

Advances in Science, Technology & Innovation
IEREK Interdisciplinary Series for Sustainable Development

Muhammad Nawaz Tunio · Jorge Miguel Chica Garcia ·
Ayman M. Zakaria · Yasmin Moanis Latif Hatem *Editors*

Sustainability in Creative Industries

Innovations in Fashion and Visual Media—
Volume 3

Advances in Science, Technology & Innovation

IEREK Interdisciplinary Series for Sustainable Development

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The series draws on the best research papers from various IEREK and other international conferences to promote the creation and development of viable solutions for a **sustainable future and a positive societal** transformation with the help of integrated and innovative science-based approaches. Including interdisciplinary contributions, it presents innovative approaches and highlights how they can best support both economic and sustainable development, through better use of data, more effective institutions, and global, local and individual action, for the welfare of all societies.

The series particularly features conceptual and empirical contributions from various inter-related fields of science, technology and innovation, with an emphasis on digital transformation, that focus on providing practical solutions to **ensure food, water and energy security to achieve the SDGs**. It also presents new case studies offering concrete examples of how to resolve sustainable urbanization and environmental issues in different regions of the world.

The series is intended for professionals in research and teaching, consultancies and industry, and government and international organizations. Published in collaboration with IEREK, the Springer ASTI series will acquaint readers with essential new studies in STI for sustainable development.

ASTI series has now been accepted for Scopus (September 2020). All content published in this series will start appearing on the Scopus site in early 2021.

Muhammad Nawaz Tunio ·
Jorge Miguel Chica Garcia · Ayman M. Zakaria ·
Yasmin Moanis Latif Hatem
Editors

Sustainability in Creative Industries

Innovations in Fashion and Visual
Media—Volume 3

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The Editors warmly thank all the Reviewers who have contributed their authority to the double-blind review process, to ensure the quality of this publication.

Preface

Long-term sustainability is a spark of the green economy which comes up with solid solutions to limited resources. Sustainability, with lenses to the Agenda of UN with its 17 SDGs, manages social, economic as well as environmental perspectives of the globe. Sustainable approach is mandatory; however, the sustainability in long term is possible through the diffusion of the innovation because the innovation is heart of the suitability. Innovation and creativity are the essential in all fields so creativity and sustainability are important and necessary segments of human life for their survival. Creativity is deep rooted in different practices of the culture, social, economic, and environment. Therefore, it is essential to mitigate the barriers of affordability, scalability, replicability, and sustainability so that the combination of the creativity and sustainability which can be approached from the different perspectives of thematic, disciplinary, trans-disciplinary, intercultural way. Creativity paves way for the all kinds of the development including the creative intelligence. Creative intelligence is new and dynamic field of knowledge, which empowers the potential of create, connect, and inspire. The combination of creativity and artistic manifestation postulates inspiration, energy, and empowerment. Design is important perspective of the creativity as well as culture.

After the adoption of emerging technologies, cultural industries are transformed into the creative industries with more modernity and economic growth. Cultural industries pave the way for the creation, production, and commercialization which results in creative content. The outcome of the creative industries appears in different versions such as journalism, studios of the artists, studios of design, architectural offices, media production, film houses, and cinema.

Thus, this book focuses on all perspectives as discussed above and touches on the new zone of knowledge.

Bhitshah, Pakistan

Muhammad Nawaz Tunio

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Introduction



Design of Projects for Sustainability in the Industry

Jorge Chica-García

1 Introduction

“Sustainability in the Creative Industries” is a pivotal component of the prestigious Advances in Science, Technology and Innovation (ASTI) series. This collection of meticulously reviewed books aims to push the boundaries of research in science, technology, and innovation (ASTI). These publications are committed to formulating unified concepts for sustainable development, addressing the urgent need for resource conservation, inventive problem-solving, and re-establishing the intricate connection between humanity and the environment. Moreover, this book offers profound insights derived from extensive research endeavors, which are in alignment with the 17 sustainable development goals (SDGs) outlined by the United Nations for the year 2030.

The ASTI series is a platform that compiles outstanding research papers from various renowned international conferences, including those organized by IEREK. This platform fosters the creation and refinement of practical solutions geared toward nurturing a sustainable future and fostering positive societal change. Encompassing contributions from diverse disciplines, it explores innovative methodologies and underscores their potential to bolster economic growth and sustainable development. By emphasizing data optimization, institutional effectiveness enhancement, and collective action at global, local, and individual levels, this series champions the well-being of all societies.

In this edition, a group of research professionals from the realms of technology and industry have come together to provide their multi-dimensional perspective through

media and design. They employ narrative and storytelling techniques to craft sustainable solutions. These methodologies employed for crafting the chapters are pivotal for maintaining the highest standards of quality and professionalism. Within the realm of storytelling methodology, narrative aspects in film storytelling become crucial for effectively communicating messages.

Documentary film captures reality through moving recordings, and it often presents a subjective perspective influenced by the filmmaker’s interpretation of reality, which is then expressed within a narrative framework. When a film is presented in a compelling and emotionally resonant manner within society, it becomes a tool for provoking thought, encouraging discussions on various topics, and potentially changing closed individuals’ hearts, minds, and desires to be more open. This openness can trigger action and bring about change for both individuals and society as a whole.

Transmedia storytelling represents a multi-directional communication network where the construction of fictional worlds becomes a social practice for both artists and consumers, allowing them to engage in dialogue long after the release of a media product. This concept, initially proposed by Henry Jenkins in response to the modern digital era of media convergence, acknowledges narrative extensions distributed through multiple media channels and enhances the overall narrative’s comprehensiveness.

Brands and consumers are interdependent, with customers influencing brand development and success while brands, in turn, impacting and guiding consumer behavior. Consequently, branding has evolved into “the story of belonging and pervasion,” enabling consumers to express their interests, attitudes, preferences, and personalities through the brands they choose. Moreover, brands serve as reliable sources of information and play a crucial role in the education and employment of a large group of consumers, particularly when formed into a brand community, which can be a potent force in society.

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In this research, focus group discussions were employed as a data collection method to gain a deeper understanding of the changes required to establish paradigm shifts in visual communication design as an integral component of the creative industry. This approach allowed for a more comprehensive exploration of the changes necessary to adapt to the evolving landscape of creative industries.

Another effective means of communicating with society in a visually straightforward manner is through infographics. Infographic design creates primary media in the form of print and digital posters that can be readily utilized by various groups, both now and in the future. Infographics offer a simple way to convey information to readers with less text and more visual communication. The application of design principles and elements, focusing on color composition, size, reading space, lines, dominance, balance, and proportion, is essential for creating effective infographics. A clear flow is key to a successful design process and yielding favorable results.

Raising awareness in society about building an industry based on sustainability is of paramount importance. Interactive storytelling is employed because it creates a more impactful message through audience involvement as active participants in the design process. This approach ensures that the audience is not just passive consumers but active participants in the message's creation and dissemination. This participation creates a deeper connection and understanding of the message, making it more likely to result in positive behavioral change.

The result of such efforts is a powerful social campaign aimed at raising awareness of plastic pollution through design installations, utilizing a narrative framework and incorporating visual storytelling and interactivity as communication tools. This approach taps into the power of design and multimedia to engage audiences and drive change.

Indonesia, as the fifth largest carbon-producing country in the world, faces significant challenges from the conversion of forests and peatlands to the issue of plastic pollution, which significantly contributes to carbon dioxide emissions in the Earth's atmosphere. The country's statistics show alarming levels of plastic waste, particularly plastic waste ending up in the sea, making Indonesia one of the largest contributors to plastic pollution worldwide. This is largely due to excessive public consumption of single-use plastics and inadequate waste management. Without consistent and simultaneous efforts to address these issues, climate change could become a permanent and devastating phenomenon, leading to various disasters in the future, such as extreme weather, economic disruptions, loss of habitat, and the emergence of diseases that threaten food supply, water, and overall quality of life.

Technology is continually evolving to meet human needs, streamline daily tasks, and address societal challenges. While technology does not eliminate jobs, goods, or services, it does gradually or rapidly replace established practices and technologies, necessitating adjustments in human behavior. People must adapt to new technologies, acquire skills aligned with market demands, and develop habits, mindsets, and activities suited to the era they live in. What was once commonplace may now be considered unusual.

Visual communication designers must be adaptable, open to new ideas, and view technological advancements and the emergence of new media as opportunities and tools rather than threats to their field. Designers and the business sector should recognize the strategic role of designers in developing problem-solving techniques and strategic approaches, in addition to their ability to create visually appealing designs. By using empathy as the foundation of their designs and employing ideation and prototyping to explore new approaches and media for effective communication, designers can adapt to changing target audiences and continually improve their designs.

The field of visual communication design education must also evolve and adapt to the changing demands of the times. This means that visual communication design education should encompass teaching additional hard skills required in the workplace, such as research, marketing research, human management, project management, and data analysis, alongside the traditional design skills. Moreover, it should emphasize the development of soft skills like leadership, teamwork, communication, anger management, time management, and critical thinking. In an era marked by rapid technological advancements and evolving workplace dynamics, graduates of visual communication design programs must possess a well-rounded skill set that enables them to excel in a competitive and ever-changing professional landscape.

"Sustainability in the Creative Industries" is an essential addition to the esteemed *Advances in Science, Technology and Innovation (ASTI)* series, meticulously curated to cater to a diverse readership that includes research and teaching professionals, consultants, industry experts, as well as representatives from government and international organizations. In collaboration with IEREK, the Springer ASTI series remains dedicated to introducing readers to vital new research in science, technology, and innovation (ASTI) that is pivotal for achieving sustainable development. This commitment to providing a platform for cutting-edge research and knowledge dissemination underscores the series' significance in the academic and professional landscape. By fostering a global dialogue on sustainable development and innovation, the ASTI.

Sustainability in the Fashion Industry



Contemporary Pop Textile Pattern: Application to Androgynous Fashion

Ciawita Atmadiratna Lautama, Enrico, and Evan Raditya Pratomo

Abstract

The application of textile patterns to a fashion product is highly considered by designers due to several reasons, including creativity stimulation, patience and control development, mental health and self-esteem improvement, stress and anxiety relief, as well as social ties enhancement. As a popular culture in 2021, the South Korean Squid Game series is reportedly the inspiration for the development of a pop contemporary textile pattern, which was then applied to the design of an androgynous fashion collection. Therefore, this study aims to determine the application method of a pop contemporary textile pattern to androgynous fashion collections. This is a qualitative study using the descriptive analysis method with the Wolfgang Jonas design micro-cycle containing the following, (1) study, (2) analysis, (3) synthesis, and (4) realization. The results were obtained through the following, (1) the placement of a textile pattern in various positions, (2) the processing of the pattern in different size scales, and (3) the adjustment of the pattern's size scale with clothing pieces.

Keywords

Popular culture · Pop contemporary · Textile pattern · Androgynous fashion · Design development

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1 Introduction

The existence of contemporary pop art is widely adopted by artists and designers in the production of designs. This affects various design fields such as fashion, which is presently inseparable from modern societal life. In this case, fashion products and their derivatives are often targeted and responsive to lifestyle trends. Contemporary fashion is also oriented to present trends, which are often short and not durable. This shows that the fashion process is always updated according to present demands. It also ensures the inseparability of contemporary fashion from popular culture, which is interestingly preferred by many people (Storey in Widayatmoko, 2014). Furthermore, the existence of a popular culture indirectly dictates trends in the fashion world, accompanied by social and political issues. Some examples of this culture include movies, music, sports, and lifestyle, with popular cultural icons subsequently containing the following, (1) worldwide films or TV series, (2) unique and striking music, (3) celebrities, (4) musicians, and (5) athletes with outstanding achievements or sensations. The products existing within this culture are also a preferable trend to many people, such as the South Korean Squid Game series globally aired in 2021. This emphasized a brutal competition involving both the male and female genders of various ages and backgrounds. Its popularity also increased the prestige of the actors and music involved. In addition, the utilized products were often found in the market, becoming one of the popular cultures demanded in 2021. This phenomenal TV series influenced people in the creative industry towards the development of various designs, such as textile patterns.

Textile patterns play an important role in the aesthetics of an overall fashion product design, specifically in beautifying one's appearance. Besides this, the products are more striking with the patterns of which the placements are highly considered by fashion designers. The style of dress is also a major source of consideration for these designers and

connoisseurs. This indicates that the placement of patterns needs to consider the style of a dress being combined with the fashion products. The androgynous style combines both feminine and masculine elements, due to its unisex traits in similar objects or subjects (Crepax, 2016). This androgynous term emphasizes two words in ancient Greek, namely *andro* and *gyne*, which indicates male and female, respectively (Bem in Wijayakusuma, 2020). The style also aims to harmonize existing gender differences (Hamenda, 2012) of which the prestige in the fashion world is increasing with the development of equality issues. This is because the combination of masculinity and femininity in one appearance ignores compartmentalized gender classifications, subsequently leading to equality consideration. Moreover, the standards of masculinity and femininity have reportedly changed (Danesi, 2004), causing the transformation of appropriate unisex fashion. This style commonly blurs the boundaries between genders, where the younger generation reluctant towards conventional stigmas is found to adopt androgynous patterns in their existence. Based on these descriptions, the increasing prestige of this style and the Squid Game series' popularity are subsequently combined in a fashion collection, which is aimed at young people within the age range of 20–27 years. Therefore, this study aims to determine the method by which a pop contemporary textile pattern is applied to androgynous fashion collections. The results obtained are expected to be increasingly accepted by the wider community.

2 Method

This is a qualitative study using the descriptive analysis method, where various phenomena, events, social dynamics, attitudes, beliefs, and perceptions are explained and analysed. In this context, the preparation of basic assumptions and rules of thought were initiated for utilization, accompanied by data collection for subsequent interpretation. The qualitative approach also produced descriptive data in written or oral forms, as well as possessed natural characteristics as sources of important direct, elaborative, and processed information. The data in this study were obtained through observation and literature study. Observation is the act of observing and carefully recording the phenomenon or object being observed. In this study, observation activities were conducted online and the data collected through observation were related to popular culture, the Squid Game series, and the androgynous style. Data related to supporting theories concerning popular culture and androgynous style were obtained through a literature study. Furthermore, the micro-design cycle of Wolfgang Jonas was used as a modification of the existing macrostructure. The micro-design contained four stages,

namely study, analysis, synthesis, and realization, where a more detailed process is produced with a solid foundation. According to Handayani (2020), these stages are described as follows:

- Study Stage: This emphasizes the literature and factual data that need to be obtained, i.e. the information related to popular culture, the Squid Game series, and androgynous style.
- Analysis Stage: This prioritizes the interpretation and evaluation of the data obtained to produce considerable products.
- Synthesis Stage: This stage consists of the overall descriptive understanding of a design problem to produce a solution. It emphasizes mind mapping, which contained the correlated keywords generated from data analysis.
- Realization Stage: This prioritizes the actualization of a design solution.

3 Popular Culture

Popular culture plays an important role in contemporary pop art, due to adapting to present emerging trends. This is defined as a set of thoughts, attitudes, ideas, perspectives, and images preferred by most people (Vyomakesisri et al., 2020). It also attracts a large number of followers and fans. According to John Storey and Strinati (in Widayatmoko, 2014), some definitions and characteristics of popular culture are as follows:

- Popular culture is aimed at the masses, mass-produced, and for mass consumption.
- The origination of popular culture prioritizes the people due to being a new custom containing a commercial value.
- Popular culture is the result of industrial capitalism regarding the generation of profits.
- Popular culture is a daily problem enjoyed by people from specific circles.
- The popular culture emphasizes the elements of fantasy and fun, which illustrates high-level entertainment.

Based on the possession of fun and entertaining characteristics, this culture dominates human life filled with boring routines and activities. It also reflects and influences people's lifestyles with its general and market nature (Dukut, 2018). As shown in Fig. 2.1, Squid Game is a South Korean series aired on Netflix, an internet-based subscription TV service. This was initially aired on September 17, 2021, and contained nine episodes emphasizing a brutal competition with a prize of 45 billion won. The participants were also

a group of people experiencing financial difficulties. The popularity of Squid Game succeeded in attracting global TV series audiences and became one of the most popular cultures in 2021. This subsequently increased the popularity of the actors and icons involved, as well as influenced the sales of products directly related to the series.

4 Androgynous Style

In the world of fashion, extreme and unique occurrences often turn out to become a trend due to creativity considerations. Unnatural things considered normal are also not uncommon in this sector. This emphasizes the androgynous style unnaturally considered initially during its emergence. Subsequently, this style is presently and increasingly considered reasonable and accepted by society. The prestige of the style is also increasing with a typical appearance prioritizing a unique element of ambiguity. This became a seasonally continuous trend with a fairly large fan base in the fashion world. In this context, the combination of two contradictory elements ensured style uniqueness, which was promoted by the people reluctant towards conventional gender stigma. This stigma is an important aspect always eradicated by androgynous style. Fashion is a component representing the identity of its users, including background, regional origin, character, social status, and feelings (Feisol, 2018). With the rise of androgynous style trends, the use of clothing also functions as a manipulator of gender identity (Ranathunga & Uralagamage, 2019), specifically in the physical transformation of masculinity and femininity standards. Through dress and appearance, groups of people often easily challenge the gender roles assigned to them. According to Marcangeli (in Ranathunga & Uralagamage, 2019), the fashion world changed gender characteristics

by transforming masculine into feminine and vice versa or combining both sexes.

Since medieval Europe, the androgynous style became popular with the end of World War I, when young women were able to perform men's jobs. They also used gender ambiguity to reject the passive traditions restraining and demanding more freedom to conduct the roles normally reserved for men (Thesander in Crepax, 2016). Subsequent refusals were observed in wearing torturous dresses and corsets limiting mobility. This led to the transformation of wearing short dresses with straight silhouettes while having low haircuts similar to men. The style is often known as the *garçonne* appearance, which emphasizes a youthful physicality (Crepax, 2016). Based on Freeman (in Ranathunga & Uralagamage, 2019), two typical appearances differed in androgynous styles, namely male femininity and female masculinity, which are the display of men and women's physicality as feminine and masculine appearances, respectively, as shown in Figs. 2.2 and 2.3. These appearances were determined by silhouette, material, colour, and fashion pattern. Silhouettes are commonly synonymous with a feminine appearance, which highlights body curves, smooth and shiny silk or lace materials, festive patterns, and bright colours. Since the loose silhouette did not highlight these curves, the sturdy material with neutral colours and simple patterns was identical to the masculine appearance. In addition, the perception of these appearances was generally adopted by the adherents of androgynous styles and gender ambiguity reflection.

The increasing number of movements and reluctant people supporting and rejecting gender equality and stigma increased the prestige of the androgynous style. This style is presently and widely adopted by young people refusing conventional gender stigma restraints, based on their will to wear clothes regardless of acceptance or rejection from the

Fig. 2.1 Squid Game series poster. *Source* (Talukder, 2022)





Fig. 2.2 Female masculinity. *Source* (Feminine Male Fashion) <https://id.pinterest.com/pin/412009065904864061/>

surrounding community (McNabb, 2018). Contemporary fashion trends are also presently filled with representations of gender issues and boundary infiltrations between masculinity and femininity (Gligorovska, 2011). This indicates that the androgynous style has become an important trend in the fashion world, which is inseparable from popular culture. This inseparability contributes to the elevation of prestige, as some popular celebrities are commonly observed in the style. The portrayal of these celebrities as role models also causes their respective clothes and accessories to become a trend hunted by the masses. In this case, the role of popular culture is highly effective in increasing the prestige of a trend. The androgynous style displayed by some of these celebrities is also a trend breaker representing the rejection of conventional gender stigma.

This style began to penetrate the Hollywood film industry in 1930 with the masculine appearance of Marlene Dietrich in a movie named *Moroccan*. This was the first Hollywood artist to popularize the appearance of women by wearing tuxedo suits, subsequently inspiring designer, Yves Saint Laurent, to modify male wear. The designer also released the female *Le Smoking Tuxedo Suit*, whose appearance was accompanied by various controversies. In this context, the appearances of Marlene Dietrich in the *Moroccan* movie and Yves Saint Laurent's *Le Smoking Tuxedo Suit* broke the concept of female clothing.



Fig. 2.3 Male femininity. *Source* (Ask DapperQ: Androgynous (NOT Masculine) Wedding Attire? | DapperQ | Queer Style) <https://id.pinterest.com/pin/365143482291008502/>

Meanwhile, the Peacock Revolution in the 1960s helped break the concept of male clothing (Githapradana, 2022), leading to the emergence of androgynous styles in popular culture. During this period, male musicians often combined feminine elements in each of their appearances. For example, The Beatles and Jimi Hendrix were some of the musicians that pioneered the Peacock Revolution, with their performances widely admired by the younger generation of that period. The boredom of these young people regarding the concept of masculine and typical monotonous appearances attempted to break the gender stigma by incorporating feminine elements into their physicality. This indicated that the concept of male masculinity appearances changed because of the presence of related feminine elements. Besides this, the emergence of bohemian hippies, glam rock, punk, and new romantics on the outskirts of the city contributed to the androgynous style of men during the Peacock Revolution (Githapradana, 2022). In previous decades, the performance of some musicians and celebrities such as David Bowie, Boy George, Prince, Grace Jones, Annie Lennox, Harry Styles, Ruby Rose, and Jared Leto

periodically signified the continuous existence of this style in popular culture. This showed that the androgynous style and popular culture were two continuously coexisting elements. The existence of this style for decades also reflected the continuous rejection of conventional gender stigma by several reluctant people. In this context, the issue of gender equality has subsequently strengthened the existence of androgynous styles in the fashion world. This restrained its users from the gender stereotypes distinguishing men and women from each other.

5 Pop Contemporary Textile Pattern

Patterned textiles are applied in various creative fields, such as fashion, decoration, and interior design. In this case, selling and aesthetic values are commonly attached to these patterns. The world of fashion is also quite common with the existence of patterned textiles, due to being closely related to each other. Moreover, design elements and principles are inseparable, including textile patterns. According to Brommer (2000), design elements contained line, shape, form, colour, value, texture, and space, while the principles included balance, movement, rhythm, contrast, emphasis, pattern, and unity. This confirmed that a textile designer needs to carefully process both variables when designing a pattern composition (Worbin, 2010). A pattern also contains various harmoniously-applied elements and principles. In designing a textile pattern, repetition is always an unavoidable element, due to the repeated application of a specific method. Based on Worbin (2010), the following types of basic repetition methods were observed in the design of textile patterns.

- Straight repeat is the repetition of patterns placed in horizontal and vertical rows, with precise intervals from the previous motif.
- Running bond/tile/brick wall repeat is the repetition of horizontally lined patterns, where the second row is not parallel to the first position. This represents the position of the brick wall placement.
- Half drop is a repetition of patterns vertically placed where the second row is not parallel to the first part. This is similar to the brick wall and the most popular method in textile design.

Pop contemporary textile patterns reportedly adapt to the trends presently emerging and demanded by the wider community. This shows that popular culture is always associated with the design of a pattern. Some textile designers also adapt to highly demanded trends and presently-evaluated issues. As a popular series in 2021, Squid Game was a popular culture of which the popularity motivated the

design of pop contemporary textile patterns, as shown in Fig. 2.4.

These patterns were designed by Cheryl Angeline Azalia Santofe, a student of the Fashion Product Design and Business study programme at Universitas Ciputra, Surabaya, Indonesia. As a Squid Game fan, this student loved the plot and the unique story concept of the South Korean series, which was subsequently expressed in textile motif patterns. In the series, each competitor wore a uniform with a serial number on the chest and back, which were then contained in this textile pattern design. These numbers were combined with random blood splatter elements, which reflected the brutality and sadism of the bloody competition. The placement of these numbers was also repeatedly composed with a brick wall method in the series. This represents the sequence of participants waiting their turn to compete and encounter death. In addition, the colour of the uniform worn by these participants was bluish green.

This pop contemporary textile motif was gender neutral, regarding its non-reference to a specific sex. These unbiased specifications indicate that the design applied to male and female clothing or a combination of the two. With its

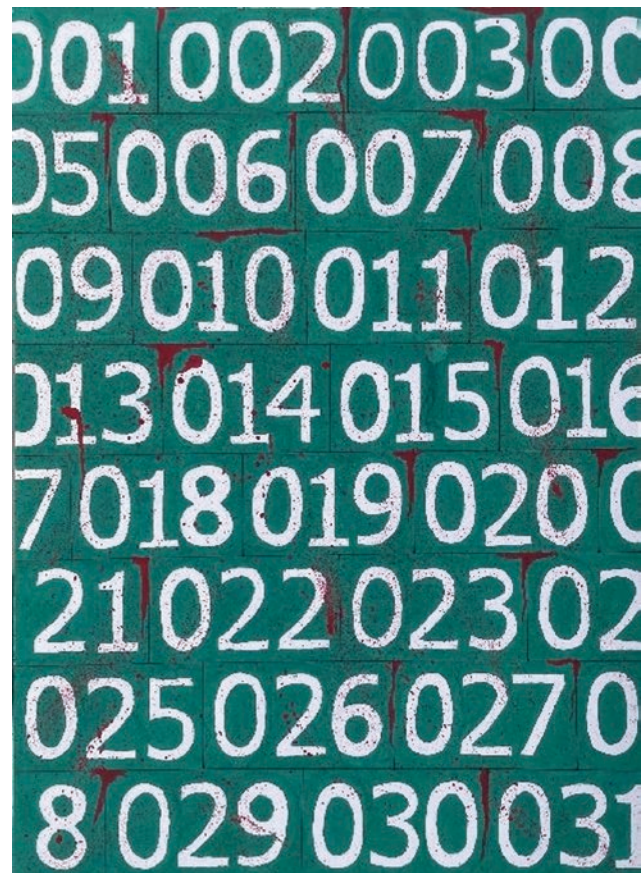


Fig. 2.4 Textile pattern by Cheryl Angeline Azalia Santofe, inspired by Squid Game series. *Source* (Personal documentation, 2021)

versatility, this pattern was applied to androgynous fashion collections.

6 Application to Androgynous Fashion

The placement of patterns is a great concern for fashion designers, due to not being accomplished arbitrarily. In this context, the brick wall repeat method has several advantages, which are applied in the design of androgynous clothing. These advantages are as follows:

- Textile patterns are placed in a vertical, horizontal, or diagonal position,
- The appearance is more dynamic because the row positions between patterns are not similar,
- The size scale is processed and developed, causing a non-monotonous appearance.

The design of this fashion collection emphasizes young people between 20 and 27 years old, due to their interests in exploring and experimenting with appearance. In this context, the clothing collection was an androgynous style, consisting of two outfits each for men and women. The pop contemporary textile motifs inspired by the Squid Game series were also applied in this collection. In addition, the concepts and design solutions were obtained through the mapping of the keywords acquired from the data analysis as shown in Fig. 2.5.

Dynamism is a characteristic commonly shared by popular culture and androgynous styles. This showed that the feature is observed in various types of cultures, as well as their respective details and characteristics. It is also found in the multiple perspectives provided by androgynous styles. From a specific perspective, the combination of

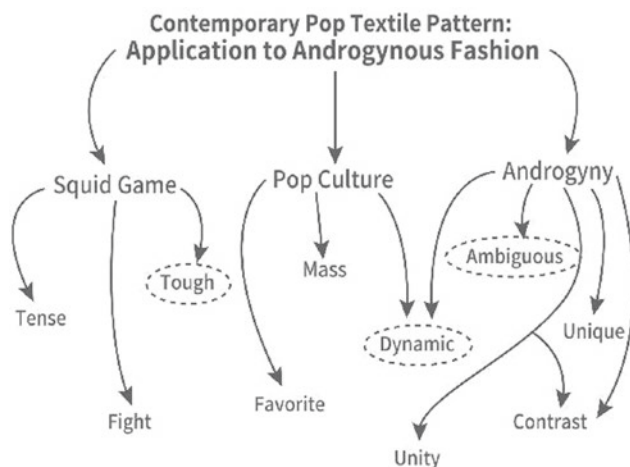


Fig. 2.5 Mind mapping. *Source* (Personal documentation, 2022)

masculine and feminine elements represents gender ambiguity. Meanwhile, the brutality and severity of the Squid Game competition emphasize the harshness and fierceness of life. Ambiguity, dynamism, and firmness are the design concepts of this fashion collection, which are implemented in the following form:

- Ambiguity is implemented as a combination of feminine and masculine designs in every outfit.
- Dynamic is implemented in a combination of curved striped and straight line designs, as well as variations in the size scale and placement of textile patterns.
- Firmness is implemented in the application of a firm line design, to display a sturdy and structural impression.

The clothes designed were tailor-cut clothing with firm lines of which the colours consisted of white, grey, and bluish green from the utilized pop contemporary textile patterns. In this case, white and grey were the neutral combinations used with the dominant bluish-green colour in the pattern.

All female androgynous clothing contained three pieces of design as shown in Fig. 2.6, namely (1) a top piece with a collar, (2) a bottom piece as pants, and (3) an outer piece as a vest. Meanwhile, the male clothing consisted of two and three pieces of design, as shown in Fig. 2.7 (a vest top and pants, a collared top, pants bottom, and a long vest). The application of a curved striped and a straight line

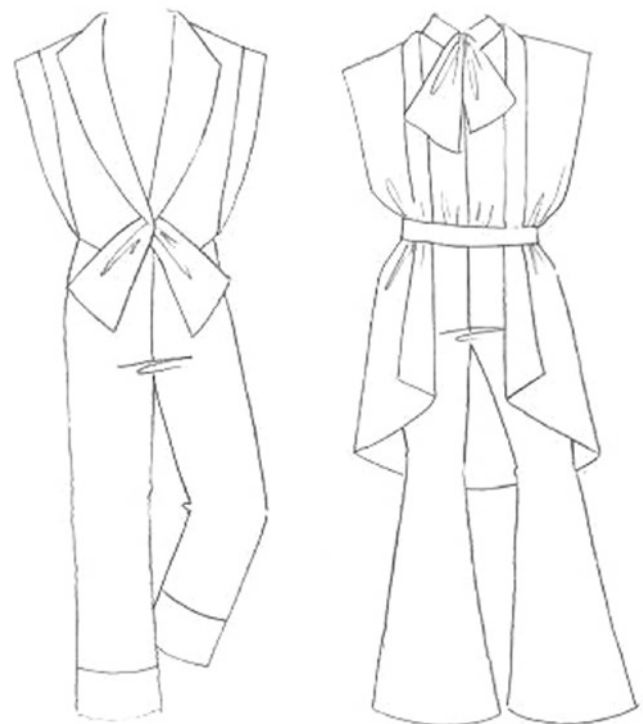


Fig. 2.7 Male androgynous design. *Source* (Personal documentation, 2022)



Fig. 2.6 Female androgynous design. *Source* (Personal documentation, 2022)

design also increased the dynamic element in the designed clothing. In this context, the feminine element in male clothing was represented by the ribbon detail at the top and bottom of the collar, as well as the outer silhouette of the long vest accentuating the waist curve. This subsequently indicated that the back of the vest was longer than the front. Furthermore, other vest tops had a low neckline with tight cuts, indicating that the masculinity in female clothing was represented by solid and firm design lines. This was observed on the external part of the vest and pants bottom, as well as the loose clothing pieces that did not highlight the body curves. Dynamic elements were also applied to the placement of pop contemporary textile patterns, which were processed with different size scales. These were subsequently applied with various patterns to avoid monotonous and boring impressions. The addition of colour gradation to the textile pattern was also observed, as the design was found to be more 'alive' and not flat.

