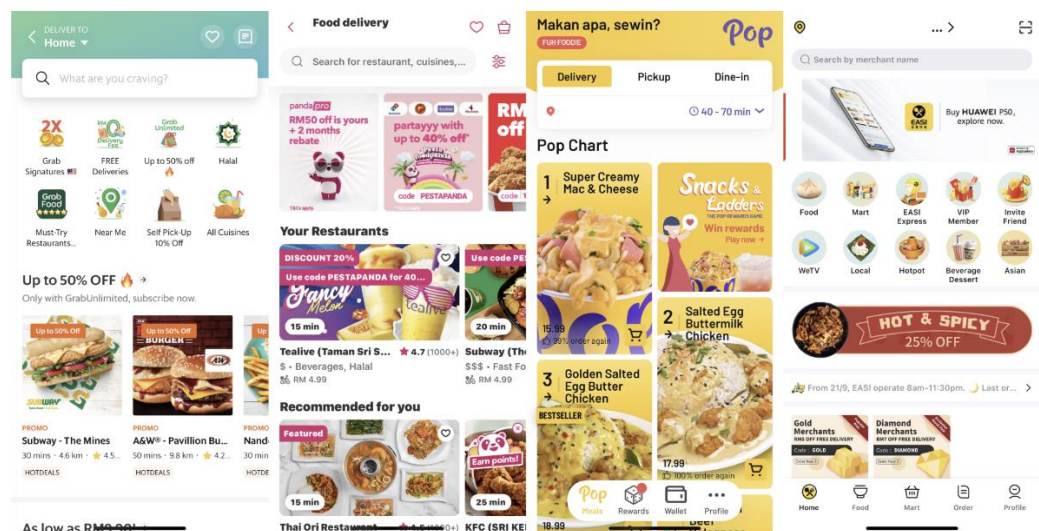
Figure 1 The interface screenshots of FDAs, from left to right (Grab, Foodpanda, Pop Meals and EASI)

Subsequently, observational studies were carried out in order to determine the features utilized in UI/UX design to support food delivery applications in staying competitive. Individual observation and analysis of food delivery applications were used in the studies. The latest version of Grab (version 5.177.300), Foodpanda (version 21.21.0), Pop Meals (version 64.1), and EASI (version 2.7.1) mobile applications were also used for this research. Figure 1 shows screenshots of the interfaces of the FDAs that have been chosen. The researcher will be the prime involved party in the observational studies. The user flow of each application to place an order was first reviewed, beginning with the home page and onto the menu and cart using the researcher's mobile device. The UI/UX design of food delivery applications was then evaluated in observational studies using various keywords. The data acquired using this method was scored using the 5-Likert scale for the various aspects of UI/UX design for food delivery applications.

Findings and Discussion

Grab's UI/UX design as a food delivery application regularly outperforms other food delivery applications. From the quantitative finding (appendix 2), Grab is the most frequently used FDAs, which means it has the highest user engagement. According to Kumar et al. (2021), the app design would encourage users to share and engage with the app. Hence, the following will discuss the three user experience (UX) factors and three user interface (UI) factors that will influence the user engagement of FDAs.

Starting with the UX design of food delivery applications, Grab outperforms the other three in quantitative and qualitative approaches for the UX design essentials of ease of use (appendix 3). Following that, Grab, and Pop Meals have more straightforward navigation compared to Foodpanda and EASI (appendix 4). However, by comparing them, the user interactions of the Pop Meals app are much lesser than Grab, following the findings from the quantitative study shown in figure 2. The researcher believes this is because Pop Meals is less popular than Grab. Grab also has the highest popularity because the number of users accessing Grab is the highest, with 92.6 % of 81 respondents who used FDAs and used Grab previously, only followed by Foodpanda (75.3%), EASI (12.3%), and Pop Meals (11.1 %), as shown in figure 2.
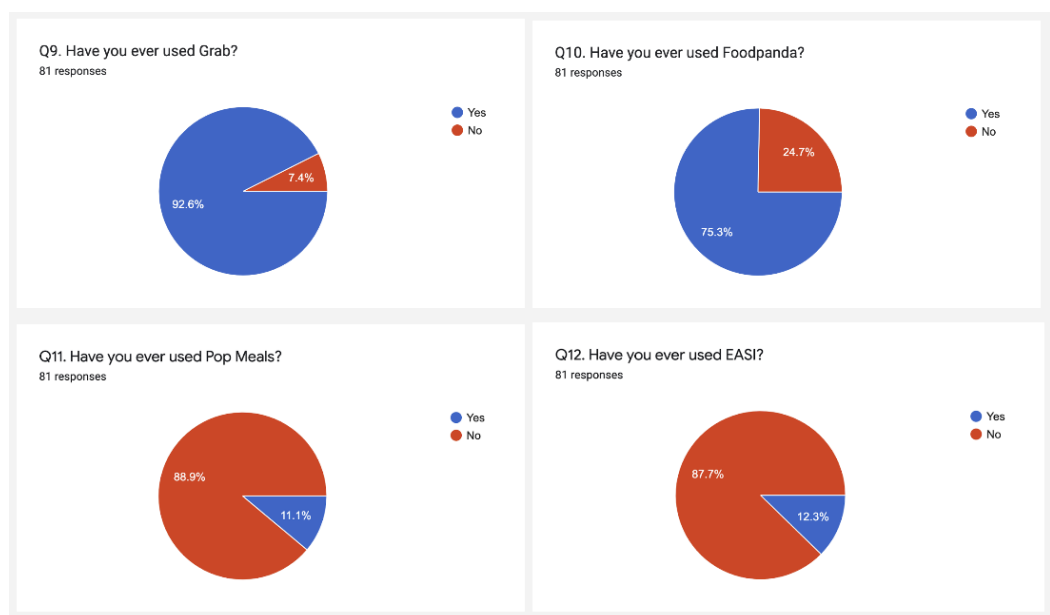
Figure 2 Pie charts show the respondents' experience with Grab, Foodpanda, Pop Meals and EASI

Besides, the clarity of Grab and Foodpanda scored higher compared to Pop Meals and EASI in the qualitative study (figure 3). Following that, Grab is the most efficient compared to other FDAs (appendix 5). This finding is also aligned with the result shown in the qualitative study (figure 3), in which Grab has the fastest responsiveness.
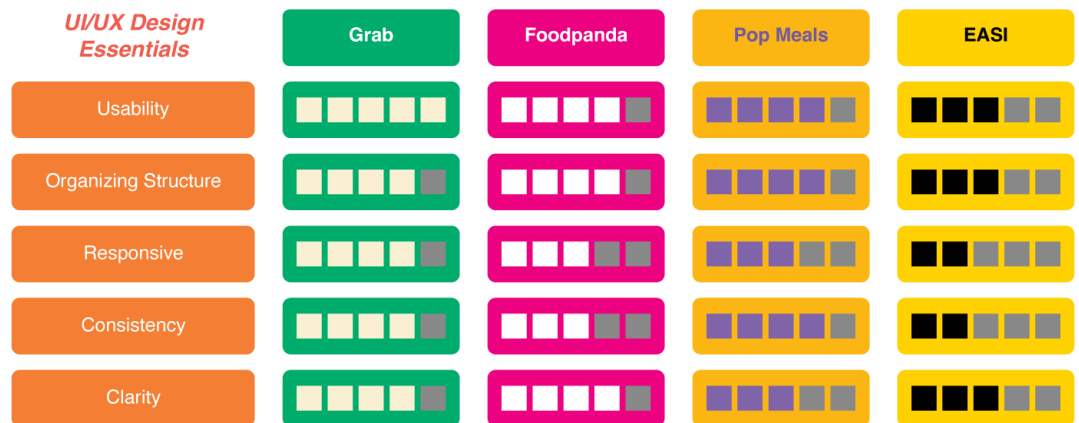

Figure 3 A summary of FDAs' ratings for UI/UX design essentials in the qualitative study

Moving on to the UI design essentials, Pop Meals has the highest scores in interface conciseness based on the quantitative method results (appendix 6). Grab has an overall high score due to its straightforward interface design, followed by Foodpanda and EASI. The following essential would be consistency. If consistency is achieved, the application will become more familiar and dependable. The results of both methods are the same, as Grab and Pop Meal are more consistent than Foodpanda and EASI (appendix 7 and figure 3). Moreover, the quantitative study demonstrates that Pop Meals' visual elements are the most appealing compared to other FDAs (appendix 8). Overall, quantitative and qualitative study on UI/UX design essentials shows that Grab's UI/UX design outperforms the other three FDAs, and Grab is the market's strongest competitor.

According to Kumar et al. (2021), the key effect of increasing user engagement with food delivery applications is the intention of consumers to return to food delivery services. The past enjoyable experience with the same applications would motivate users to revisit the FDAs. Based on the quantitative findings shown in appendix 9, poor experience is the top reason a user does not use or engage with an FDA, while poor interface design received the third most votes. With this in mind, it is observed that an FDA should have a good UI/UX design in order to gain user engagement.

Conclusion

In conclusion, a well-designed UI/UX can improve the interaction between FDAs and their users. The findings of this study also show that an ideal UI/UX design can increase user engagement as well as assist the FDAs in maintaining competitiveness in the current market. In this study, a few UI/UX design essentials have been deliberated to examine the user engagement in UI/UX designs of the four chosen food delivery applications: Grab, Foodpanda, Pop Meals and EASI. For user experience design, the essentials are ease of use, clarity, and efficiency, whereas, for user interface design, the essentials include conciseness, consistency, and attractiveness.

Overall, Grab has the highest rating, EASI has the lowest rating, Foodpanda and Pop Meals have almost the same ratings as Grab and EASI. One of the reasons Grab got the highest rating is its highest usability, where users can get familiar with it quickly. Grab can be

concluded that it is a mature developed FDA, and it also has its own loyal users that engage with it. EASI has the lowest rating among the four FDAs due to its low responsiveness and inconsistency. It took the longest time to respond as compared to Grab, Foodpanda and Pop Meals. According to the quantitative method data, EASI has lower user engagement than Grab and Foodpanda. As a result, EASI has low user engagement and poor UI/UX designs. As for Foodpanda, the performances are mostly average. Based on the findings, it is also proved that Foodpanda has higher user engagement than Pop Meals and EASI, but in terms of UI/UX designs, Foodpanda scores lower compared to Pop Meals but higher than EASI. Moving on to Pop Meals, it is a surprising finding when the scores on UI/UX design of Pop Meals perform well, but the user engagement is low. The visual elements in Pop Meals have outstanding scores as they are consistent, appealing and easy to understand.

In the highly competitive market of food delivery applications, the purpose of this research is to get a better understanding of the role of UI/UX design in FDAs as well as FDA user engagement in today's competitive market. This research would act as a bridge for designers and users as it might help app designers learn more about user preferences and UI/UX design essentials to prevent poor designs while redesigning an old application or creating a whole new one in the future.

However, there are also limitations to this research. The most significant gap in this study is the choices of food delivery applications available in Malaysia. In contrast to the three food delivery applications, only Pop Meals has its own restaurant serving customers' meals. Besides, this study lacks the examination of the feelings of users. The feelings of an individual play an essential role in the topic of user engagement and user experience.

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Appendices

Age of Respondents	Frequency (n)	Percentage (%)
13 to 18	10	10
19 to 24	42	42
25 to 30	23	23
31 to 36	8	8
37 to 42	2	2
43 to 48	7	7
49 to 50	4	4

Employment Status	Frequency (n)	Percentage (%)
Employed full-time	29	29
Employed part-time	1	1
Self-employed	17	17
Unemployed	3	3
Student	44	44
Retired	4	4
Contract	1	1
Housewife	1	1

Current Living Place	Frequency (n)	Percentage (%)
Selangor	59	59
Kuala Lumpur	30	30
Johor	1	1
Putrajaya	1	1
Negeri Sembilan	1	1
Penang	5	5
Perak	2	2
Kedah	1	1

Appendix 1 Table shows the demographic studies of respondents

Q8. Which food delivery applications do you use the MOST in Malaysia?

81 responses
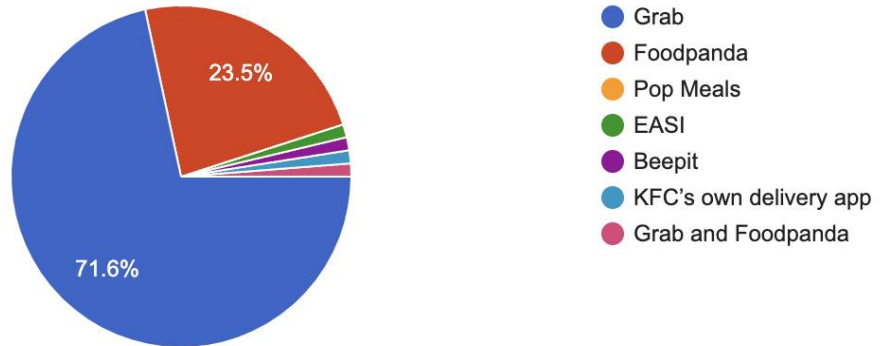
Appendix 2 Pie chart shows that Grab is the most frequent used FDA in Malaysia by the respondents

Do you think the FDA is easy to use?
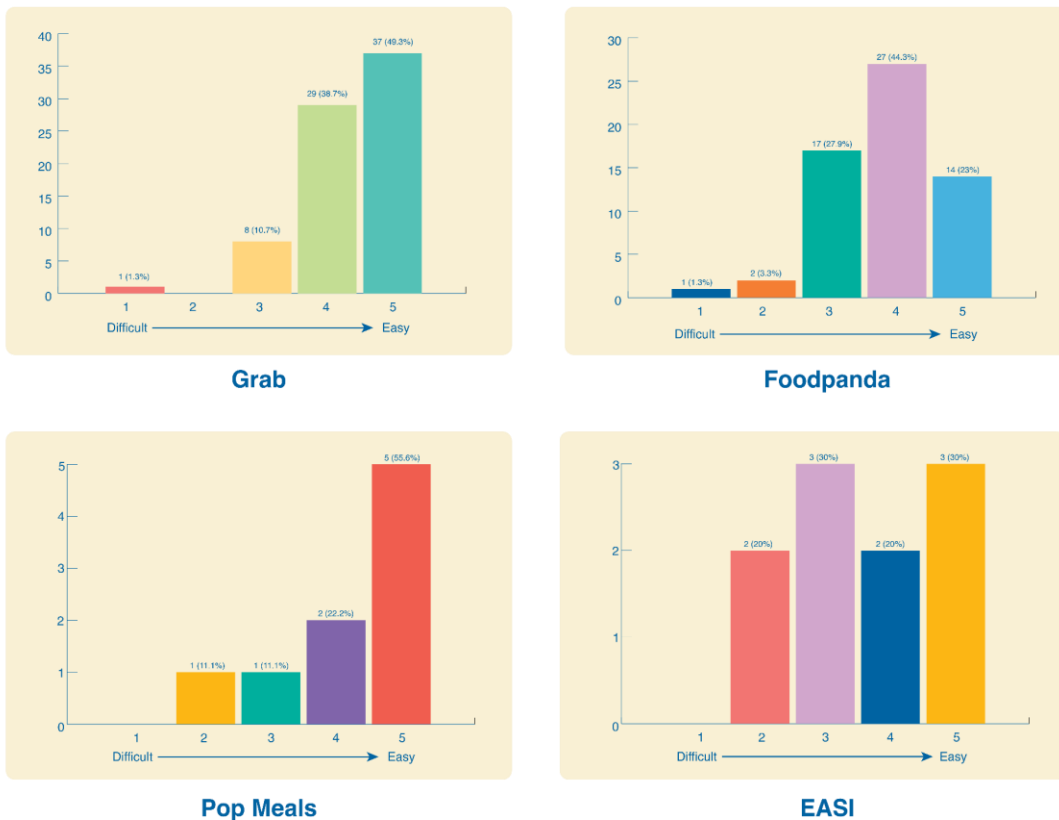
Appendix 3 Bar charts show the ease of use of FDAs from left to right, top to bottom (Grab, Foodpanda, Pop Meals, EASI)
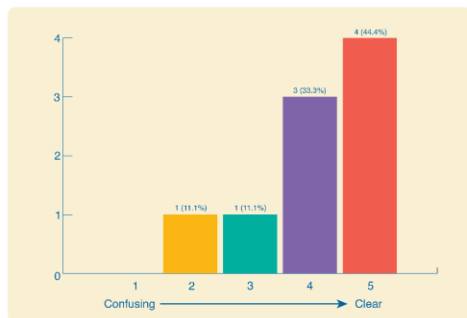
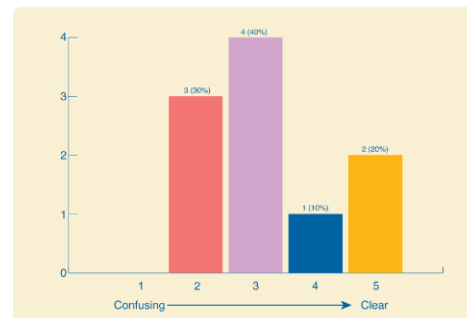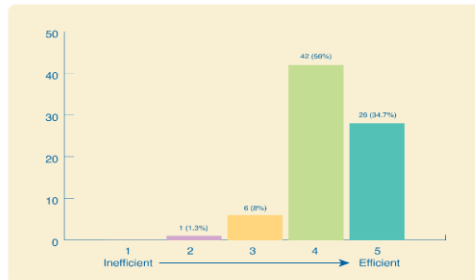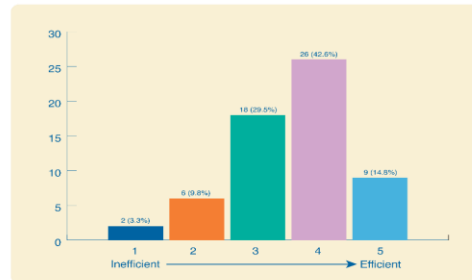**Do you think the navigation of the FDA is clear?**
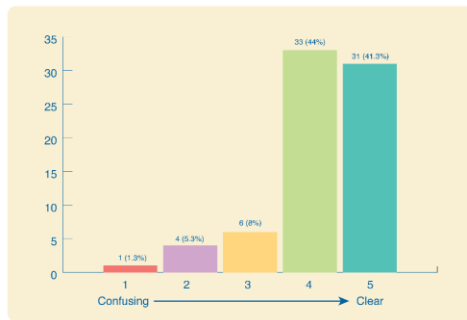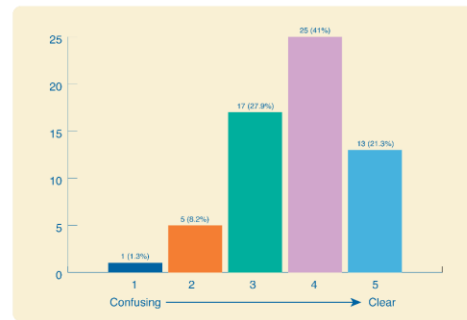
Appendix 4 Bar charts show the clarity of navigation of FDAs from left to right, top to bottom (Grab, Foodpanda, Pop Meals, EASI)