As shown in Fig. 2.8, Look 1 contained a collared top, a vest, and pants. In this condition, the sleeveless collared top had an opening in the front, with the outer vest designed with a tapered shape at the bottom. This was subsequently equipped with a cut line at the shoulder leading to the sleeves. The bottoms were also slim-cut trousers with pockets on both sides, where grey colour was used on the top,



Fig. 2.8 Look 1. *Source* (Personal documentation, 2022)

bottom, and the panel cut stitches on the vest. Pop contemporary textile patterns were then applied to the outside of the vest and the pants pockets. On the shoulders of the vest, the patterns were also placed parallel to the panel pieces leading to the sleeves. In this case, the patterns with a larger size scale were diagonally placed at the neckline of the vest. Meanwhile, small-scale patterns were placed parallel to the waistband in the pockets of the pants.

Based on Look 2, a collared top, a vest, and pants were observed, as shown in Fig. 2.9. This showed that the cropped sleeveless top was combined with the Shanghai collar, where the outer part of the vest was designed through a loose cut. Subsequently, this was equipped with a cut line on the sleeves leading to the bottom of the vest. The bottoms were observed as wide-cut culottes, where grey and white colours were used in the vest cut and the Shanghai collared top, respectively. Pop contemporary textile patterns were then applied from the shoulders to the neckline on the overall vest and pants. This indicated that the patterns were placed in oblique and parallel positions on the vest and pants, respectively.

As shown in Fig. 2.10 above, Look 3 emphasized a dress consisting of a collared top and pants. This confirmed



Fig. 2.9 Look 2. *Source* (Personal documentation, 2022)

that the sleeveless collared top was designed with a low neckline exposing the front of the body, as a ribbon was observed at the bottom end of the collar. Moreover, cut panels were observed on the sleeves, with the bottoms emphasizing straight-cut trousers. A grey colour was also used on the tops and bottoms, with pop contemporary textile patterns applied to the collar, ribbon, sleeve panels, and the pants' lower part. On the top collar and ribbon, the patterns were placed diagonally, with a smaller size-scale design positioned above the sleeve panels. Besides this, the patterns were placed at the bottom in a diagonal position, regarding the pants.

According to Look 4, a collared top, a vest, and pants were observed, as shown in Fig. 2.11. This indicated that the sleeveless top was completed with ribbon detail, where the knee-length vest was designed using a loose fit and a belt. The back of the vest was also designed to be longer than the front, as the bottom emphasized the trousers with a boot-cut cut. Furthermore, a grey colour was used on the vest and belt, while white was utilized on the top collar and ribbon, as well as the inner lining of the vest. Pop contemporary textile patterns were also applied to the overall top and pants. This showed that the patterns with a smaller size scale were placed in an upright position at the top. The textile motifs with a larger size scale were also placed on all parts of the pants, in a position parallel to the waistband.



Fig. 2.10 Look 3. *Source* (Personal documentation, 2022)



Fig. 2.11 Look 4. *Source* (Personal documentation, 2022)

7 Conclusion

Based on the androgynous fashion design, the following conclusions were obtained regarding the application of pop contemporary textile patterns to the clothing collection:

- Placing pop contemporary textile patterns in vertical and diagonal positions for a more dynamic and varied observation.
- Processing the textile patterns with three different size scales, namely small, medium, and large.
- Adjusting the size scale of the patterns with fashion cuts. This indicated the utilization of smaller and larger scales for small and large clothing pieces, respectively.
- Providing the gradations of white and black to pop contemporary textile patterns, for a more 'live' and dynamic appearance.

The results are expected to be a reference for the public, as well as fashion connoisseurs, practitioners, and designers, regarding the application of popular culture and pop contemporary textile patterns to androgynous style clothing collections.

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Developing a Mobile Fashion Dictionary to Improve Understanding of English Vocabularies for Fashion

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Abstract

Generally, fashion students in higher educational institutions have difficulty to learn English fashion terms and their meanings. This situation inspired researchers to develop a media of mobile fashion dictionary. This research aimed to design and to assess the feasibility of the digital application developed for fashion students at universities. The development model of this study adapted Pressman's waterfall process through analyzing the software and designing and its employing. The results showed that the concept of the mobile fashion dictionary constitutes two parts. First, the database of the mobile fashion dictionary was consisting of 9300 vocabularies with a definition and accompanying illustration. The second was the application of software system of the mobile fashion dictionary to users. On the other hand, the feasibility test stated that the mobile fashion dictionary application was feasible enough to be used by university students or public who want to learn fashion. In conclusion, the media can be used by fashion students at universities and public to understand English words or terms of fashion quickly.

Keywords

Fashion dictionary · Fashion terms · Higher education · Vocabulary · Media for fashion learning

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1 Introduction

Languages constitute a necessary means of communication (Copp et al., 2021; Patel, 2015; Reboul, 2015). Languages are a requisite skill with which to see the world and compete in the global context (Akhter et al., 2020; Sudarmo, 2021) as they allow humans to acquire vast knowledge and build up a strong network of relationships worldwide (Bettney & Nordmeyer, 2021). For this reason, languages are an essential skills everyone, especially university students, should possess in order that they can be competitive enough in the business world or continue their study to the higher level of education. One of the language skills university has to master is English skills. English is a language considered to be the most widely recognized language in the world (Dubey-Jhaveri, 2001). In fact, it has become an international lingua franca in which communication in almost all fields has been established (Alharbi, 2015).

Although their national language is not English, it is still important for Indonesian people—particularly for university students as the succeeding generations of the nation—to learn and practice English (Andayani, 2022). However, as a matter of fact, many of the Indonesian students feel afraid to practice English (Mahmudi & Anugerahwati, 2021). It also happened in fashion students. Although English is included in the list of compulsory subjects, however partly university students cannot practice it fluently. This happened because it is one of the subjects of which most fashion students are afraid. Besides, they have poor basic skills at English although they did get English lessons at their previous educational institutions (primary school, junior high school, and secondary high school). In the other hand, they have to accept the fact that the English course they attend at the university requires them to understand and use both spoken and written English according to their own fields.

In their process of learning English, the memorizing and recalling of English vocabularies become the greatest obstacle for those students (Hao et al., 2021). This has

forced them to search for the vocabularies that they want to use from the Internet, translating tools, dictionaries, and e-dictionaries among others (Alamri & Hakami, 2022). However, those vocabulary applications they choose do not provide the integrated method or model appropriate for each of their fields. The existing e-dictionaries only offer them a narrow definition of each entry without satisfactorily explaining its meaning, not to mention displaying images illustrating it. Ibrahim et al. (2021) explained that visual images can help streamline the process of memorizing words and other learning processes. Eventually, such factors contribute to the difficulty students have to experience when trying to memorize vocabularies.

The purpose of this study is to develop an interactive learning media in the form of integrated, mobile-based digital dictionary in the field of fashion, called FASHCABULARY. This contained integrated entries on important, technical terms of the fashion field equipped with the definition, explanation, and specific images illustrative of the entries. A mobile-based dictionary, FASHCABULARY will provide students with easy access to learning processes anyplace and anytime. Besides, this can also be used by the public concerned with fashion to enrich their knowledge of English terms for fashion.

2 Literature Review

2.1 Integrated English Digital Dictionaries

A dictionary is a book containing an alphabetical list of words which provides any information about lexical items for users (Valli et al., 2021). According to Rabiah (n.d.), a dictionary is a tool designed to respond to audiences' real needs, such as their need to communicate with other people speaking different languages. According to this definition, a dictionary can be seen as an important language learning medium providing a large number of vocabularies which can facilitate effective communication in different languages. Alqahtani (2015) affirmed the importance of vocabularies in second-language acquisition and academic achievements. In short, a dictionary is an important medium in learning languages. Chan (2014) also mention that a dictionary can make a good accompaniment for students since it can give them instant and direct access to many things, i.e., it provides second-language learners meanings of foreign words (Boulton & De Cock, 2017).

Furthermore, one of the dictionaries is a digital dictionary, commonly referred to as e-dictionary (Rezaei & Davoudi, 2016). E-dictionaries are favored by many people, including university students (Valli et al., 2021). Their flexibility makes e-dictionaries easier to use than printed ones.

E-dictionaries list words in an alphabetical order along with their meanings, or similar words or expressions in different languages; besides, they also give information on how to pronounce and use every single of their entries, in addition to the information about the history of each word, namely the time when it was first used. Karami and Riasati (2023) mentioned that English e-dictionary has been widely distributed, but it is still hard to find the ones compiled specifically for a particular field of study. The existing, widely used English dictionaries contain common words instead of specific technical terms in particular fields. E-dictionaries are by definition in a digital form to be installed on cell-phones, smartphones, or laptops.

Meanwhile, the integrated English digital dictionary under discussion in this study is the one which contains technical vocabularies and terms in fashion. In addition to the definition of a word, this dictionary is equipped with visual images illustrative of the word chosen. These all are displayed in an integrated way to support each other.

2.2 Mobile Learning

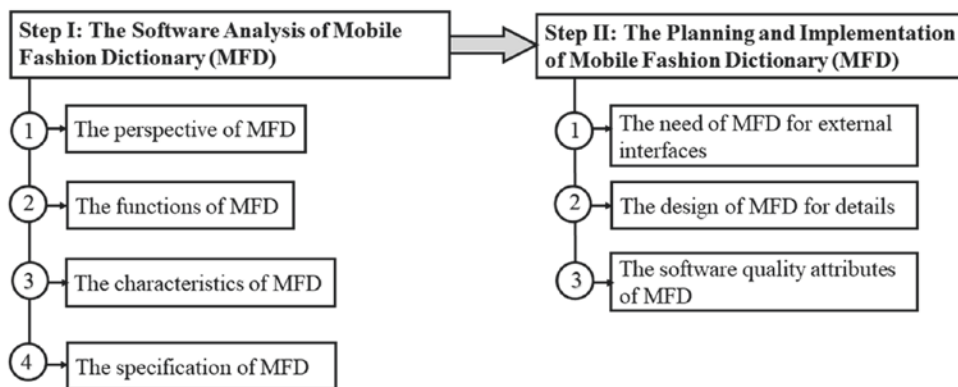
The e-dictionary developed to build students' vocabularies in the fashion field is a mobile-learning dictionary. Mobile learning (m-learning) is a learning process through the Internet accessed via digital devices like cellphones or tablets to get subject matters from cellular applications, social interaction, and online education centers (Dias & Victor, 2022; Sung et al., 2016). This is a flexible learning process which allows students to access subject matters wherever and whenever (Houlden & Veletsianos, 2020; Looi et al., 2014).

Moreover, mobile learning provides educational institutions with some methods for sharing knowledge and delivering educational contents wherever and whenever they need to do so (Ally & Prieto-Blázquez, 2014). At the same time, students use the application and digital devices to finish and submit assignments to their teachers, download course instructions, and do assignments in a social-media group (Montrieux et al., 2015; Serdyukov, 2017). Therefore, mobile learning can help facilitate effectively students' learning (Wu, 2018).

3 Research Method

The research and development of the software application of mobile fashion dictionary was adapting the model of Pressman's waterfall process (Andrei et al., 2019; Muntaheen, 2021), as shown in Fig. 1. The main reason of the use of this model was the characteristic of the product that has similarity to the steps in the waterfall process, in

Fig. 1 Waterfall model adapted from (Andrei et al., 2019)



which the specification of the product development has been well identified, including the necessary supporting technology.

Figure 1 shows that the model consisted of two steps: the software analysis and the planning and implementation of mobile fashion dictionary. The first step included the perspective, function, characteristics, and specification of mobile fashion dictionary. The second step included the need for external interfaces, detailed planning, and the software quality attribute of mobile fashion dictionary. The following is the detailed explanation of both steps.

3.1 The First Step: The Software Analysis of Mobile Fashion Dictionary

This part consists of four steps. The first is the perspective of digital fashion dictionary. This dictionary is an application designed specifically for fashion students. On the menu bar are some words or terms users can choose by clicking them. Once users choose a particular term, the dictionary will display an image illustrating the term along with the definition of the term in English. The programming language used in this software included java, xml, html, JSON, and PHP. Meanwhile, the application used to design included Android Studio, Sublime, and phpMyAdmin. Second step is the function of digital fashion dictionary. The function of this software includes admins to access the data on admin's website and users to display particular categories for word search. The third is the characteristics of digital fashion dictionary. The characteristics can be seen from what admins and users can do. Admins are allowed to do data processing and change or add entries to be displayed, while users are allowed only to search for the definition of words with which they have not been familiar. The last stage is the specification of digital fashion dictionary. For this application to be used, it needs the Internet access and the use of Android platforms by smartphones.

3.2 The Second Step: The Planning and Implementation of Mobile Fashion Dictionary

The first stage is the need for external interfaces for mobile fashion dictionary. This was divided into four parts: user interface, hardware interface, software interface, and communication interface. User interface allows users to run the application of mobile fashion dictionary with the help of smartphones. This application displays menus and images to users directly on their smartphone screen and accepts user input through the menu button and the button on screen. Users process the input by touching the screen. Hardware interface can be used only with general hardware in the form of smartphones. Another requisite for the system is the Internet connection which can be accessed via SIM cards or WiFi. Meanwhile, software interface is shown by the application of mobile fashion dictionary which can be accessed via smartphones with Android operating system with the support of the Internet connection. Indeed, users should have downloaded the files of the application and installed them on their smartphones. Communication interface requires the Internet connection to connect mobile devices of users, server, and admins.

The second is the design for the details of mobile fashion dictionary. The design included use case, performance, software system attribute, and other requisites. Use case planned this information system to have two actors: admins and users. Admins are responsible for making dictionary entries and updating data and images of mobile fashion dictionary. Users can access the data of fashion e-dictionary and process inputs to the application that has been run. The performance of fashion e-dictionary can be seen from the need for response time, data availability, and recovery time. The response time needed to access data is 10 s at maximum. As long as the server is on, the data will be available 24 h a day and 7 days a week. Meanwhile, the recovery time expected is 24 h after an error is detected.

The software system attribute consists of error-handling, message, security, and probability. Other requisites for the application include the application display, the menu format, the color of the application, and font styles.

The third is the software quality attribute of mobile fashion dictionary. This is divided into two parts: reliability and maintainability. The reliability of this application makes easy for students to search the application for fashion terms in foreign languages to the extent that they can differentiate meanings of those terms by knowing their equivalents in English terms. Meanwhile, maintainability of application can be seen from the ease with which admins perform maintenance activities through updating the database with new terms.

4 Results and Discussion

Based on the development process of mobile fashion dictionary, the discussion is divided two aspects: database and the application of software system. The detailed description of both aspects is as follows.

4.1 The Database of Mobile Fashion Dictionary

The preparation for the database development involved 93 students from three English classes. Those students were asked to collect fashion-related words or terms frequently used in their activities in the field of fashion. This was considered to be effective enough considering that in the process of manufacturing fashion products, they often found English fashion terms which they did not understand. During this process of vocabulary collection, as many as 9300 vocabularies were collected; however, this number of vocabularies should have been selected to avoid the repetition of the same words. After the selection, the collection of words was arranged in an alphabetical order, and then each was given a definition. Subsequently, visual images suitable to each of the words or terms were inserted. The next step was to check and confirm the overall data to ensure suitability of words, definitions, and images before the programmer input the data into the software. The process of collecting database could be repeated many times as the database development continue. Figure 2 illustrates the process.

4.2 The Application of the Software System of Mobile Fashion Dictionary

The first step taken was to prepare and analyze the need of the software developed. This step was taken to specifically

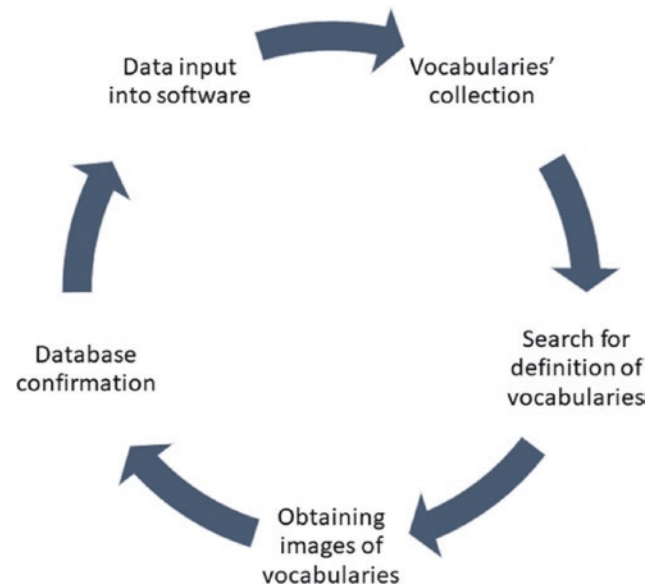


Fig. 2 Process of the database development adapted from (Vithani & Kumar, 2014)

describe the application of mobile fashion dictionary developed. To obtain information about the contents and features expected as input the application of mobile fashion dictionary, the researchers conducted interviews and processed information. The data obtained from those processes was subsequently analyzed and categorized in accordance with the need of the system and its purposes.

The next step was to design software system. Developing the system's design suggested was an application whose software could translate and describe particularly chosen words and display visual images illustrating the words. The programming language involved in this process of developing the software included java, xml, html, JSON, and PHP. Meanwhile, the application used to design the software included Android Studio, Sublime, and phpMyAdmin. The product perspective of the system application is shown in Fig. 3.

Figure 3 shows how the concept of the data of the application was formulated; namely, the data input from the computer of the server/admins was stored in the server. The data in the server was then accessible by mobile devices and could be displayed on the devices. According to the concept, the application of mobile fashion dictionary was designed to be used by university students, especially fashion field, to help them search for technical terms used in the fashion field by choosing the displayed menus. In each menu are choices of English words or terms. If users choose one of those words, they will see an image and definition of the word given in English displayed on their screen such as Fig. 4.

The application of mobile fashion dictionary is called FASHCABULARY. It has no specific hardware interface

Fig. 3 Product perspective of the system application adapted from (Chopra, 2010)

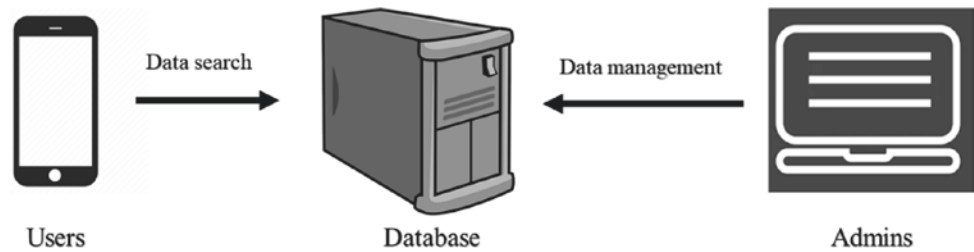
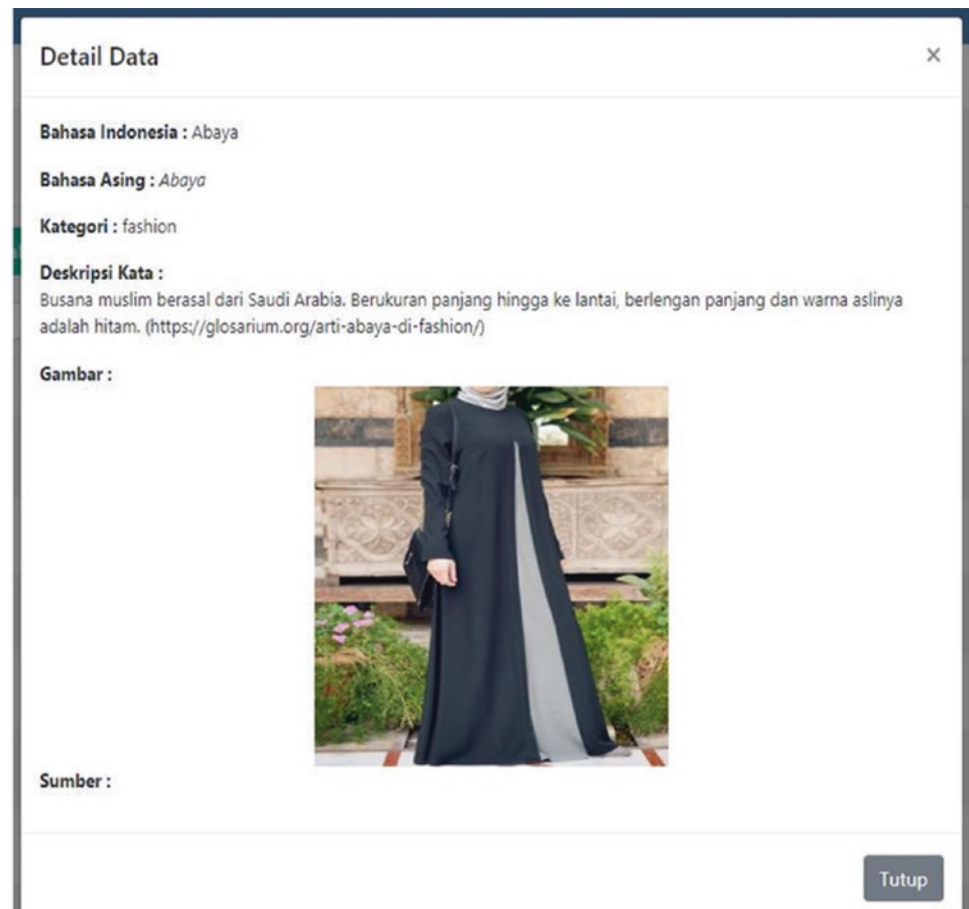


Fig. 4 Detailed display of the terms chosen by users adapted from (Panjimhs, 2019)



but a hardware in the form of smartphones. Additionally, the operation of the application of this system needs the Internet connection provided by SIM card or WiFi.

Subsequently, this software has two actors: admins and users. Admins can process data input, issue updates, and delete the data or images on FASHCABULARY. Users can access the data on FASHCABULARY and submit feedback or suggestion concerning the application that has been run. As shown in Fig. 5, admins and users establish different relations with the application as regards what each can do. The application-admin relation deals with data management. Admins are offered a full access to some features of the application like data input, data deletion, data update,

and data information; however, such access is given only if admins log in using the registered username and password. Meanwhile, the application-user relation allows users merely to search and access the data input by admins.

Needless to say, in order to make use of this application, users have to download the application beforehand. This step is shown in Fig. 6a–f, which shows that after being installed via APP Store, if opened, the splash screen of the application will display its logo, name, and brand, just as illustrated in Fig. 6a. Subsequently, the main menu will display the main features of the application: search, about, and exit (see Fig. 6b.). The search menu offers two choices: search for vocabularies and search for meanings. The search

Fig. 5 Relations of the application with both admins and users adapted from (Paul, 2008)

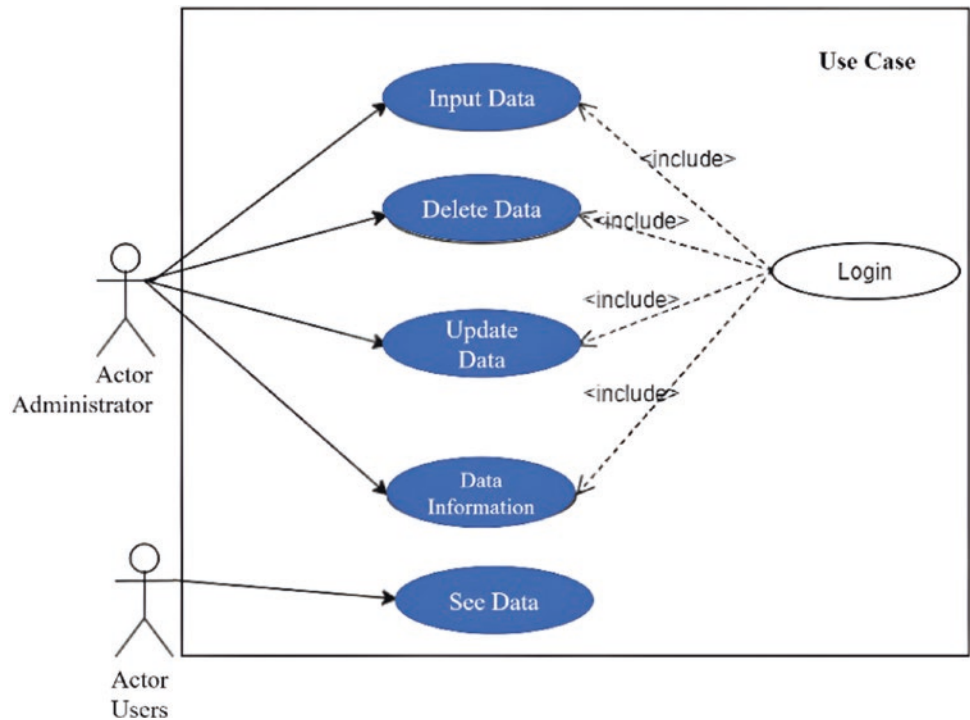
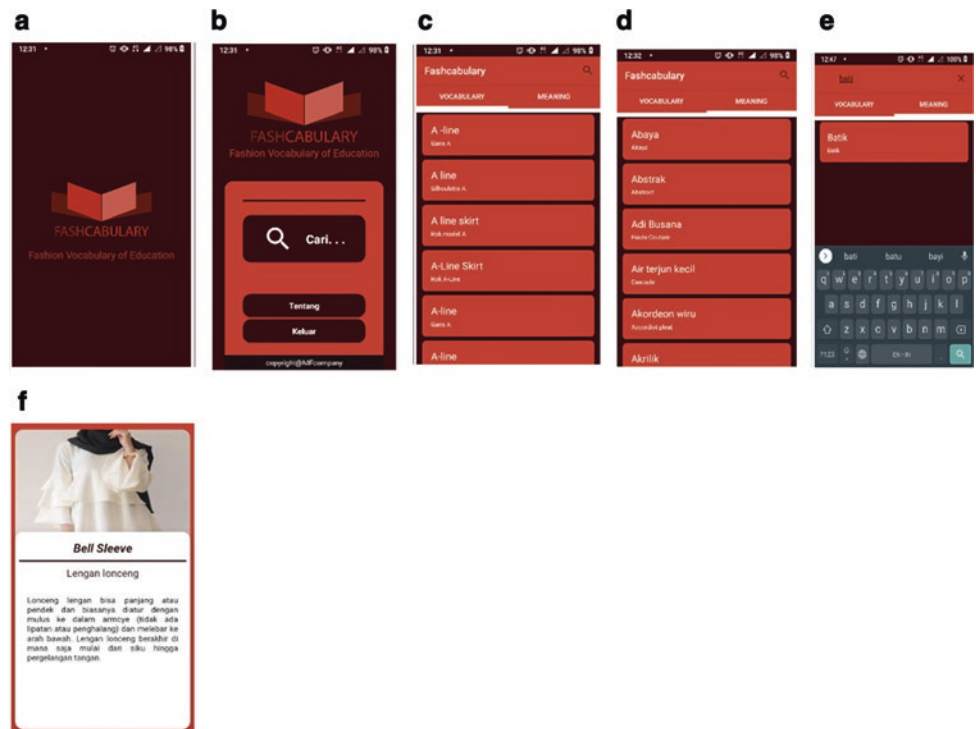


Fig. 6 a-f Users' process of accessing the application adapted from (Wang, 2017)



for vocabularies is the menu which posts a list of fashion terms in English such as Fig. 6c. The search for meaning is the menu posts a list of fashion terms in Indonesian likes in Fig. 6d. In this search, menu is a sub-feature which allows users to perform a keyword search manually by clicking on

the search icon in the upper part of the application (seen in Fig. 6e.). Meanwhile, the detail menu as shown in Fig. 6f presents information of the dictionary which including images, English fashion terms, Indonesian fashion terms, and the description of those terms in.

Table 1 Expert assessment result of application of mobile fashion dictionary

Components	Indicators	Assessment result			Average scores	Conclusion
		Expert 1	Expert 2	Expert 3		
Performance	Response time	86	85	86	85.67	Very feasible
	Data availability	86	82	84	84	Feasible
	Recovery time	90	90	88	89.33	Very feasible
Software system attributes	Error-Handling	90	90	90	90	Very feasible
	Security	88	87	86	87	Very feasible
	Portability	89	90	90	89.67	Very feasible
Other requisites	Application display	80	81	83	81.33	Feasible
	Menu format	82	80	81	81	Feasible
	Application color	78	76	80	78	Feasible enough
The average score					85.11	Very feasible

The feasibility study of this application involved media experts to assess it. The components under study included performance, software system attributes, and other requisites. The indicator and result of the assessment of each component are shown in Table 1.