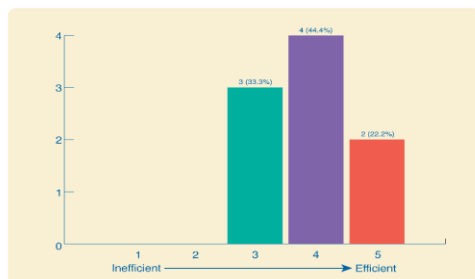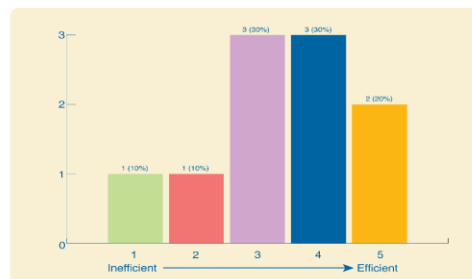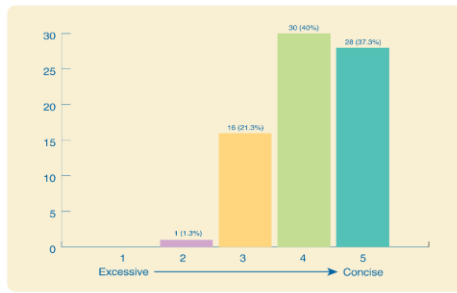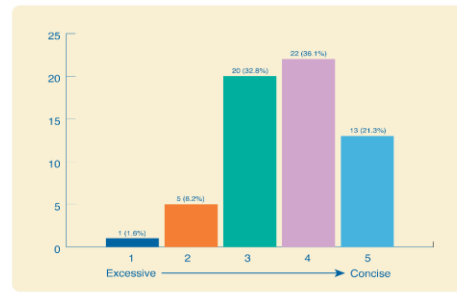**Do you think the FDA is efficient?**

Appendix 5 Bar charts show the efficiency of FDAs from left to right, top to bottom (Grab, Foodpanda, Pop Meals, EASI)

Do you think the interface design of the FDA is concise?
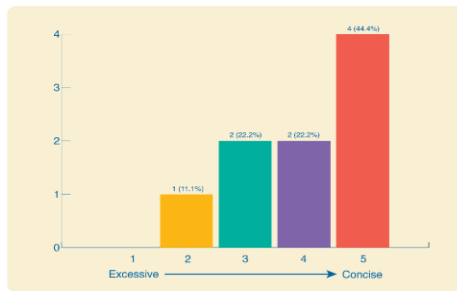
Appendix 6 Bar charts show the conciseness of FDAs from left to right, top to bottom (Grab, Foodpanda, Pop Meals, EASI)

Do you think the interface design of the FDA is consistent?
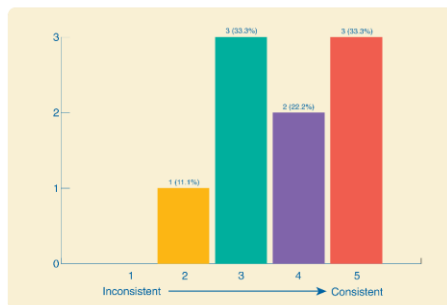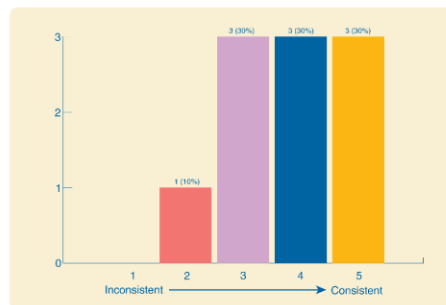
Appendix 7 Bar charts show the consistency of FDAs from left to right, top to bottom (Grab, Foodpanda, Pop Meals, EASI)

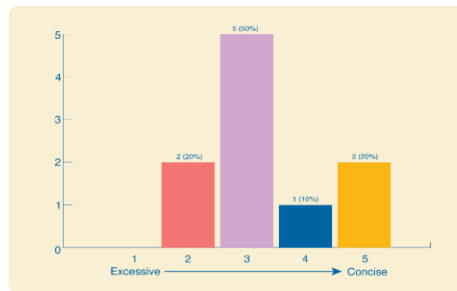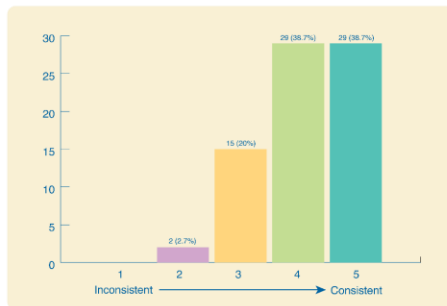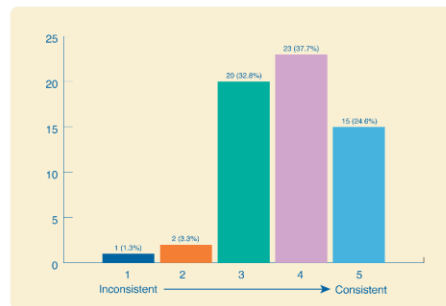**Do you think the visual elements used the FDA is attractive?**

Grab

Foodpanda
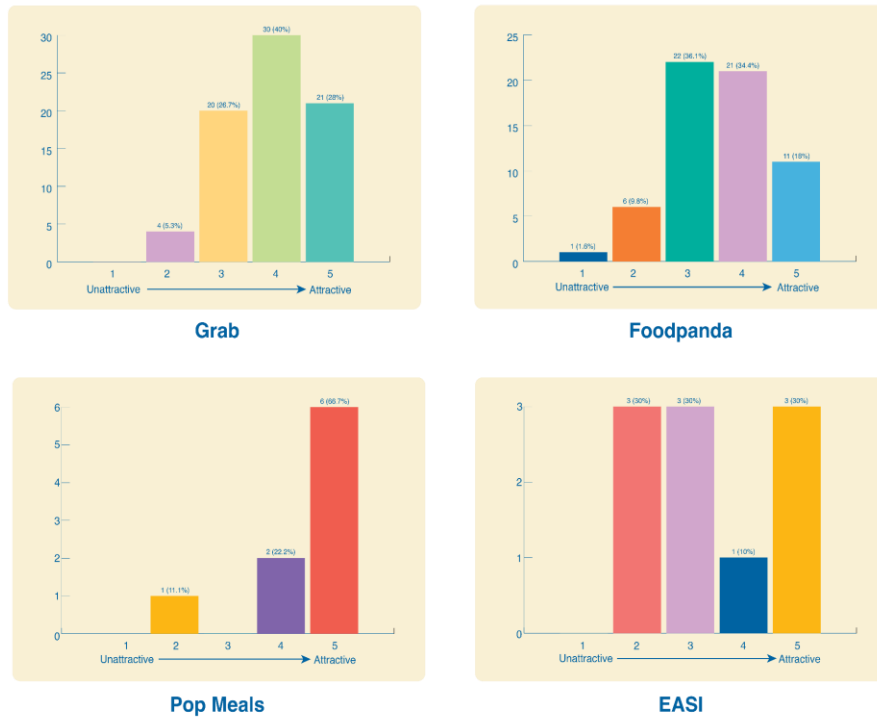
Pop Meals

EASI

Appendix 8 Bar charts show the attractiveness of visual elements used in FDAs from left to right, top to bottom (Grab, Foodpanda, Pop Meals, EASI)

Q15. What do you believe is the primary reason why a person choose not to use or engage with a food delivery application?
81 responses

- Poor experience
- Poor interface design
- Another app consists of similar features and functions
- Expensive
- Food options and lousy UI/UX design
- Lack of experience
- food delivery poor service, not related to apps
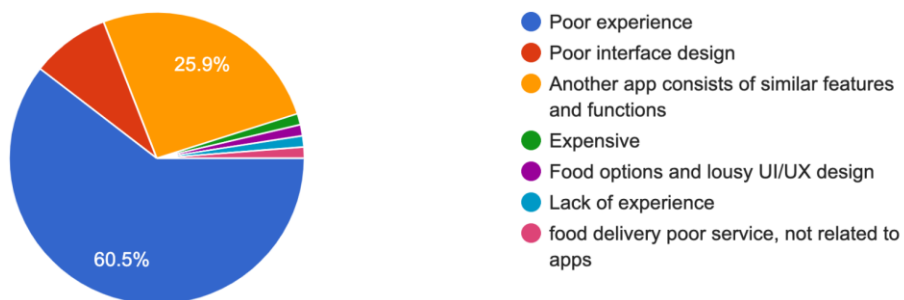
Appendix 9 Pie chart shows the reasons for not engaging with a FDA

Grab
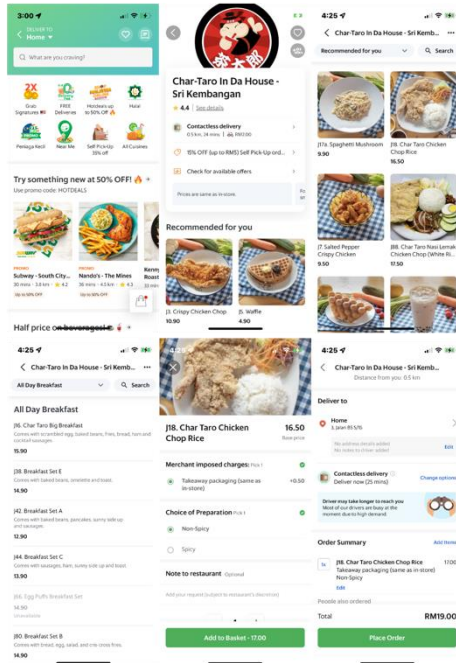
Foodpanda

Pop Meals

EASI

Appendix 10 Screenshots of FDA's interfaces from left to right, top to bottom (Grab, Foodpanda, Pop Meals, EASI)

Initial Findings of Dark Pattern Expulsion
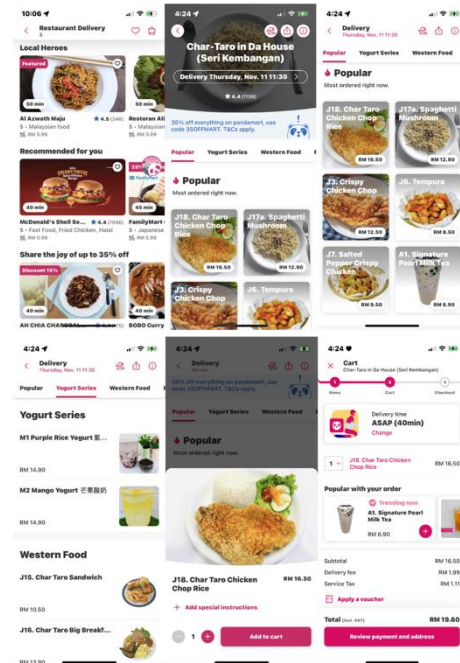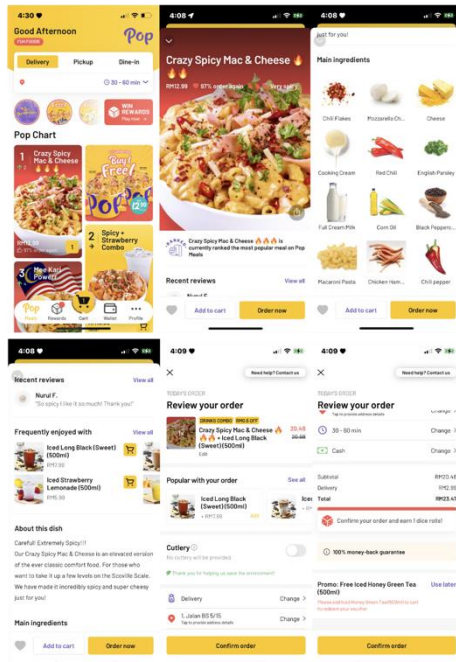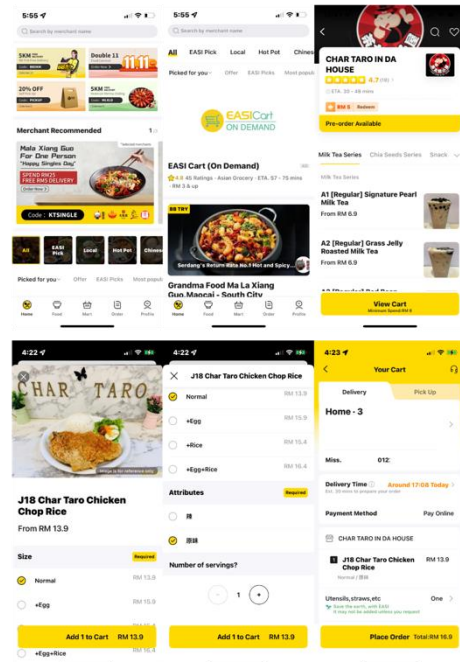
Lim, Jia Sheng[1]; Saad, Noorhayati[2]

The Design School, Faculty of Innovation and Technology, Taylor's University

jiasheng.lim02@sd.taylors.edu.my;
noorhayati.saad@taylors.edu.my

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09 Sep. 2022

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thedesignschool.taylors.edu.my/kreate

Abstract *Dark patterns exploit affordances found in User Interfaces (UIs) to manipulate human behaviour into doing things they otherwise would not have. Such as making the more emphasised option agree to a privacy-invasive action or adding items to a user's cart as they move through the checkout process. These behaviours, whilst not technically illegal, diminish the experience of using digital platforms and should be the target of expulsion to the highest degree as our lives increasingly revolve around the digital world. This article thus attempts to find a way to stop dark patterns' application in the digital world, conducting a survey and focus group on achieving such an aim. Finally, enough information and knowledge were provided to get a few conclusions. These include the first: dark patterns affect people, and most people not only understand that fact once educated, but they also agree that it is malicious. Besides that, a second conclusion, too: a solution to this problem may be achieved; however, it would be complicated, and cross-field ideas may be the ones that successfully pull off dark pattern expulsion.*

Key words *User interface, digital world, expulsion, privacy invasion*

Introduction

Almost all walks of life are consumers of digital user interfaces. These UIs act as the layer of abstraction between the complex inner workings of computing and the simple, common human. In an ideal world, this vector of communication between two said points would form itself into an un-opinionated science. However, with both its users and its creators being of humankind, biases are constantly introduced according to the affordances of a human (Tiab and Hornbæk, 2016). This may be done unintentionally, helpfully, or maliciously, with the latter being the main issue requiring research.

Consumers are lucrative, but unfortunately, we have free will for some. It forces corporations to produce quality products and services to earn over the consumer. However, when a bad manipulator finds their way to skirt around that requirement, it tips the scale and degrades the balance of the free market. This coercion and exploitation of natural human behaviour for private gain should be shunned and expelled. However, such a journey contains its difficulties. This article shall thus attempt to provide initial findings on the challenges to be faced and the solution of expulsion, navigating through the world of education, legislation, and market choice.