Based on the result of the assessment process shown in Table 1, it was concluded that media experts considered the application fashion e-dictionary was feasible enough to be used by fashion students. The performance criterion of this application was 10-s response time to access data—a long waiting time for accessing data will make users feel a sense of discomfort or have a trouble; the data of the application remained accessible for 24 h; and the time for recovery or maintenance in case of an error was at maximum 24 h. The criterion for software system attribute of this application dealt with error-handling, security, and portability. The error-handling criterion is shown to overcome problems of bugs and errors when the application is run. The security criterion is shown to ensure data protection and give data access only to authorized users. Meanwhile, the portability criterion is to provide easy access when the application is run. The last component is other requisites, the indicators of which include the application's display, the menu format, the color of the application, and font styles. The display of the application is shown in the form of an image which can let users log in and lead them to the next page by clicking the image. The format of menus is shown in the form of a button arranged vertically downward to make it easy for users to interact with interfaces. The application is orange in color, which stands for warmth and cheerfulness to provide users with a sense of comfort. The orange color is combined with the white color to make the application look interesting and easy to remember. Eventually, the font style used in the application is Arial font.

5 Conclusion

The application of mobile fashion dictionary that developed by researchers stated feasible by media experts. The next step to take is to put the application to the field test to assess the effectiveness of product developed. The test should be in various higher education institutions having fashion students to know the effectiveness of the application in a wider range of users and, in turn, to receive more constructive feedback and advice from its users. The success of this application development will introduce innovations to help fashion students to learn English terms and understand their definition.

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Fashion Sustainability: The Practices Among Fashion Students During the COVID-19

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Abstract

Fashion is one of the world's most in-demand industries, with a tendency to fluctuate and change. However, during COVID-19, fashion was one of the affected industries, with many fashion businesses closing down, changing people's perceptions of fashion. People tend to follow trends or styles, which contradicts the nature of fashion. However, as the COVID-19 virus has spread, people have become more cautious about spending their money in order to survive and prefer to seek out more practical ways of consuming fashion, such as sustainability activities. The purpose of this study is to examine how COVID-19 has influenced fashion sustainability practices among Malaysian fashion students through semi-structured interviews with 21 people. The findings show that participants are hesitant to spend money on fashion items and prefer to use their remaining clothes by experimenting with more "mix and match." Furthermore, they try to avoid purchasing second-hand fashion items, primarily from fast-fashion brands, or they switch to slow fashion and focus on pre-loved items if they still want to buy. They also emphasise "waste to wealth" by upcycling their old fashion items, such as embellishments, embroidery, patchwork, beading, quilting, or altering their dress. Finally, to encourage themselves to engage in one of the sustainability activities, participants prefer to donate unused items to the needy

or exchange them for coupons (e.g., at H&M). Finally, COVID-19 has altered people's perceptions of fashion and gradually educated them to engage in fashion sustainability activities.

Keywords

Fashion sustainability · COVID-19 · Fashion students · Malaysia · Fashion consumers

1 Introduction

COVID-19's lethal virus and simple infection have shook the world. This virus spreads quickly, causing trauma and, in some cases, death. It has had an impact on many industries, including transportation, agriculture, manufacturing, construction, and retail trade such as fashion (Barlow & Vodenska, 2021).

Previously, the revenue of the fashion industry was projected to rise from US\$ 0.57 trillion in 2018 to US\$ 1.10 trillion in 2023 (Statista, 2022a, 2022b). However, it slowed significantly in early 2020 as a result of COVID-19, which affected almost all aspects of the fashion industry, including import, export, employment, turnover, production, and retail sales (Statista, 2022a, 2022b). Furthermore, the virus has caused the government to impose restrictions that prevent people from going outside in order to prevent the virus from spreading (Elengoe, 2020), which has negatively impacted the fashion industry, particularly physical stores. As a result, many fashion companies closed their doors, and thousands of other businesses suffered losses and uncertainty as a result of this virus (Debnath, 2020). Alternatively, some fashion companies have taken other measures to stay afloat, such as expanding their operations to online platforms (Wang et al., 2021).

The COVID-19 situation has had an impact not only on the fashion industry but also on fashion consumer

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behaviour, such as shifting priorities from unnecessary to necessary or essential items rather than wasting money (Karunaratne, 2021). Despite this, fashion fans continue to exist during COVID-19, but they are looking for alternatives, such as substituting sustainable fashion to save money while also preserving the environment. Recycling, upcycling, awareness-raising, mix-and-matching, and other activities are all part of fashion sustainability. However, research and public awareness of fashion sustainability in Malaysia remain low (Aziz et al., 2017; Hasbullah et al., 2020). As a result, this study investigates how COVID-19 has influenced Malaysian fashion students' fashion sustainability practices. A qualitative approach was used to conduct this study, which included semi-structured interviews with 21 participants from a local university. The data were analysed using coding and template analysis.

2 Literature Review

2.1 COVID-19's Impacts on the Fashion Industry Global

Coronavirus, commonly known as COVID-19, is a viral infection caused by the SARS-CoV-2 virus. This virus has had a tremendous influence on the globe since the end of 2019. COVID-19 was found in China, according to several hypotheses, and has since spread to other nations such as Spain, France, Italy, and many more, including South Korea, Japan, Singapore, and Malaysia (Liu et al., 2020). The Globe Health Organization (WHO) labelled the virus a pandemic in early 2020 because to its quick and extensive spread over the world (World Health Organization (WHO), 2020). This virus spreads swiftly by direct contact (e.g., respiratory droplets) or indirect contact (e.g., fomites and aerosol), both of which need entrance locations such as the eyes, mouth, or nose, according to Galbadage et al. (2020). This virus causes fever, coughing, lung infiltrative lesions, and, in the worst-case scenario, death (Kang & Su, 2020). By far, more than 6 million people are predicted to have perished from this virus as of June 2022 (Worldometer, 2022) as a consequence of the various COVID-19 variations such as Delta, Lambda, Omicron, and others, each of which has varied criteria and effects on victims all across the globe. People have begun to stock up on basic or necessary commodities such as food, medications, and toilet paper as a consequence of this circumstance (Austin, 2020).

As the virus spread, most governments worldwide were forced to enact the "lockdown" phase. People are not permitted to move or participate in any contact-based activities to prevent the virus from spreading. The first lockdown was established in the United Kingdom in March 2020, limiting interaction and travel, forcing individuals to remain at

home, and compelling them to wear masks when outdoors (Institute for Government, 2021). Meanwhile, the first lockdown in Malaysia happened in March 2020, during which the Malaysian government enacted several steps to restrict the virus's transmission, such as limiting people's ability to acquire essentials, social isolation, and the obligation to wear a mask (Rodzi, 2021). Elengoe (2021) adds to the list of limitations the ban on attending mass meetings, the obligation of undergoing health screening, shutting borders to foreigners, closing schools and colleges, and closing government offices (except for essential services). Those who do not wear a mask will also be punished if they are caught outside their house (Anjumin, 2021). To prevent the virus from spreading, several nations have encouraged or mandated their workers to work from home, and students have likewise studied from home (Sundaresan et al., 2020).

As a consequence of the limitations' adoption, numerous firms, particularly the fashion sector, have suffered. Many multinational fashion labels, including Zara, H&M, Gap, Oasis, Warehouse, Esprit, and Cath Kidston, to mention a few, have announced the closure of some of their physical locations throughout the globe (Kong, 2020). Other fashion companies, including Abercrombie & Fitch, Burberry, Guess, Levi's, Nike, Ralph Lauren, Salvatore Ferragamo, Under Armour, and many more, have lost millions of dollars as a consequence of the regulations that caused them to reduce their workforce. Other firms, such as J.C. Penney, True Religion, and Neiman Marcus, are facing a similar situation, as announced bankruptcy has had a substantial influence (Ilchi, 2020). Furthermore, numerous fashion factories or manufacturers were compelled to shut their doors and face the weight of garment production expenses, which might amount to up to US\$ 3.15 billion in Bangladesh alone, affecting over 1000 apparel companies (International Labour Organization, 2021). Aside from that, many workers have been laid off as a consequence of the closure of garment factories in the majority of apparel-producing nations, including Vietnam, India, Sri Lanka, Indonesia, and Myanmar, to mention a few.

COVID-19 has an influence on Malaysian fashion designers and companies. Salikin Sidek, a well-known local fashion designer, for example, was forced to shut one of his shops and sell the products in his shop for pennies on the dollar. Meanwhile, Robinson has shuttered its doors owing to the infection and lay off the bulk of their staff (David, 2020). Many small company owners in the United States have voiced anxiety about the epidemic and its limitations, which have lost them more than half of their sales (Silver, 2020).

Regardless of the hurdles and constraints created by COVID-19 regulations, fashion firms must establish revenue-generating alternatives or strategies in order to continue operating their operations. This includes shifting their

company from offline to online or concentrating more on online in order to survive the pandemic, and online customers have expanded as well, providing companies with additional options to diversify their goods more readily (Eger et al., 2021; Wang et al., 2021). Youn et al. (2021) also revealed that, as a consequence of the pandemic, fashion customers are transferring their channels to online, which has become one of the most important prospects for fashion firms in their online marketing. During the epidemic, internet customers included not only those who wanted to purchase online but also those who were originally less inclined to shop online but altered their choice owing to mobility constraints, according to Watanabe and Omori (2020). Simultaneously, customers like to be in a secure atmosphere (no direct or indirect interaction with other people), and thus they would rather remain at home and wait for their deliveries than go outdoors (Sheth, 2020).

Furthermore, in order to limit touch, most fashion shows have moved from offline to online. Paris Fashion Week, Milan Fashion Week, London Fashion Week, and other shows by well-known fashion designers such as Moschino, Prada, Balmain, Balenciaga, and others are held all over the globe (Glendinning, 2020). However, after two years, Paris Fashion Week is expected to return to an offline fashion show in January 2022 (News Wire, 2022) to satisfy fashion customers and lovers (News Wire, 2022).

2.2 COVID-19 Impacts on Fashion Consumers

COVID-19 has been shown in studies to have an impact on the fashion industry and consumer behaviour (Choi & Lee, 2020; Henkel, 2020; Kirk & Rifkin, 2020; Pang et al., 2021). The nature of fashion fluctuates and changes (Nenni et al., 2013). Despite their peculiar nature, consumers continue to purchase fashion products for specific purposes and in accordance with their consumption motivations (Kaur & Anand, 2021). During the COVID-19 pandemic, however, this pattern of fashion consumption shifted.

Globally, it was reported that demand for fashion items decreased during COVID-19 (Santamarina et al., 2020), which corresponded to a decrease in consumption of fashion products (Chakraborty & Biswas, 2020). COVID-19, according to Yeon et al. (2022) has had a significant impact on fashion consumers by shifting their focus away from fashion items and towards more important things. It was also stated that, as a result of COVID-19, people prefer to look for lower-priced essential goods, but are willing to pay more for products that they value and are worth the money, such as essentials (Ahmadi et al., 2022). As a result, fashion is regarded as less important during the pandemic.

This situation is related to events in several countries. During the pandemic, for example, more than half of UK

consumers bought fewer clothing items (Warden, 2020). Meanwhile, according to a study conducted by Vladimirova (2021), COVID-19 has reduced fashion consumption in various countries (the United States, the United Kingdom, Finland, Germany, Switzerland, Iran, the Czech Republic, India, and Hong Kong). South Korean consumption of fashion products, on the other hand, has been reported to be increasing (Pang et al., 2021). This has demonstrated that the outcomes of fashion consumption differ across countries and fashion categories.

Overall, the mixed reactions to fashion consumption show that COVID-19 has altered people's perceptions of fashion. They are willing to reduce their spending on fashion items (Liu et al., 2021) or consider fashion items to be non-essential (Arora et al., 2020). As a result, most people prefer to spend their money more carefully, primarily on necessities or essential items such as food, cleaning and household products, toiletries and personal hygiene products, medical and other disability-related health supports, and a variety of others (Karunaratne, 2021). Nonetheless, despite the challenges and obstacles posed by COVID-19, they continue to consume and browse fashion items, albeit not as a priority (Ong et al., 2021). They can still look for and buy the items online, as many fashion brands have expanded their businesses to include online platforms.

Despite the fact that the effects on the fashion industry have been enormous, studies on the impact of COVID-19 on fashion consumers are still lacking in Malaysia (e.g., Aziz et al., 2017; Hasbullah et al., 2020). As a result, more research should be conducted in Malaysia, taking into account the various reactions from different countries, such as fashion sustainability.

2.3 Fashion Sustainability in Malaysia

Despite being one of the most demanded and popular industries worldwide, fashion is also one of the most polluting industries, owing to excessive production and consumption that harms the environment, primarily due to the amount of water and chemicals used (Lee, 2017; Parisi et al., 2015). This situation is expected to worsen by 2030, when global textile consumption will exceed 102 million metric tonnes per year, negatively impacting the environment (Niinimäki et al., 2020).

Meanwhile, a similar situation has been reported in Malaysia, where fashion consumption is increasing and more than two million kilogrammes of textile waste is produced almost every day (Rosli, 2018). The figure is quite concerning and has caused some trepidation. As a result, immediate action is required to reduce pollution and waste, such as strongly promoting the practice of sustainability. Sustainable fashion, according to Zain et al., (2021a,

2021b) and Vladiminova et al. (2021), has also become important to consumers because it is more cost-effective than other categories while also helping to preserve the environment, particularly for the next generation. Only a few studies have been conducted in Malaysia to recognise the importance of fashion sustainability, especially during the pandemic, in order to avoid waste. Although Vladimirova et al. (2021) have shown the swift direction of fashion towards sustainability fashion, the existing studies on fashion sustainability mainly focus on the supply chain (e.g., Kaur et al., 2022; Sumarliah et al., 2020); social media (e.g., Salem et al., 2020); and small enterprises (e.g., Tajuddin et al., 2017), but only a few are focusing on the effect of COVID-19 on fashion sustainability. During COVID-19, studies on fashion sustainability can be expanded. What, for example, has Dickinson (2019) recommended that can contribute to sustainable activities such as refuse, rethink, and redesign; reduce and reuse; and recycling? Furthermore, sustainability awareness is spread via the Internet or social media (Du et al., 2016). Despite the fact that Malaysia is familiar with sustainability (Salem et al., 2020; Bedor et al. (2021) stated that Malaysians' attitudes towards fashion sustainability are still moderate and that more effort should be put into encouraging it. As a result, the goal of this research is to look into how COVID-19 has influenced fashion sustainability practices among Malaysian fashion students.

3 Methodology

The goal of this research is to find out how COVID-19 has affected fashion sustainability practices among Malaysian fashion students. The researchers believe that in order to conduct this study, they must first understand the opinions of fashion consumers. In this regard, researchers believe that one of the most important aspects of obtaining data is to listen carefully and deeply to the thoughts or involvement of participants during the event (the COVID-19 pandemic). As a result, because it has been shown to investigate human behaviour and assist researchers in gathering rich data from participants, the qualitative approach should be used (Moser & Korstjens, 2018). In comparison with the quantitative method, the qualitative method only allows for in-depth analysis of personal experience (Choy, 2014), so it is the best method for this topic.

Women, fashion students, and millennials were among the 21 participants chosen based on their criteria. The relevant number for the interview, according to Robinson (2014), is between 16 and 20. As a result, it validates the number of participants in this study, which was 21 people. Furthermore, women were chosen because they have more fashion tendencies and interests (Lee & Workman, 2018).

Meanwhile, fashion students were selected because they were familiar with current fashion issues and had been exposed to fashion technique skills and sustainability at university. The millennial generation was chosen because they are familiar with social media platforms and gadgets such as Instagram, Facebook, TikTok, Twitter, and YouTube. They can easily access online information about fashion sustainability and fashion tutorials, such as alteration and embellishment, and they can easily browse many more.

The interviews were supposed to be face to face, but due to COVID-19, the researchers had to switch to online interviews via Google Meet. At the time, the government restricted our movement in order to combat the COVID-19 virus, and direct interactions (face to face) were prohibited. Furthermore, the number of people permitted to go out was limited, and participants did not want to risk exposing themselves to the virus's spread. As a result, Google Meet was chosen to conduct the participant interviews. Online interviews, according to Hanna (2012), are considered face to face and ethically fulfil the standard type of interview.

The researchers also ensured comfort by asking only relevant questions and avoiding sensitive or judgmental ones. To obtain rich data, interviews were used based on previous studies on fashion sustainability (e.g., Niinimäki, 2017; Han & Sweet, 2021). A total of 20 questions were asked, covering their COVID-19 experience as well as their knowledge and practice of fashion sustainability activities. Each interview lasted 20 to 40 min. The interviews were transcribed verbatim in Microsoft Word by hand because it is unnecessary to use software and save money, which agrees with Ose (2016). At the same time, using Microsoft Word will allow multiple researchers to access the dataset and allow for much faster analysis (Silverio et al., 2021). To complete the data analysis for this study, coding and thematic analysis were used to obtain themes and subthemes of the findings.

4 Findings

Data were analysed using coding and thematic analysis, as suggested by Brooks et al. (2015). As a result, two main themes (Fashion Priority and Fashion Sustainability) were obtained, as well as five subthemes (Style versus Survival; Mix and Match, From Fast to Slow and Pre-loved Fashion, Sustainable Fashion Charities, and Sustainable Fashion Motivation). Table 1 contains explanations of the main themes and subthemes.

4.1 Fashion Priority

The first main theme that emerges from the data is fashion priority. According to the current study, their perception of

Table 1 Summary of the results

4.1 Fashion Priority	4.1.1 Style versus Survival
4.2 Fashion Sustainability	4.2.1 Mix and Match
	4.2.2 From Fast to Slow and Pre-loved Fashion
	4.2.3 Fashion Upcycling
	4.2.4 Sustainable Fashion Charities
	4.2.5 Sustainable Fashion Motivation

fashion has shifted due to COVID-19, with more important items taking their place in order to survive the pandemic.

4.1.1 Style Versus Survival

The importance of fashion was one of the first questions asked during the interview. Initially, most participants stated that fashion is very important in representing themselves and their identity as fashion students. According to them, as well as fashion students, it is logical to make fashion one of the most important items in their lives by following or staying up to date with the latest fashion trends in the market. Furthermore, participants emphasised the importance of getting involved in fashion issues and all events that occur in the fashion industry, as well as expressing their passion for current fashion, confirming studies by Hodges and Karpova (2009). Participants, for example, mentioned:

Participant 1: “Of course, fashion is very important in my life. One of the reasons why I choose to study fashion is to understand the nature of fashion, current fashion issues, and fashion future.”

Participant 3: “I consider fashion as my identity and one of the elements to boost my confidence level. Therefore, fashion is essential in my life.”

Participant 15: “I think it is important to study fashion as it helps us with our confidence level and builds our character or personality.”

However, when the participants were questioned about their opinion regarding the fashion situation during the COVID-19 pandemic versus the importance of fashion before the pandemic, they changed their minds and facial expressions, from excitement to seriousness. According to the majority of them, COVID-19 has altered their fashion perception, and their fashion priorities have shifted from important to less important. This finding agrees with Arora et al. (2020) and Liu et al. (2021) that consumers prioritise their essential needs over less important items. Findings show that participants are cautious about spending their money on non-essential items such as food and medicine; similarly to Karunaratne (2021), consumers spend less money on fashion items but save it for unexpected events. Participants expressed their thoughts in this context:

Participant 2: “I do lie if I don’t think about fashion at all during the Covid-19 Pandemic. It does cross my mind as fashion is important in my life, but we need to think something more important to save our lives than doing OOTD (outfit of the day), being stylish and fashionable.”

Participant 5: “The Covid-19 has made me realise that there is nothing more important than to survive in the most desperate way, that it has changed the priority for my fashion style to be less important.”

Participant 12: “Between fashion and essential during the Covid-19 pandemic? I would go with essential. I have a lot of apparel in my closet, so I don’t need to add more, and I can save my money to buy the necessities.”

4.2 Fashion Sustainability

The findings also reveal a second major theme: fashion sustainability. Findings have also shown a shift in fashion purchase or style habits. Instead of purchasing new or used fashion items, participants choose to utilise the leftover items, such as by practising more “mix and match,” transitioning from fast fashion to slow and pre-loved fashion, fashion upcycling, sustainable fashion charity, and sustainable fashion motivation.

4.2.1 Mix and Match

According to the findings, participants prefer to employ current things, whether old or new, to create a fresh aesthetic. Combining a jacket with a skirt and hijab, a cardigan with a palazzo and hijab, and many more accessories are among the most often stated methods to utilise their current attire, concurs with Zain et al. (2021a). They construct the style depending on what they have previously acquired, using their expertise and inspiration from the Internet. This demonstrates that COVID-19 has motivated individuals to save money for more vital products, gradually adopt fashion sustainability, buy less fashion items than before, and emphasise their creativity by reducing expenditures. This conclusion is consistent with previous research (Claxton & Kent, 2020; Hamdan, 2022; Rahman & Gong, 2016) that encourages customers to mix and match in order to prevent waste and conserve the environment. Participants in this situation express:

Participant 6: “During the Covid-19 Pandemic, we were not allowed to go outside, and I spent lots of my time glued to my phone screen. However, I miss going to the stores and buying fashion items. But, that will not happen during the pandemic, I rather save my money for the more important items. If I miss fashion, I just use and match whatever I have in my closet.”

Participant 9: “I used to buy lots of fashion stuff. It is such a big test for me as a fashion lover during the Covid-19 pandemic; I have to sacrifice my desire and save my money. So, I use what is left in my wardrobe if I want to go out looking for essential stuff.”

Participant 17: “Even though it will be very difficult, I promise myself not to buy fewer fashion items during the Covid-19 Pandemic, or not at all. What I have in my wardrobe, I match them to each other, and surprisingly, they work really well together, and I love it!”

4.2.2 From Fast to Slow and Pre-Loved Fashion

The findings also suggest that individuals changed their fashion purchasing habits during COVID-19, including their preferences for fashion categories. Despite the fact that the epidemic has prompted them to conserve money, the participants said they still want to buy stylish things. They do, however, take diverse tactics to staying fashionable by avoiding purchasing second-hand fashion goods, mostly from fast-fashion firms, or by transitioning to slow fashion and concentrating on pre-loved products if they still wish to buy. Furthermore, several fashion firms, including premium fashion labels like as Gucci and Marc Jacobs, have reduced or halted manufacturing during the epidemic due to a lack of customer reaction, and they are exploring for other options or something cheaper (Black, 2020). Participants in this setting highlight:

Participant 4: I used to buy Zara’s products before. I got a lot of Zara’s stuff in my closet. But lately, I don’t purchase its products and kind of moving to other categories such as slow-fashion.

Participant 7: I change my habit of consuming fast fashion to slow fashion during the Covid-19 Pandemic. This will help me from wasting my money buying fashion products and changing the priority to essentials.

Participant 13: Second-hand or pre-loved items is my alternative if I want to purchase fashion items during the covid-19 Pandemic. It is a good opportunity to look for my favourite fashion items. Many people sell their items for a lesser price to earn money during this pandemic period.

4.2.3 Fashion Upcycling

Another sustainable fashion practice suggested by participants was upcycling their leftover fashion items, such as blouses, skirts, caftans, and many others, into new pieces or designs. Upcycling is the activity of transforming old garments into new fashions and is regarded one of the sustainability activities (Cummings, 2021). This activity has become one of the most popular fashion style options as a result of the pandemic (D’Alessandro, 2022). It is also

connected to the “waste to riches” concept, since it involves upcycling outdated fashion components such as decorations, embroidery, patchwork, beading, quilting, or modifying their outfit into a new design. Fashion upcycling, according to Chew (2021), is trendy and highly current with the manufacturing of fashion designers like as Miu, Emilio Zegna, and Hermes, to mention a few. This is important to influence or persuade consumers to practice fashion sustainability. Furthermore, participants said that fashion upcycling is a pleasant hobby to do during the pandemic to spend their spare time while also honing their fashion talents required in the business in future. Some volunteers, on the other hand, upcycle their garments and build masks, since masks are required to be worn throughout the epidemic. This conclusion is consistent with Wilson’s (2020) observation that customers vary masks by upcycling their old clothing. Participants express themselves:

Participant 1: “As a fashion student, I think it is important to apply what we have learned in class to embellish our garments and to give new looks and style by applying the upcycling method.”

Participant 9: “I have read the latest articles about upcycling, which is a new fashion trend to follow. I can watch the tutorial and YouTube on how to do this, and at the same time, this is how I reduce stress from not doing anything at home during the Covid-19 Pandemic.”

Participant 18: “I think the mask is the most important accessory during this pandemic. However, I don’t want to look boring wearing the same masks in the market, so I make the masks with my own clothing.”

4.2.4 Sustainable Fashion Charities

Findings also demonstrate that charitable organisations may promote sustainable fashion. Septiyanti and Zerlina (2021) agree that contribution is part of sustainability. Participants said that they prefer to give useable goods to people in need, such as those afflicted by natural disasters or conflicts, or simply those who cannot afford to purchase clothing. Participants provide the example of flood victims, which occur practically every year in this nation; they choose to donate their clothing since many of their houses sank in the water. Another significant gift event occurred during the COVID-19 pandemic, when many individuals lost their employment and were unable to purchase clothing. According to a Wrap research, clothes donations will therefore assist to soothe the afflicted households (2020). Many local and worldwide organisations that handle or manage donation or charity may be found on the Internet, such as UNCHR, the Salvation Army, and Community Recycle for Charity, to mention a few, to assist channel contributions to the needy. Participants also emphasised that

donating may help conserve the environment and that it is their obligation to care about environmental values and align with Lee et al. (2021). However, they emphasise that in order to give useable things, they must first confirm that the products are in good shape. Furthermore, participants mention not only giving but also receiving the emotional connection between givers and receivers; despite not knowing each other, agrees with Cruz-Cardenas et al. (2017), as one of the humanitarians moves to help each other's and, in this case, to get involved in the sustainable activities. Participants in this situation express:

Participant 2: "The covid-19 has hit us hard; many persons, especially those with families, are affected. Some lose their jobs and are stressed out. It is time for me to step up to give away what I have; even though not much, at least it will help them to stay warm."

Participant 10: "During the pandemic, I started checking my closet and didn't realise how much clothing I had. I sorted them, and I donated a majority of them to the needy ones."

Participant 16: "One of the most disastrous events in our country is the flood that happens almost every year. I shared what I have by donating them. Now it is much easier, I send them to the organisation, and they will be passed to the right persons who receive them."

4.2.5 Sustainable Fashion Motivation

Aside from the gift, the data show that reasons push people to embrace sustainability. For example, fashion businesses such as H&M, Levi's, and Patagonia, to mention a few, provide credit or vouchers to customers who come to swap their old clothing (Mullen, 2019). This is to promote and attract more customers to consume their goods, while also encouraging them to engage in one of the fashion sustainability activities and generate favourable attitudes regarding employing or purchasing eco-friendly garments (Jalil & Shaharuddin, 2019). Participants express their gratitude for receiving the voucher for buying new products for less in exchange for donating their old garments to help preserve the environment. This conclusion is consistent with the findings of Vladimirova et al. (2021), who discovered that during the COVID-19 pandemic, customers choose to hunt for reduced things in order to spend less money on fashion items. At the same time, this has shown that customers may be trained to engage in fashion sustainability initiatives in exchange for coupons, which agrees with Brojonca (2019). Although Stein et al. (2020) observed that customers' opinions of the sustainable items available may vary, communication and understanding of sustainability might persuade people to engage in this activity. Participants made the following observations:

Participant 3: "Although the Covid-19 has slowed down my fashion purchasing desire, I still search for fashion items on the internet, mainly the items on sales, promotions or clearance items/ coupons. This is how I lower my desire to buy fashion items and save money."

Participant 8: "I think one of the ways how H&M spreads sustainability is to educate the customers to recycle their old garments and change them to coupons for less price. Definitely, I will do it."

Participant 11: "I am so happy that some brands allow us to change our old clothes to the lesser price of new items, such a genius way to promote their brands and sustain our environment."

5 Conclusion

In conclusion, COVID-19 has had a wide-ranging physical and emotional impact on humans. It has altered consumer behaviour, altered people's perceptions of fashion, and progressively taught individuals to engage in fashion sustainability efforts.

This research contributes to the topic of fashion sustainability by broadening the knowledge base or opening up new avenues of exploration into fashion sustainability in Malaysia, focusing on the practical aspects. Furthermore, this research is one of the first to investigate fashion sustainability practices during the COVID-19 epidemic. The findings show that this study adds to the literature on fashion sustainability in COVID-19 (e.g., Granskog et al., 2020; Vătămănescu et al., 2021; Del Prete, 2022) by demonstrating that fashion consumers' behaviour towards fashion items has changed and their priority has shifted to essential items, which concurs with Karunaratne's findings (2021). Furthermore, although knowledge of fashion sustainability among Malaysians remains low (Bedor et al., 2021), this research has shown a shift towards embracing and practising fashion sustainability, mostly during the pandemic, which is an appropriate moment to teach people about fashion sustainability (Brydges et al., 2020). It is, however, highly urged that customers participate in fashion sustainability activities not just during the pandemic, but also continue to do so in order to decrease waste and protect the environment.

According to the findings of this research, regardless of COVID-19, customers who still have wishes would hunt for alternatives to stay up with trends or styles. Consumers, for example, participate in fashion-sustainable behaviours during the COVID-19 epidemic. Mix and Match has switched to more necessary products, in which customers minimise fashion product purchases but combine current items to create a new appearance independent of consumption (Karunaratne, 2021). Next, in order to conserve money

while staying stylish, their choice has switched from quick to slow and pre-loved fashion. Aside from that, customers participate in fashion upcycling, which entails changing their items to create a new look. Aside from that, this research revealed fresh results about sustainable fashion activities, such as the fact that customers participate in sustainable fashion charities to give back or contribute to the poor. Finally, sustainable fashion motives encourage people to incorporate more sustainable fashion into their daily lives.

Fashion sustainability may be researched further at COVID-19 among instructors, lecturers, educators, and the community to promote positive role models towards doing or engaging in more fashion-sustainable activities. Furthermore, it is recommended that the fashion course incorporate sustainability to raise awareness, particularly among the younger population.

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Fashion Design as a Method to Improve the Sustainability of Batik Lasem Industry

Yosepin Sri Ningsih and Dewi Isma Aryani

Abstract

Since 2020, textiles and fashion are also sectors that have been heavily impacted by the COVID-19 pandemic. This was felt by producers who experienced a significant decrease in turnover during the pandemic, one of which was the written batik industry center in Lasem, Central Java. This study tries to boost the interest from the urban community of Batik Lasem through increasing the product value. The improvement is made through creating design of fashion products that have been developed in accordance with the development of trends and market needs. This research collaborates with various important partners in Lasem area such as the batik industry represented by Pusaka Beruang and the Lasem Heritage community organization so that the research process and results can be more efficient and optimal. From the field study process, the design directions for fashion products are divided into four categories, namely office-formal wear for urban youth market, cocktail wear for youth urban market, classic party formal attire for adult urban market, and lounge wear for urban market. The product-making process is directed to use a sustainable fashion approach with application of fashion trends. All fashion collections use the main material of Batik Lasem with the target market of urban communities.

Keywords

Batik · Fashion · Industry · Lasem · Sustainable

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1 Introduction

Creative economy as a term in the economic field is an industrial activity based on the role of creativity and intellectual ability (Siagian et al., 2020). The role of creative economy in Indonesia includes providing new jobs, reducing unemployment growth, creating a creative society, creating healthy competition in the business world, and increasing innovation across the creative economy sector. Referring to the official website of the Ministry of Tourism and Creative Economy, the creative economy sector in Indonesia is divided into 17 sub-sectors with the largest revenue contributor in the culinary sector, followed by the fashion sector. The increasingly important role of creative economy in Indonesia made creative economy officially listed in Law No. 24 of 2019. In this Law, the definition of creative economy is made up from three aspects, namely cultural heritage, science, and technology, that become an added value of intellectual property. Referring to the definition of creative economy in the law, cultural heritage is the first thing that is emphasized, so it is hoped that cultural heritage in Indonesia can be more sustainable and play an important role in improving the economy (Ningsih, 2022).

One of the economic sectors that has become a priority is fashion, which is the field that provides the second largest contribution after the culinary sector to the national economy. This was stated by the Minister of Tourism and Creative Economy, Sandiaga Uno, who targets the value of creative economy exports at 25.14 billion USD in 2022 from the previous 23.9 billion USD in 2021, with the percentage of fashion commodities at 61.6% (Respati, 2022). When it comes to culture, both in form and in its elements, various sectors in the creative industry rely heavily on the cultural richness from specific place, including the fashion sector. The existence of forms and elements of culture in the fashion sector has moved dynamically to enrich culture in Indonesia.

Since the COVID-19 pandemic, the fashion and textile sector has experienced a major impact due to various factors such as loss of sales, order cancellations, store closures, job losses, and fluctuations in raw material prices (Black, 2020). People's purchasing power for products has also decreased, and this is experienced by most MSMEs in Indonesia such as producers in the center of the fashion and textile industry in Lasem. The Lasem area is known as the largest hand-drawn batik center in Central Java. Lasem is also projected as a Heritage City by the government of Central Java Province. Based on the research team's field observations, Lasem has strong potential thanks to its distinctive social and cultural characteristics. Besides being seen from the craft products in the form of hand-drawn batik, this uniqueness is also seen from the buildings and traditions that are still carried out by the Lasem people. To be able to become a Heritage City, hence, Lasem must strengthen and enrich the potential of the region. On this basis, the hand-drawn batik industry in Lasem has an urgency to get assistance from various disciplines that can work together, as in this research fashion design played a main role in order to realize Lasem into a Heritage City and further maintain the sustainability of the batik industry which is the hallmark of this research.

1.1 About Lasem Area

Small city Lasem is a part of Rembang Regency and is situated on the north side of Java. Since its geographic position, Lasem's batik has unique characteristics that have evolved as a result of both internal and external circumstances (Aryani, 2022). Internal variables, influenced by the palace and the local culture of coastal settlements, are the primary influences on cultural acculturation in Lasem batik. In the meanwhile, foreign cultures from China and Netherlands affected external variables. Lasem batik differs from other coastal batik motifs because of these two characteristic effects, which also give it a highly distinctive decoration and color. According to Suliyati and Yuliyati (Suliyati & Yuliyati, 2019), Lasem batik has more fascinating concept with a combination of two or more colors, while the motif is altered with interesting color variations. Since foreign traders first arrived in Indonesia centuries ago and left a significant cultural legacy, it is possible for cultural differences to coexist in a flexible and dynamic way.

The above-mentioned external variables have to do with the two countries that are quite influential in many areas of Indonesia, including Lasem. Chinese ships began to dock in Lasem, which is where the Chinese influence first appeared. The Lasem area is thought to have been a significant location for Chinese immigrants throughout the fourteenth and fifteenth centuries. Due to this, the local Javanese culture

was heavily influenced by Chinese culture (Darmayanti & Bahauddin, 2020). During the Dutch colonial era, Lasem developed into a region that was traversed by the "Pantura" highway project in Northern Java. Lasem is one of many areas that has been significantly impacted by the Pantura project's protracted development. The effect on Lasem is evident in their "Watu Kricak" batik design. The Javanese name for stone is "watu kricak" and the fractions "kricak" stand for the Lasem people's labor-intensive production and transportation of stone for road construction.

Industrial growth certainly needs to be balanced with leading-edge research so that the output from the industry is not only good in quantity but also in quality and responds to market needs. Based on a field survey conducted by the research team at the beginning of the 2022 quarter, it shows that the batik industry products in Lasem are still limited to sheets of cloth, while ready-to-use products such as accessories and clothing are still very minimal. The beginning of the manufacture of Lasem batik cloth was for the needs of the community to wear clothing in the form of a sarong/cloth wrapped as subordinates for women. However, the community's need for batik cloth has now grown not limited to sheets but in other forms such as clothing and accessories.

Departing from this condition, this research aims to expand the use value of Lasem batik cloth, which was originally a sheet of cloth, into fashion products in accordance with the development of trends and market needs. The scope of the research is limited to the processing of the main materials and techniques, namely hand-drawn batik from Lasem and the development of trends in 2022–2023. It is hoped that through this process, Lasem batik cloth can have more selling value for the community.

2 Theoretical Foundation

Research with the scope of activity in the form of processing certain materials to add value which is in accordance with the development of trend needs to be based on related theories such as material processing methods, trend forecasting and target markets. In material processing, there is a main foundation which is the sustainable fashion approach. It is not new that the fashion industry is an industry known as the second largest contributor of waste in the world (Zarley Watson, 2013). Not only waste, but this industry also has social impacts such as substandard wages and the employment of minors. In response to these problems, research related to fashion products from upstream to downstream needs to consider a sustainable approach. The theoretical foundations in this research are also complemented by theories about batik, especially hand-drawn batik and the theory of trend forecasting in Indonesia.

2.1 Sustainability in Fashion

The existence of fashion from earliest people shows its strength in cultures around the world; fashion can perform many roles from social catalysts, communication media, enabling us to increase self-esteem and express our identity, present and appear in various contexts (Black, 2011). The function of fashion as a means of fulfilling individual needs to appear in front of other individuals is one of the factors that makes fashion enter the realm of industry. With the entry of fashion into the industrial area, the existence of fashion is getting wider so that it affects various aspects such as social, cultural, and economic. The fashion industry sector is an important sector of the economy, with the ability of more than billions of workers worldwide. The fashion industry sector consists of various other industries from upstream to downstream starting from the raw material industry for fiber, yarn, dyeing, textiles, advertising, packaging, distribution, and sales. Of all these processes, of course, it takes time and cost calculations until finally a product can reach the hands of consumers.

Various impacts that arise due to the process and after life of a product make the process of the fashion industry need to be reviewed. Based on the time needed to produce clothing, fashion products are divided into 2, namely fast fashion and slow fashion. The term fast fashion refers to products that are produced quickly and cheaply. Fast fashion products are mass products with a large-scale industrial system to reduce production costs and can be sold quickly. The consequences from the fast fashion system are creating more consumption and malignant circle. It forces industries to produce more products in less time, this impacting from the bottom end of the production chain who involved in creating clothes (Black, 2011).

Sustainability is the term in using of natural products and energy in a way that does not harm the environment, so that the natural products and energy do not lose their ability to continue or be continued for a long time. Referring to this definition when it is associated with the fashion industry, then every part of the industry needs to consider whether the process carried out can damage the sustainability of the environment. To suppress the resulting damage, various changes have emerged in the fashion industry, from a flash fashion style to a slower fashion and more considerate of ethics in economic, social, and environmental terms so that fashion becomes more sustainable. Many new brands are currently considering the use of more eco-friendly materials, such as the Duanyam brand. Duanyam is a brand from Indonesia that elevates the character of palm leaf fiber as the main material for its products. In addition to material considerations, the brand is also known as a brand that brings prosperity to local craftsmen.

In this research, there are several elements in fashion production techniques that are selected based on sustainable considerations, namely the selection of materials and production processes. Besides being the essence of sustainability, materials are a characteristic factor for fashion. From the material, the fashion can create an image that represents the subject as individuals and social beings (Fletcher, 2012). Material is the main raw material for clothing and accessories products; consideration of the use of materials will greatly affect the level of sustainability of a product. Materials as forming products are basically categorized into 2 major parts, namely natural fibers and manufactured fibers. There is still a perception that natural fiber is a better material than manufactured fiber, but that's not necessarily the case. Materials can be called more environmentally friendly materials when they are produced by considering various things such as monitoring the carbon footprint and the amount of energy needed to produce the material to handling when the material is finished (Claxton & Kent, 2020). These considerations continue to be a challenge in the fashion industry in developing technology in producing materials that are increasingly environmentally friendly.

Sustainable method for industries is increasingly becoming an important agenda; the term of sustainable is implemented to the production and consumption models that are based on the regulation of circular economy. The goal of a circular economy system is to protect natural resources from exploitation that lead to extinction (Claxton & Kent, 2020). Circular forms of economy in the fashion sector include recycling old products, products that are no longer in use, bartering clothes, and other efforts that can reduce the rate of production with new materials. In these efforts, the role of design becomes very important in making the product attractive when it will be delivered back to consumers.

2.2 Fashion Trend Forecasting

The definition of a trend is a direction, movement, or flow, but in the realm of fashion, a trend is a trend of the next fashion. The noun "trend" means "the general course, tendency, or drift, then talking about trends means talking about trips, general movements, and trends. Trend also refers to the process of change (Aninda, 2021). Trends are influenced by various factors such as social, political, economic, cultural changes, and the movement of consumer viewpoints/emotions. The success of a trend prediction is the potential to win popularity in the market and the effort to attract consumers. To be able to produce innovative fashion products, it is necessary to realize that fashion has the ability to be adaptive, flexible, or changeable and created

from many influences (Aninda, 2021). Based on the understanding of trends, namely as a forecast of product popularity in the market based on the development of market needs, research related to trends is very important, especially for industry players. However, unfortunately, the industries in the regions that raise the potential of local culture generally do not understand how to read trends and also apply them in production process.

Research on trend forecasting in Indonesia was pioneered by the multidisciplinary design consultant BD+A. In 2013, BD+A socialized the first trend forecasting book entitled *Trend Forecast 2014/15: Tradition Revolution* in collaboration with Jakarta Fashion and Food Festival. Since then, BD+A has consistently published trend prediction books every year, namely *Trend Forecast 2015/16: Re+Habitat*, *Trend Forecast 2016/17: Resistance*, Indonesia Trend Forecasting Team has so far published *Trend Forecast 19/20: Singularity* and *Trend Forecast 21/22: The New Beginning*. In 2017, Bekraf and creative economy players created the Indonesia Trend Forecasting (ITF) team, discussed trends that will occur in the global community, and then converted according to the Indonesian people. Trend Forecast is tasked with finding the main points of thought and phenomenon in human civilization and then analyzed and adjusted for creative economy industry players so that the products produced have selling value and added value. This added value is the reference for the creative economy (Aninda, 2021).

Irvan Noe'man, a designer and founder of the design company BD+A Design in 1989, served as the Steering Committee at Indonesia Fashion Week and was actively involved in seeding and researching initial ideas on creative economy development at the Ministry of Trade in 2007–2009. Founder of Indonesia Trend Forecasting (ITF), which at that time had not been named by that name. Anxiety conveyed are: designs on Indonesian products tend to run statically, trapped in the mindset that Indonesian products carry the breath of tradition so that craftsmen tend not to have innovations in creating their products, domestically so that people tend to buy imported products, and human tastes will continue to change every time, so the design of Indonesian products should be able to meet the ever-changing needs. The objectives of the ITF are: advancing Indonesia's creative industry with a trend research background, craftsmen or MSMEs can have new visual explorations and the products made will sell well in the market. With products that continue to sell well in the market, the wheels of the economy will spin and will prosper the surrounding community (Aninda, 2021). Irvan Noe'man with his team and also the APPMI fashion designer community have concerns about Indonesian products that have no selling value and run statically. This is influenced by the mindset of the Indonesian people about the production process

which tends to lack innovation because it is trapped in the breath of tradition. Supposedly, traditional values are values that are maintained but the ability of craftsmen must be cultivated with novelty products so that the products produced have a selling value to the needs of the community. If the selling value already exists, then the economic empowerment of the community around the craftsmen can also prosper. This prompted Irvan Noe'man and his team and APPMI to move on to make trend studies that could encourage craftsman and MSME innovation because it would be in accordance with future human development. However, at that time the study of trends was still within the scope of fashion and had not yet been expanded.

In the research process that has been going on since November until now, there are 2 trends published by the Indonesia Trend Forecasting team, namely *Trend 2022* entitled *The New Beginning* and *Trend 2023* entitled *Co-Exist*. Both *The New Beginning* and *Co-Exist* trends are trends that both depart from the limited conditions experienced by humans due to the pandemic caused by COVID-19. In the trend of *The New Beginning*, the concept that is carried is more like the beginning that was built by humans from the various problems faced during the pandemic. Humans need a new concept and start over in order to survive or live better. Furthermore, in the *Co-Exist* trend, human efforts to survive are at a higher level. Various disturbances and uncertainties in life give birth to the ability to adapt with optimism and creativity.

In *The New Beginning* trend, the sub-theme of the trend is divided into Exploration, namely the hope for a better life in eccentric, dreamy, and hybrid forms. The sub-theme Exploitation describes the impact of exploitation of the environment and life that is maximalist and excessive, contained in exaggerated, bold, hyperbolic, and egocentric forms. The Essentiality sub-theme is a sub-theme that departs from concern for the surrounding conditions and focuses on things whose essence is contained in a light, clean, authentic, and simple form. The fourth sub-theme in *The New Beginning* trend is Spirituality, which is based on awareness to protect nature and cultural roots. The Essentiality sub-theme is contained in a classic form, smells of tradition, and is full of local wisdom.

The *Co-Exist* trend is a 2023/24 trend that has the main key to collaboration, namely the awareness that humans cannot live alone. The *Co-Exist* sub-theme is divided into *The Survivors* sub-theme, namely the human urge to continue to survive in the face of various limitations and shortcomings contained in the style of new-old fashion, retro, and primary colors. The sub-theme of *The Soul Searchers*, namely the human condition to find peace in beautiful and remote places to bring healing within. The *Soul Searchers* sub-theme is contained in a romantic, joyful, and folkloric visual form. The sub-theme of *The Saviors* is a growing

sense of helping each other in overcoming obstacles. The Savivors sub-theme is contained in bold characters, mixed patterns with masculine colors. The fourth sub-theme in Co-Exist is The Self-Improvers, namely the character of young people who grow up in the digital era; passionate about exploring the virtual world. The Self-Improvers sub-theme comes in the form of artificial intelligence, bright, and edgy color palettes.

2.3 Batik

The definition of Batik in this research is Batik as a technique for producing patterns on fabrics using the barrier dyeing method. According to Roojen (1997), the word Batik comes from Indonesian and Malaysian languages, which are currently generally interpreted as a cloth barrier dyeing technique. The barrier dyeing technique works by covering some of the surface areas of the fabric which will later become a pattern using a barrier substance so that the area does not absorb the color when dyeing. Resist dyeing technique is more than a thousand years old, and there is historical evidence showing that cloth decoration with the obstacle dyeing technique is also used in several areas such as West Africa, the Middle East, and some places in Asia (Van Roojen, 1997). The general theory suggests that this technique was spread by the inhabitants of the Indian sub-continent, who are known to have traveled to Southeast Asia since 100 AD (Van Roojen, 1997). Not all resist dyeing techniques use similar substances/materials, and only some use wax. However, the resist dyeing method originated from the Java area which later developed much differently from the previous ones to produce distinctive forms. Then from Java, Batik fabrics are exported to other islands in the archipelago to the Malay Peninsula; the popularity of Batik in various regions is what brought the spread of Batik centers outside Java. For 2 to 3 centuries, Batik has been able to become a part of the spiritual meaning and even the most important cultural values in Southeast Asia (Van Roojen, 1997).

Hand-Drawn Batik Lasem

Like other traditional textile, the visual from fabric batik is categorized into decorative that is also called ornament which has certain purpose and meaning. The principal of pattern arrangement that consisted of repetition, measurement and balance (Haake, 1989) is also seen in the composition of batik patterns.

1. Lasem batik motifs with the influence of Chinese visual style in the form of: stylized from Hong Bird (Phoenix), dragon (Liong), Qilin, butterfly, partridge, deer, goldfish, crab, turtle, shrimp, Magnolia, Peony, Sakura,

chrysanthemum, vines, bamboo, moon goddess, eight gods, banji, coin currency, and fans.

2. Lasem batik motifs with the influence of Mataraman visual style in the form of: abstractions such as: Tumpal, Kawung, Ceplok, and Limaran.
3. Lasem batik motif in the form of flora with the theme of the natural environment in the form of: stylized from marine plants Latohan and Algae.
4. The mixed-style Lasem batik motifs, namely Kendoro Kendiri, Watu Kricak, Gunung Ringgit, and so on.

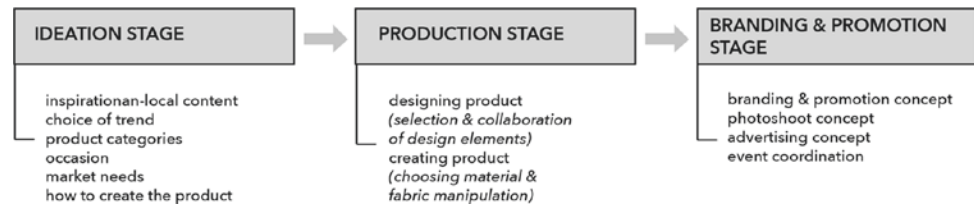
Similar to the motifs in Batik Semarang presented by Aryani and Aiman (2021) as Coastal Batik with a unique design, Batik Lasem also for some of its motifs has distinctive and contemporary colors because it displays a variety of decorations from the acculturation of the Lasem people's culture. In contrast to the naming of Batik Semarang based on the strength of its folklore, the naming of Batik Lasem is generally based on the color scheme and not the decoration. Therefore, several names emerged for Batik Lasem such as: Bang-Bangan which has a white background color and red decoration or vice versa, Kelengan from Javanese "keleng" which means black or blackish, Bang-Blue has a white background color and variety red or blue decorations, and the last Bang-Biru-Ijo has a white background color and red, blue, and green decorations (Djoemena, 1986). The ornamental variety in Lasem batik itself can be classified into four variations based on the motif or pattern (Soerjanto, 1982), namely flora, fauna, figurative, and geometric.

3 Methodology

Discussing about the meaning of fashion, fashion is often associated only with clothes, even though the scope of fashion itself is wider than just clothes. Referring to the notion of fashion, namely a cultural product that provides space for symbolic freedom and embodiment of aesthetics, the scope of fashion is no longer limited to pieces of clothing. Further, fashion is a lifestyle that tends to be determined, favored, and used by certain subjects in appearance during a certain period. The presence of fashion will always coexist with style and trends. Style specifically means the tendency of the subject to look that can be categorized in a certain style, while the trend is more identical to change where fashion is a field whose instincts are dynamic and always changing and developing following developments in various fields that affect it.

From the context of this understanding and scope, the process of the journey of a fashion product from creation to communication to its users will proceed in a series of certain stages (Fig. 1). The stages are divided into:

Fig. 1 Creative process of fashion collection (Ningsih, 2022)



The ideation stage is the stage where the designer creatively collaborates with various data elements to become a unified inspiration. In the context of tradition-based product design, the main data element is the data on the tradition. Data related to inspiration are divided into primary and secondary data. Primary data are data that are directly obtained by the designer through the experience of direct interaction with the data, such as visiting the object of inspiration or processing inspiration. While secondary data are data obtained through media such as books, films, and reviews/editorials that do not make designers interact directly with the objects being recorded. To produce works that are more original, designers need to master what they inspire both through primary and secondary data acquisition.

The data elements that need to be determined by the designer before entering the design stage are data related to the main inspiration, data about trends that are the reference, target market data as the target user of the product, data about types of similar products, methods of using-processing products/materials, market needs, and how the product is made. This research uses various methods to complete the data. In searching for data related to Lasem as the main inspiration, the research team conducted field surveys, expert interviews, and literature studies. In determining the trend used, the research team conducted an interview process and literature study. In determining the need for the right product, the research team distributed questionnaires. So it can be concluded that the method used in research activities can be adapted to the character of the data needed.

The ideation stage that has been finalized is then continued with the design process stage based on the data elements that have been narrowed down in the mood board and creative brief. In the design process, the designer can make several alternatives which are then selected by a special team with various considerations, both aesthetic and practical. The selected designs are then transformed into a collection. The collection that comes from a certain concept needs to be conveyed to the prospective target market with the appropriate socialization concept. In this process, the designer works with the marketing advertising team to develop the concept of product delivery to match the concept and market segmentation.

4 Results and Discussion

The three major stages in the process until fashion products can be delivered to the market are applied to the main object of inspiration, namely the Lasem area. At the ideation stage, the main inspiration consists of the potentials contained in Lasem, namely the social way of life of the multicultural Lasem community. The trend used is Indonesia Trend Forecasting, 2022 and 2023. The target market selection is divided into 2 main segments, namely the youth/early adult market and the adult market. The scope of the products made is divided into formal party wear collections for young people, ready-to-wear collections, and resort collections for the adult market. Each collection is made with a different manufacturing technique. The various collection techniques consist of batik patchwork, batik upcycling with other materials, and batik making with more eco-friendly materials.

4.1 Collection “Life from Lasem”

The collection entitled Life from Lasem was inspired by the cultural mix that was present in the city of Lasem (Fig. 2). Historically, the culture in Lasem is a blend of cultures from indigenous peoples (Javanese), Chinese, Arabic, and Dutch. Apart from the shape of the building in Lasem, the tangible manifestation of this cultural fusion is clearly stated in the Lasem batik motifs. The trend reference uses Indonesia Trend Forecasting “The New Beginning” with the theme Exploitation, Hedonism, and Patternization sub-themes (Indonesia Trend Forecasting, 2020). The use of this sub-theme emphasizes the mixture of lively motifs and attention-grabbing details. Lasem's hand-drawn batik cloth that flourished in motifs and colors seems to party in a festive collection display. The concept of cultural mingling is also implemented with a patchwork technique utilizing hand-drawn batik products that have manufacturing defects such as perforated fabrics and uneven colors. The target market of this collection is young people, men and women with an age range of 25–35 years. The target market has a strong personality, is confident, and dares to appear. People who wear these clothes are people who can appreciate the



Fig. 2 Creative process of life at Lasem collection. (Source Author, 2023)

concept of cultural mingling and appreciate the potentials of Indonesia's multicultural local culture.

4.2 Collection “Welas Asih”

In the second collection, inspiration is taken from a tangible form, namely the historic pagoda building in Lasem. Cu An Kiong Temple is the oldest temple in Lasem and Java Island with the main deity being Dewi Samudra—Ma Zu. The Goddess of the Ocean Ma Zu is a goddess worshiped by sailors and nomads who sailed the oceans to find safety. The inspiration then came through a collection of formal party clothes entitled Welas Asih (Fig. 3). The trend

reference uses Indonesia Trend Forecasting “The New Beginning” with the theme Spirituality and the sub-theme Exotic (Indonesia Trend Forecasting, 2020). This collection is intended for young people with an age range of 20–30 years. The target market has a personal character that is confident and respects historical values and classics, but is also open to new things.

The collection entitled Welas Asih is packed with ethnic yet contemporary designs by adapting the carved roof section with details of the diorama, dragons, and Hong birds, as well as four seasons’ flowers from Cu An Kiong Temple. In addition to these inspirations, design materials in the form of free motion embroidery and pankou knots were also applied so as to display the impression



Fig. 3 Creative process of Welas Asih collection. (Source Author, 2023)

of ready-to-wear clothing for formal and semi-formal purposes. The silhouette and application of Lasem's hand-drawn batik in the collection make the details and characteristics of the concept of Dewi Mazu as the god of compassion at Cu An Kiong Temple as a form of acculturation in the culture in Lasem. The red and blue colors are dominant in this compassionate collection because they represent Goddess Mazu in the form of red that can be seen when the god is in the middle of the sea. In addition, red means luck, success, and happiness. Blue itself symbolizes the vastness of the sea or ocean, where Goddess Mazu reigns and also means strength and vitality.

4.3 Collection "Tiga Negeri"

The name of this collection is derived from type of batik with the same name. Batik Tiga Negeri is a type of batik that proceed in three different places that produce three different colors. The first place is Lasem that produced red dyeing, and the second place is Pekalongan for the blue dyeing and Solo that famous for its brown soğan dyeing (Rismantojo et al., 2021). Changing locations to carry out a different coloring process can minimize the cost of batik production in the nineteenth to early twentieth centuries. The difference in location has an impact on the visuals; apart from color, the pattern also shows the style of the three locations, giving rise to the names of the three countries. The concept of "country" differences is then combined with trend forecasting "Co-Exist" with the theme Survivor and sub-theme thrifty chic (Indonesia Trend Forecasting, 2022). The survivor theme was born from an uncertain situation that requires people to survive. In these

conditions, humans are naturally required to be more creative, in fashion one of which is creativity in utilizing old products to be processed into products with new styles. Departing from this concept, the fashion collection of the three countries is translated by the use of used clothes donated from various backgrounds of different people according to different "countries." Because used clothes come from various ages, this collection is intended for a larger age range, namely from 20 to 50 years. The used clothes made of denim were then combined with hand-drawn batik fabrics from three countries that were defective in production, so they were donated to make this collection (Fig. 4).

4.4 Collection "Healing in Lasem"

Pandemics cause various new conditions in which humans must be able to adapt either quickly or slowly. The adjustment process sometimes raises both physical and psychological responses from humans, not only positive but also negative, such as stress, worry, and feeling insecure. This collection tries to present the concept of "healing" by combining Co-Exist trend forecasting with the Soul Searcher theme and the healing sub-theme. Trend Soul Searcher with the sub-theme healing describes the human process in recovering emotional fatigue by contemplating the beauty and wisdom of the surrounding nature (Indonesia Trend Forecasting, 2022). Lasem as part of the Rembang district, even though it is located in the northern Java mobility route, has a strong cultural character that makes tourists/outsideers of Lasem have a different atmosphere by enjoying life in the city of Lasem, namely historic Peranakan houses,



Fig. 4 Creative process of Tiga Negeri collection. (Source Author, 2023)



Fig. 5 Creative process of healing in Lasem collection. (Source Author, 2023)

food, northern coastal landscapes, and trees. This different atmosphere became a direct experience for designers when surveying 3–4 times to Lasem; the experience was then contained in a collection of resort clothing titled *Healing in Lasem* (Fig. 5). The collection is present as a form of appreciation for the various beauties of Lasem which is translated through clothing materials from Lasem batik made with soft viscose rayon material where the eucalyptus fiber is also obtained from Indonesia. Fabrics that have been batiked with plant patterns typical of Lasem batik are then dyed using natural dyes. The collection is made for the adult target market with an age range of 30–50 years.

5 Conclusion

The creation of new fashion products inspired by certain local traditions has basically been done a lot, but the challenge is how far the designer can convey the local potential that inspires the wider community who will become the potential target market of a fashion collection. With a clear stage system in the form of ideation, manufacture, and communication-promotion, it can assist designers in producing collections that are accompanied by a clear and systematic basis for the concept of work. In this research, the design team consisting of lecturers and students at the ideation stage tried to explore the Lasem area by means of surveys to locations, interviews with various batik houses and local communities, and literature studies. At this stage, the design team also determines the concept of a trend that is

tailored to the inspiration and selection of the target market. From there, the ideation stage is continued with the production stage where the designer already has the skills related to production techniques that are in line with the ideation stage. In the *Life from Lasem* collection, the technique used is the ability of designers to process the combination of Lasem's batik which is rich in colors and patterns into a cocktail collection for young people. It is different from the *Tiga Negeri* collection where the blend that is raised is not about rich colors, but rather the concept of a different area, namely ownership of used clothes from different people, meets the philosophy of *Batik Tiga Negeri* which is made in 3 different areas to produce a piece of cloth. In the *Tiga Negeri* collection, designers use recycle and upcycle techniques by combining used clothes with Lasem batik. The third stage is the product promotion stage; although this stage has not been carried out because the research process is still ongoing, the promotional design has been mixed from the beginning. How is the photoshoot concept, catalog concept, promotional video concept, product narrative and consideration of event and media selection in promoting products. Each collection will use different style of branding concept and it will be delivered to different kind of target market. From the results, it can be concluded that the potential of an area can be explored and processed according to the target market needs or problems that occur in the area. In this case, Lasem, an area with local potential in the form of wastra, needs assistance in creating fashion products to expand market opportunities. The potential of wastra can be explored and transformed into various different

fashion collections with specific target markets. With the transforming into various products using trend forecasting approach, the Lasem batik market which was previously limited to sheets of cloth has increased as a fashion product that can be directly worn by potential markets.

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Applying Design Thinking Method to Fashion Upcycling Educational Campaign

Monica Hartanti, Berti Alia Bahaduri, and Julia Rosalind

Abstract

The advances in technology have hastened fashion trends in reaching its audience, especially Generation Z. The fast fashion industry has been the main source for this generation to follow fashion trends affordably. However, fast fashion has a considerable negative impact from their hazardous waste and low-quality fabrics, on our environment. To avoid environmental repercussions for young Indonesians, there is slow fashion as another option. Upcycling is one option for Generation Z to practice slow fashion as a more environmentally friendly option. According to our preliminary survey, more than half of Generation Z has not applied upcycling yet, because they lack inspiration and tools. In this study, we are applying the design thinking method in building an educational campaign for this generation to be able to practice upcycling by themselves. The campaign used Instagram as the main social media to reach and interact with this specific audience. For the implementation phase, a workshop for 15 high school students was held. Afterward, this study can learn from their choices and insights into the campaign design. The findings of this study, seven steps of design thinking, were applied in this educational campaign accordingly and have given desired outcome. Students are enthusiastic in working on their upcycling projects. The most interaction was gained during the challenge phase when participants displayed their creations. Instagram has proven to be a powerful medium to invite students to show the results of their fashion upcycling to

others. The interesting photoshoot creates the impression that fashion upcycling is attractive and trendy, especially for teenagers who are the same age as students.