Problem Statement

Dark patterns have been described as tricks used in UIs that make users do things they did not mean to (Brignull, 2010). Every successful instance of a dark pattern in line with its ethos will go undetected by the consumer; every ounce of consumer ignorance adds to the government's inaction; every amount earned due to a dark pattern adds to the eagerness of corporations to pressure harder. It is all around us, whether it be going after your privacy or your money, a dinge panorama of unconscious manipulation (Pardes, 2020, Mathur et al., 2021; Luguri and Strahilevitz, 2021). With you and I being the victims of this situation, finding ways to protect ourselves and expulse this madness from the digital world becomes even more of an uphill battle.

Unfortunately, even previous research that looked into this issue seemed to have always fallen short of a successful implementable solution. This includes work in various fields, from law to computing (Luguri and Strahilevitz, 2021; Hausner and Gertz, 2021). This observed chain should thus be broken by some form of drastic, cross-field action, exploiting the power of people against the mad power of design. Where there is hope, this article aims to take advantage of it, to provide a take on how to expulse dark patterns once and for all.
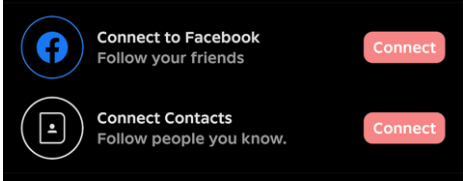
Shop Now! 49 : 35 : 35	**Countdown Timer** Forces the user to make a decision quickly, and possibly rashly.
Connect to Facebook — Follow your friends — Connect / Connect Contacts — Follow people you know. — Connect	**Privacy Zuckering** Gets the user to give up more information about themselves, possibly unknowingly. (Contacts collected will be used to personalise their experience)
Settings (2)	**Visual Interference** Misuses visual cues to persuade the user into performing actions that may otherwise be orthogonal to a user's best interests. (Notification to buy iCloud subscription)

Figure 2.1.1 Examples of dark patterns in the wild.

Methodology

Mixed methods were employed in the research, specifically using the "explanatory research" design philosophy. A one-two hook of a quantitative and then a qualitative research method forms a context where the scope of research is first narrowed, then further investigated, all ensuring preservation of focus (Almalki, 2016).

Survey The first research method in the figurative research soup was the qualitative survey. It enabled the understanding of general users' perception, experience, and acceptance level of current User Interface (UI) design status quos. For an effective survey, some challenges had to be overcome: the need to introduce dark patterns as a concept and the need to reduce the friction of answering. Respondent group selection had to also be intentional, with a demographic most likely to have good English comprehension and prior brushes with dark patterns. The philosophy of being as terse as possible whilst being as descriptive as possible was thus born.

People on the internet, ambiguous of location & age, were thus surveyed with three sections: non-identifying information, an explanation interlude, and the main questions. The personal particulars collected were as little as possible to form correlations with the primary data, whilst the explanation was based on Harry Brignull (2010) taxonomy. Mainly, the questions would touch on current platforms' behaviour and their level of opposition towards dark patterns versus their loyalty to said platforms. In the end, due diligence was done to ensure the integrity and reliability of the survey, according to Creswell 2018.

Focus Group The following method up would be the quantitative focus group. Continuing from the survey enabled the narrowing down of data collected from the study into nuanced takes and answers. The main challenge to be overcome here is the requirement of critical thought and, thus, a deeper understanding of the topic at hand by the participants. The philosophy followed would therefore be a ping-pong briefing and explanation style, where information provided to the participant would be relayed back to ensure both sides had converged on an understanding.

A group of friends and mutuals who took the survey were chosen as participants to ease said challenges, to ensure the conversation style would sway more towards one of open and questioning, with no friction to discuss personal experience. During the session, participants would be shown an instance of three dark patterns, that being "Countdown Timer", "Privacy Zuckering", and "Visual Interference". A range of three to four questions

would then be asked to spark discussion and understand each person's views on the topic. At the end of it all, care was taken to maintain the privacy of all participants, all whilst ensuring minimal loss of nuance and meaning throughout the transcription process. Both questions for the survey and the focus group are attached in Appendix 1 and 2. The answers for each are attached in Appendix 3 and 4.

Findings and Discussion

To start, a few notable findings set the scene. The surveyed group were mostly out of the loop on the concept of dark patterns prior to being involved. However, with some prompting and some education, the ability to identify instances of dark patterns from memory became second nature. With the context set for them, they could conclude that dark patterns affect human behaviour in general and that they valued dark-pattern-less experiences enough that having moved on would be a serious consideration in specific criteria. When further research via the focus group, though, it can be found that their proposed solutions were generally vague and unsatisfactory, even after some help.

A solution then to tie everything together would be one that is clearly defined, takes advantage of the low bar of education to successful dark pattern recognition from memory, as well as weaponise the potential willingness of the people to make a choice and make a change. Proposing such a solution would be split into two phases: education and legislation.

The first education phase would be to create a governmental body to educate consumers on dark patterns. More precisely, solutions to dark patterns, which, whilst often inconceivable by common folk, may be precisely crafted by experts to show what is possible and thus what should be expected. Putting these "genetically-modified" UIs next to ones from the wild should subsequently make their wrinkles much more apparent. Regarding implementation, education may be conveyed through campaigns and government-sponsored advertisements. These would ideally be run on the platforms that the consumers are being actively manipulated on, facilitating fresh impressions.

Other than that, including chunks of this topic in the curriculum taught to schooling children would culminate a new generation growing up to be sceptical-by-default of any producer-benefiting choice that would possibly be against their own interests, such as privacy-compromising or monetarily-draining prompts. After all that, when consumers become aware of the concept of dark patterns and a potential world without them, their appetite for such should increase similarly to the result of "playground design" (Trendacosta, 2014).

With an appetite, the main course would need to commence. This comes in the form of the second legislative phase, where another governmental body, separate from the educating one, is formed to draft and enforce legislation to protect consumers against dark patterns. Here is where the tricky part comes in, as crafting a piece of legislation that stands up to entities with virtually infinite resources will be difficult.

The proposal assumes a hypothetical piece of legislation that is recursively self-protecting and extendible as needed. Then, the separation of concerns comes in to ensure that the body that makes the noise and empowers the public does not hold power to take entities down; the body that holds said power does not need to worry about being silenced and losing the power of the public. As both pillars stand tall, with a supportive public, the digital landscape should look no more distorted from here on out.

Conclusion

In conclusion, UIs are a crucial part of many of our lives, as important as computing in this technological era. The ability to use such a tool in stride, with no worry of persuasion, coercion, or manipulation, should be a given. UIs should not be able to target a victim base

formed mostly of under-educated people on the dark pattern matter. It is even clear that consumers who are newly aware of the topic do not want such a digital environment anymore. Actions need to be taken to resolve this pressing issue of the current times, as the digital world continues to expand into every nook and cranny of a human's belonging.

Whilst dark patterns still run rampant today, there may be avenues via people and government into a world that is different. This, as found above, includes a multifaceted solution that requires the cooperation of many cogs in the system. Unfortunately, this may also mean that getting the initial velocity required to propel it all into motion may be challenging. Not only that, a few assumptions were made, including the hypothetical well-crafted legislation and the fact that the findings from a specifically chosen group would scale to a population.

This segues into potential recommendations for future research building from this article. Firstly, said law above should be clearly defined, perhaps to be one that used a way to identify and restrict dark patterns, independent of their effects; a law that drilled down into what makes a dark pattern dark and acted fast to minimise the issue. Besides that, the law should also ensure that there is an out when users do prefer certain "dark" behaviour, but also recursively make sure that the transaction of asking itself is done in a coercion-free manner.

Other than legislatively, ways should also be found to ensure education is done correctly and not in a way that would enable the dismissal of the main issue at hand. As technology progresses, consideration for even a fully autonomous system to identify and shoot down dark pattern instances in their tracks should also be had. All in all, much research is needed, and any contribution to this field of dark patterns will be of significance, moving the entire digital landscape forward into a nett better experience.

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Appendices

No.	Question	Rationale	Options
1	Age*	To correlate with dark patterns prior knowledge and acceptance. To correlate with traditional retail manipulation knowledge and acceptance. To find possible disproportionately affected demographics.	• Under 18 • 18-24 • 25-34 • 35-44 • 45-54 • 55-64 • Over 64
2	Ethnicity*	To find possible disproportionately affected demographics.	• Caucasian • Chinese • Indian • Indigenous • Malay • Other
3	Primary speaking language*	To identify unfamiliarity with language as a potential aspect of vulnerability to dark patterns.	• English • Malay • Mandarin • Other
4	Primary display language (language used for the UI on their personal devices)*	To identify unfamiliarity with language as a potential aspect of vulnerability to dark patterns. To identify whether applications in certain languages have more obvious usages/translations of dark patterns.	• English • Malay • Mandarin • Other
5	Highest level of, or currently enrolled, formal education*	To correlate with dark patterns education and acceptance.	• No formal education • Middle-school • High-school • Undergraduate • Postgraduate • Other
6	What is your daily average screen time?*	To correlate with prior experiences of instances of dark patterns	• Under 1 hour • 1-2 hours • 3-4 hours • 5-6 hours • 7-8 hours • Over 8 hours

* Required

Table 7.1.1 Non-identifying survey questions.

No.	Question	Rationale	Options
1	Prior to this questionnaire, were you aware of the concept of dark patterns?*	Tests for awareness without additional education.	• Yes, I'm an expert. I have done research, understood its origins, and determined existing instances • Yes, I knew the concept and that it was malicious, but have never really thought much about it • Yes, I knew the concept but I didn't know the term • Yes, I've heard of the concept somewhere, but wasn't quite sure what the concept meant • Yes, I've heard of (only) the term somewhere, but wasn't quite sure what the term and concept meant • No, I had not heard of the concept or term at all
2	How well do you feel like you understand the concept of dark patterns?*	Attempt to extract weighing factor on the analysis of the final data.	• Very well • Well • Average • Not well • Completely confused
3	How does the concept of dark patterns compare to the tactics used by traditional big box stores for attracting customers in terms of maliciousness?*	Attempt to draw a parallel of dark patterns to something pre-existing and well established the participant's mind	• Dark patterns are less malicious than traditional customer persuasion tactics. • Dark patterns are more malicious than traditional customer persuasion tactics. • They are both equally malicious. • They are completely different and cannot be compared.
4	What are a few applications, websites, or platforms you use, which contain dark patterns?	Attempt to bring forth existing memories in the participant's mind and enable them to draw the answers to the next questions from those applications; effectively priming the participants. Tests for perception of commonality.	• [Short answer]
5	In your opinion, does the implementation of dark patterns affect general human behaviour on spending time, money, or attention on the implementer's platform?*	Tests for perception and normalization.	• Yes • Slightly • Not really • Not at all

6	In your experience, has the implementation of dark patterns affected your behaviour on spending time, money, or attention on the implementer's platform?*	Tests for awareness of effects.	• Yes • Slightly • Not really • Not at all
7	Based on the last question, how have you reacted to the effect of dark patterns on your behaviour?	Tests for likelihood of if the participant is actually unaware or actually unaffected by dark patterns. Tests for existing ways users are combating against dark patterns, thus allowing morally correct entities to implement tools/methods and help boost the ways' effectiveness.	• [Short answer]
8	In your opinion, if a platform A came out and denounced the use of dark patterns in the use of their products, would you choose to spend your time, money, or attention on platform A instead of their equally featured competitors?*	Tests for how much the consumer values truthfulness in platforms	• Yes, I would switch immediately regardless of context • Yes, but only if I was already on the edge between platforms • No, it would certainly tempt me but I'd need more incentive to push me over the edge • No, I wouldn't really care for it
9	In your opinion, if a platform B came out and denounced the use of dark patterns in the use of their products, would you choose to spend your time, money, or attention on platform B instead of their more fully featured competitors?*	Tests for how much the consumer values dark-pattern-less platforms	• Yes, I would switch immediately regardless of context • Yes, but only if I was already on the edge between platforms • No, it would certainly tempt me but I'd need more incentive/feature sets to be matched to push me over the edge • No, I wouldn't really care for it
10	What is a particular case of dark pattern implementation, if any, that stands out in your memory, causing you loss of either time, money, or energy?	Tests for the type of dark pattern stick out in a user's mind the most	• [Short answer]

11	What would be the ideal dark pattern-less experience for the scenario described in the previous answer?	Tests for the experience users actually prioritize in UIs	• [Short answer]

* Required

Table 7.1.2 Main survey questions on exposure, perception, and acceptance of dark patterns

Appendix 1 Survey questions
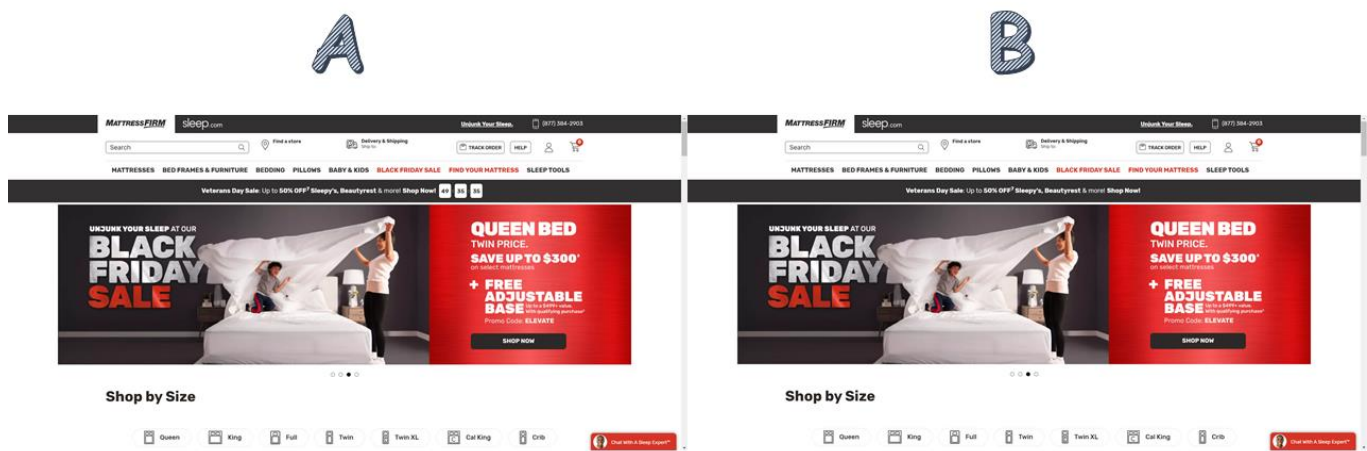
Figure 7.2.1 Left/A — An unedited screenshot of a commerce website; Right/B — the same screenshot with the "countdown timer" dark pattern removed

No.	Question	Rationale
1	Comparing both figures, which one are you more likely to purchase from?	Tests for effectiveness.
2	How regularly, if any, have you seen this pattern out in the wild before?	Tests for commonality.
3	Do you feel that you, the consumer, are able to make a rational buying decision when faced with this pressure?	Attempt to extract conversation about the consequences of dark patterns.
4	Describe an alternative, if any, to this dark pattern.	Attempt to extract conversation on lighter patterns that are acceptable to the participants.

Table 7.2.1 Focus group questions for the "Countdown Timer" dark pattern

Figure 7.2.2 Left/A — An unedited screenshot of the "Discover people" screen in a popular social media app; Right/B — the same screenshot with the "Privacy Zuckering" dark pattern removed

No.	Question	Rationale
1	Do you find Figure A problematic when compared to Figure B?	Tests for acceptance/ignorance on the issue of online privacy.
2	Would you have given up the extra personal information if presented with Figure A over Figure B?	Tests for usual privacy alertness and importance of privacy in general to the participant.
3	Describe an alternative, if any, to this dark pattern.	Attempt to extract conversation on lighter patterns that are acceptable to the participants.