Keywords

Design thinking · Educational campaign · Fashion upcycling · Generation Z

1 Introduction

Fast fashion is widely available and easy to purchase cheap clothes. The technology supports the fast-changing trends and causes the speed purchase intensity in buying new clothes (Henninger et al., 2016). This tendency has changed the way people purchase and then throw away clothes. The fast fashion phenomenon emerged as a dominant business model, causing rocketing garment consumption. Globally, 80 million clothes are being bought every year which is equal to US\$ 1.2 trillion yearly for the global fashion industry. Most products were produced in China and Bangladesh. Fast fashion uses “fashion democratization” as an excuse to supply the latest style for consumers from all classes, without any concern for human health or environmental repercussions, especially throughout the cycle of each clothing—starting from cotton growth to ill-treatment of coloring waste polluting local water sources. Socially, to squeeze production costs, the workers were given low wages. Cheaper products made product buying increase. Since fast fashion products were low quality made, they tend to break easily and are quick to be thrown away. This creates large garbage volume (Bick et al., 2018). Textile waste is one big part of daily human waste. The fashion industry is responsible for 10% of global carbon emissions. This percentage is larger than carbon emissions from international airlines and naval (Priyambodo, 2022). The fashion industry is the second largest polluter in the world. Even

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Ecowatch journalist has written about the Citarum River (West Java) as the most polluted river caused by fashion waste (Zerowaste.id, 2022).

Fashion trends will always evolve from time to time. In addition to technological development, fashion trend is also progressing in more rapidly (Endrayana & Retnasari, 2021). The fast-changing trend made the consumer pursue to buy the latest style. Mass media, the entertainment world, business, and the Internet are the top influences in fast fashion (Leman et al., 2020). To deal with the negative impact of fast fashion, people start to emphasize high-quality, long-lasting environmentally friendly materials in fashion production. Other efforts are education and the practice of slow fashion. This effort is also supported by the UN through its Sustainable Development Goal (SDG), which targeted high-player brands in fast fashion. Sustainable fashion activists are massively raising consumers' awareness to buy high-quality and long-lasting products. In their opinion, the producers will change to a more sustainable business model, when there is demand for environmentally friendly products (Cai & Choi, 2020).

In Indonesia, textile waste is also alarming. As published in Indonesian National Geographic Magazine in March 2022, Indonesian waters, especially Jakarta Bay, is heavily polluted. 8.2% of Jakarta's garbage findings are fashion waste and only 0.3 million tons were recycled (Priyambodo, 2022). Another study by Cordova and Nurhati about land-derived debris from Greater Jakarta Area that pollutes the marine ecosystem conveyed cloth as major debris, while shoes and sandals are also classified as dominant waste, especially in Tangerang at 34% (Cordova & Nurhati, 2019). The slow fashion phenomenon still needs to be made known to the general public, especially to fashion enthusiasts. One of the easy and entertaining method of promoting this slow fashion movement is fashion upcycling. The public needs more education on the benefits and attractiveness of fashion upcycling. Educational campaign on fashion upcycling in this study will focus on high school students as representative of Generation Z. As a pilot project, this educational campaign involved 15 high school students in the city of Bandung. This campaign will continue until we get 100 fashion upcycling works. This generation also like to shop for fashion. According to Alvara Research

Center, Generation Z and millenials are most often purchase fashion items than other products via online. 56% of Z Generation and 43.3% of millenials admit to shop for fashion routinely, rather than other products (dataindonesia.id). This educational campaign will use Instagram as social media and a fashion upcycling workshop. Instagram was chosen due to its popularity among teenagers. Social media is also a promising tool to raise and facilitate research on teenagers (Thomas et al., 2020).

2 Research Method

This project aims to design an educational campaign to aid Indonesian Generation Z to make their upcycling projects. Brown and Wyatt (2010) stated that businesses and nonprofit organizations have utilized design thinking in their social innovation projects. Liedtka (2015) summarizes the design thinking process for researchers to improve their practice and improve the imperative value of our innovations.

This study implements the design thinking process, especially the phases coined by Ambrose and Harris (2009). Their steps are: define, research, ideate, prototype, select, implement, and learn (Fig. 1). Defining the problem and the target audience is the first step. The next step was researching the problem and the audience needs to find out the most suitable design to communicate the solution. After we have done literature review, gathering insights and observation, we have found out about Indonesian Gen Z eagerness to practice up-cycling. They are interested in easy to do at their school or home and not a time consuming projects. Thus our campaign has to look easy to make, to ignite their interest. Making the design prototype was the next step. Then select the most applicable and suitable design to answer the problem. Implementing the design to find out the reaction from the target was next. Then afterward, the designer could study the impact of the prototype and could make needed adjustments.

The defined problem was giving upcycling ideas to Indonesian Generation Z through a familiar media outlet for them. Then during the initial research, there was an online survey. Afterward, during the ideate phase, the designer

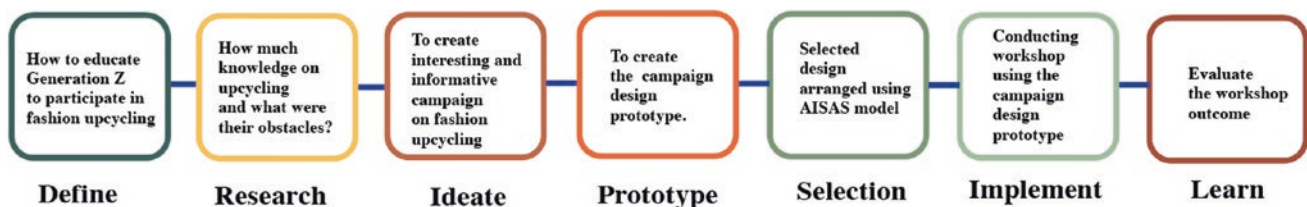


Fig. 1 Design thinking process

searches for visual references suitable and has the prospect to attract the main viewers. A prototype was made in the form of Instagram image feeds and reels. Selected feeds and reels then were published on an Instagram account as part of the implementation phase. To complete the phases, the research team conducted a workshop with 15 high school students as participants on August 19, 2022 at SMAK 1 (BPK Penabur I High School). Then the study can learn the effectiveness of the campaign design from the participants of the workshop.

3 Data

Generation Z are the most likely to be exposed to digital marketing on the social media. According to Djafarova (2021) the massive exposure from social media (in this case, Instagram) influences Generation Z to make impulsive fashion purchasing. Djafarova study used focus groups in United Kingdom, to find out the stimuli for impulsive fashion buying by female teenagers are advertisement, opinion leader and user generated content. Similar to Djafarova's finding, this study did an online survey to find out how much Indonesian Generation Z behavior toward fast fashion and their knowledge on slow fashion. The preliminary survey gained 100 respondents which consists of 80% women aged 18–25 years old. All of them are Indonesian who live in major cities in Java. Their monthly income is around 1 to 3 million rupiah.

The respondents bought 3–5 new clothes every month, with average price around Rp. 100,000 to Rp. 500,000. Respondents' buying drive was caused by trend in social media, replicating celebrity or idol's style, favorite brand, and promotional event. This result is in lieu with previous studies about Generation Z spending habit. According to Lee et al. (2021), the Fear of Missing Out (FoMO) is the main drive for this generation to make impulsive buying. Another drive is from constant consumption of content made by social media influencers. Jacobsen (2021) study found out that 47% of their Generation Z respondents feel pressured to buy the latest trend in clothing. Similar with Indonesian Generation Z, Ni Kadek (2021) did a study on fast fashion consumption among Balinese Generation z. Balinese Generation Z buy fast fashion products to keep in track with the trends; their main source for information was from social media, especially Instagram.

These supporting data support the needs to practice fashion upcycling. The respondents already have knowledge about slow fashion, but not quite informed yet on upcycling. This study utilizes design thinking process to build an educational campaign to communicate with Generation Z as the main audience.

4 Discussion

In this section, we will discuss one by one about applying design thinking method to fashion upcycling educational campaign.

4.1 Define

This study aims to design a concise informational design as educational and interesting source for Generation Z to make their own upcycling projects. Generation Z encompass that the population who are born after 2001 are using digital technology daily. However, they can tackle their problems with provision of technical opportunities which provide them to different frames.

Generation Z can also be a stake holder in upcycling movement. This study has implemented and designed a prototype to encourage Generation Z to participate in upcycling fashion. Sung et al. (2020) stated about multi-stake holder in upcycling; this team divided their stakeholders into material suppliers, upcycling designers and makers, retailers and consumers. Dolot (2018) highlighted the uncanny ability of this generation to be able to function in both real and virtual worlds. Thus our high school students, participants in the workshop, can participate as upcycling makers and agent in sharing educational information.

The main media outlet for this project is Instagram. Generation Z are the first truly digital generation who grew up with social media and digital technology, as Jacobsen (2020) mentioned, and their interest and behavior are relevant to businesses. Generation Z are very active in social media such as Instagram, YouTube, Pinterest, and Tik tok. Thus the visual for this campaign design was designed to publish in Instagram.

4.2 Research

As main part of the research phase, data was gathered from forementioned online survey. The respondent's purchase decision was based on comfort, material quality, and affordable price. The majority of the respondents only wore the clothes once and then store them in their closet. Their main reason not to reuse the clothes is boredom. Sometimes, the clothes they have bought online did not meet their expectation, which counts as another reason to wear it only one time.

Majority of the respondents (87%) know about slow fashion, but did want to buy them. Their reasons were clothes from that brands are more expensive and look impractical. Most of the respondents are interested to know

more about affordable and easy slow fashion. They already know about upcycling; however, they have not practiced any upcycling because of their limited inspiration and lack of supporting tools. Therefore, this design project only need to inform further on upcycling, as the target already has the introductory knowledge on it.

The valuable insights from the survey were used to build a suitable, informative, and attractive graphic for the campaign. The target needs examples for easy upcycling techniques, which can they practice by themselves, using simple tools. The upcycled clothes have to be comfortable so they will wear their own products. Last but not least, the information has to be attractive and accessible for them. Wyatt (2010) summarized the two important steps in design thinking: ideate and implementation. Therefore, this project has to give the target simple upcycling techniques as reference for ideas. Moreover, this campaign design aims to inspire them to try out new techniques.

4.3 Ideate

The main creative concept of this campaign design is displaying easy and entertaining style for the Generation Z as the audience. The chosen name for the account is “*Si Lama Yang Baru*” (The Old is New). Vintage, playful and informative styles were chosen for the main design. Here is the inspiration/moodboard for the campaign design. This moodboard then used as a guide to design all images for this campaign (Fig. 2). Thus this campaign has an overall identifying look with its significant style and color combination. There are 6 main colors used for this campaign design: Blue (#618F95), Dark Green (#3F544F), Olive Green (#868546), Orange (#DF8D41), Red Orange (#D96552), and Beige (#F6DEAE) identified here in their Internet color codes, because they are applied as Instagram



Fig. 2 Moodboard and color campaign

posts. The colors are muted color for vintage look. Yang and Park (2010) found out that low chromatic and grayish color gives worn-out and faded feeling. Kuno (2005) classified these color or colors in gray and sepia tone, as part of nostalgic colors.

4.4 Selection



Instagram was the chosen social media to publish the prototype, because the target group frequently use the media. Generation Z would check Instagram before buying a fashion product as a guide to trend. Molina-Prados et al. (2021) studied the Instagram role as a shop window for fashion brands. Frequent consumer engagement was creating trust between the consumer and the fashion brand. In this study, AISAS a marketing strategy coined by Sugiyama and Andree (2010) was chosen to set an effective and informative timeline for the target. AISAS phases are attention, interest, search, action, and share. This strategy gave gradual information for the audience. AISAS was applied to selected design for Instagram feed. Dewanti (2019) in her thesis found out about the effectiveness of this social media for promotion. She added about the tendency to share experience and visual with other users in Instagram, made AISAS genuinely effective.

This design apply different color schemes for each AISAS phase. As visible in the table below, the attention phase used beige, light green and dark green as background (Table 1). The Interest phase used red as background (Table 2). Olive green was used as background in the Search phase (Table 3), while yellow background was used in the action phase (Table 4). The Share phase used blue as background (Table 5). The color scheme is still in line with the moodboard in the ideate phase. The intended audience, will be able to identify the different stages of this social campaign from the colors in these hues. The color differences in every phase also intended to prevent the audience from boredom and easier to understand. Details can be seen bellow.

4.5 Implementation

Although they already have knowledge on negative impact from fast fashion, Generation Z are still purchasing them. They also already have overall information of slow fashion, yet they have not practiced it. Thus more education on easy and enjoyable fashion upcycling is crucial. As the implementation of the design thinking phase, this study conducted a workshop at SMAK 1 (BPK Penabur I High School) in Bandung with 15 participants.

Table 1 Instagram feed, caption and hashtag (#) attention phase

Attention (A)	In this phase, there is brief information on negative effect of buying fast fashion products. More information on fashion upcycling was given next. In the fourth, fifth and sixth feeds, there was information about plastic in clothing, and then the average usage of clothing item is seven times. Lastly, the amount of yearly textile waste
Feeds	
Caption and Hashtag (#)	(Translated from Indonesian)) Have you heard about fashion upcycling? If you're curious about it, let's learn together! #slowfashion#slowfashioncampaign#upcycling#fashionupcycling #kampanyeslowfashion#sustainablefashion#dkvmaranatha#fsrdmaranatha #si_lama_yang_baru
Feeds	
Caption and Hashtag (#)	(Translated from Indonesian)) Do you know that the waste from fashion production are adding every day? This is the result of public fashion consumption to follow trend from social media! This has brought environmental pollution, which worsen with our plastic laden cloth. ☹️ #slowfashion#slowfashioncampaign#upcycling#fashionupcycling #kampanyeslowfashion#sustainablefashion#dkvmaranatha#fsrdmaranatha #si_lama_yang_baru

The phases for this implementation are:

- In the first week, 15 students were given short lecture on negative effects of fast fashion. Then they were given examples on simple and interesting upcycling techniques in class. Afterward, they were asked to follow SLYB Instagram account (https://www.instagram.com/si_lama_yang_baru/?igshid=YmMyMTA2M2Y%3D) to find out more about upcycling. So they can choose which outfit they wish to upcycle and prepare their materials.
- In the second week, they were given task to bring their outfit and discuss their upcycling plan with the research team. Then the team will give advice on the necessary steps to upcycle.
- The participants continue their upcycling project, with or without professional seamstress helping them.
- In the third week, the participants take a picture with their finished upcycled product. The research team gave

a challenge for them to post their picture in their own social media account and SLYB, and tag three of their friends (Table 5).

- The study team then choose top three upcycling project based on their effort and creativity. The top three upcycling projects are rewarded with cash gift.

4.6 Learn

Fashion upcycling education using design thinking method was quite proven effective. The designed prototype has been informed to high school students in Instagram feed form. The high school students involved as participant were part of Generation Z. According to their insights, the Instagram feed has given ample information on negative impacts of fast fashion. The prototype design was quite interesting and easy to read for them. There were also

Table 2 Instagram feed, caption and hashtag (#) interest phase



Interest (I)	There is brief introduction of slow fashion in this phase and then information on upcycling definition
Feeds	
Caption and Hashtag (#)	<p>(Translated from Indonesian) Maybe you are curious about things we can do in upcycling? ☺ Can upcycling be beneficial for us? Upcycling in fashion is turning old cloths to ✨ new one ✨. We can save money with doing upcycling! 🌟💎 Besides, our outfit will be one of a kind, because it is our own creation ☺. In SLYB, we're going to get to know more about slow fashion through upcycling #slowfashion#slowfashioncampaign#upcycling#fashionupcycling #kampanyeslowfashion#suistainablefashion#dkvmaranatha#fsrdmaranatha #si_lama_yang_baru</p>
Feeds	
Caption and Hashtag (#)	<p>(Translated from Indonesian)) Why do we need to choose slow fashion 🌱🌿. The environmental damage made it compulsory for us to practice that. But most of us don't want to do it 🙄 because we thought it must be expensive and impractical. However, slow fashion can be easy and affordable with ✨ upcycling and mix and match ✨ #slowfashion#slowfashioncampaign#upcycling#fashionupcycling #kampanyeslowfashion#suistainablefashion#dkvmaranatha#fsrdmaranatha #si_lama_yang_baru</p>

Table 3 Instagram feed, caption and hashtag (#) search phase

Search (S)	The images emphasized on easy and affordable information on upcycling
Feeds	

(continued)

Table 3 (continued)

<p>Caption and Hashtag (#)</p>	<p>(Translated from Indonesian) Perhaps we can be confused on how to start upcycling? ☹️ Where to start and which tools we can use? Don't think too far! Try to look in your closet, which outfits have you neglected? Try to start from there and use things around you to decorate it #slowfashion#slowfashioncampaign#upcycling#fashionupcycling #kampanyeslowfashion#sustainablefashion#dkvmaranatha#fsrdmaranatha #si_lama_yang_baru</p>
<p>Feeds</p>	

(continued)

Table 3 (continued)

Caption and Hashtag (#)	(Translated from Indonesian)) Slow fashion is not just upcycling ☺ You can do that with mix and match too ☺ by pairing different clothes in your wardrobe If you are still unsure about doing upcycling, you can start with mix and matching clothes in your collection ☺ Huge change starts from ✨ small change ✨ #slowfashion#slowfashioncampaign#upcycling#fashionupcycling#kampanyeslowfashion#sustainablefashion#dkvmaranatha#fsrdmaranatha #si_lama_yang_baru
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Table 4 Instagram feed, caption and hashtag (#) action phase


Action (A)	In this phase, there will be an online upcycling challenge for workshop participants
Feeds	
Caption and Hashtag (#)	Do you want to try upcycling without the hassle? Check these easy and hassle-free tutorials ☺ #slowfashion#slowfashioncampaign#upcycling#fashionupcycling#kampanyeslowfashion#sustainablefashion#dkvmaranatha#fsrdmaranatha #si_lama_yang_baru

Table 5 Instagram feed, caption and hashtag (#) share phase


Share (S)	In this phase, the workshop participants are encouraged to share their upcycled cloths in SLYB Instagram feed. They can wear their creation or just take picture of the finished product
Feeds	
Caption and Hashtag (#)	Let's share your upcycling creation! Get prizes for best 3 creations #slowfashion#slowfashioncampaign#upcycling#fashionupcycling#kampanyeslowfashion#sustainablefashion#dkvmaranatha#fsrdmaranatha #si_lama_yang_baru



Fig. 3 Workshop fashion upcycling

information on easy upcycling techniques, so they can view visual examples.

There was enough information on slow fashion and upcycling. However, most of the participants chose to upcycle using new materials, instead of using waste products. The Instagram feed did not give enough inspiration for them to maximize waste product usage. 87.5% of the participants were willing to try fashion upcycling by themselves. They are also eager to try other upcycling techniques, not just the ones they've tried in the workshop (Fig. 3). Therefore, the design team has to add more visuals for more upcycling techniques using waste or used products.

During the workshop, the participants sought creative recycling ideas from Pinterest; these ideas were combined with students idea and made real product (Fig. 4). This is one of Generation Z traits as digital generation who depend on digital technology (Stillman, 2018). Their technology usage heavily influenced on their behavior and decision making (Santoso & Triwijaya, 2018). Instagram as the chosen social media was quite effective as educational media, because the participants were still actively using it. As per design wise, 68% of the participants considered the visuals are attractive. The participants like the illustration and color combination in SLYB Instagram feed. Illustration is an influential visual language. Illustration is also a universal communication medium, to make information easier to understand. This medium also could explain from simple to complicated matter. In early 2000, illustration started to gain more popularity in new media and animation (Witabora, 2012). Generation Z have been used to view illustration in various new media. Thus they are attracted to visual with illustration. According to the participants, the vintage color combination in SLYB feed is familiar as vintage colors in fashion, in lieu with the intended upcycling theme by the designer.

In the last phase of AISAS, the participants were urged to show their upcycling project through their own Instagram account, and we reposted it to the SLYB account Instagram (Fig. 5). All participants were enthusiastic to share their finished products. The participant uploaded their creation in

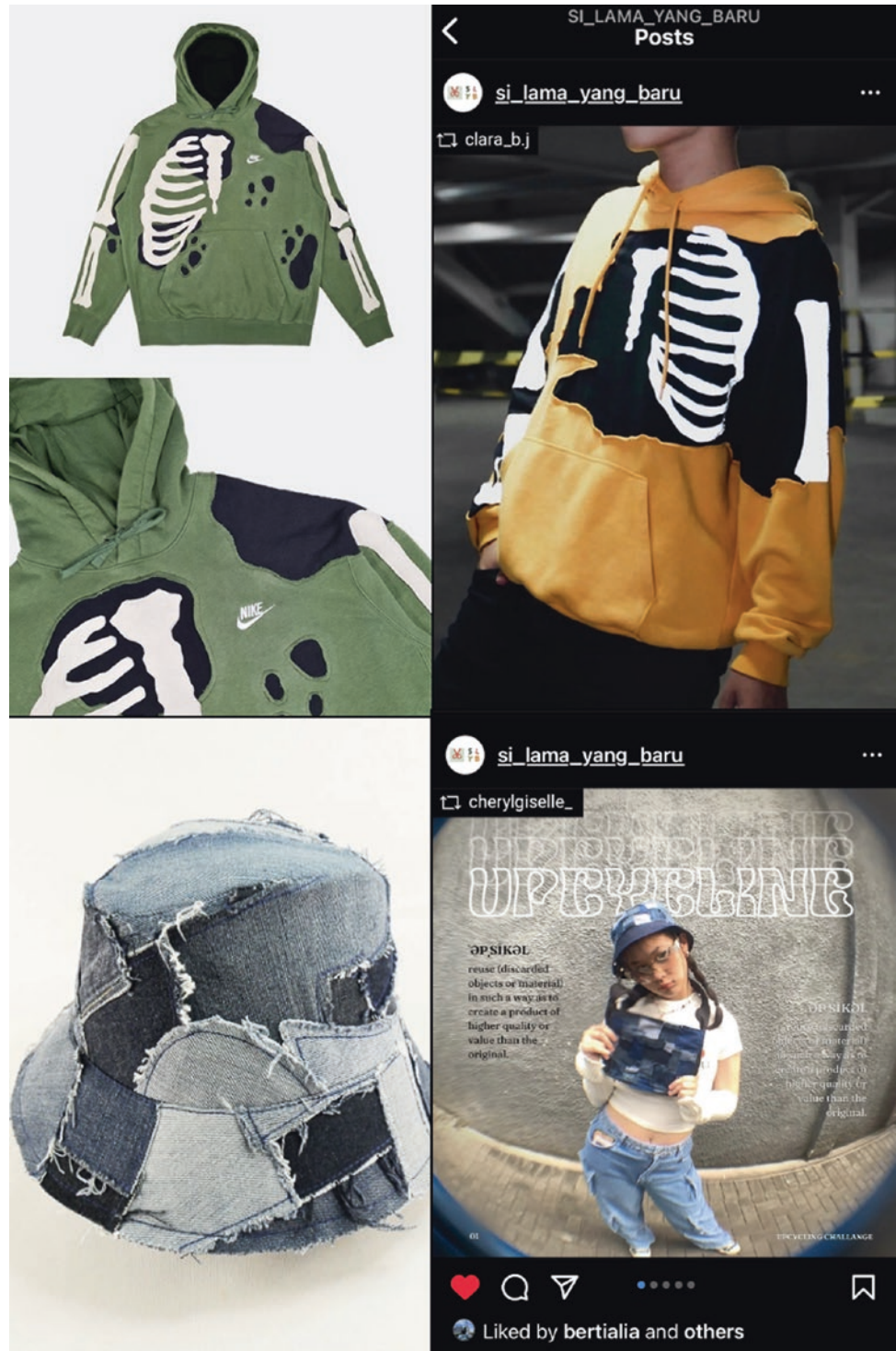
their Instagram Feed and tagged the SLYB account. They posted their chosen fashion item before they worked on it, then they uploaded the finished up-cycled product. This display is popularly known as before & after, hence this study team briefed the participant to do so. Six of the students who participated also made captions about the negative impact of fast fashion in their Instagram post caption. They also worn their creations and tag their friends. Hopefully this act will inspire their friends to try fashion upcycling as well. To add their motivation, there were rewards for three best projects. The participants took the challenge seriously; they even plan special photoshoot session to best display their product. The extra effort was intended to gain likes in their post. In several occasions, Generation Z are affected by the media ideology which requires user to carefully curate their posts and to gain likes from the viewers. In other occasions, the Instagram users want to be original, but they also want to post an image which gains numerous likes (Gershon in Ross, 2019). These are few examples of their finished images (Fig. 6).

5 Conclusion

5.1 Result

The design thinking method was used to plan an educational campaign on negative impacts of fast fashion and to encourage Generation Z to try fashion upcycling. The seven steps of design thinking by Ambrose and Harris (2009) were applied accordingly and have given desirable outcome. Instagram as the chosen social media was also proven as effective. In the selection phase, selected image was uploaded to Instagram with Generation Z as the main target viewer, while a workshop with 15 high school students as participants was held for the implementation phase. The participants understand about the negative impacts of fast fashion. They were also enthusiastic in working on their upcycling projects. Furthermore, they were also have

Fig. 4 Example for design inspiration from Pinterest and students fashion upcycling creations (<https://pin.it/6s78pUx>, <https://pin.it/5C9JmHa>, https://www.instagram.com/si_lama_yang_baru/?igshid=YmMyMTA2M2Y%3D)



given extra effort in displaying their finished upcycling product in Instagram.

On the down side, the participants only used small amount of used products for their fashion upcycling projects. Two weeks were not sufficient for the participants to try on more than one upcycling technique. The Instagram feed needs more upcycling technique examples in the

future. To continue this study, the team will have to give more examples for fashion upcycling using denim and t-shirt, because those are the most used fashion products owned by the participants. The social media educational campaign alone could not motivate the participants to try upcycling. Therefore, workshop in the implementation phase was crucial. The most interaction was gained during

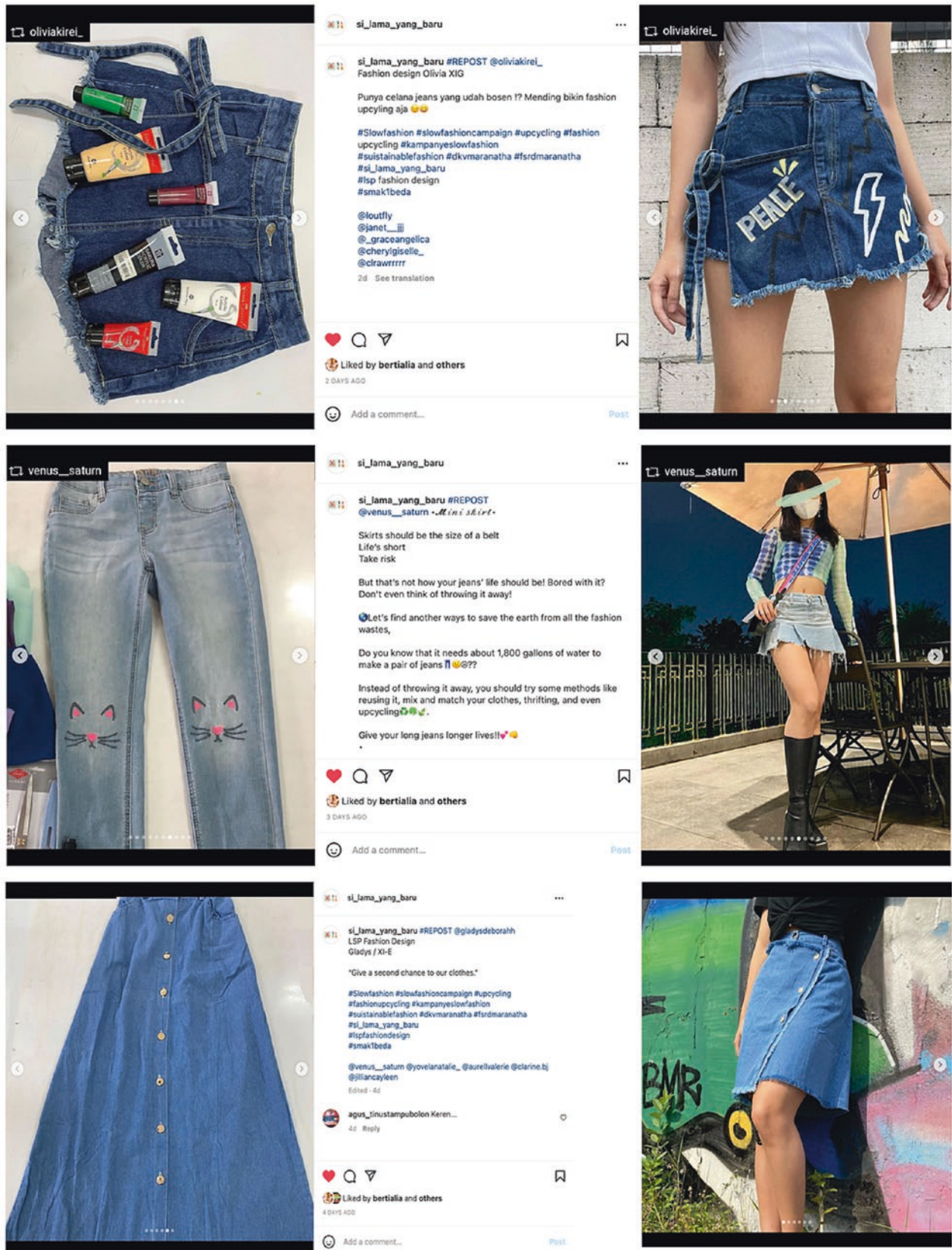
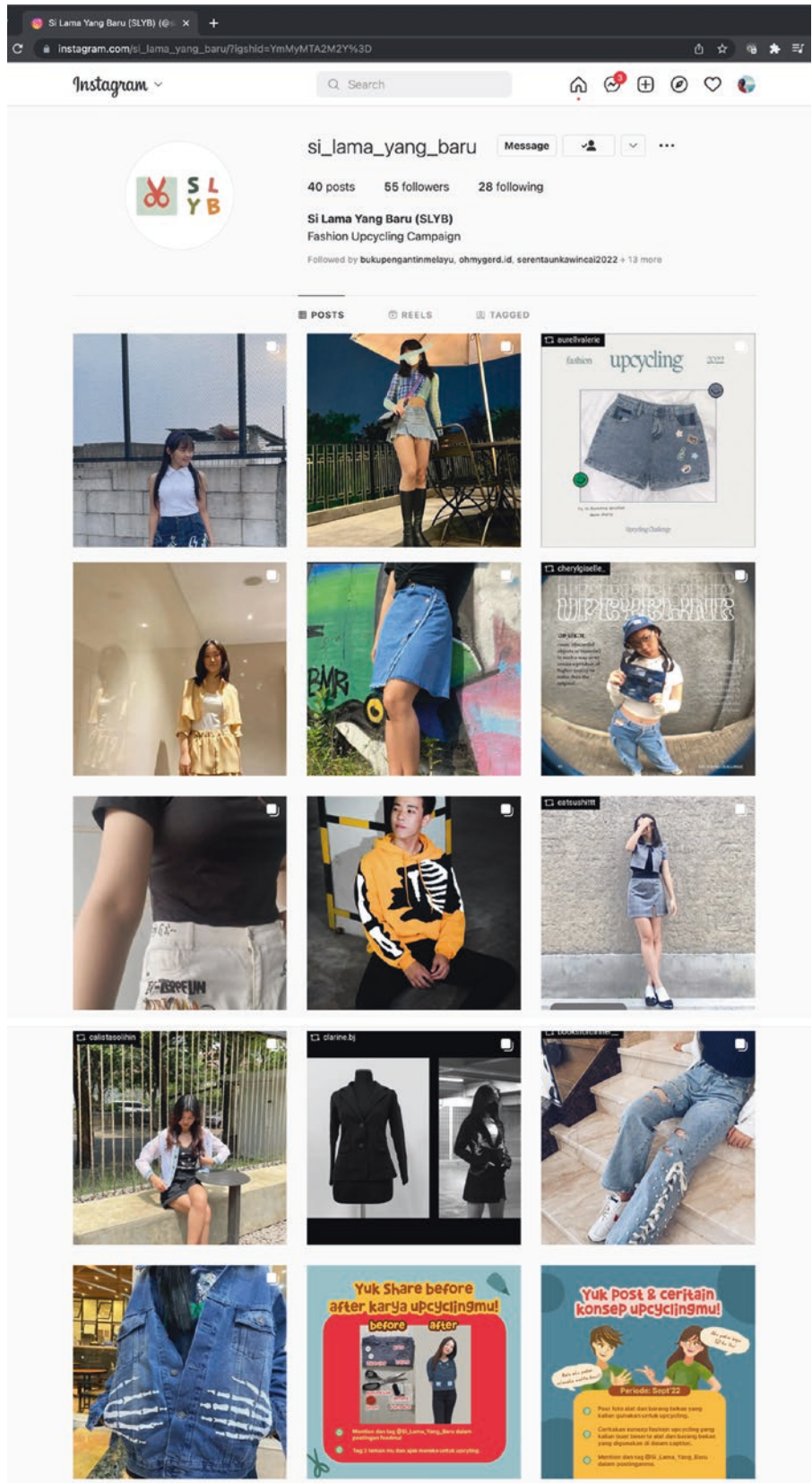


Fig. 5 Few examples of students caption and after before feed in their Instagram

Fig. 6 Few examples of students finished images fashion upcycling (https://www.instagram.com/si_lama_yang_baru/?igshid=YmMyMTA2M2Y%3D)



the challenge phase, when participants displayed their creations. The amount of likes gained by the participants has proven to motivate them. Instagram has proven to be a powerful medium to invite students to show the results of their fashion upcycling to others. The interesting photoshoot creates the impression that fashion upcycling is attractive and trendy, especially for teenagers who are the same age as students.