Table 7.2.2 Focus group questions for the "Privacy Zuckering" dark pattern

Figure 7.2.3 Left/A — An unedited screenshot of the home screen of a popular mobile operating system; Right/B — the same screenshot with the "Visual Interference" dark pattern removed

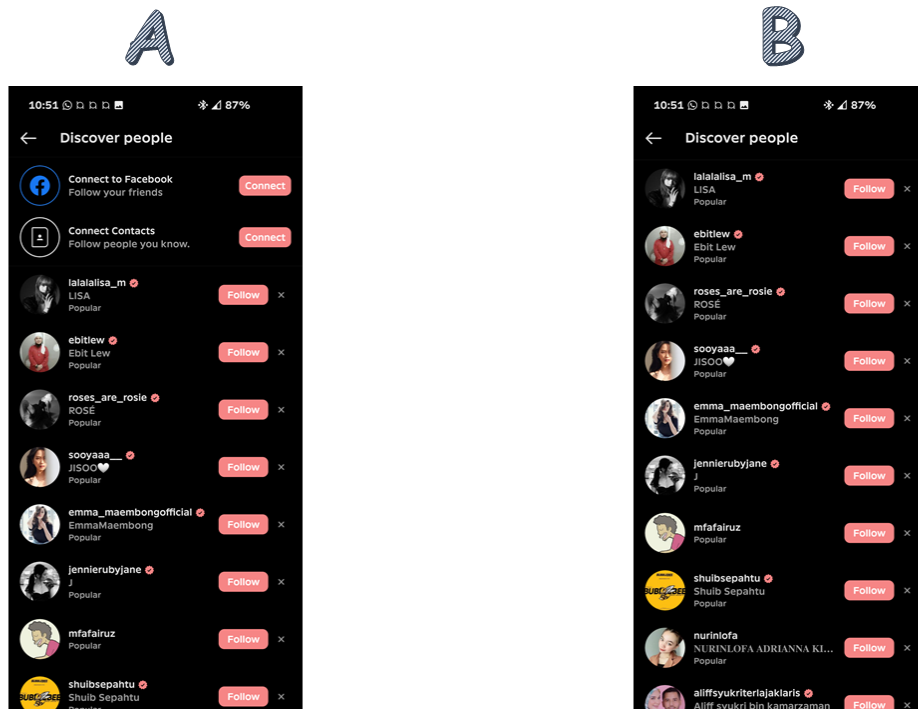| No.	Question	Rationale
1	Have you experienced instances where notification dots were used to force you into acknowledging a part of a piece of software?	Tests for commonality and awareness.
2	On a scale of 1-10, how annoying is it?	Tests for perception.
3	Do you usually cave in and click onto it to dismiss it anyways?	Tests for acceptance.
4	Describe an alternative, if any, to this dark pattern.	Attempt to extract conversation on lighter patterns that are acceptable to the participants.

Table 7.2.3 Focus group questions for the "Visual Interference" dark pattern

Appendix 2 Focus group questions
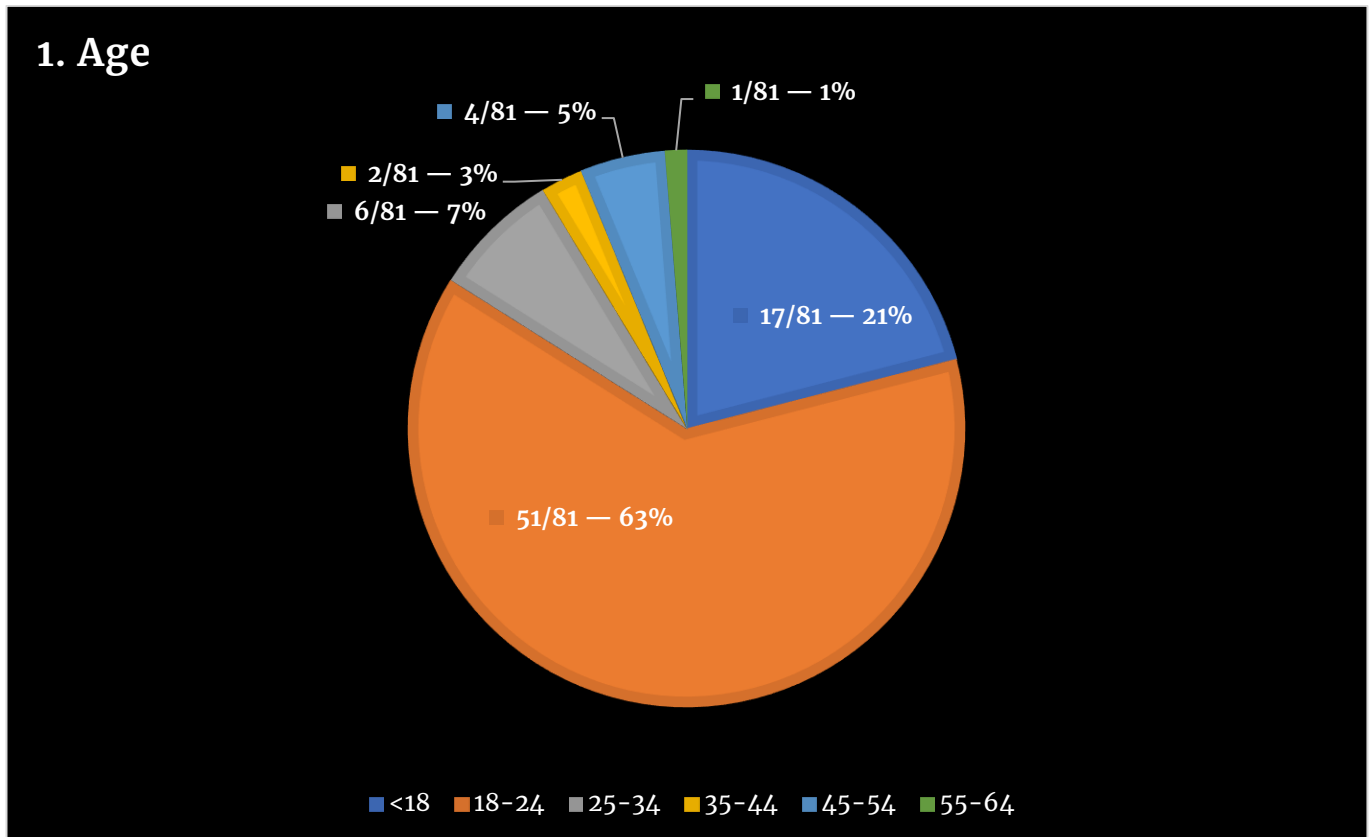
Figure 7.3.1 Age amongst survey respondents

Figure 7.3.2 Ethnicity amongst respondents

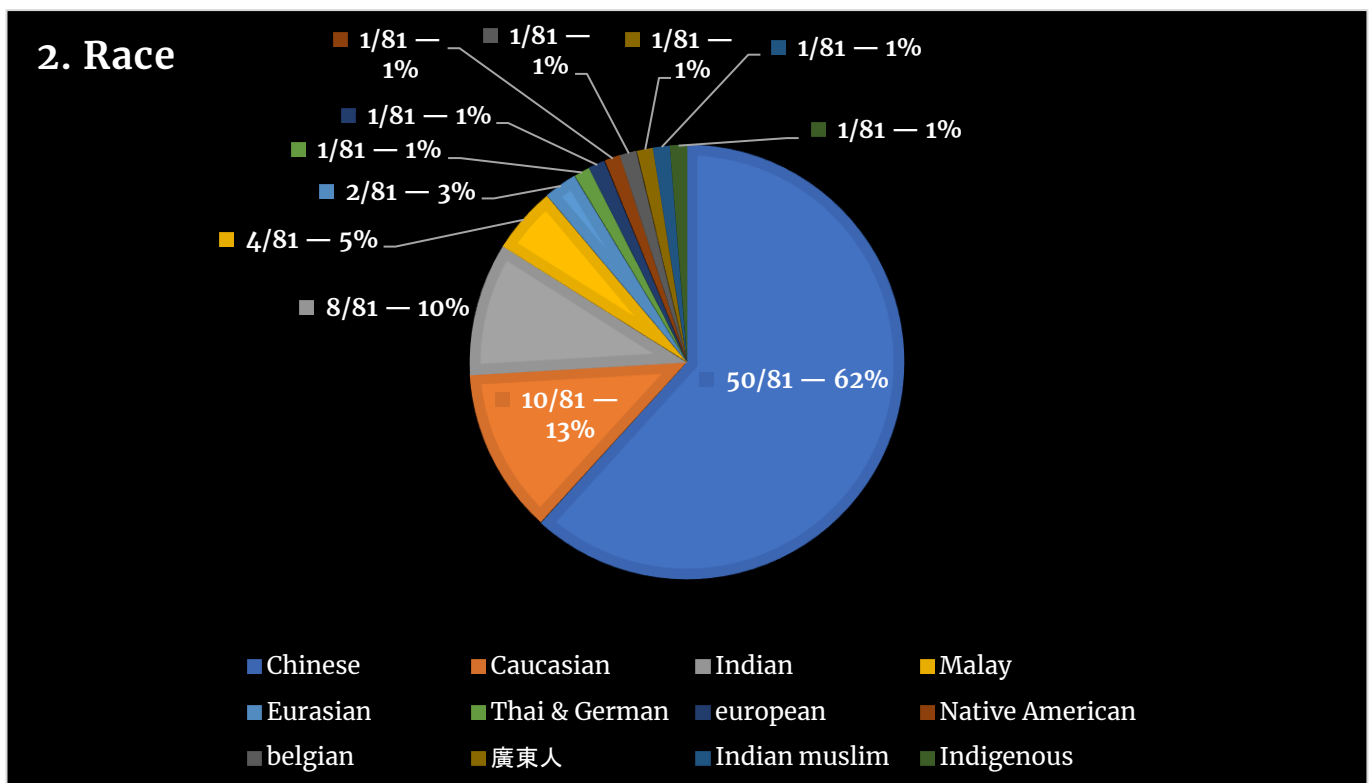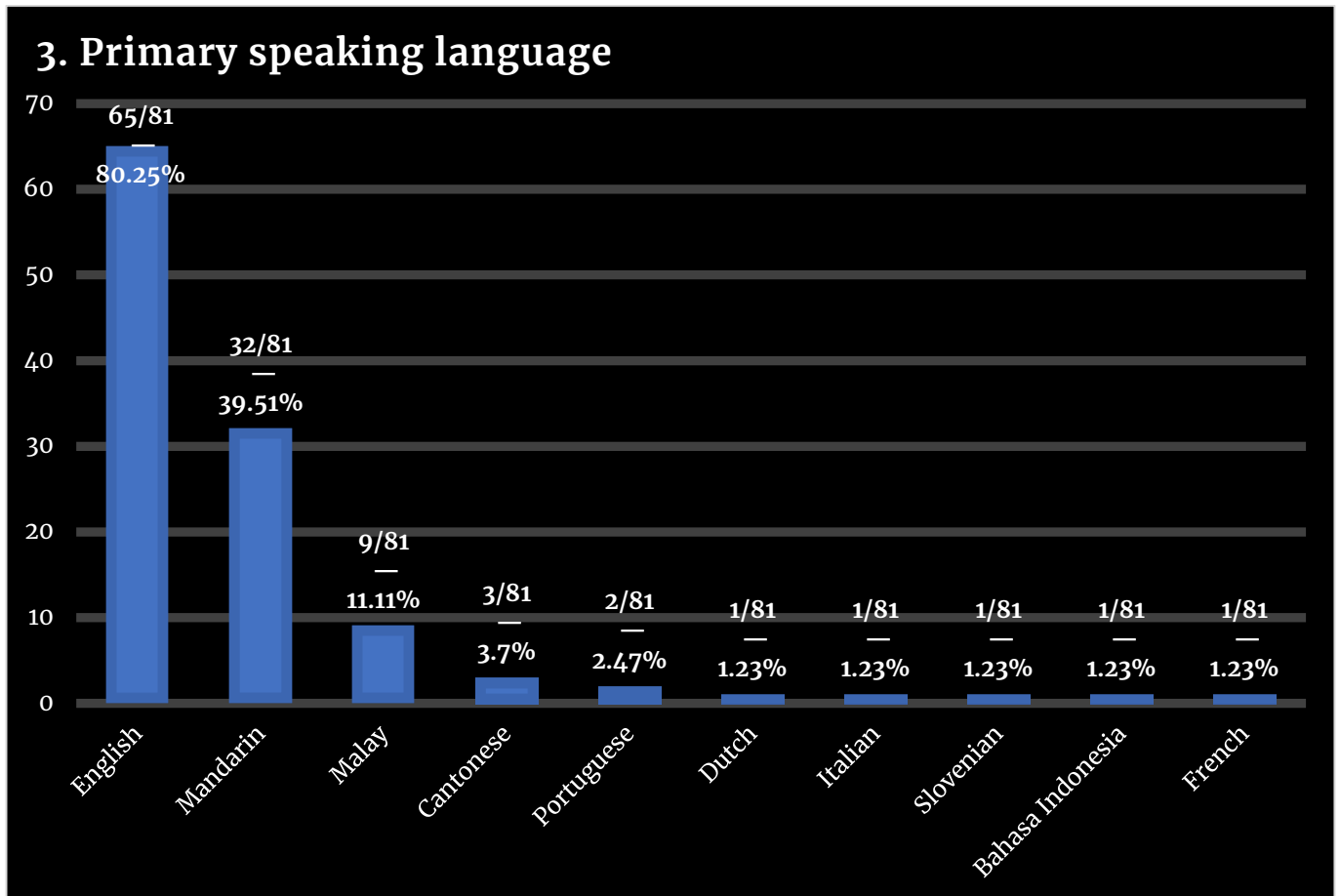*Figure 7.3.3 Primary speaking language amongst respondents*
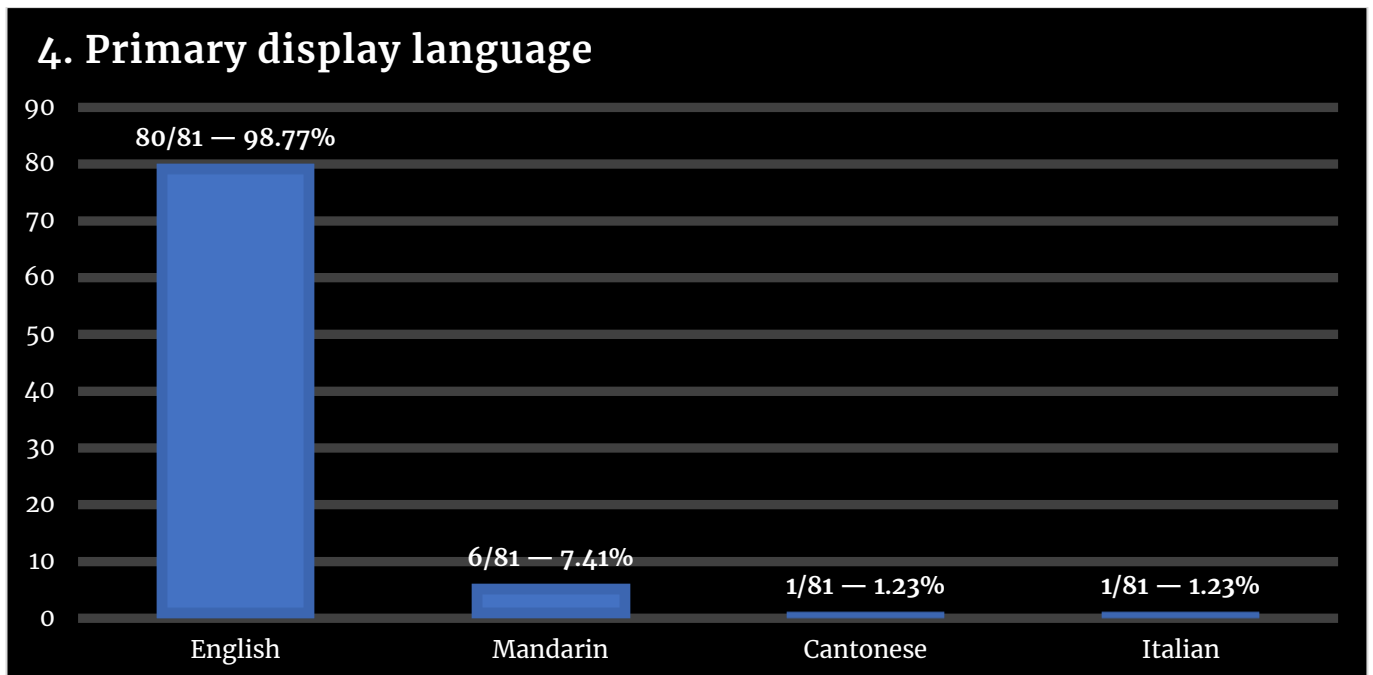
Figure 7.3.4 Primary display language amongst respondents