5.2 Recommendation

Design thinking method can be used to pursue this study. As part of research phase, a broader study on possible upcycling techniques is crucial before implementation. Additional examples on upcycling techniques and examples in the Instagram feed is also important, to revise the ideate phase, while in the implementation phase, the participants could be given extra time. Therefore, they will be able to try more than one upcycling technique for their project. The techniques and examples will concentrate more on t-shirt and denim material exploration, because most of the fashion waste from Generation Z owned are made from these.

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Finding Value: Exploring Local Resources for Sustainable Fashion

Rahayu Budhi Handayani and Seksarit Thanaprasittikul

Abstract

Restriction on mobility and distribution processes in global trade after the Covid-19 pandemic is an action that teaches countries to bolster their economic resilience and local resources to make the fashion industry sustainable. Localism has been recognized as an important approach toward sustainable practice in fashion. This is because it supports the effort to reduce carbon emissions from the distribution and transportation of global trade, as well as promote visual diversity, economic resilience, and social engagement. Therefore, this study aimed to provide how universities try to explore the localism discourse through a project-based design studio. A one-semester design project was conducted in a studio using a localism theme at Universitas Ciputra Surabaya, Indonesia, in collaboration with the fashion design department at Rangsit University Bangkok, Thailand. It followed: (1) empirical observation during the design process as data collection methods, (2) critical analysis of the project's results, and (3) critical analysis feedback from the expert to support the recommendations. The investigations yielded four (4) design suggestions for designers, along with a corresponding procedure for their implementation. The results were intended to serve as inspirations and guidelines for fashion designers who wish to incorporate localism themes in their designs.

Keywords

Design methodology · Localism · Local resources · Pedagogy · Sustainable fashion

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1 Introduction

Covid-19 is a catalyst for multiple changes in the fashion industry, which has caused economic crises, particularly in the fashion industry, and triggered restrictions on physical mobility. According to BoF and McKinsey (Amed et al., 2020), the restrictions on mobility caused by the Covid-19 pandemic have accelerated consumers' shifts, such as the development of a non-supportive attitude toward waste-generating business models. It also increased support for businesses that are driven by positive goals and actions for sustainability. Some of these changes may present an opportunity to improve the value chain in the global fashion industry, which is currently being impacted by the pandemic.

Even though the conversation about localism in the fashion industry began before the pandemic, the consumer behavior shift became more apparent after Covid-19. One of the economic consequences of the Covid-19 pandemic is the rise of peer-to-peer social commerce, which is focused on supporting community members and driving the new circular economy. Additionally, like-minded design communities are expanding, paving the way for new directions in ethical and conscious cross-cultural collaboration. These communities are digital, social, and local, with shared cultures or values (Hall, 2021).

The changes occurring in the industry and higher education have impacted fashion design, mostly practiced through studio-based learning. The students unable to attend the studio due to the pandemic returned to their hometowns and were quarantined locally. The online design studio requires students to explore local resources for the creation of a fashion product.

The partnership of Universitas Ciputra Surabaya Indonesia partnered and Rangsit University Bangkok Thailand in academic development is to improve cooperation through the joint project from both selected design studios. As part of a research and development initiative

intended to stimulate and promote the use of local resources as value added in fashion, students at both institutions were tasked with learning and utilizing their local unique resources and implementing it into fashion design.

Finally, the collaborative project evolved into research through design in order to evaluate and formulate the design phase as well as design recommendations to guide designers in designing fashion using local resources.

2 Localism as a Sustainable Approach for Fashion

The volume of manufacturing, consumption, and resource usage is crucial to several textile and fashion sustainability challenges. When more energy is consumed, production and consumption scales become greater and more rapid. Most of the resources are also non-renewable to manufacture products that are frequently used for a short time. According to Preau (2020), most fashion products currently are designed in one country, manufactured in another, and distributed globally as part of the linear fashion system and globalization.

Globalization in the fashion industry is a contribution to several environmental issues, including carbon emissions from production, transportation, and distribution. Because of the growing middle-class population and the fast-fashion phenomenon, production has more than doubled in the last 15 years. Suppose this trend continues, the fashion industry will consume more than 26% of the carbon budget by 2050 (Ellen MacArthur Foundation, 2017).

Localism has been recognized as an important approach to sustainable fashion practice. It supports the effort to reduce carbon emissions from global trade distribution and transportation, as well as promotes visual diversity, economic resilience, social engagement, and driving the new circular economy. Furthermore, Kate Fletcher introduced the concept of fashion localism by comparing the concept to local food (Fletcher & Vittersø, 2018). Fletcher believed localism can be a sustainable solution because local and smaller communities directly feel the consequences of their actions on the environment (Fletcher, 2012).

Fletcher and Tham (2019), in a study titled “through Earth Logic: Fashion Action Research Plan,” discussed the importance of strengthening local networks, consumers, and small-scale producers as part of an effort to transform the current fashion system (Fletcher & Tham, 2019). To implement sustainable solutions, localism must be considered within the context of contemporary transformations in the globalized network society, where the local and the small are both open and connected (Manzini, 2010).

According to WGSN, one of the future consumers’ driving forces following the Covid-19 pandemic is localism.

The pandemic has led to the growth of peer-to-peer social-based commerce, including the fashion industry. Consumers’ focus on mutual support in their communities and promoting the creation of a circular economy will shape future shopping behaviors (Hall, 2021).

Localism is a developing international trend that aims to empower communities and economies through promoting local production, consumption, and identity. It is defined as a business strategy in which companies establish supply chains based on geography and consciously consider local conditions when making business decisions (Dybdahl, 2019).

Manzini (2010) proposed the Small, Local, Open, and Connected (SLOC) scenario as a visionary approach and long-term solution to the current financial and ecological crisis. This approach combines the sociotechnical system based on distribution, a connected local system in a global world, and operated on a smaller scale, making it controllable by individuals and communities (Manzini, 2010).

Narrowing the scales of sourcing, producing, and distributing the fashion products can have economic because the fashion value chain is within the coverage area, including reduced transportation budget and easier control. Additionally, it promotes a more active relationship between consumers and products, resulting in longer lifetimes due to emotional attachment. Klepp et al. (2022) stated that collaboration can boost employment and the circulation of the local economy, resulting in economic resilience.

According to this theoretical perspective, the cosmology of localism is based on a simple hierarchy that elevates society, consisting of the local community and the land on which it is mutually dependent, above the economy. It substitutes diverse, distinct economic, and social structures for globalized, homogeneous ones. Fletcher (2018) reported that a “one economy” view of society is giving way to a plethora of alternatives influenced by the specifics of the various places where life occurs.

3 Guiding Fashion Students in Designing Based on Local Resources

Similar to other design disciplines in higher education, fashion design is taught using the design studio method. The studio-based model is distinguished by one-on-one teaching activities in a physical space. Consequently, the term “design studio” can describe physical space and pedagogical strategy (Crowther, 2013).

To prepare future graduates, many design schools are shifting from teaching based on “merely artifact” outputs to pedagogy emphasizing the design process, the relationship between creators and users, as well as the physical and

social surroundings. This understanding of design's interconnectedness is critical in introducing alternative perspectives to studio work and encouraging students to analyze and examine the context of their practice. This approach is more contextual because it considers the individuals' interactive engagement with the social environment (Faerm, 2019).

Higher education fashion design schools have recently incorporated environmental sustainability and social responsibility to address contemporary local and global challenges. The introduction of sustainability issues into fashion school curricula is relatively common but limited to Western Europe, East Asia, and Non-European Anglo-Saxon countries (Murzyn-Kupisz & Hołuj, 2021).

As a result of the Covid-19 pandemic, various industries, notably the fashion sector and higher education learning approaches, such as studio-based learning, were forced to undergo significant adjustment. Due to the limitation of physical encounters, the common practice of studio-based learning had to be modified. However, virtual design studios are not a completely new thing. Distance learning pedagogy is actively being developed, and some design education programs that use the online learning method have already been accredited (Ahmad et al., 2020).

Fashion Product Design Universitas Ciputra Surabaya, Indonesia, and Fashion Design Department Rangsit University, Thailand, recognize the Covid-19 pandemic as an opportunity to strengthen their collaboration through joint projects from both selected studios. The joint project activities were carried out between September and December 2021, when the pandemic was still at its peak, and physical studio-based learning was impossible. Students who returned to their hometowns during the pandemic were expected to investigate local resources to create timely fashion goods.

According to Blankenship (2005), the designers' cultural influences, as reflected in their work through recollections and perceptions, informed and inspired their work. Individuals can contribute to the global cultural exchange by sharing cultural heritage (Blankenship, 2005).

The cross-cultural digital connection between Indonesian and Thai students coincided with the big idea presented in the report of WGSN on 2023 Big Ideas Fashion. Furthermore, connectivity and collaboration among communities and collectives are becoming more digital, social, local, and rooted in shared culture or values (Hall, 2021).

The nature of design may be presented as an effective instrument for addressing cross-disciplinary problems. With inclusive capability based on a better understanding of culture, design strategy is becoming a tool for solving problems and expressing innovative ideas, a better approach to rethinking the management of local resources, and

design-led innovations in harmony to generate initial design solutions with consideration of local contexts (Pei, 2016).

As shown in Fig. 1a, b, the joint lecture was conducted as a brief overview of the significance of localism, sustainability, and the relationship between people and clothing to provide students with context regarding the values raised in this project. Therefore, three main issues were delivered, namely: (1) Localism as a Sustainability Approach in Fashion, (2) Design Methodology: Design Approach for Sustainable Fashion, and (3) Redesigning the Relationship between Fashion and Clothing.

Localism is characterized by the use of nearby resources, local knowledge, and reliance on the community. It also implements the practices shaped by traditions, local habitus, needs, climate, imagination, and as a form of the local authority. According to Fletcher and Tham (2019), localism creates a sense of rooted identity and community, and it is always within a specific geographical area (Fletcher & Tham, 2019).

An important approach to seeking creative impulses, aesthetic expressions, forms, and materials is by exploring cultural heritage, such as local materials, traditional crafts techniques, and historical or local stories as fashion inspiration (Murzyn-Kupisz & Hołuj, 2021). It is also part of an effort to shift the state of the art of fashion education from "products and designers" to "values and design process" (Bertola, 2018).

Finally, students are encouraged to use the nearby resources in order to bring them closer to the roots of their identity and community. This project prioritizes the opportunity and affordability of resources closest to them as fashion design students as a useful starting point for understanding how these materials can be used to explore value in fashion design.

4 Methodology

This study aimed to observe and evaluate the exploration of local resources by students in the development of a fashion collection. Using a design approach, it involved: (1) empirical observation in the design process as a method of data collection, (2) critical analysis from the outcomes of the project, and (3) critical analysis feedback from the expert to support the recommendations, as shown in Fig. 2. The design process consisted of four phases, as explained by the design studio procedure below. In the analysis section, the selected outcomes of the joint project using purposive sampling were critically assessed and supported by the inputs from the practitioners. The results of this study are value recommendation and design methodology of localism fashion. The overall methodology is depicted in a chart that is shown in Fig. 2.

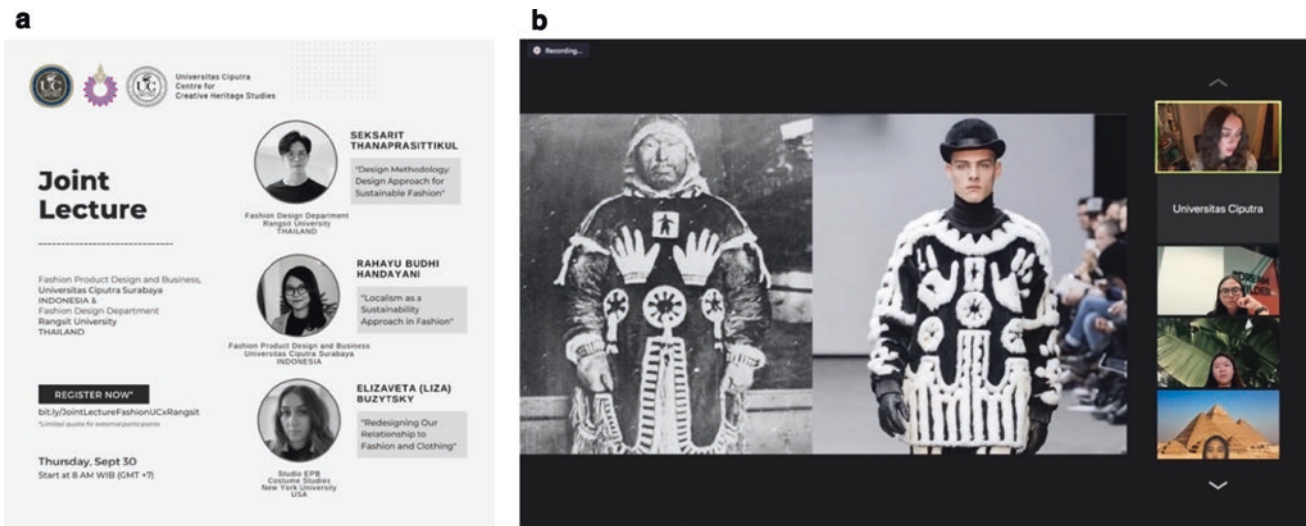


Fig. 1 a Joint lecture about localism (author), b joint lecture conducted online (author)



Fig. 2 Methodology (author)

4.1 Design Process

4.1.1 Participants

The project included 56 s-year fashion design students from Universitas Ciputra Surabaya, Indonesia, and 15 from Rangsit University in Thailand. During the design studio, the authors, as lecturers, facilitated and mentored students.

4.1.2 Procedure

Essentially, the core process of fashion design is investigation, design development, and the realization of the final product. According to McKelvey and Munslow (2012), the process, which includes design development, begins with a list of guidelines, commonly referred to as design briefs, followed by study in the form of personal inspiration and fashion directions such as trend analysis, markets, and others.

The next step is to create a prototype, which will be repeated when it is approved (McKelvey & Munslow, 2012).

In this project, the design development process was carried out to produce a prototype, which is described in the form of a thinking framework as shown in Fig. 3, as follows:

This studio-based course is part of the Fashion Product Design study program at Universitas Ciputra Surabaya, Indonesia, and the Fashion Design Department at Rangsit University, Thailand. It covers methods for designing fashion products, emphasizing incorporating creative study as a key component of the design process. Furthermore, primary and secondary data collection was used to obtain visual data.

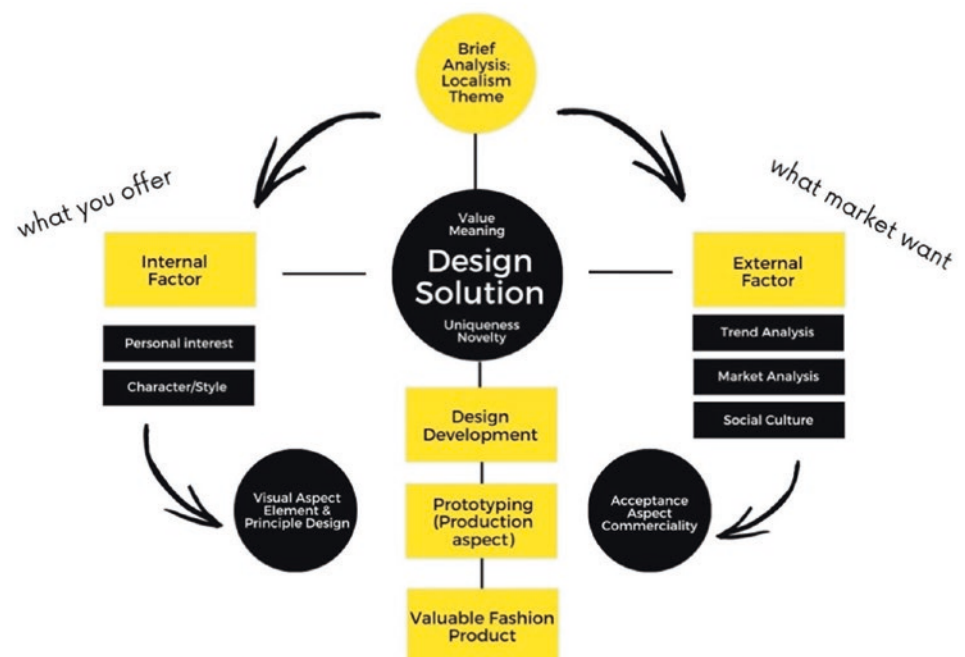
The design process for this project consists of four phases, in the first, (1) students identified local resources that fit their interests. Phase two (2) is Planning and Resourcing, during which students collect primary and secondary data, as well as explore nearby resources. The information gathered was used to create a design brief. The third phase (3) involves executing, where students created designs based on the study results and design brief. Phase five (5) is Execution and Reflection, during which prototypes were created and presentations were made. The virtual exhibition platform displayed the 20 selected students. The overall methodology is depicted in a flowchart that is shown in Fig. 4:

5 Outcomes

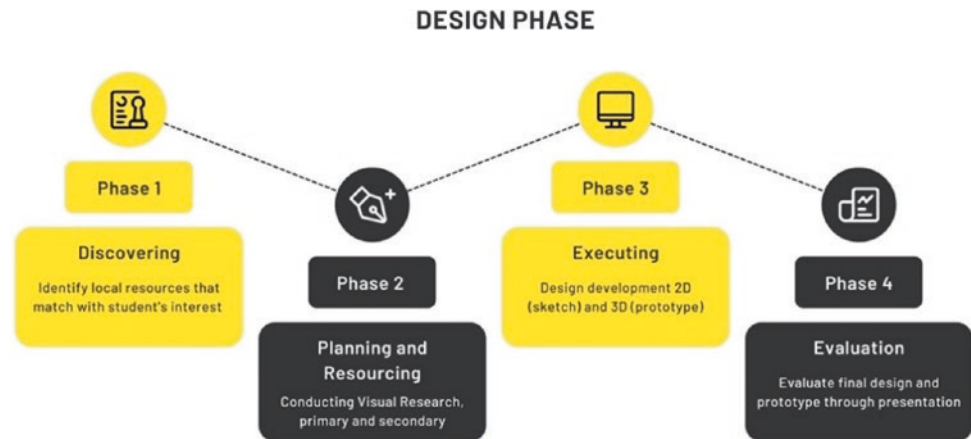
Overall, the studio yielded 71 fashion design collections, followed by the presentation of processes and brief descriptions of the results using purposive sampling from selected works. Meanwhile, according to Thompson (2007), Indonesia and Thailand are both located in the South-East Asia region, which is a mixture of races, religious beliefs, inherited culture, indigenous crafts, people, and other local values. Most students obtain their inspiration from local resources from nearby local textiles or stories.

In the first phase, as shown in Fig. 5a, the first sample was collected from Aurelia Pamela Tjandra, a student at Universitas Ciputra. The student was inspired by the Tengger tribe’s sarong, which is the typical clothing of the indigenous tribe known as “The Tenggerese,” who live on the plains of Mount Bromo and include the regencies of Lumajang, Probolinggo, Malang, and Pasuruan in East Java. The topic was selected because it is located near the student’s home, and she has several friends who are members of the Tengger tribe. The second sample shown in Fig. 5b came from Panchitar Rakwattanasirikun, a Rangsit University Thailand student, who was inspired by the technique of wearing a loincloth by Thai men, mostly from Thailand’s northeastern region. The loincloth is versatile and has been used by Thais since ancient times.

Fig. 3 Design framework (author)



ADAPTED FROM: MCKELVEY & MUNSLow (2012) FASHION INNOVATION & PROCESS + A OSTERWALDER VALUE PROPOSITION CANVAS

Fig. 4 Design phase (author)

Based on these two examples, students were more likely to use objects that resulted from an existing culture in their surroundings. This is because Indonesia and Thailand have many cultural artifacts, such as traditional textiles, that are still in use currently.

In the second phase, students conducted a visual study to collect primary and secondary data. Due to the restriction of physical mobility during the pandemic, students were allowed to collect data through virtual observation. Digital ethnography is a relatively recent approach to studying human cultures that have arisen in tandem with the rise of the Internet and other forms of digital media. Unlike traditional ethnography, which involves direct observations in the field, digital involves making observations through social media, virtual environments, and communication mediated by digital platforms (Györ, 2017).

Some students conducted primary and secondary studies by observing certain dimensions of observation, such as space, actors, activities, objects, acts, events, time, goals, and feelings. They selected the most relevant dimension to incorporate into their visual research.

The following sample as shown in Fig. 6a came from Catherine Kanaya Ditha, a Universitas Ciputra student

observing Desa Sade, a traditional village in Central Lombok. It was made up of physical settings, objects, actors, and ambiance that were photographed for visual reference. Meanwhile, Soythida Sudaruk, a student from Rangsit University, as shown in Fig. 6b, examines Thai Yuan culture, particularly the objects. The dress, weaving, patterns on the sarong and how Thais wore the sarong were investigated. In this second phase, students still used more visualization of existing traditional objects.

The students developed the design from the results of their visual study in the third phase. They created design elements using keywords visually represented in a mood or inspiration board. On the inspiration board, shape, line, proportion and scale, texture, material, color, detail, and specific purposes were all portrayed. Furthermore, the mood board was used as a visual guide for design development.

The majority of students created designs that incorporated essential visual elements representing traditional local values, such as motifs and colors. As shown in Fig. 7a, Putri Sakura Gotama, a student at Universitas Ciputra, was inspired by Dayak tribes and used decorative elements in her design. The design was inspired by Dayak beading culture and the Enggang bird, a typical bird of Borneo,

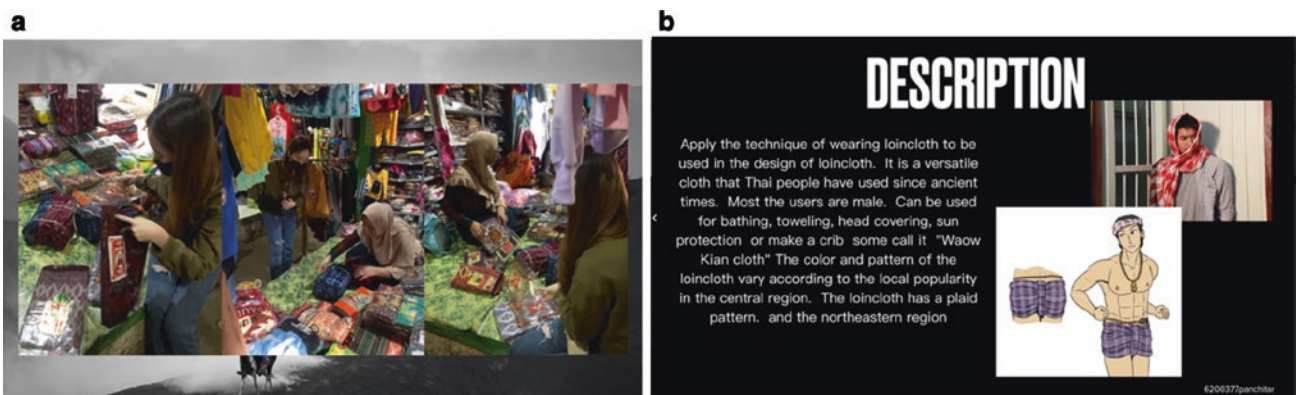
**Fig. 5** a Phase 1 sample (author), b phase 1 sample (author)



Fig. 6 a Phase 2 sample (author), b phase 2 sample (author)

Indonesia. Meanwhile, as shown in Fig. 7b, Dhitsayarin Phuwattaweeputh from Rangsit University developed a design based on several visual aspects of Black-bellied Lao, including tattoo motifs and the shape formed by the way Lao people wear the chong kraben to cover their genitals.

In the final stage, students turned their selected design into a prototype, which included pattern making, cutting, sewing, and finishing. The realization of the design was one of the critical phases that required students to pay close attention to details, particularly those supporting the final silhouette and construction. The example of Phase 4 results is shown in Fig. 8:

All students delivered their concluding presentations and submitted all process documents. Furthermore, 10 students from each university were displayed as a sample of the joint project’s outcome. This collaborative project produced 71 fashion design works by examining local value, and 20 were exhibited virtually using 360 virtual exhibitions as shown in Fig. 9a, b.

6 Critical Analysis of the Outcomes

To examine the joint project’s outcomes, input was obtained from two (2) fashion designers with experience using local resources. The first was Voravaj Bangkok’s Jaque Varazatiravatt, and the second was Dewa Made Weda Githapradana, an Indonesian fashion designer and member of the Indonesia Fashion Chamber. Both experts have over ten years of experience in the fashion industry, primarily in Southeast Asia. Some of their works incorporate localism as an added value. They were asked to provide critical feedback by analyzing samples purposefully selected to represent each phase. The feedback from the expert interviews assisted in summarizing design recommendations for each stage with localism value.



Fig. 7 a Phase 3 sample (author), b phase 3 sample (author)

Fig. 8 Phase 4 sample (author)**Fig. 9** a Virtual exhibition (author), b virtual exhibition (author)

6.1 Experts Interview

Experts anticipated that students would be able to investigate the tangible and intangible value of local resources during the first phase. Dewa Made Weda Githapradana stated:

Students who responded well to the brief were sensitive to their environment, particularly the local resources and culture. It was a good start to gain valuable inspiration for fashion designers by being aware of what was occurring around them.

The first phase is crucial because it is an integral aspect of the topic selection process. According to Jaque Varazatiravatt, this is the stage where students can choose their unique selling point.

Students conducted primary and secondary studies during the second phase, which is a complex undertaking to obtain inspiration. This stage can be very personal for each student, but according to Jaque:

It is important to make people understand the process, especially for local value. Mostly, the things I see in the artworks are my interpretation. Communication is the key to making individuals more engaged and appreciative of works.

Dewa Made Weda Githapradana believed that the selection of visual reference is crucial because design works are the visualization of abstract ideas. During this phase, students must source references for tangible and intangible aspects, such as object shape and cultural value.

The third stage is design development, where students create designs based on a creative study. Jaque Varazatiravatt commented:

Students tend to put everything in the design. They need to understand who will wear it and where to wear it.

Dewa Made Weda Githapradana also stated:

Simple or complex designs must still be able to represent the concept. There must be storytelling about the process from concept to selected design elements.

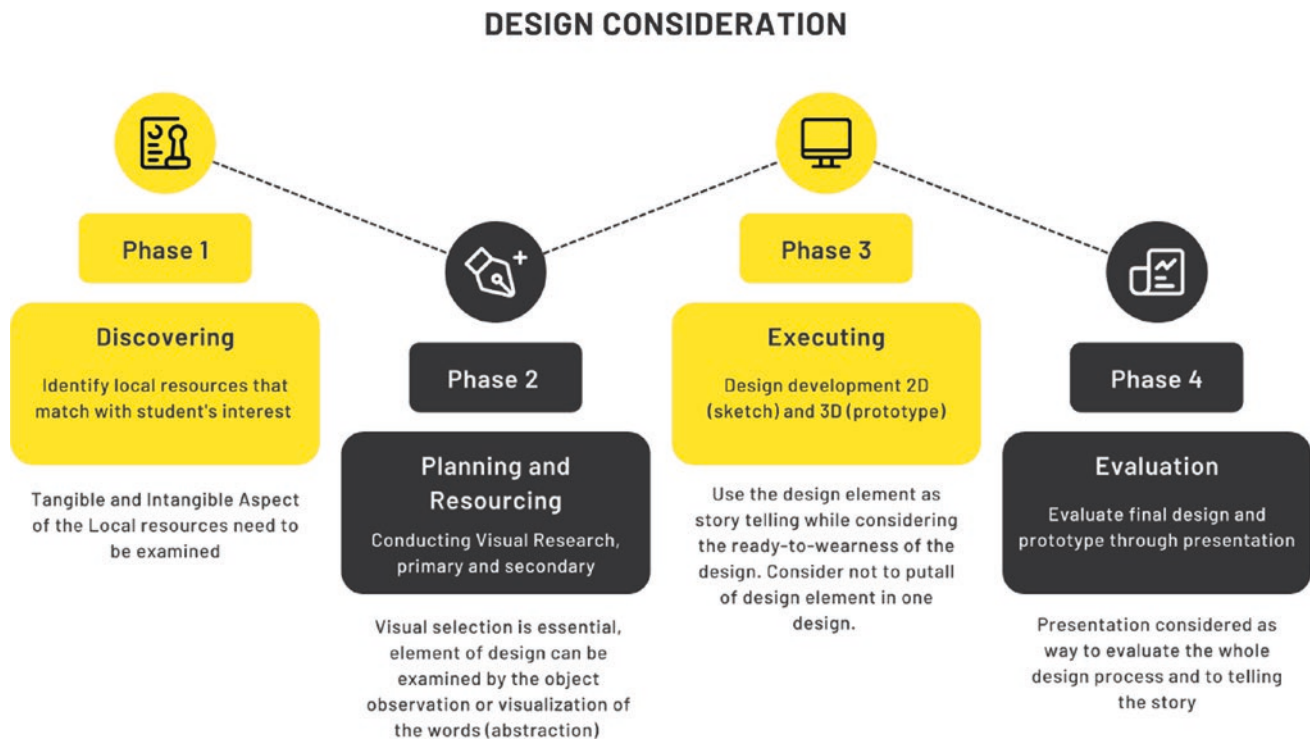


Fig. 10 Design consideration (author)

The final phase is evaluation, where students present their final work to the public for feedback. For this project, every student gave an oral presentation and was allowed to be showcased virtually.

The experts appreciated the virtual exhibition and the students' final artworks. However, Dewa Made Weda Githapradana provided feedback that:

The whole presentation will be better when it represents the ambiance of localism, not only the artworks.

All expert feedback has been summarized as design recommendations for the next project or other fashion design projects that use localism as an added value.

6.2 Design Recommendation

This section covers fashion design recommendations for contributing to a project using localism. The following are the recommendations based on each stage of the design process:

- **Phase 1 Discovering:** One of the most important phases of the localism-based fashion design project is identifying local resources. Based on the observations of the design process and expert feedback, the recommendation is to investigate both the tangible and intangible aspects of local objects.

- **Phase 2 Planning and Resourcing:** One of the factors to consider when conducting a primary and secondary creative study is the selection of visual representation. This is executed to assist designers in developing design ideas and educate the audience about the overall process.
- **Phase 3 Executing:** It is critical to consider wearability during designing when carrying out the design. Local resources derived from cultural heritage tend to be complex and challenging to wear daily.
- **Phase 4 Evaluation:** Following the presentation, the results were evaluated by reviewing the entire design process. Presentation is essential for conveying to the audience the overall ambiance of the local value. The entire presentation must be considered able to provide the collection's value.

The overall design recommendation for every phase of design process is depicted in a chart that is shown in Fig. 10:

7 Conclusion

Localism is one of the sustainable approaches that emerged after the Covid-19 pandemic. Furthermore, localism is a sustainable approach that can reduce carbon emissions from global trade distribution and transportation, as well as promotes visual diversity, economic resilience, and social engagement. The study and development labs of Universitas

Ciputra Surabaya and Rangsit University Bangkok guide students in designing fashion based on localism.

The students were guided through four stages of the design process to create fashion using local resources. The expert then evaluated the project results to formulate a design recommendation, which includes (1) examining the tangible and intangible aspects of local resources; (2) selecting essential visual references to represent design elements that will be used; (3) consider not including all elements in one design because local resources have complex visual and philosophical aspects; and (4) the entire process of designing with local resources must be communicated as part of the value added.

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Utilization of Pasuruan Regency Handloom Fabrication Silk for the Indonesian Sustainable Fashion Industry

Janet Rine Teowarang

Abstract

This article interprets the importance of innovating Pasuruan Regency handloom fabrication silk for the Indonesian fashion industry to manifest the textile usage for sustainable fashion or lifestyle concept products. The breakthrough of handloom fabrication silk in Pasuruan Regency in East Java has given the substantial opportunity to utilize the textile for various sustainable products for the Indonesian sustainable fashion industry. Since 2019, East Java has become the essential resource for silkworm cultivation, particularly eri silkworm *Samia Cynthia Ricini* cocoon with the extracted process without killing the pupa inside into peace silk. Furthermore, to prolong the durability and comfort of the eri silk fibers have integrated with TENCEL™, a sustainable fiber with low water usage and excellent dyeing absorption for natural dyes. The fibers combination and spinning process is the first in Indonesia, where yarns are required for the handloom fabrication silk process by Pasuruan Regency-based MSMEs KaIND. The Handloom fabrication silk utilization promotes the distinctive textile into luxurious, wearable Indonesian sustainable fashion products with locally based natural dyes and Indonesian batik.

Keywords

Handloom · Fabrication silk · Utilization · Sustainable fashion · Indonesia fashion industry

1 Introduction

1.1 Research Background

East Java is the second largest in Indonesia for its Gross Regional Product (GRP) nominal based on the 2021 national gross domestic product data, the most comprehensive measure of the national economy from Statistics Indonesia. The province is one of the largest and most strategic in Java, with its business and logistic hub for the eastern part of Indonesia. According to Hidayat and Asmara (2017), it's proven that Indonesian craft and traditional textile is one creative industry with entrepreneurship-based and it has achieved economic growth nationally by 5.76%. Meanwhile, the average Indonesian economic growth is only 5.74%, where the creative industry supports economic growth in Java Island from the Micro, Small, and Medium Enterprises' contributions (Hidayat & Asmara, 2017). By 2019, the Indonesian government implemented the program "Roadmap of SDGs Indonesia" as a commitment to support the United Nations SDGs 2030 development agenda. The SDGs agenda will develop and grow the local creative industry toward sustainability, particularly in fashion, textile, and craft raising Wastra Indonesia, the traditional Indonesian cloth. Sustainable fashion in Indonesia has emerged since 2015, then after SDGs Indonesia was implemented in 2019, sustainable fashion practices arose more with the latest issue and supporting technology. Related to the sustainability concept, the silkworm cultivation practice is widely adopted by local communities in Java from west to east for business turnover purposes. The local silk farmer, Eko Hariyanto, from Batu Sub-District in Malang Regency, East Java, has implemented silkworm cultivation practice for two years. Because of its profitable business, he receives continuous orders from a silk thread processing factory in Lawang Sub-District, Malang Regency (jatimnow.com, 2022). Since 2019, East Java has become the essential resource for silkworm cultivation from

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Fig. 1 Eri silkworm *Samia Cynthia Ricini* with their staple food castor leaf. Beside the eri silkworm, the result of a healthy, white, clean and sizable eri silk cocoon. Documentation: Janet Teowarang, 2022



Fig. 2 Eri silkworm *Samia Cynthia Ricini* on simple-built wooden shelves. Documentation: Koperasi KUPU Sutera, 2022

the mulberry silkworm and eri silkworm, as well as cross-breeding the silkworms. From the process of silk production there are two kinds of silk, commercial and peace silk; however, the commercial silk production process is not ethical. Nonetheless, the silk production of mulberry and eri silk are examined to have a small depth of water footprint and, most importantly, almost produced without waste. Truthfully, silk materials are biodegradable for some years

compared to synthetic materials' lasting capacity for hundreds of years; silk material does not release any harmful toxins during production, while manufactured fibers are poisonous and contaminate the environment. Silk materials also have natural qualities for healthier utilization with hypoallergenic grade (O'Brien, 2016). The conventional procedure of silk manufacturing implies boiling the entire cocoons of silkworms, then disentangling the silk filament. When the process is completed, the silk fibers are sturdy. Nevertheless, that denotes the silkworm departs in the process. The *Bombyx Mori* silkworms are the types of silk produced without ethical processes, and the silkworms exclusively consume mulberry leaves. Other than the *Bombyx Mori* silkworms type, there are other methods with different cocoons founded by the researchers. The Eri or Ahimsa Silk process methods without killing the eri silkworm *Samia Cynthia Ricini* during extracting silk from the cocoons, where the methods use the natural evolution of the silkworms surfacing from their cocoons. Thus, the ethical process makes eri silk called peace silk. Eri silkworms consume different leaves than *Bombyx Mori* as seen in Figs. 1 and 2, and the worms devour castor leaves (O'Brien, 2016). In 2019, Micro, Small, and Medium Enterprises (MSMEs) KaIND based in Purwosari Sub-District, Pasuruan Regency, East Java, utilized the eri silk fiber to be integrated with TENCEL™ by Lenzing. KaIND has collaborated with Koperasi KUPU Sutera to empower East Java eri silkworm farmers as seen in Figs. 3 and 4, promoting the local economy and maintaining the sustainability of eri silkworm cultivation. The composition of eri silk fiber and TENCEL™ is 30% and 70% into fabrication silk yarns, later weaved become handloom fabrication silk cloth refer to Fig. 5. Both fibers are environmentally friendly, although the composition of TENCEL™ is higher since the natural eri silk fibers tend to adhere to an object or surface during the process if the percentage is higher than 30%. The fabrication of silk handloom cloth has key benefits as follows: it contains real silk with peace silk, the fabric is soft to the touch, breathable and biodegradable, preserving heritage by using handloom and batik techniques as shown in Fig. 6, empowers villages by creating an ecosystem for the weavers, batik artisans, and silk farmers with production process 100% in Indonesia as the first in Indonesia (Indarto, 2019). Since the material's absorption level is excellent, the usage of natural dyes functions ideally. KaIND initiated the utilization of fabrication silk in Indonesia for sustainable fashion pieces such as clothing, shawl as fashion accessories, utility fashion pieces such as mask scarf, and collaboration with other MSMEs with the sustainable practice for fashion accessories and home living products. Indonesia is a country in Southeast Asia alongside Thailand, with a traditional handloom process with local raw materials such as eri silk. According to Charungkiattikul, S., & Joneurairatana, E.,



Fig. 3 Women eri silk farmers during cultivation of eri silkworms placed on simple-built wooden or bamboo shelves. Documentation: KaIND, 2020

both of their research results focus on the advancement of Thailand textiles, where they adopted the philosophy of a Sufficiency Economy. The philosophy is the essential principle of Thai culture to foresee the research findings' ability to assist material awareness. It aims to sustain textile and fashion cultures in Asia's modern society (Charungkiattikul & Joneurairatana, 2021).

Fig. 4 Eri silk farmer candidates from Purwodadi Sub-District, Pasuruan Regency in East Java, during the workshop for regeneration. Documentation: Koperasi KUPU Sutera, 2022



2 Literature and Theory

The literature review of previous research about the fabrication silk and its utilization in the sustainable fashion industry has yet to be available since the topic is brand-new. Therefore, the utilization of the material is only implemented during hands-on practice among MSMEs. Handloom is a traditional cloth technique in Indonesia with two types of commonly used handloom machines: backstrap and floor weaving. From Eastern Indonesia, etymological documentation about Indonesian handloom on Sumba Island is gathered. By 1985, the Sumbanese people assembled metallic threads into their lambelekko skirts. Later, proven interest in Indian silver and gold thread led to Sumatra's songket textiles, Javanese lurik cloth with woven metallic threads, as seen in 1980 during an exhibition in Jakarta (Novellino, 2006). Indonesian traditional handloom textiles existed across the archipelago, specializing in various primary materials from cotton and commercial silk to peace silk. There are men and women handloom artisans who manage different types of handloom machines, where men generally handle floor weaving machines while women with backstrap weaving machines. When handloom textiles become a commercial item, the standard dyeing process is using cotton and rayon yarns with synthetic dyes purchased



Fig. 5 The innovation of fabricated silk by Pasuruan Regency MSMEs KaIND with Koperasi KUPU Sutera and Lenzing Indonesia. Documentation: KaIND, 2022

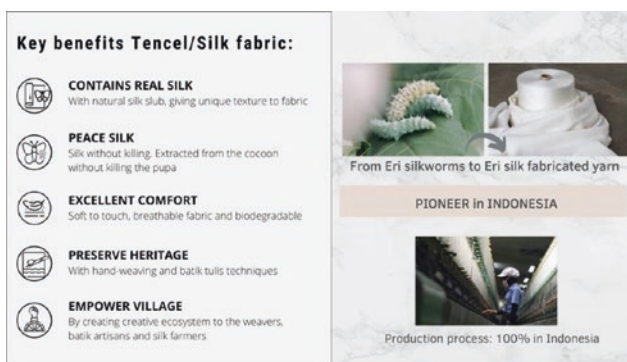


Fig. 6 The key benefits of the fabrication silk fabric for the human wearing the material, the people who produce the material, and preserving the local wisdom with environmentally friendly material. Documentation: KaIND, 2022

from local yarn producers since this will achieve brighter features on handloom textiles. In addition, the process also proceeds in a shorter time. However, many handloom artisans must be aware that synthetic dye harms the environment and neighborhood, clearly decreasing the traditional textile's cultural value (Jiniputri, Panggabean, & Widiawati, 2021). In 2019, KaIND MSMEs from Purwosari, Pasuruan Regency in East Java, made the breakthrough for handloom textile development by joining forces with Lenzing, PT. Lakumas, and Koperasi KUPU Sutera. With this collaboration, KaIND produces handloom fabrication silk from fine quality fusion fibers of eri silk and TENCEL™ into yarn-spun fabrication silk. This combination process is the first in Indonesia (Wardhani, 2021). KaIND has used natural dyes for the handloom textile dyeing process from local plants and seeds homegrown in their workshop with its safe waste disposal on waterways. Wardhani (2021) also explains that the traditional sari silk and TENCEL™ fibers

process is supported by innovative technology, which is proven to produce environmentally friendly material with soft and safe skin characteristics luxuriously like 100% silk.

Eri silkworm is a wild silkworm with several benefits and accomplished the absolute wheel of life. Characteristics of eri silk are like ordinary silk, such as sleek, glossy, and white, often blended with other fibers, including cotton (Rungruangkitkrai et al., 2020). In addition, eri silk fabric has unique characteristics such as lightness, soft-smooth feel, and thermal properties that absorb sweat quickly and are well-ventilated (Rungruangkitkrai et al., 2020). The era spun silk yarns are expected to be highly useful in manufacturing a range of fabrics, where eri silk reflects better than mulberry silk for strength and air permeability (Javali, 2012). Research findings have claimed the strength and durability of eri silk fabric with particular fabric texture. Therefore, the fabric is popularly utilized for home furnishing products such as home curtains, comfortable bed covers, cozy cushion covers, and others (Boruah & Kalita, 2015). Therefore, various utilization of eri silk fabric developed into sustainable fashion with function and needs, for instance, the protection of UV radiation properties from naturally dyed eri silk textile developed by Thailand textile researchers. They developed casual eco-friendly textile of eri silk fabric from naturally dyed eri silk yarns with Thai plants providing UPF 50+ protection into three prototypes of a hat, scarf, and dress.

Sustainable fashion in the Indonesian fashion industry emerged in 2019 after the “Roadmap of SDGs Indonesia” was imposed. However, using handloom fabrication silk was not widely known during early implementation. A pandemic situation in 2020 has caused the cease of eri silk farmers in East Java from 250 to only 20 farmers. In 2021, Allegra Jane, an Indonesian fashion brand, collaborated with Universitas Ciputra Surabaya Fashion Product Design and Business students. They used non-dyed handloom fabrication silk from KaIND as upcycling fashion product of universal sustainable fashion products by combining machine weave textile waste with the handloom fabrication silk. They designed and made the kimono look outer with various styles and added some fashion accessories such as detachable buttoned front vests, tie-waistbands, face and sleeping masks, and fabric clutches for staying at home or outside preferences (Teowarang, 2021). The main reasons for their contribution utilizing handloom fabrication silk are to raise global awareness of the sustainable fashion project, empower local Indonesian wisdom, and promote East Java eri silk farmers. The eri silk farmers play an excellent role in silkworm cultivation and supply to support the production capacity of the handloom artisans (Teowarang, 2021).

3 Data Methods

Material utilization for sustainable fashion in the Indonesian fashion industry is limited to market demand and the product's price. Moreover, Indonesia is relatively new to the sustainable fashion concept, unlike other countries leading the sustainable fashion, namely the United Kingdom, the Netherlands, Australia, and many others in Northern Europe. The certified textile is also bound to only large textile manufacturers like Asia Pacific Rayon produces 100% biodegradable viscose rayon, and Lenzing Indonesia company PT. South Pacific Viscose, which produces brands of wood-cellulose-based fiber such as TENCEL™ and ECOVERO™. Therefore, KaIND as the MSMEs leader for eri silkworm cultivation with Koperasi KUPU Sutera collaborated with Lenzing Indonesia and PT. Lakas for producing the first fabric silk textile in Indonesia. However, Koperasi KUPU Sutera has yet to gain more buyers from sustainable fashion practices in Indonesia or globally. This caused limited utilization of eri silk fibers within the fashion or home industry. On the other side, KaIND has succeeded in international collaboration producing handloom fabrication silk pillow cushions for TEPILANE®, a conscious homeware brand from Hawaii, USA, the handloom fabrication silk sleep mask and pillow cushion for NOST, sustainable loungewear and homewear from Singapore as seen in Fig. 7. The collaboration is also with Indonesian sustainable industry practices such as Handep in Bali for the inner fabric of their rattan bag, TISOO in Bali for tissue pouch, Lepas Wear in Jakarta for outerwear of kebaya, and Batik Keris in Solo for handloom fabrication of silk batik scarf as shown in Fig. 8. Alternatively, the material is also ideal for a corporate gift from the company to their loyal customers or partners refer to Fig. 9. Just recently, KaIND also had the opportunity to present about eri silk and fabrication silk at Asian Venture Philanthropy Network or AVPN Global

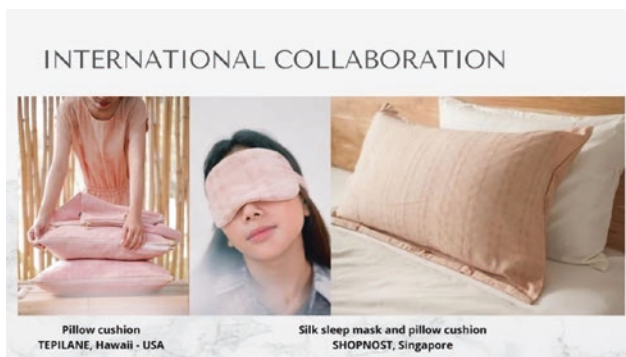


Fig. 7 International Collaboration with TEPILANE® and NOST for homewares from handloom fabrication silk with natural dyes. Documentation: KaIND, 2022

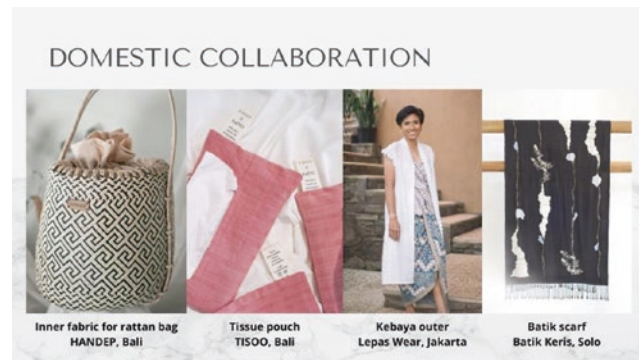


Fig. 8 Collaboration with Indonesian sustainable practice with Handep in Bali, TISOO in Bali, Lepas Wear in Jakarta, and Batik Keris in Solo utilizing handloom fabrication silk into fashion and homeware products. Documentation: KaIND, 2022



Fig. 9 Material utilization for the exclusive corporate gift made by KaIND based on the custom orders of the corporation. Documentation: KaIND, 2022

Conference 2022 in Bali, Indonesia, last June 2022 as shown in Figs. 10 and 11. According to Sandiaga Uno, the Indonesian Minister of Tourism and Creative Economy, during the opening of AVPN, said that to provide solutions and opportunities for a sustainable and inclusive economy, we need global events such as AVPN because this event aims for a future safe environment, boost productivity, balance, and certainty, and enhance Asia and global leadership (Jessica, 2022). During this event, KaIND has aimed for global collaboration and sharing their impactful movement supporting eri silk farmers and further utilizing the handloom fabrication silk.

Meanwhile, Allegra Jane, who collaborated with KaIND in 2018 refer to Figs. 12 and 13, has the same vision and belief in using different methods as sustainable fashion practice. Allegra Jane's creative director has used a practice-based research method. Following the fundamental precept of practice-based research, where practice or design becomes the crucial and inseparable part of the research process. The questions from related research are born through practice development and provide exploration



Fig. 10 KaIND's Founder Melie Indarto with Svida Alisjahbana, the CEO and President Director of Femina Group, one of Indonesia's distinguished women's lifestyle publishing companies. Documentation: KaIND, 2022

space to find answers and various new forms of knowledge that can explain and improve practice on other occasions (Candy & Edmonds, 2018). Allegra Jane utilized KaIND's handloom with natural dyes and batik for their first sustainable concept fashion capsule collection in 2019. Another collaboration with KaIND during designer and MSMEs synergy for BRILIANPRENEUR Lokal Keren Jatim in August 2021 created two sustainable fashion looks from handloom fabrication silk for the auction event as seen in Figs. 14 and 15. Recently in May 2022, Allegra Jane created sustainable tailored suits using handloom fabrication silk with Samuel Wongso from Wong Hang Tailor, a celebrity and one of the distinguished tailors in Indonesia refer to Figs. 16 and 17. Allegra Jane's upcoming collaboration plan is creating a sustainable fashion collection for the Australian market, with Australian fashion designer Carla van Lunn showcasing in Brisbane in October 2023. Allegra Jane aims to promote KaIND's handloom fabrication silk with natural dyes and batik for the Australian market to gain global buyers' interest in the sustainability of eri silkworm cultivation, the productivity of eri silk farmers, and extensive utilization of handloom fabrication silk. Allegra Jane's creative director will design 12 looks of a sustainable fashion collection with Carla van Lunn using handloom



Fig. 11 KaIND's exhibition at AVPN Global Conference 2022 in Bali. Documentation: KaIND, 2022

fabrication silk alongside natural dyes and batik. The collection designs will use local-based natural dyes and developed batik motifs according to the interest of the Australian market with easy-to-blend pieces, especially essential items. Allegra Jane will produce the 12 looks design with semi-couture finishing such as turned under seam finish, French seam, blind hemming, and others. The sustainable fashion collection will be showcased in Brisbane, Australia, as part of the Brisbane Fashion Month event, where the collection will be for sale. Afterward, a portion of the sales revenue will be donated to Koperasi KUPU Sutera for the sustainability of eri silkworm cultivation and eri silk farmers.

The figures consisted of the visual images from the data methods above supporting the facts of eri silkworm cultivation and the eri silk farmers. KaIND's approach to global collaboration and handloom fabrication silk material utilization into sustainable fashion and home products with other stakeholders, Allegra Jane's role as Indonesian fashion practice raising the awareness of Indonesian eri silk fibers into fabrication silk fibers with TENCEL™, empowering eri silk farmers through periodical article publication and journals, supporting by utilized handloom fabrication silk for their sustainable fashion concept collection.



Fig. 12 Allegra Jane Sustainable Fashion Collection in 2019 made from KaIND's handloom of cotton rayon with hand-written combination stamp batik and natural dyes. Documentation: Allegra Jane, 2019

Fig. 13 Utilization of KaIND's handloom cotton rayon material into the three-piece sustainable fashion look by Allegra Jane. Documentation: Allegra Jane, 2019



4 Result and Discussion

Since the year 2019, the endeavor of KaIND and Koperasi KUPU Sutera to lead the Pasuruan Regency eri silk into fabrication silk for the Indonesian sustainable fashion industry has gradually gained national and global interest. Although, the COVID-19 pandemic has made the eri silk fiber supply unavailable or very limited due to internal and external influences. KaIND has succeeded in joining forces with Lenzing Indonesia and Benih Baik, promoting the fabrication silk fiber and the handloom for donation program to recover the supply of eri silk fiber. Koperasi KUPU Sutera regularly manages workshops at their base in Purwodadi Sub-District, Pasuruan Regency in East Java, to train eri silk farmer candidates refer to Fig. 4d. Hence, they can regenerate. They will gain young farmers from the millennial generation for further development of the community union.

Moreover, many public figures and influencers are interested in acknowledging the handloom fabrication of silk through their utilization of the material from fashion or homeware products for personal use. This movement has allowed East Java eri silk yarns as Indonesian wild silk to be known to the Indonesian and global fashion industry, especially the innovation of eri silk and TENCEL™ into handloom fabrication silk. Allegra Jane's collaboration with KaIND also gained global interest from Australia as

Fig. 14 Designer and MSMEs collaboration for BRILIANPRENEUR Lokal Keren Jatim by Bank BRI, the largest Indonesian state bank. Documentation: Lokal Keren Jatim, 2021



Fig. 15 Designer and MSMEs collaboration for BRILIANPRENEUR Lokal Keren Jatim by Bank BRI, the largest Indonesian state bank. Documentation: Lokal Keren Jatim, 2021



noticed from several purchases made by the Australians for the fashion products from handloom fabrication silk. In addition, Allegra Jane's creative director also has promoted East Java eri silkworm cultivation, the innovation of eri silk yarns, and the sustainability of eri silk farmers to the Sustainable Design House Program by the University of Technology Sydney and Indonesian Trade Promotion Center (ITPC) Sydney through webinar in September 2021.

From this opportunity, the audience recognized that there is eri silkworm cultivation, the creative combination of natural and conscious manufactured fibers into handloom fabrication silk in East Java for the utilization of Indonesian sustainable fashion products as seen in Fig. 18. All of the accomplishments are receiving positive interest, feedback, and further opportunity for collaboration or acknowledgments from fashion and public communities.



Fig. 16 Allegra Jane, in collaboration with Samuel Wongso from Wong Hang, a celebrity and one of the distinguished tailors in Indonesia, created sustainable tailored suits from handloom fabrication silk. Documentation: Wong Hang, 2022

5 Conclusion

The study research and exploration by Allegra Jane's creative director has developed yearly since 2018 through journals, periodical articles, and outcomes from sustainable fashion showcase collections or product prototypes. In addition, the findings from the objective of the study of fabrication silk material are suitable for tropical and subtropical climates as the fibers can adjust to the current temperature. Therefore, the utilization of the Pasuruan Regency fabrication silk handloom is widely comprehensive from fashion to lifestyle and home products with easy fabric care. However, the journey of exploration continues since the eri silk fiber still needs to integrate with other likely conscious manufactured fibers to gain more percentage of eri silk fiber implementation for the blended fibers. Recently with TENCEL™, the capacity is only 30%, which means a more significant capacity implies more eri silk fiber is needed. KaIND and Koperasi KUPU Sutera need additional stakeholders who will technically be doing research and development (R&D) in the textile lab to try new possibilities for new blended fibers.

Fig. 17 Allegra Jane's Creative Director and the students from Fashion Design and Business Universitas Ciputra Surabaya during sustainable tailored suits project with Samuel Wongso, Wong Hang. Documentation: Allegra Jane, 2022



Fig. 18 Arumi Bachsin Emil Dardak, the wife of the Vice Governor of East Java, Indonesia, utilizes the scarf from handloom fabrication silk made by KaIND. Documentation: Janet Teowarang, 2022



Consequently, the collaboration plan with an Australian fashion designer will gain interest from the Australian target market, textile producers, through sustainable fashion showcases at a local fashion event and mini exhibition at local in-store silk clothing in Brisbane, Australia. Hence, this may bring new opportunities for the fabrication silk material into the Australian fashion and textile industry. Furthermore, we need to keep sustaining the current innovation of the fabrication silk material and the handloom; therefore, the utilization of the material can reach the broader local and international market.