5. Highest level of, or currently enrolled, formal education
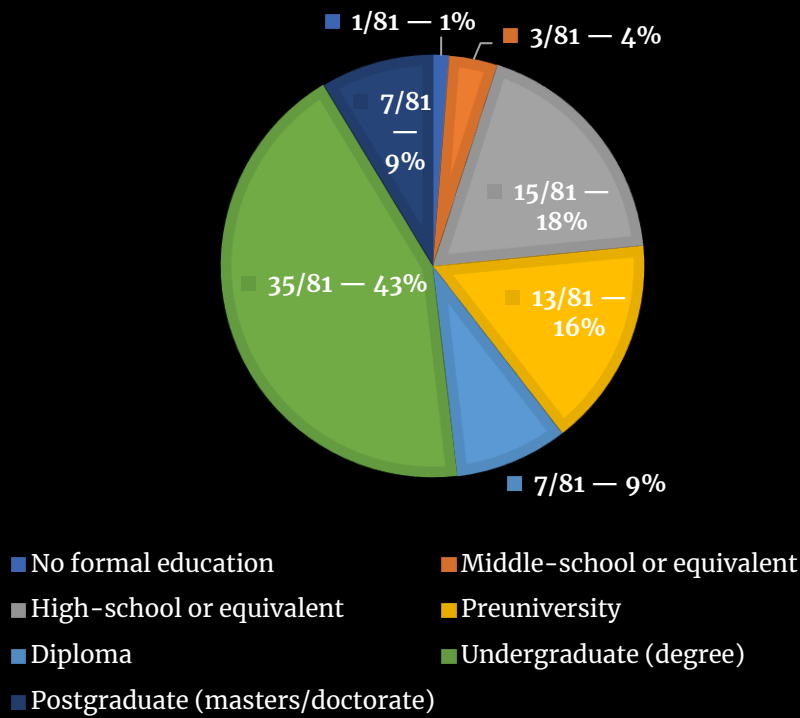
Figure 7.3.5 *Highest level of, or currently enrolled, formal education amongst respondents*

6. Daily average screen time
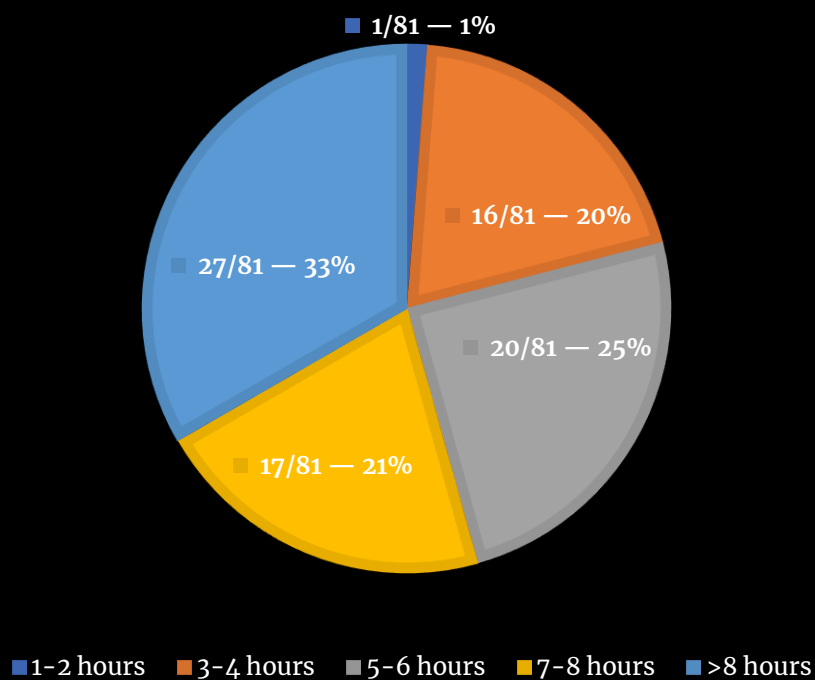
Figure 7.3.6 *Daily average screen time amongst respondents*

1. Prior to this questionnaire, were you aware of the concept of "dark patterns"?

- 2/81 — 3%
- 1/81 — 1%
- 10/81 — 12%
- 33/81 — 41%
- 29/81 — 36%
- 6/81 — 7%

- ■ No, I had not heard of the concept or term at all
- ■ Yes, I knew the concept & the term, but have never really thought much about it
- ■ Yes, I knew the concept but I didn't know the term
- ■ Yes, I'm an expert. I have done research, understood its origins, & determined existing instances
- ■ Yes, I've heard of (only) the term somewhere, but wasn't quite sure what the term & concept meant
- ■ Yes, I've heard of the concept somewhere, but wasn't quite sure what the concept meant

Figure 7.3.7 The respondents' awareness level of the concept of dark patterns prior to this questionnaire

2. AFTER READING THE INTERLUDE, HOW CLEAR ARE YOU NOW ON THE CONCEPT OF "DARK PATTERNS"?

- 2/81 — 2.47%
- 1/81 — 1.23%
- 17/81 — 20.99%
- 40/81 — 49.38%
- 21/81 — 25.93%
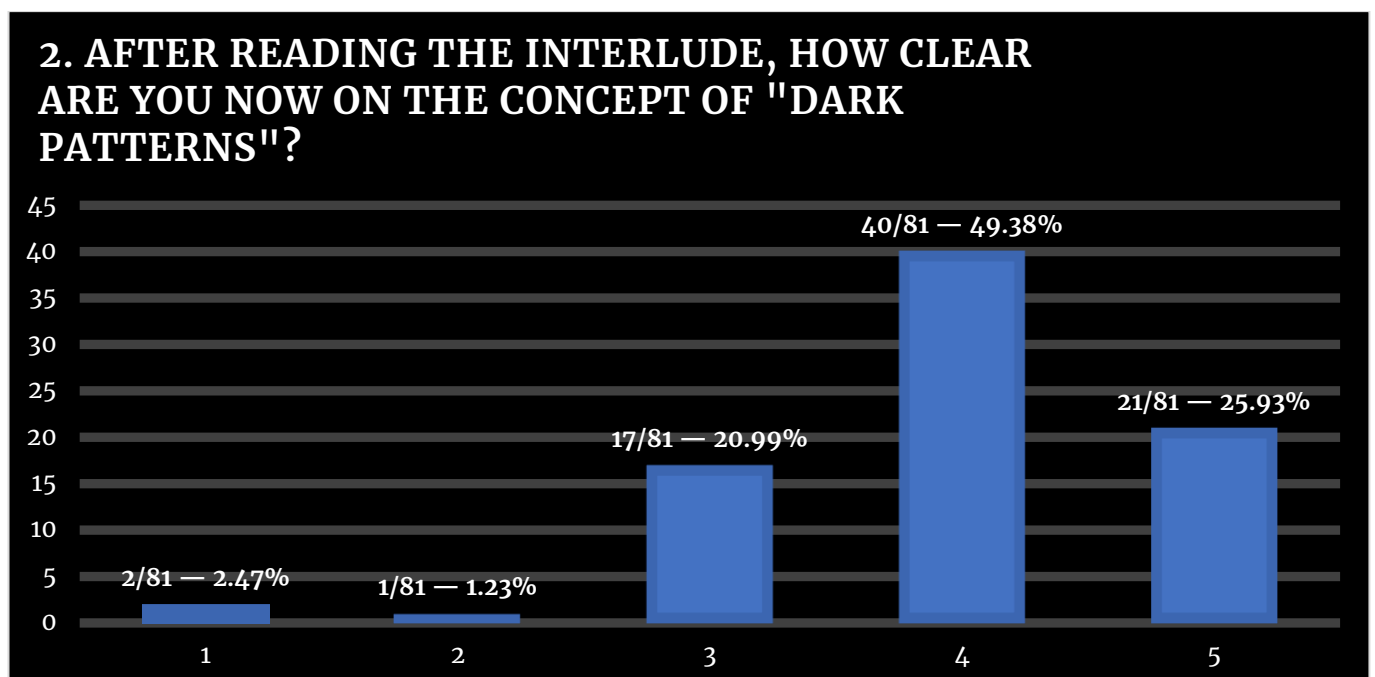
Figure 7.3.8 The respondents' level of clarity on the concept of dark patterns after reading the interlude

3. How does the concept of "dark patterns" compare to the tactics used by physical stores for attracting customers in terms of maliciousness?
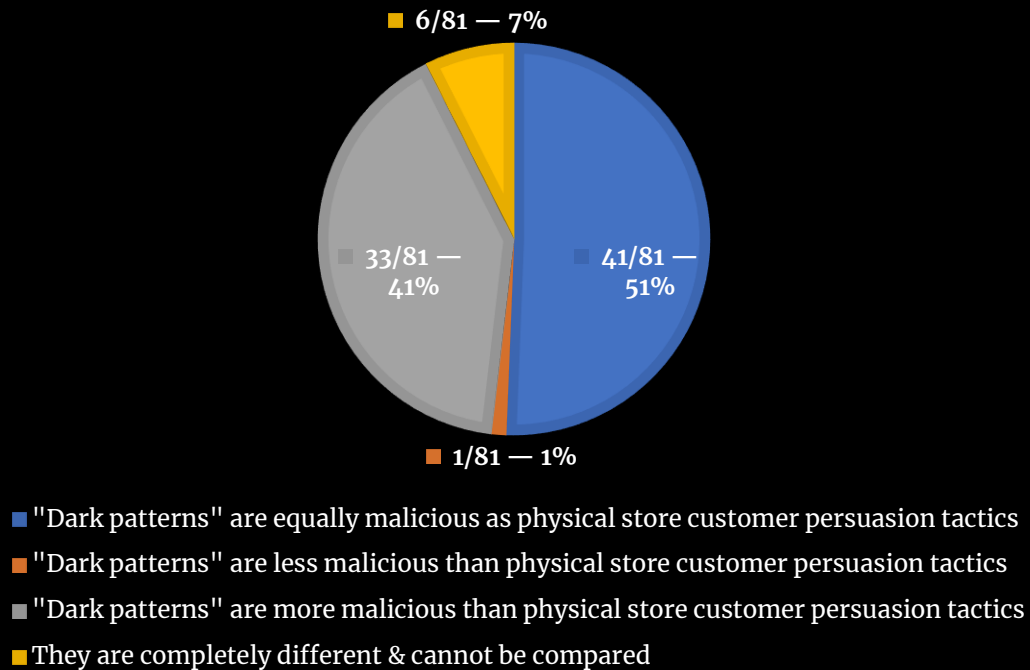
Figure 7.3.9 The respondents' perception of maliciousness of dark patterns compared to tactics used by physical stores for attracting customers

4. What are a few applications/websites/platforms you use that contain "dark patterns"?
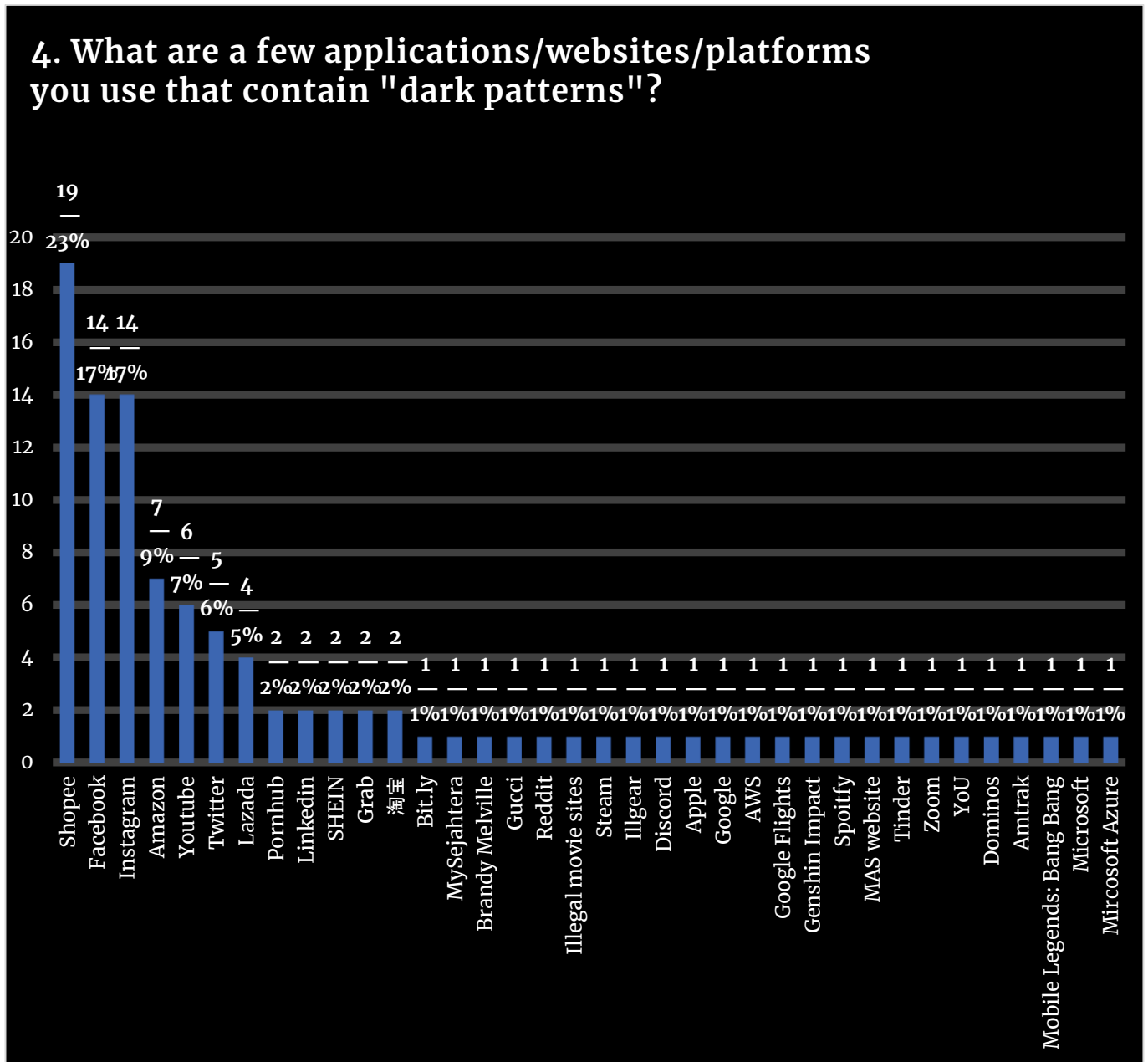
Figure 7.3.10 The applications/websites/platforms used by respondents that contain dark patterns

5. In your opinion, does the implementation of "dark patterns" affect general human behaviour on spending time, money, or attention on the implementer's platform?
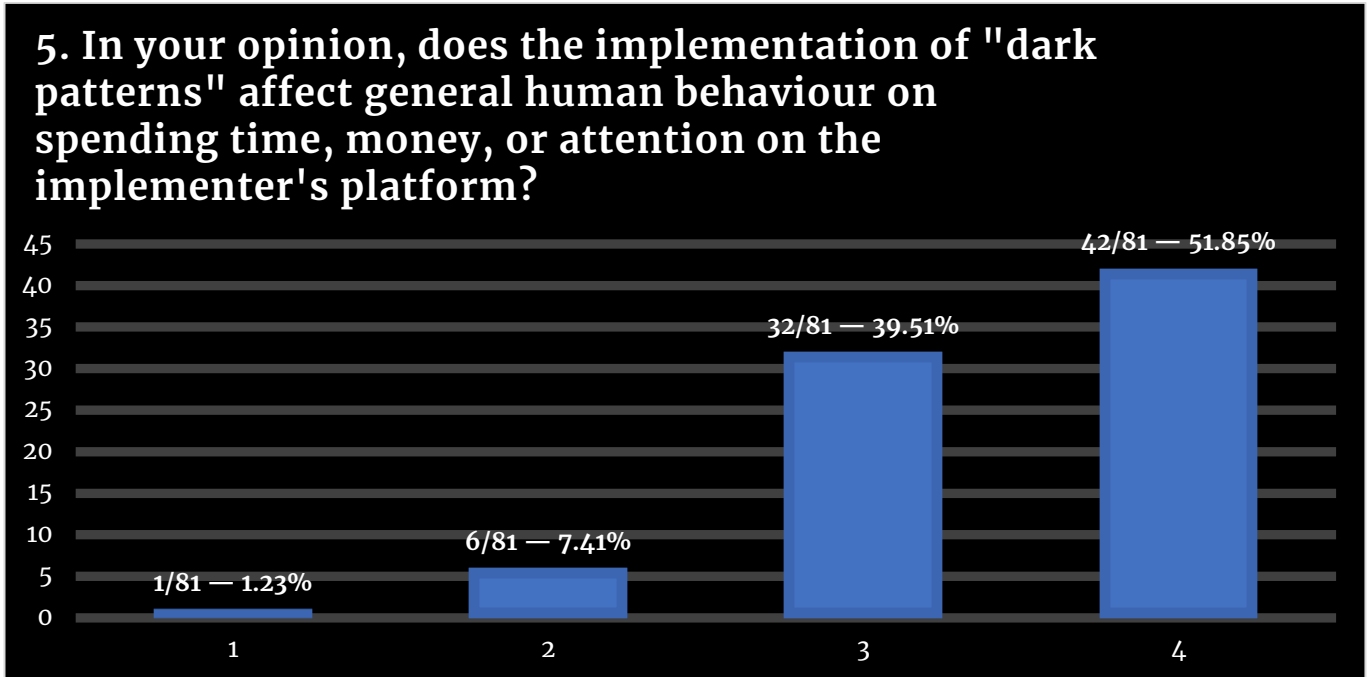
Figure 7.3.11 The respondents' opinion on if the implementation of dark patterns affect general human behaviour on spending time, money, or attention on the implementer's platform

6. In your experience, has the implementation of "dark patterns" affected *your* behaviour on spending time, money, or attention on the implementer's platform?
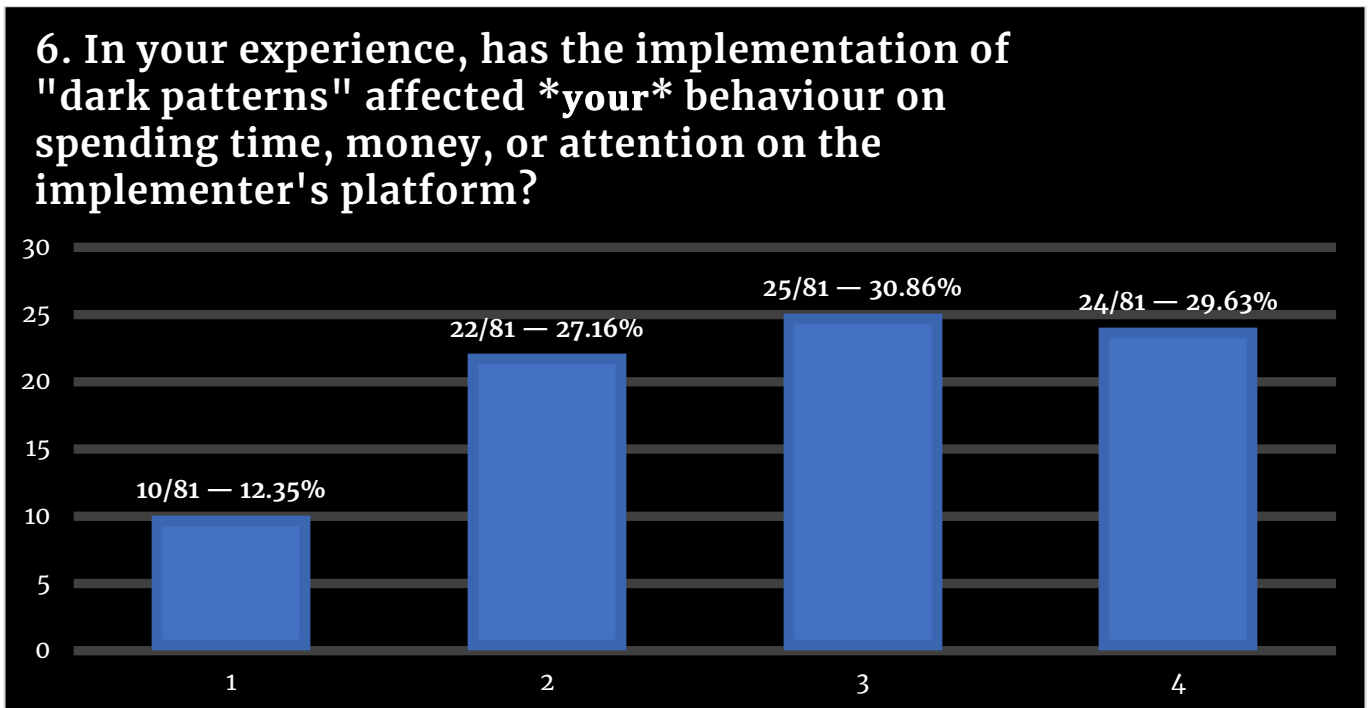
Figure 7.3.12 The respondents' opinion on if the implementation of dark patterns affected their behaviour on spending time, money, or attention on the implementer's platform

7. Based on the last question, how have you reacted to the effect of dark patterns on your behaviour?
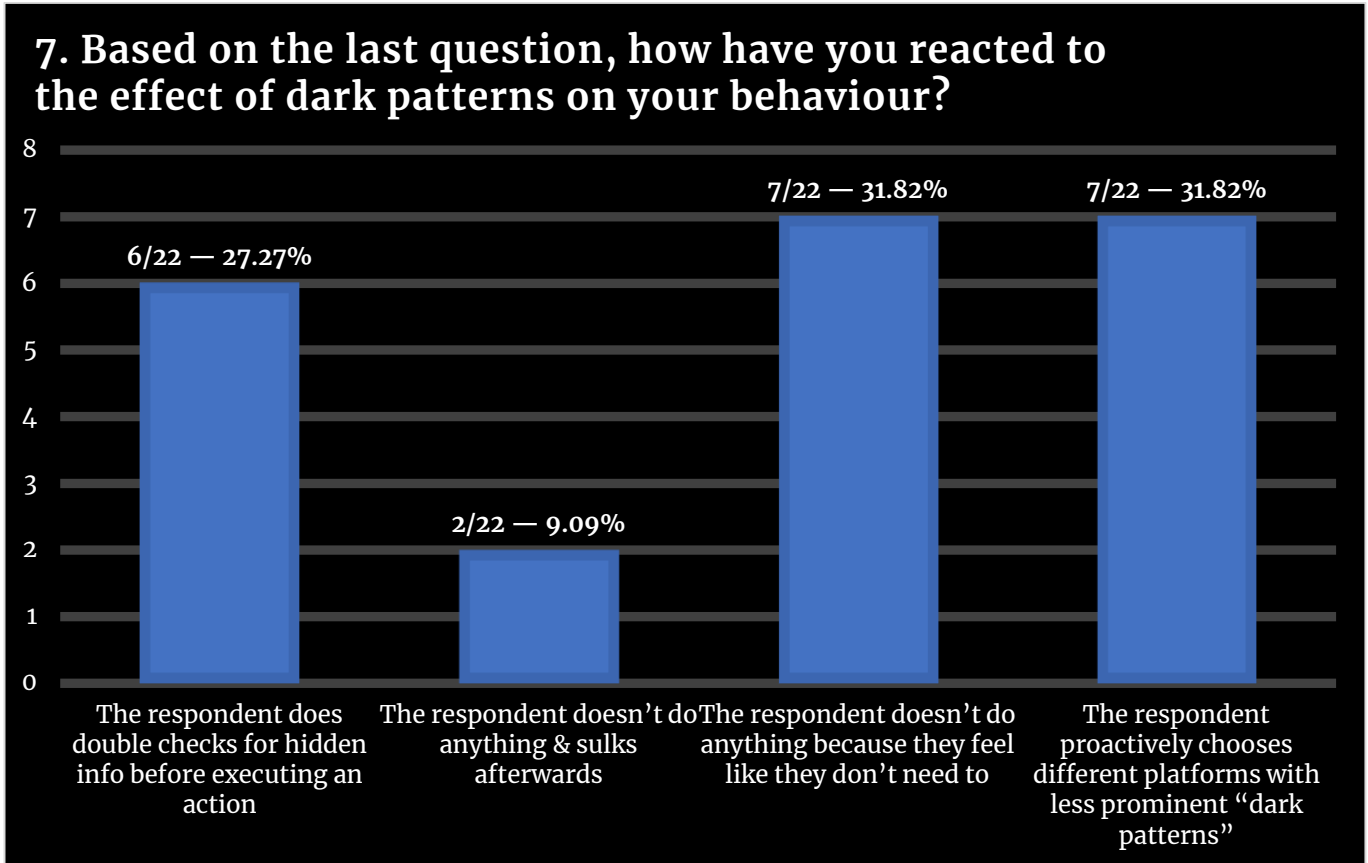
Figure 7.3.13 The respondents' reaction to the effect of dark patterns on their behaviour

8. In your opinion, if a platform A came out & denounced the use of "dark patterns" in the use of their products, would you choose to spend your time, money, or attention on platform A instead of their *equally* featured competitors?
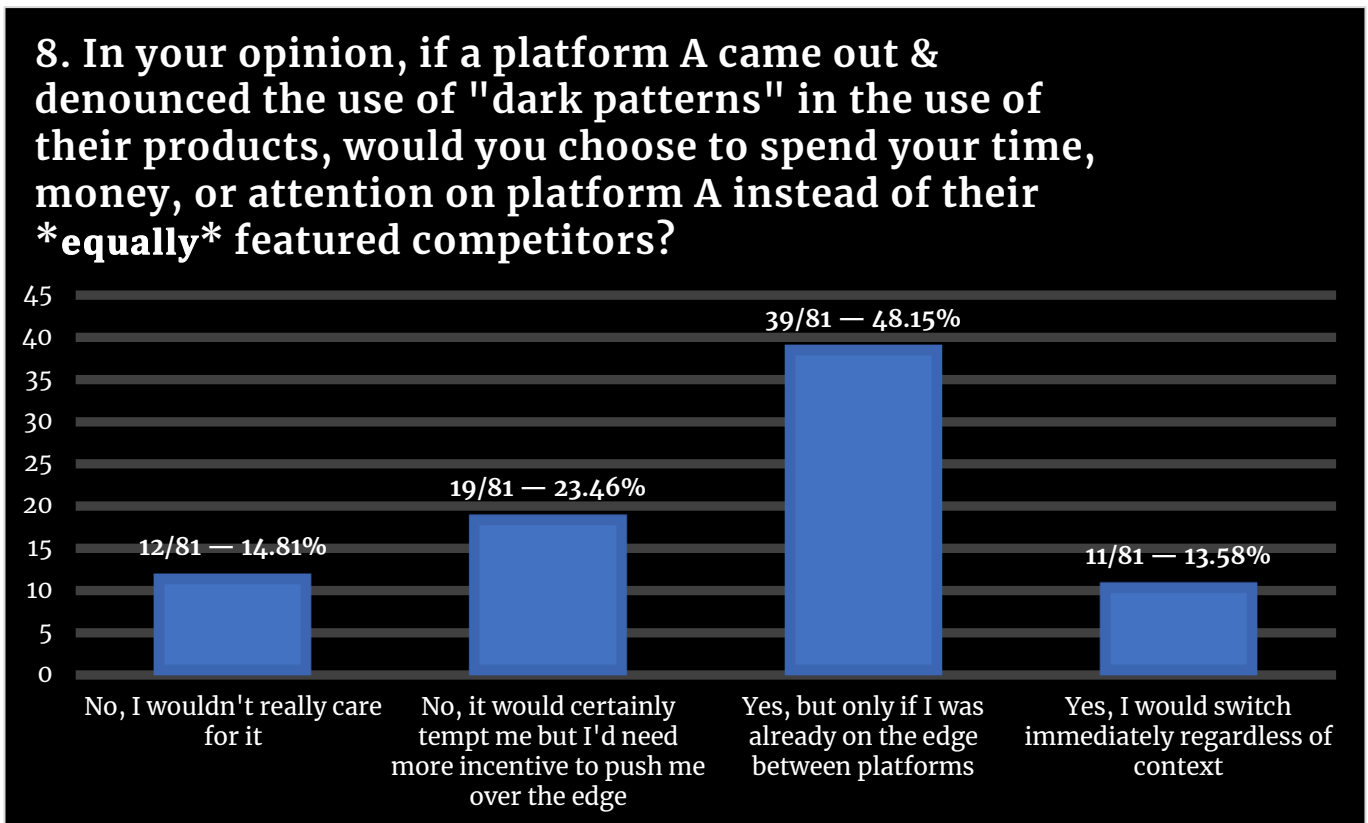
Figure 7.3.14 The respondents' opinion on whether they'd switch to an equally featured, dark-pattern-less competitor

9. In your opinion, if a platform B came out & denounced the use of "dark patterns" in the use of their products, would you choose to spend your time, money, or attention on platform B instead of their more *fully* featured competitors?

Figure 7.3.15 The respondents' opinion on whether they'd switch to a more featured, dark-pattern-less competitor

10. What is a particular case of "dark pattern" implementation, if any, that stands out in your memory, causing you loss of either time, money, or energy?

Figure 7.3.16 The respondents' chosen dark pattern implementation that stands out in their memory

11. What would be the ideal "dark patternless" experience for the scenario described in the previous answer?
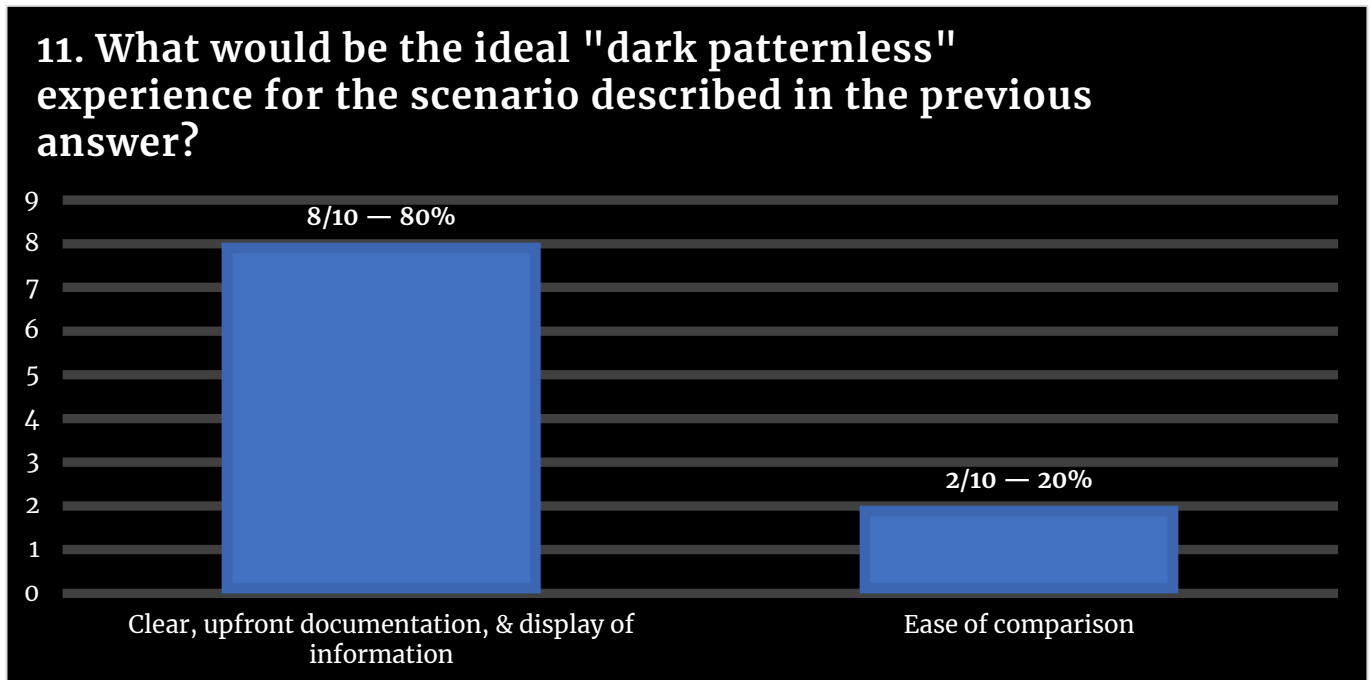
Figure 7.3.17 The respondents' dark–pattern–less scenario to the previous question

Appendix 3 Survey answers

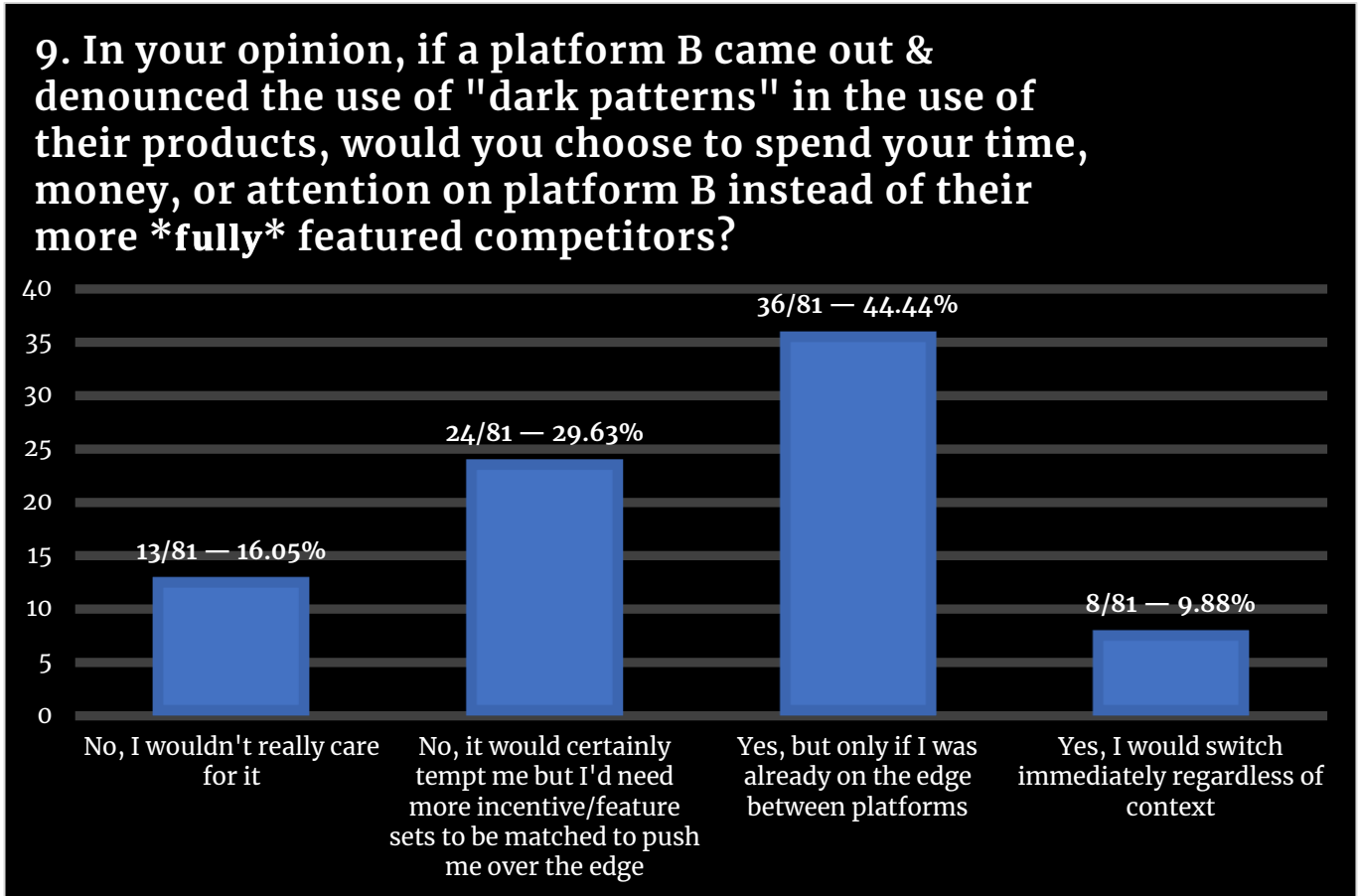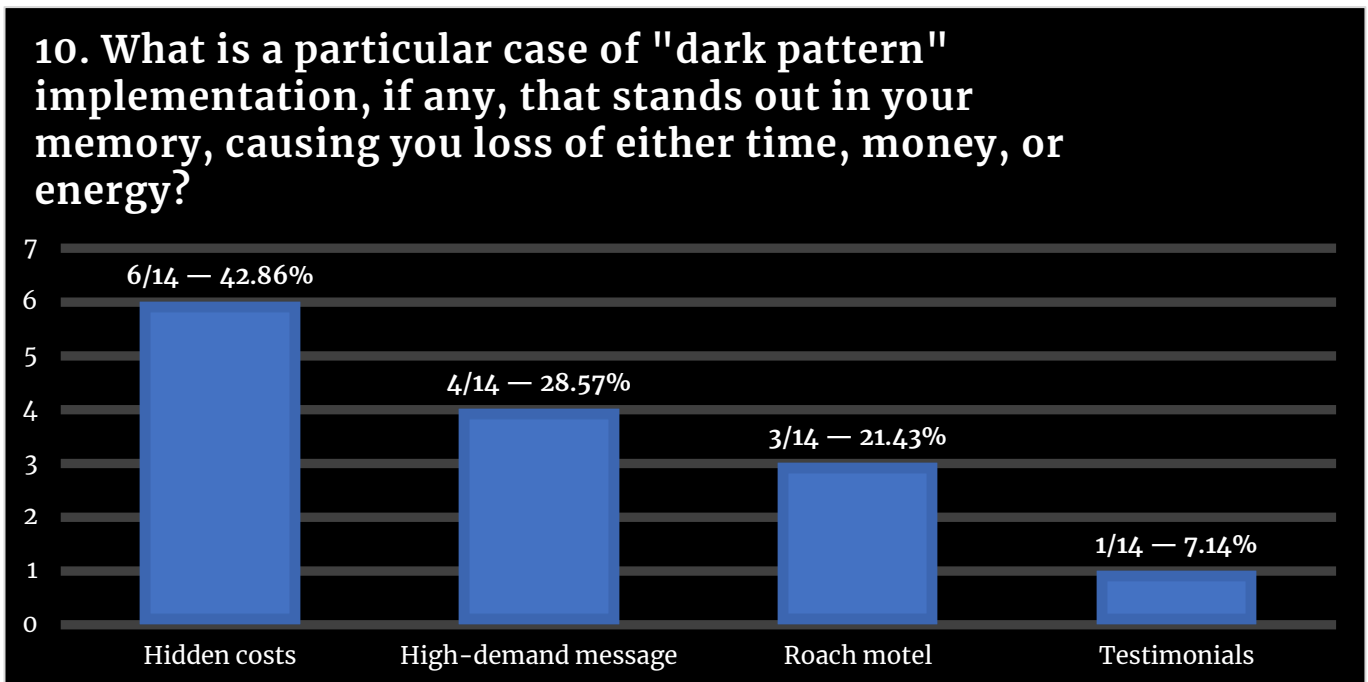| No.	Question	Answers
1	Comparing both Figures, which one are you more likely to purchase from?	"KT" —[Figure A] obviously, because there's time limit. Like you see so little time left then you choose that one first. "LS" — [Agrees with "JD"]. "JD" — I don't really care, if I need [the products then] I'll buy. "JT" — [Agrees with "JD"]. "BY" — [Figure A with] the time limit attracts & gives u less time.
2	How regularly, if any, have you seen this pattern out in the wild before?	"KT" —Everytime. [Agrees with "JD"], Zalora [as well], [& Mobile Legends: Bang Bang]. "LS" — [Generally agrees with no additional suggestions]. "JD" — It's the Shopee, Lazada type of thing, [Clash Royale]. "JT" — [Generally agrees with no additional suggestions]. "BY" — [It happens] whenever [we] buy stuff.
3	Do you feel that you, the consumer, are able to make a rational buying decision when faced with this pressure?	"KT" — No. "LS" — Yes. "JD" — No, [but it's no big deal]. "JT" — No. "BY" — Yes, [as] they can simply avoid it.

| 4 | Describe an alternative, if any, to this dark pattern. | "KT" — Advertising.
"LS" — [No opinion].
"JD" — [No opinion].
"JT" — [Don't do direct to consumer selling].
"BY" — [Do promotions]. |

Table 7.4.1 Focus group answers when shown the "Countdown Timer" dark pattern

No.	Question	Answers
1	Do you find figure A problematic when compared to figure B?	"KT" — Yes, [it's] ugly, and then [I] always press [on the app, & it will] disturb [me]. I want to use Instagram not Facebook. It's very [troublesome] especially when I want to quickly stalk someone. "LS" — Yes. "JD" — I mean I don't think it's problematic. You connect to Facebook & they recommend you people you'd be interested in; I feel like it's something I would've done anyways. "JT" — Yes, [it's] ugly, it's OCD; [Disagrees with "JD"], yeah but privacy [is a concern]. "BY" — Yes.
2	Would you have given up the extra personal information if presented with figure A over figure B?	"KT" — No. "LS" — No. "JD" — [Yes. (Inferred from previous answer)]. "JT" — No. "BY" — No.
3	Describe an alternative, if any, to this dark pattern.	"KT" — Why not just not do it? Why not just don't connect; go away? "LS" — [No alternative]; [The suggestion by "JD" would force one to provide location, defeating the purpose]. "JD" — If you don't give them a clue [by providing additional personal info] how are they going to know your friend circle at all? [There is no alternative]. [Cannot be you] tell them where your workplace is & they'll show you everyone around you; It's more complicated than just pressing one button. "JT" — [No opinion]. "BY" — Just don't implement it.

Table 7.4.2 Focus group answers when shown the "Privacy Zuckering" dark pattern

No.	Question	Answers
1	Have you experienced instances where notification dots were used to force you into acknowledging a part of a piece of software?	"KT" — [iOS demands attention for] iCloud, updating software, forgot password, update password, re-login [, etc.] "LS" — I'm pretty sure every game has it, especially ones [like everdale] with notification dropdowns; Google. "JD" — Coin master. Dragon city.

		"JT" — Mobile Legends. [Agrees with "LS"], like Lords mobile, [it] tells us to share the game. "BY" — [iOS demands attention for] iPhone not backed up; [Instant] message advertisements.
2	On a scale of 1-10, how annoying is it?	"KT" — 10, every time I [turn] on my phone [the iOS Settings notification dot] will be there. For iPhone when you do stuff half way it will just pop [up to] ask you [to] enter passcode [for] iCloud. "LS" — 10, I see it every time. Normally I don't care but dots everywhere is [annoying]. "JD" — 3. Honestly I don't really care. I'm used to it. "JT" — 10. [Especially] when [Google] asks to enter [my] birthday [on Android via notification]. "BY" — 4.
3	Do you usually cave in & click onto it to dismiss it anyways?	"KT" — Let it be most of the time, until I need to use [the app/section of the app] I'll check. "LS" — Sometimes. "JD" — [I let it be]. "JT" — Yes. "BY" — Only if it's too much [in quantity], otherwise I let it be.
4	Describe an alternative, if any, to this dark pattern.	"KT" — Good question, [notification dots] seems like the only way; [Disagreeing with "BY"], yeah but how are you going to uninstall iCloud? "LS" — [No alternative]. "JD" — [No opinion]. "JT" — [OxygenOS] gets rid of all the red dots, so I never had red dots; I see it all in the notification [shade]. [Instead of being there all the time, it can be in somewhere the user can check on demand]. Once I clear the notification [shade], [all the notifications would disappear]; [Agreeing with "BY"], like his thing where he say uninstall if you don't need it. "BY" — They can just dismiss the notification. For apps you don't use you can just [disable notifications for] it.

Table 7.4.3 Focus group answers when shown the "Visual Interference" dark pattern

Appendix 4 Focus group answers

Promoting Environmental Sustainability: The Role & Influence of Graphic Design Elements on Packaging

Dorcas, Lim Jie Shi [1]; Yip, Jinchi [2]

The Design School, Faculty of Innovation and Technology, Taylor's University

dorcasjieshi.lim@sd.taylors.edu.my, Jinchi.Yip@taylors.edu.my
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09 Sep. 2022

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thedesignschool.taylors.edu.my/kreate

Abstract   *Graphic design—a visual language—has become one of the most powerful mediums of communication that is unconfined by any limitations of human usage. However, the impact of graphic design on packaging design and its influence towards raising awareness and promoting environmental sustainability issues are rather untouched. Thus, this article seeks to discuss research carried out to investigate the role and influence of graphic design elements on packaging towards promoting environmental sustainability. A survey was conducted where four packaging were shown to the participants to rate the graphic design element concerning its effectiveness, comprehension, and influence. A total of 90 responses were accumulated whereby it was discovered that graphic design elements on packaging have a role in engaging, motivating, and educating environmental sustainability and as a result promotes positive influence to the public in regards to sustainable activities. Additionally, it was also discovered that visual and verbal elements were the most effective in conveying information about environmental sustainability. Despite that, the researcher also observed that even though graphic design elements are effective in raising awareness and promoting environmental sustainability, it requires great skills from packaging designers to produce effective, sustainable packaging.*

Figure 1. Packaging Illustration by Dorcas Lim Jie Shi, (June 2022)

Key words   *Graphic Design, Design Elements, Packaging, Environment, Sustainability*

Introduction

The Cambridge Dictionary defines graphic design as a profession or skill that involves the organisation of visual elements (Cambridge Dictionary, 2021). Graphic design plays a crucial role in society and now more than ever, as with its ability as an effective communication tool, it can impact the lives of people (Sasaki, 2010). However, it was observed that often graphic design skills are used in huge global corporations and the world of advertising for increasing financial gains—producing effective outcomes. Despite the topics and issues of environmental sustainability being one of the hottest topics discussed and the growing realisation of the potential of design towards social issues, it was realised that the impact graphic design has on packaging design in the realm of environmental sustainability is rather untouched. Thus, this study seeks to investigate the roles and influences that graphic design elements on packaging can have towards promoting environmental sustainability to the general public of Malaysia. As of 2022, environmental waste is being produced twice as much in comparison to two decades ago yet only 9% of it is being recycled globally (OECD, 2022).

These statistics show the need for action to reduce our society's carbon footprint and bring about change for the betterment of our environment. In this day and age, it would be impossible for people to stop purchasing, however, innovative product design and sustainable alternatives could be a potential solution.

Figure 2. Graphic design work to promote the reuse of materials and help create a sustainable future as graphic designers by Ryan Kavanagh, (May 2014)

Problem Statement

Packaging design is one of the main aspects of graphic design, often used as an effective marketing tool to promote sales and increase buyer engagement. A good packaging design can be described as a packaging that has protective and visually attractive qualities that is able to influence consumers' buying behaviour (Orzan et al., 2018). Hence, packaging design can play a big part in promoting environmental sustainability through the information communicated on it or the material choice that is used can influence purchasing choices. However, not everyone might be equipped with the knowledge concerning environmental sustainability or sustainable practices, such as recycling (Tu et al., 2018). Thus, it would confuse and shorten the life cycle of a packaging, ending up in the trash after a single use. This just goes to show the importance of graphic design in packaging design towards promoting and educating environmental sustainability to the public with valid information and comprehensive infographics (Borgman et al., 2018; Tu et al., 2018). Additionally, it is prominent to research the role and influence of graphic design in packaging as it is one of the main contributors of waste. Looking at the global scale, in 2018, packaging alone contributed approximately 46% of waste (Tiseo, 2021). It was also reported in 2020, there was a yearly average plastic consumption rate equivalent to 16.78kg in Malaysia (Müller, 2021). Furthermore, studies also suggested that people's attitudes and beliefs are hugely affected by what they purchase, thus through the consumption of sustainable packaging, people have come to be more aware of environmental issues (Orzan et al., 2018). That said, it is evident that graphic design is capable of influencing and educating society with the components and principles of graphic design on environmental sustainability. Therefore, this research aims to study the role and influence of graphic design in promoting environmental sustainability on packaging towards the public.

Figure 2. Sustainable packaging design with verbal and visual elements, (n.d.)

Methodology

In the research, a quantitative approach was opted to garner the necessary data to address the research questions and achieve its research objectives. This approach was selected as the study seeks to obtain the responses of the general public; hence, a quantitative approach is the most appropriate approach as it can obtain a larger number of responses in a short amount of time. This would also provide more credible findings to better represent the general public (Creswell & Creswell, 2014).

A quantitative method was engaged in the form of survey questionnaires via Google Forms and the chosen targeted audience would be the general public of Malaysia. A total of 90 responses were collected where the participants were shown four types of packaging and asked to rate their understanding concerning the information presented on the packaging as well as the influence it has on them. The four packaging in the survey consisted of two conventional packaging and two sustainable packaging, whereby two versions—conventional and sustainable—of the same type of packaging would be shown to the participants. Despite there is no set frameworks to determine what a sustainable packaging should abide to as of the present, these sustainable packagings chosen for this research can be easily identified through its visual and verbal information that emphasizes on environmental sustainable. That aside, sustainable packaging is also often indicated by the sustainable materials used, minimal use of colours or colour palettes that are more neutral and organic, such as green or brown, it would also feature minimal graphics, sans serif typeface, and simple ergonomics (Borgman et al., 2018). On the contrary, conventional packaging most commonly would disregard the characteristics as mentioned above, unless it is the branding strategy of a product. This further implies the need for a framework for sustainable packaging on a deeper level that goes beyond the visual aspect of what determines a sustainable packaging, as thus far the criteria of a sustainable packaging is ambiguous. The packaging included in the survey was eBay's e-commerce delivery packaging and Spritzer's mineral water bottle packaging. These two products were selected as they are one of the most commonly purchased products.

In the survey, are a total of 20 questions which are separated into two sections, in Section 1 a total of four general questions were asked which are then followed by four sets of questions containing three specific questions about the four selected packaging shown to the participants. Lastly, four extended questions of the questions in Section 2 would be asked in regards to the overview of all the packaging shown. These questions were asked so that the researcher could collect findings that would explore the role of communication, education, and the influence that graphic design elements have on packaging design to promote environmental sustainability. A sample of the questionnaire can be found in the Appendix.

Findings and Discussion

A comprehensive discussion and analysis of the role and influence of graphic design elements on environmental sustainability through packaging would be discussed in this section. Through the study's findings, it was observed that graphic design elements seen in packaging design can engage, motivate, and educate the general public on environmental sustainability.

Engagement
It is stated that visuals are processed 60,000 times more quickly when compared to verbal information by the human brain and supposedly 90% of information that is received and transferred to the brain are visuals (Eisenberg, 2014). Hence, visual elements often play the role of attracting customers, providing a good first impression, and painting a better picture. According to the survey of the present study, a few respondents stated that they are often first attracted by visuals and that the way the visuals are placed would determine their purchase intent. Referring to the words of one of the anonymous respondents "I was more motivated by the visuals because that draws the eye first- if it is not well presented, I would not trust the verbal information that comes in the packaging because it might not be as authentic or verified". It is only when they are attracted by the visuals that they would consider reading the verbal information on the packaging. This implies that verbal elements

are just as significant in engaging consumers but in the later stages such as conveying messages and information and even being an influence to how consumers perceive a product (Schifferstein, 2021). Further elaborating on that, graphic design elements can put forward environmentally sustainable packaging designs that can attract the intended audience. Hence, it does the job of first attracting the consumers to the packaging, in which the information present would later influence the consumers regarding environmental sustainability. This concludes that graphic design elements on packaging can influence consumers by firstly engaging them and subsequently motivating and educating them to learn about environmental sustainability.

Motivation
According to the data collected in this study, it was reported that across the four packaging shown on the survey an average of 46.7% of the respondents mentioned that they are influenced to participate in sustainable habits and an average of 36.4% commented that they are somewhat influenced.

The study also discovered that 70% of participants indicated that sustainable packaging design had more influence on their behaviour towards environmental sustainability. It was also observed that the sustainable packaging were the ones that uses a good balance of verbal and visual elements, which Nemat et al. (2019) and Chen et al. (2018) also reported that the usage of both visual and verbal elements is the most effective and suggests that it could motivate consumers and promote positive attitude towards sustainability.

Education
As stated previously, graphic design elements play the role of engaging and motivating consumers towards environmental sustainability. Ultimately, these packaging attributes can also serve as a form of education for the public on various issues, as in the case of this study, it would be environmental sustainability. According to the survey carried out for this research, 16 out of 75 (90 responses were obtained but 15 responses were omitted as they were either invalid or respondents opted to not answer) participants stated that visual and verbal information was effective in educating them on environmental sustainability. The respondents mentioned that often visual elements can guide them on the correct methods of recycling as the steps shown visually were easy to follow. As in the words of one of the anonymous respondents, "visual is able to guide me in the steps of recycling". Whereas, verbal elements were helpful as they provided additional information that visual elements were unable to convey, such as stimulating green messages or statistics which can educate consumers and provide them better insights into the methods and purpose of taking part in environmentally sustainable activities. As two of the anonymous respondents replied, "verbal elements confirm [sic] the right practices I need to put in place" and "verbal elements explain the impact of my actions".

Conclusion

In this research, it was noticed that there is a gap between graphic design and packaging design towards raising awareness and promoting environmental sustainability issues. Hence, the researcher sought to explore the role and influence of graphic design elements on packaging and whether it could be used to promote environmental sustainability to the public. The study discovered that graphic design elements which are categorised as visual and verbal elements in this study play vital roles in promoting environmental sustainability. It was discovered that these elements can engage, motivate, and educate the public on environmental sustainability through the elements as a form of communication. Furthermore, it was observed that visual elements play a more significant role in the primary stage which is to engage and provide a good impression to the public. Hence, appropriate and well-designed packaging is crucial to increase engagement. It is in the following stages that verbal elements play a more significant role in motivating and educating the public through stimulating and informative messages, statistics, or the accurate steps towards green activities. In motivating and educating the public, the study has found that the use of both visual and verbal elements to be the most effective as it can both attract the public as well as convey the necessary information to them. Hence, when these packaging attributes are well-designed, they can influence the public's attitudes towards environmental sustainability for the better. However, it is important to note that with the absence of a designer's knowledge and skills to use graphic design elements

properly, it would be less significant for the packaging attributes influence on promoting environmental sustainability to the public. In conclusion, the study has adequately achieved its research objective which was to explore the role and influence of graphic design elements on packaging towards environmental sustainability.

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Picture Credits

Figure 1. Lim, D. (2022, June). Packaging [Illustration]

Figure 2. Kavanagh, A. (2014, May). Sustainable Graphic Design [Mix Medium]. Retrieved from https://www.behance.net/gallery/16682247/Sustainable-Graphic-Design

Figure 3. 99Designs. (n.d.) Sustainable Packaging Design for Eco Bottle. Retrieved from https://99designs.com/profiles/2629685/designs/1300062

Figure 1. Lim, D. (2022, June). Packaging [Illustration]

Figure 2. Kavanagh, A. (2014, May). Sustainable Graphic Design [Mix Medium]. Retrieved from https://www.behance.net/gallery/16682247/Sustainable-Graphic-Design

Appendices

Appendix: Sample of Survey Questionnaire
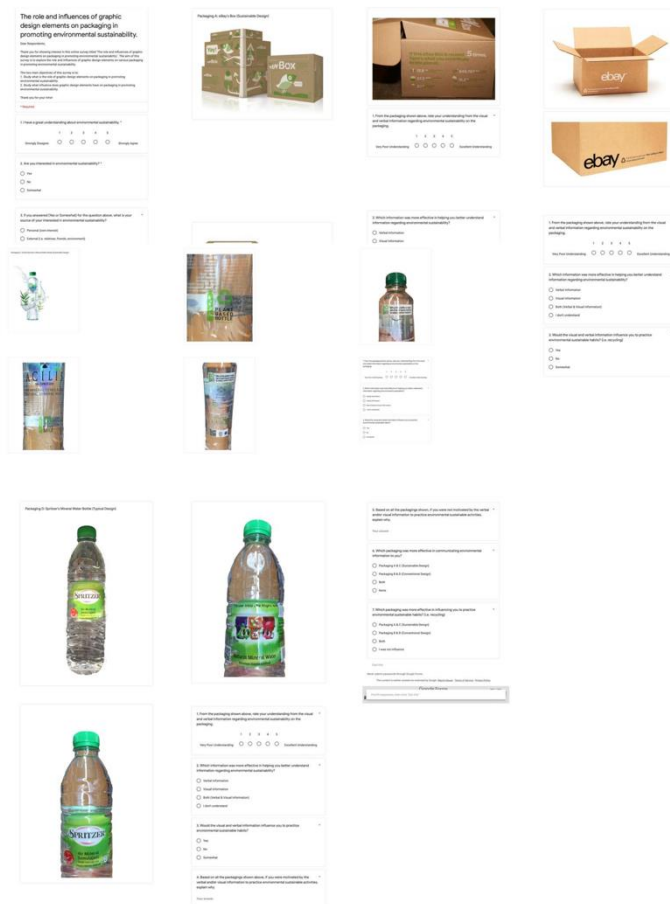
Appendix 1. Sample of Survey Questionnaire

The Roles and Impact of Malaysian Street Art in the 21st Century

Loke, Yeanne Tung[1]; Yip, Jinchi[2]

The Design School, Faculty of Innovation and Technology, Taylor's University

yeannetung.loke@sd.taylors.edu.my; jinchi.yip@taylors.edu.my

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09 Sep. 2021

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thedesignschool.taylors.edu.my/kreate

Abstract   Street art possesses a very old history, dating back to prehistoric inscriptions. Malaysia also has its fair share of street art as well. However, it is a controversial topic in the public eye as to whether street art is considered vandalism or illegal in Malaysia. This research highlights the roles and impact of Malaysian street art illustrations in the 21st century and aims to study whether the illustrations of street art can be a culture in the community or a cultural image of the place and also to study if the different types of street art can bring about cultural appreciation or bring a negative impact on the cultural image of the place. The research was conducted using mixed methods, a total of 111 surveys were distributed online with open-ended and closed-ended questions included. Mixed methods were chosen as public perception is crucial in determining whether street art can provide value or have an impact on the community and a survey is a good way to get information from the general public. The results and findings indicated that a successful street art project should have local cultural aspects such as tradition, heritage, custom, and ethnicity incorporated to convey the essence of Malaysia's multicultural communities to provide value to local communities.

Key words   Street art, roles and impact, graffiti, mural, 21st century

Introduction

Street art is a visual means of communicating with the general public. According to Smith et al. (2007, as cited in Sadatiseyedmahalleh et al., 2015), humans began to share and express themselves publicly in the early days by scribbling on cave walls. During World War II, social and political messages were often written on the walls. Street art used to carry messages that were prohibited by local governments. Illegal paintings continued even after World War II (Chaffee, 1993, as cited in Sadatiseyedmahalleh et al., 2015). Street art has a long history and it has become a hot topic since many are unsure if it is artistic or illegal.

However, the application of street art has become a promotional tool in many industries such as advertising and tourism. George Town in Penang, Malaysia is a great example of legally implementing street art to attract locals and tourists (refer to Figure 3). Without causing any damage to the heritage site in Penang, they were able to attract people with street art containing images of heritage and culture in Penang (Sadatiseyedmahalleh et al., 2014). Culture establishes connections between the past, present, and future. Cultural information can bring communities together as well as enhance social and cultural understanding. Hence, cultural heritage protection and enhancement should be advocated as a crucial aspect of human development (Salau et al., 2018).

Salau et al. (2018) discussed how street art can act as a medium to conserve culture and heritage in Malaysia. In general, various forms of media can evoke an emotion (An-Nuur et al., 2020). With that said, local cultural elements such as heritage, custom, ethnicity and tradition must be incorporated in street art to convey the essence of Malaysia's diverse communities and cultures, giving people a visual sense of place while providing specific references for their cultural identity through visible and intangible components (Salau et al., 2018).

Figure 1. Street art in Malaysia

Problem Statement

Unsanctioned visual art developed and/or done in public spaces is classified as street art, a type of subcultural activity. Distinguished by its illegal nature, this type of art is generally known as the post-graffiti movement (Hundertmark, 2003, as cited in Alpaslan, 2012).

According to research by Ley and Cybriwsky (1974, as cited in Shobri et al., 2017), teenagers mark their territory using signatures and gang names. Some people may consider graffiti art to be vandalism. As a result, in most countries, graffiti without permission is considered vandalism and hence a crime that can be prosecuted (Shobri et al., 2017). However, street art grew in popularity and began to have more positive and beneficial influences on today's art activities. Urban designers used street art to change cities' atmosphere and to promote the city's culture to visitors (Rahman et al., 2015). People's focus had deviated from historical parts of the city and to only finding street art. The removal of artwork might reveal the meanings and emotions linked with the artwork or its location (Nomeikaite, 2017).

The aim of this research is to study whether the illustrations of street art can be a culture in the community or a cultural image of the place and also to study if the different types of street art can bring about cultural appreciation or bring a negative impact to the cultural image of the place.

Figure 2. Early Roman caricature of a politician

Figure 3. Street art in George Town, Penang

Methodology

Given the research problem of this study is if Malaysian street art has an impact on the community or represents the culture of the community, the author believed that public perception played a role in determining whether street art could provide value or have an impact on the community. When it comes to political issues, it may be especially crucial to consider public perceptions. The process of how the public develops their knowledge, value judgments, behavior, and attitudes can be better understood by incorporating public perception into planning. In this instance, a survey by questionnaire was suitable to get information from the general public. Both qualitative and quantitative methodologies were implemented in this study.

Survey by questionnaire was created with Google Forms and distributed online, where open-ended and closed ended questions were included. The aim to combine both approaches was to gather comprehensive data and gain a better understanding of the research problem. A total of 111 responses were collected across different social media platforms, such as Whatsapp, Instagram and Facebook within the duration of 2 days. The targeted participants were aimed at the general public, specifically Malaysians aged between 18 and 65 years.

The reason being they are the direct stakeholders of the country, so they have the right to decide if street art illustrations could bring value to the community. The survey covers the public perception on street art in Malaysia and if the public think whether the illustrations of street art can be a culture in the community or a cultural image of the place and also if the different types of street art can bring about cultural appreciation or bring a negative impact to the cultural image of the place. A sample of the questionnaire can be found in Appendix 1.

Findings and Discussion

The origins of Malaysia's street art culture dates back to the early 2000s. Street artists have been blamed for many different types of destruction which is considered as criminal mischief (Sadatiseyedmahalleh et al., 2014). However, the use of street art has changed over time and cities such as Penang, Malacca, and Selangor have grown in popularity with the implementation of street art. In this paper, graffiti and mural art will be discussed as both are constituted as street art. The following discussion is based on relevant literature and the findings from the survey.

Graphic Components in Malaysian Street Art

Image — Based on observation, graffiti art is usually heavily dependent on typography. When it comes to mural art, An-Nuur et al. (2020) found that words and human figures are

utilized as the main elements in the majority of the murals that contain themes such as heritage, unity and patriotism.

Message — According to Shobri et al. (2017), messages on current issues, social messages, and politics can be found indirectly communicated via graffiti art. On the other hand, the most common themes that revolve around mural art are historical facts, communicational purpose, cultural representation, and symbolism (Ismail et al., 2020).

Color — Based on observation, graffiti art in Malaysia is much more colorful and vibrant now than it was in the past, walls along the Klang River in Kuala Lumpur for example. For mural art, the artist's choice of colors is determined by the concept he or she is pursuing. Murals in Malaysia are often colorful, with more than five bright and vibrant colors, which can be found in George Town, Penang.

Roles and Impact of Malaysian Street Art

Promotion of culture and heritage — Poon's (2016) survey results showed that 56 out of 100 (56%) respondents strongly agreed and 32 out of 100 (32%) respondents agreed that preserving street art will benefit future generations and for posterity. Similarly, Vepachedu (2017) reported that cultural heritage should be acknowledged and affirmed for the sake of present and future generations. Additionally, implementation of public art enhances an area's visual image, and it also reflects the city's identity, commemorates history, and highlights the uniqueness of the local culture (Jasmi et al., 2016). In line with that, Salau et al. (2018) revealed that it is fundamental for city development to preserve culture and tradition through street art installations since the city image is to cater to the tourism industry. Furthermore, the implementation of public art has improved the understanding of the urban community and encouraged their participation in public art creation (Jasmi et al., 2016).

Differences in values and perception — The results from the present study's survey have revealed that most of the respondents (96.4%) can differentiate between graffiti art and street murals. The respondents do not think negatively when the terms "graffiti art" and "street murals" come to mind. They think the street art illustrations that reflect local culture are the ones associated with past memories and local culture while the street art illustrations that do not reflect local culture are the ones associated with the style of graffiti. "Non-culture," "inappropriate," (sample response from respondents). 36% of the survey respondents believe that street art illustrations in Malaysia that do not reflect local culture does not bring value to the community. However, they think both graffiti and mural art are suitable in general to promote culture and heritage in Malaysia.

Conclusion

In conclusion, street art used to be considered as vandalism or a crime. However, the controversial topic has now become more positive and has a beneficial influence on communities and today's arts activities. The aim of this study is to study if Malaysian street art has an impact on local communities or represents the culture of local communities.

Overall, it has been discovered that graffiti art and street murals are more accepted and appreciated in Malaysia. In terms of imagery, more graffiti artists are exploring and implementing local identities in more graffiti art in Malaysia. This study has also shown that Malaysian street art is not merely for aesthetic purposes but it also acts as a medium to celebrate Malaysia's unique heritage and culture, potentially reminding Malaysians about the importance of their country's heritage. Street art implementation also enhances the city image, reflects the city's identity while encouraging community members' participation in public art creation and at the same time improving their understanding of street art.

More importantly, whether it be mural art or graffiti art, a successful street art project should have local culture aspects such as tradition, heritage, custom, and ethnicity incorporated to convey the essence of Malaysia's multicultural communities in order to

provide value to local communities also hoping to influence a change in the communities' behavior with its message. For some, Malaysian street art generates collective memories providing a source of identity and unity, giving people a visual sense of place while providing specific references for their cultural identity through visible and intangible components while to others it is learning about one's culture and heritage via visual communication.

From this research, two possible design projects could be implemented. To educate the community on street art, the first project would involve teaching young children on cultural appreciation so they have a better understanding and appreciation for cultural elements at a young age. Schools can arrange for the children to go on a field trip to Jadi Batek, one of the few places in Kuala Lumpur, where they can experience Malaysia's culture and heritage and enjoy the batik making process to motivate them in the future to find ways and preserve Malaysia's heritage. With this experience and understanding, they could produce more meaningful street art with the incorporation of cultural elements in the future. To increase public awareness, the second project would be to organize street art collaborations every so often between artists and local community members would be effective. This helps local community members to be more involved and contribute to public art creation which would create a sense of pride and belong to the community. With the participation of local community members, misunderstandings about the stereotypes of graffiti art could be resolved and perceptions of the community could be changed. In addition, public perceptions of the use of street art as an element to increase public awareness must be taken into account by local authorities. Local authorities should inform the public about the purpose and significance of the project as community support is crucial to determine if this could be a culture and bring values to local communities.

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Picture Credits

Figure 1 Armesto, D. (2021). Little Children on a Bicycle [Photograph]. Top Travel Sights. https://www.toptravelsights.com/wp-content/uploads/2020/05/Penang-Street-Art-6.jpg

Figure 2 White, A. (2018). [Picture of an early Roman caricature of a politician] [Photograph]. California Institute of Integral Studies. https://digitalcommons.ciis.edu/cgi/viewcontent.cgi?article=1077&context=cejournal

Figure 3 Turtle, M. (2017). Boy on a Bike [Photograph]. Time Travel Turtle. https://www.timetravelturtle.com/wp-content/uploads/2017/08/Malaysia-2017-415_feat.jpg

Appendices

Appendix 1. Sample of online survey questionnaire