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Design Innovations and Cultural Sustainability



Utilization of Vegetable Texture as an Alternative Tool for Printing Plates in Block Printing Techniques and Textile Motif Design

Ahda Yunia Sekar Fardhani

Abstract

One of the printmaking techniques is relief print, which uses the elevated part of a medium for printing. Usually, it uses medium material that is easily carved to create a high section and a low section (relief). Relief print can also be understood as using the texture of a medium. In designing textile surfaces, block printing is a technique that adapts the principle of relief print with a variety of designs engraved on the medium as a printing plate and then printed onto the fabric's surface. In Indonesia, block printing technique is not widely mastered by textile artisans, but in India this technique is developing as one of the textile industries, famous for its uniqueness in some areas, and its existence is protected by the Kingdom. In general, a variety of typical motifs are produced with this technique, such as geometric motifs, floral motifs such as paisley, and tribal motifs. Utilization of this relief printing principle can not only be developed through various motif designs on block printing plates. However, it can also be developed by utilizing everyday objects with unique textures, such as vegetables. Vegetables in the form of leaves or fruits that we often consume daily have interesting textures or reliefs to be used as textile motif designs if they are well-composed. Based on the block printing technique development, the researchers saw the potential for using this vegetable texture as a novelty of motifs in the textile design scene. This research uses a qualitative method with data collected by literature and studio-based exploration. Therefore, in this study, the author conducted several relief print experiments by exploring the texture of several vegetables and fruits, which then explored

the composition of the prints to create interesting motif compositions. This experiment will use vegetable parts as relief printing media, some of which are the texture of leaf waves and veins, the texture of fruit seeds that are still attached, the texture of a cross section of a vegetable, and cross-sectional sections of a collection of the leaf stem.

Keywords

Vegetables texture · Block printing · Textile design

1 Introduction

Block Printing is a technique for designing textile surfaces that are well known in the fashion industry. Several domestic and foreign fashion brands use this technique because it has a high value of craftsmanship, so it is believed to increase the quality and competitiveness of their product. Unfortunately, many textile artisans have not mastered the block printing technique in Indonesia. However, in India, this technique is widespread and cultivated by many textile craftsmen to become a character in several regions. Several areas in India are centers of block printing crafts that have existed since the twelfth century. Some of the areas that are the center of this block printing craft are Andhra Pradesh, Gujarat, Rajasthan, Madhya Pradesh, Uttar Pradesh, West Bengal: Kolkata, and Serampore. This area of block printing artisans is protected by the Kingdom so that it can grow and develop to preserve Indian block printing textiles to this day (Ganguly, 2013).

In Indonesia, this block printing technique is not widely mastered by textile artisans, so a few designers and fashion brands still apply it as a decorative element to their clothing products (Khairin & Ramadhan, 2019). According to the authors, this block printing technique can be another option to add aesthetic value and craftsmanship to fashion products

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besides applying batik and tie-dyeing techniques, which have mushroomed in the Indonesian market. Besides that, the trend of artisanal fashion products is beginning to emerge, which can be used as branding to highlight the uniqueness of the motif designs produced from this block printing technique (Barbara, 2018). Therefore, block printing will be a new breath and an opportunity to gain attention in the Indonesian fashion market if this technique can be studied and developed, such as in combination with batik and tie-dye or developing the visual aspect like the motif itself.

The potential to develop block printing techniques can take advantage of the principle of relief printing by using objects that are easily found around (Seidu, 2019). In this study, the surrounding objects used as relief printing media are vegetables. Although there are no specific limitations in choosing everyday objects to be used as relief printing mediums, the use of vegetables was chosen because vegetables have a natural texture, so the texture can be directly used as relief without the need to gouge it first. Using natural vegetable textures also allows the exploration of printing in this research to be applied by ordinary people who wish to utilize block printing in their designs. Besides that, specifically, the limitation of vegetable printing media is required by the author to be able to discuss this research in focus and detail. It is based on this background that the author feels the need to carry out further studies not only on technical block printing but also on the development of block printing in the fashion world from the origins of the region where it developed, namely India.

2 Block Printing During Colonial

The historical trade record in the Indian Ocean region, textiles from India became the primary commodity of spices originating from Southeast Asia and East Asia (Guy, 1998). The trading goods from India cannot be separated from Muslim Bohra traders from Gujarat and Kling entrepreneurs from South India. They are active in intercontinental Asian trade exchanging textiles for sought-after spices such as pepper, cloves, nutmeg, and other exotic goods such as rhino horn, tortoiseshell, and aromatics. The development of this spice commodity attracted the attention of Europeans around the sixteenth and seventeenth centuries. So, they exchanged gold bars for Indian textiles, which are then exchanged again for spices in Southeast Asia, especially in Indonesia. This spice trade encouraged the formation of the East Indies Industrial Empire until the start of a long colonial period in Southeast Asia. It was through this spice trade that Europeans knew about the early painted and printed textiles from India. This Indian painted and printed textile is known as Chintz, a colorful patterned fabric made of cotton that is easy to care for. The Chintz fabric craze

among Europeans pushed the home industry of block printing in India to develop rapidly to make the artisans proficient in calculating production techniques to suit the diverse needs of customers. Besides producing customer orders from outside India, they continue to produce local block printing fabrics, which are full of patrons from the Mughal Empire, local rulers, and the merchant class and landowners to pastoral communities and farmers in the Indian countryside (Edward, 2016).

The consequence of the Indian textile being famous has made the demand for Chintz fabrics increase globally and become overwhelmed in the production process. But unfortunately, the Chintz, still produced in handicrafts by local craftsmen in India, could not meet the surge in market demand until, finally, Europeans were encouraged to develop production strategies that could eventually change the world. They forced the sale of cloth and monopolized the block print artisans and the Indian weavers to be moved into the European trading fortress. With the support of their military power, the British East India Company eventually controlled and colonized the main textile-producing areas in India. With the practice of colonizing the textile industry and the global cotton trade, Europeans changed the production mechanism from handicrafts to manufacturing, in the end leading to the industrial revolution's emergence (Riello & Roy, 2009).

3 Block Printing in Postcolonial

In the twentieth and twenty-first centuries, the Indian government emphasized the preservation of block printing textiles as a cultural heritage. This initiative is also supported through education, one of which is the National Institute of Design (NID) in Ahmedabad, Gujarat—established in 1961. NID became a part of the Indian government's modernization agenda after the declaration of independence which applies indigenous cultural heritage in modern and traditional scientific disciplines to meet the challenges of the contemporary era (Design, 2013).

Until now, the role of academics and textile artisans in rural India is growing profitable collaborations and can increase revenue through export sales (Design, 2013). This development gave birth to many fashion brands, both locally and globally, creating a niche market for block printing textiles. These fashion brands embrace sustainable concepts in the production process, such as the application of block printing using natural dyes. In addition, several fashion brands have launched a slow clothes movement with an awareness of the fashion impact on artisans in rural areas who rely heavily on block printing textile orders from fashion designers and fashion brands (C, Julliete, n.d.).

In the trend of sustainable fashion and slow fashion movement, designers have a significant role in innovating block printing techniques to adapt to market demands while still paying attention to the environment. As an explanation, the trend of sustainable fashion does not have a significant definition in the fashion world. However, this concept aims to minimize the environmental impact on the production and consumption process of clothing, specifically focused on reducing pollution and waste and eradicating unfair industrial practices such as exploiting humans and animals (Fletcher, 2008). Slow clothes movement or slow fashion has the philosophy of slow culture, a systematic approach to a sustainable concept. Slow fashion is an effort to balance the fashion system and the economic, social, and ecological systems. The slow fashion concept embraces local resources that can support economic distribution. Instead of mass production in manufacturing, slow fashion promotes small-scale production and local crafts, more concerned with quality than quantity (Fletcher, 2010).

4 Block Printing and Artisanal Fashion Product

The existence of block printing artisans is crucial considering their core role in the production process in the slow fashion concept. The involvement of an artisan in a fashion production process led to the creation of the artisanal fashion product. Artisanal, which means the work of artisans, is a product made in the hands of someone with expertise. Artanship is usually associated with traditional craft-based professions such as blacksmith and carpenter. On the other hand, Artisanal is defined as a broader work, from roasting coffee to Fashion design (Aakko, 2016). According to Bettiol and Micelli, an Artisan has its mystery; he can transform an idea or idea from a designer into a three-dimensional prototype through his hands. In doing this, he can change something from conceptual ideas to real works with his skills and knowledge of materials and production processes developed from a designer's idea rather than just being an executor. In this case, an artisan understands the essence of creative work and has the capability to use his practical experience to improve it (Bettiol & Micelli, 2014). In this case, it does not mean that artisanal products must be entirely handmade but that artisanal methods are used in the production process. Campbell clarifies, "The contrast is not really between hand production and machine production, but rather between a production system in which the worker is in control of the machine and one in which the machine is in control of the worker" (Campbell, 2005).

In its development, artisanal fashion products do not only rely on the expertise of the craftsmen. These fashion brands also do not turn a blind eye to trends and technology

development. In the case of block printing textiles development, various creative processes are carried out as a form of adjustment to contemporary market demands. Block printing is no longer only owned by India but has also become global and can be learned by anyone in this part of the world. Through the eyes of entrepreneurs, there are several global brands that are exposing block printing crafts from India, as shown in Fig. 1, one of which is Block Shop Textile, which is a multigenerational group of artists and craftsmen from Los Angeles that was explicitly created to celebrate the rich history of handmade textile material and process production. As shown in Fig. 2, Block Shop has been working with block printing artisans in Rajasthan since 2013. They have also invested 5% of revenue into communities in India and LA. Block Shop supports small-scale production, workers' fair wages, and healthy working conditions. In India, they embraced the small home business ecosystem, which has now become their business partner (Fisher, 2015).

The development of block printing in the design world is often combined with several variables such as variations in the types of dyes and coloring techniques to use alternative materials for printing plates. In accordance with the details in Table 1, Jiraya and Sekar experimented using cardboard packaging, which they processed into an alternative material for block printing plates. In their experiment, they explored the most optimal formula for processing used cardboard material so it could be used as a medium for carving into a printing plate (Jiraya & Sekar, 2021). Then Mauwla and Ramadhan also use plastic waste as an alternative plate. They processed plastic waste using the cutting method according to design and heating it. The heated plastic surface expands and creates texture (Mawla & Ramadhan, 2020). Furthermore, Sekar F utilizes lino rubber waste as a printing plate with a modular printing method to create various compositions of motif designs from the limited number and size of block printing plates (Sekar, 2020). Also, Valeria and friends explored the design of resort wear clothing by utilizing block printing techniques with natural indigo dye. They combined resort wear with minimalist geometric motifs in the 2020 Pantone color resort wear trend (Valeria, Tanzil, & Tahalele, 2021).

In addition to creating alternative block printing plates for fashion products that adapt from waste processing, both rubber, paper, plastic, and natural dyes, utilizing everyday objects such as the texture of vegetables also can be an alternative material. Using vegetable textures in printing crafts has become an exciting activity for children to be creative with their hands. For example, McMahon, with the Chicago Botanic Garden, created printing crafts for children using celery sticks, citrus fruits, and cabbage (McMahon, 2013). In addition, TeacherPlus, in an article uploaded by the Teacher of India website, describes

Fig. 1 Block shop textile products (Fisher, 2015)



Fig. 2 Block shop Artisan (Fisher, 2015)


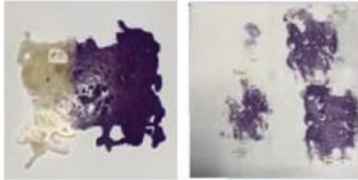



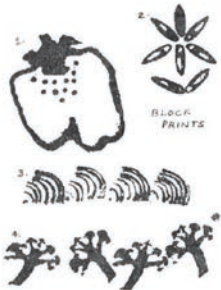


the basic technique of block printing as a fun activity for children using vegetable pieces as blocks, such as peppers, French beans, onions, and cauliflower (TeacherPlus, 2012).

From the various explorations and experiments conducted by the designers and researchers above, it can be concluded that the block printing technique has much potential to be developed. The author sees from a creative perspective that there is potential in block printing techniques to be developed further, either by using advanced technology or by

using simple methods. Therefore, in this study, the author will develop a simple method to explore possible alternative material for block printing that is expected to inspire and be developed again in the future by readers. The author will experiment using vegetable textures as alternative print plates, which will then be explored in composition to produce attractive motifs. The resulting motifs are then digitally developed in their composition so that they can be applied to textiles and also to fashion products.

Table 1 The development of block printing from the researcher

No	Researcher	Development	Result
1.	Jiraya & Sekar (2021)	Processing of Packaging Paperboard as Block Printing Plat	
2.	Mauwla & Ramadhan (2020)	Processing of plastic waste as an alternative material for block printing plates.	
3.	Sekar F (2020)	Utilization of lino rubber waste using the modular stamp method in block printing technique	
4.	Valeria & friends (2021)	The application of natural dyes in the block printing technique	
5.	McMahon (2013)	Utilization of celery stalks, citrus fruits and cabbage as printing plates	
6.	TeacherPlus (2012)	Utilization of bell peppers, french beans, onions, and cauliflower as printing plates	

5 Methods

This research uses qualitative research methods through literature studies and experiments that will explore the variety of vegetable textures and motif composition.

1. Literature study is a method of collecting data from physical and digital sources of books, journals, and websites regarding the development of block printing techniques in textile motif design and its relationship with the development of artisanal fashion products.
2. The experiment is an experimental method to find various exciting vegetable textures and possible compositions of motifs that can be produced.

6 Observation

Research on the development of alternative materials in block printing has begun to be carried out by several researchers to create interesting novelty motifs. In this research, an alternative printing plate will be developed by utilizing the texture of vegetables. The vegetables to be used are readily available in both traditional and modern markets, or some vegetables can be picked directly from the garden. These vegetables are chosen based on their interest in textures as shown in Table 2, such as leaf bones, skin texture, and fruit texture, to the cross-sectional texture of the fruit/vegetables. Then the materials used in the exploration as print media were paper, cotton, and rayon. For the color, the author used oil-based colors for the experiments. Some of the vegetables and fruits used are as follows:

Analysis: From the results of the experiment on printing several vegetables above, the criteria for vegetables that can be used as a relief printing medium are obtained, namely;

1. The texture of leaf waves, for example, Chinese Cabbage leaves, produces a visual of dense dots when printed using the inner side, while it will produce sparse branching lines when printed using the outer side.
2. The texture of the leaf veins, for example, on *Pak Choi* leaves, produces dense, thick, and thin branching lines so that they look full when printed using the inside, while it will produce thin and loose branching lines when printed using the outside.
3. The texture of fruit seeds that are still attached, for example, corn, produces visuals of dense and thin dense dots depending on the emphasis at the time of printing.
4. The texture of a cross section of a vegetable, for example, a lemon, produces a visually centered line of transverse fibers in the lemon body.

5. The texture of cross-sectional sections of a collection of leaf stems, for example, Chinese Cabbage stems, and *Pak Choi* stems, produces a circular visual in layers from a small center and outwards enlarges.

The analysis of some of the natural textural criteria of the vegetables above will be used as a relief print medium. An experiment will be made first by printing them once on cotton and rayon fabrics with oil base colors as depicted in Table 3. The first printing process will be used to know the printout of the vegetables' textures before proceeding to the more complex experiments.

7 Motif-Making Method

In exploring the design of textile motifs from vegetable texture prints, the author uses some fundamental theories of making motifs in which there are design principles to create an optimal composition of motifs. One of the fundamental theories in making motifs is the theory of repeat. Referencing the information from Table 4, the theory of the repeat system is used based on the electronic book *Pattern Design Secrets* by Holowko (2021).

7.1 First Stage Exploration - Composition of One Vegetable's Texture

In developing a motif design using the textured print, an exploration stage is needed to obtain maximum design results and has the potential to be applied to fashion products. In this exploration, it will be done digitally with consideration of material efficiency. Therefore, in this research, three stages of exploration will be carried out, namely the first stage of exploration regarding the composition of one type of texture in one composition of motifs. The second exploration is an advanced exploration stage regarding combining two types of textures in one motif composition. Finally, the third exploration is a selected exploration where the most optimal results will be selected from the first and second explorations. The selected motifs will be used as motif design in fashion products.

In this stage, the author will digitally create an exploration arranging one vegetable texture into a motif with repeat systems. The texture to be printed uses one color. This experiment arranging of composition aims to get the most optimal motif for each vegetable texture. It will use two different types of composition: the composition A uses full-drop, half-drop, and brick repeat techniques with clockwise rotation variations. The composition B uses the principle of random repeat with rotation variations by considering the principle of rhythm design.

Table 2 Vegetables and the textures




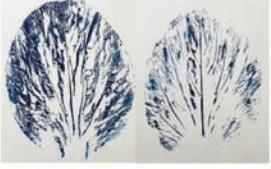



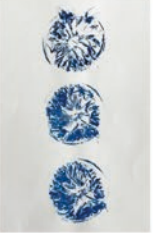

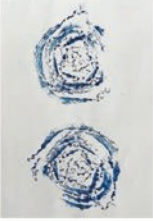






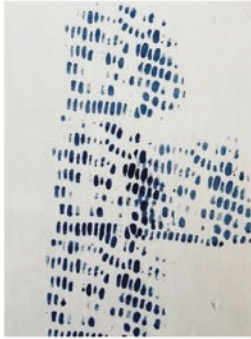



No.	Name of vegetables	Picture of vegetables	Resulting texture
1.	Chinese cabbage		 Inner texture & outer texture
2.	Pak choi		 Inner texture & outer texture
3.	Corn		
4.	Lemon		
5.	Cross section of Chinese Cabbage		
6.	Cross section of Pak Choi		

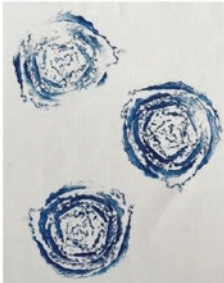
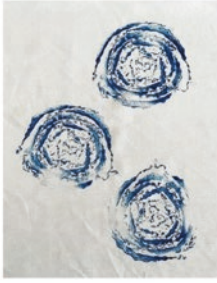


Table 3 Vegetables texture prints on cotton and rayon

No.	Vegetables	The printout textures	
		Cotton	Rayon
1.	Chinese Cabbage		
2.	Pak Choi		
3.	Corn		
4.	Lemon		

Analysis: According to the data in Table 5, this first exploration stage resulted in the composition of one type of vegetable texture with a full-drop, half-drop, brick, and random repeat system. Of all the compositions produced, not all vegetable textures produce interesting compositions

when full-drop, half-drop, and brick repeats are done, so other combinations such as rotation are needed. Then with a random repeat system, which produces the most exciting composition of motifs is the texture of the leaf bones.

Table 3 (continued)

5.	Cross section of Chinese cabbage		
6.	Cross section of Pak choi		

Source **Holowko (2021)**

7.2 Second Stage Exploration - Composition of Two Vegetables' Texture

In this stage, as indicated in Table 6 the composition of two types of vegetable textures will be arranged in one digital motif composition by applying a variety of motif repetition systems. Texture printing will still use one color. This experiment arranging composition aims to create a seamless and not monotonous motifs design. In this exploration, the author will combine the composition results of motifs from full-drop, half-drop, or brick repeat systems with random repeat system.

Analysis: From this second exploration stage, the composition of motifs is more diverse than in the first exploration. Several compositions of one texture can be combined with one other to produce a more attractive final composition.

7.3 Selected Exploration

Several compositions from the first and second stages will be selected in this exploration. As depicted in Table 7, the selection of the final composition aims to choose the most suitable motif when it is applied to fashion design. The selected composition criteria are the most optimal, and the final result looks complicated, has rhythm, and is

not monotonous. The author uses the casual-basic shirt as a design prototype. The basic shirt is used to focus on the main point, namely the motif design.

8 Conclusion

From the literature study and experiment of the composition carried out in the above experiment, it concludes that vegetable textures can be used as an alternative to printing plates in the block printing technique. The characteristics of the leaf bones and the cross section of vegetables that are different from each other produce a distinctive and unique texture that can be used as a pattern, some of which are the texture of leaf waves and veins, the texture of fruit seeds that are still attached, the texture of a cross section of a vegetable, and cross-sectional sections of a collection of the leaf stem. In arranging the motifs composition, one type of vegetable texture can be composed into an exciting composition of motifs by adapting the basic system of making motifs, namely full-drop, half-drop, and brick repeat with rotation variations. For some vegetable textures, such as the texture of Chinese Cabbage and Pak Choi leaves, it will produce exciting motifs using full-drop and half-drop repeat systems. As for the cross-sectional texture of Pak Choi and Chinese Cabbage, the most optimal composition uses a random repeat system. In addition, it can be

Table 4 Basic repeat system in pattern design



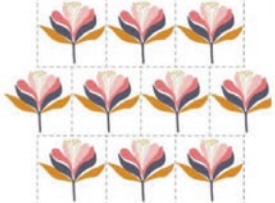

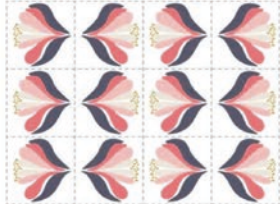


No	Repeat system	Sample	Description
1.	Full-Drop/ Block Pattern		It is the most basic and simple repeat system, namely the repetition in the form of repeating blocks with precision and straight. The motifs are made either vertically, horizontally, or triangularly repeated straightforwardly.
2.	Half-Drop Repeat		Half-Drop is a repeat system with the principle of repeating vertically where each block drops from the other blocks to create a brick-like pattern.
3.	Brick Repeat System		Brick repeat system has the same principle as half drop system but is done horizontally.
4.	Tossed/ Random Repeat		In this system, the design elements are spread out in a loop. This method produces an organic, informal, and nonlinear composition of motifs.
5.	Mirror (Full-Drop) Repeat		Mirror repetition can produce a seamless design by stacking the flow in a vertical column which is then combined with mirror replication in groups of adjacent vertical columns and carried out continuously in full-drop repeat.

Table 4 (continued)

6.	Mirror (Half-Drop) Repeat		<p>This repetition has the same principle as Mirror Full-Drop. However, repetitions in vertical columns combined with mirror replication are carried out in a half-drop repeat.</p>
7.	Turnover/ 4 Way Mirror Repeat		<p>Four-way mirror repetition is a repetition of mirroring replication of one unit of design element horizontally and then replicated again with vertical mirroring. These four units of design elements that have been repeated will become 1 unit of a larger design element and can be repeated in full-drop.</p>

done by combining two types of textures and two types of repeat systems to create a more sophisticated motif composition. In combining these two types of textures and repeat

systems, it is necessary to consider design principles, especially rhythm, to create seamless, complete, and not monotonous motifs.

Table 5 Experiment results of one type of texture arranging in one motif composition


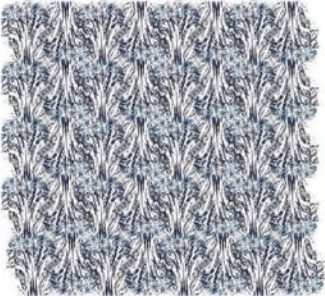
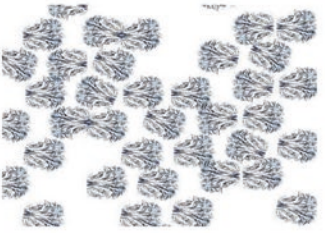

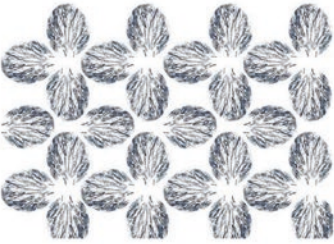


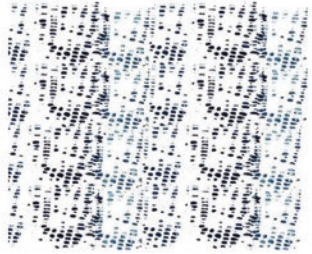
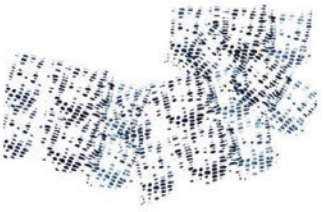
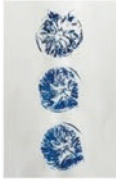
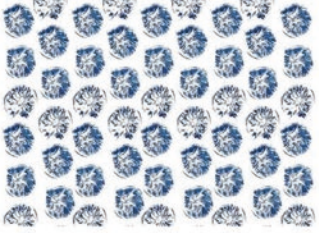

No.	Texture	Composition	
		A	B
1.	<p>Chinese Cabbage</p> 		
2.	<p>Pak Choi</p> 		
3.	<p>Corn</p> 		
4.	<p>Lemon</p> 		

Table 5 (continued)


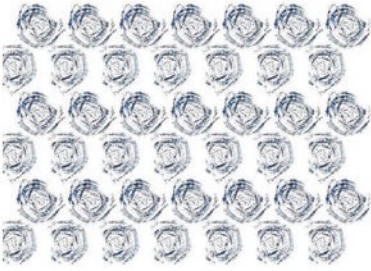
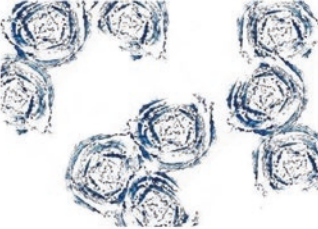

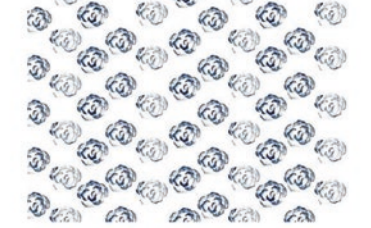

5.	Cross section of Chinese Cabbage 		
6.	Cross section of Pak Choi 		

Table 6 Exploration results of two types of texture arranging in one motif composition

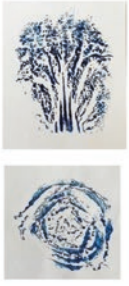

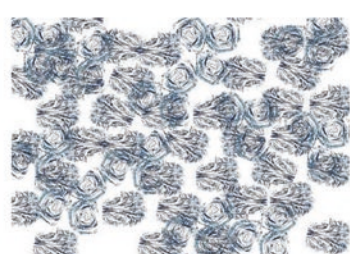


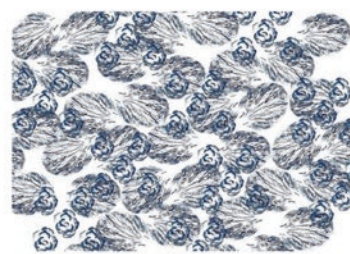
No.	Texture	Composition	
		A	B
1.	<p>Chinese Cabbage and its Cross-Section</p> 		
<p>Description: The composition of the Chinese cabbage leaf texture with its cross-section uses a combination of random repeat composition. In composition A, the composition of a random repeat cross-section of Chinese cabbage is combined with the random repeat composition of the Chinese cabbage leaf. Likewise, composition B.</p>			
2.	<p>Pak Choi and its cross-section</p> 		
<p>Description: The composition of Pak Choi's leaf texture with its cross-section combines random repeat, full-drop, and half-drop repeat. In composition A, the full-drop of Pak Choi leaf texture is combined with Pak Choy's cross-section with a half-drop repeat composition. In composition B, random repeat composition variations of Pak Choi's leaf texture and its cross-section are used.</p>			

Table 6 (continued)

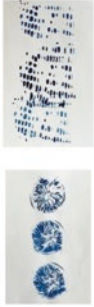
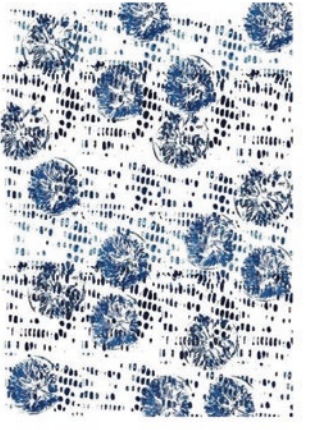
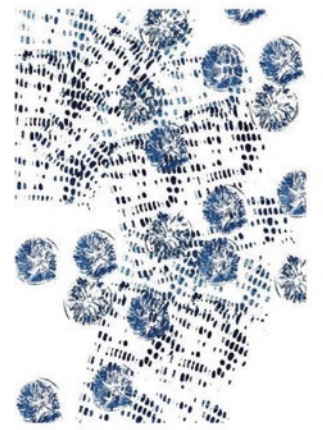
3.	Corn and Lemon Cross- section 		
<p>Description: This composition combines corn's texture and a lemon's cross-section. Composition A uses full-drop repeat composition from corn texture and random repeat composition from the lemon cross-section. Meanwhile, composition B combines two random repeat compositions from corn texture and lemon cross-section.</p>			

Table 7 Selected exploration

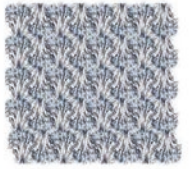





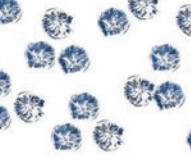


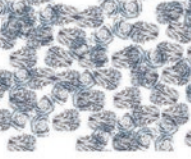


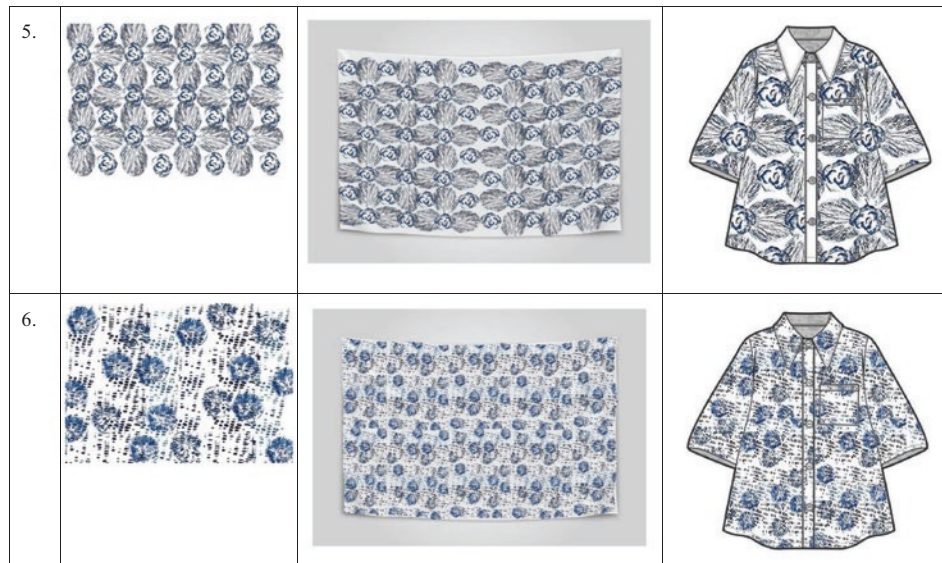
No	Selected Motif	Design Illustration on Textile	Design Illustration on Shirt
1.			
2.			
3.			
4.			

Table 7 (continued)



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Sustainable Design Implementation in a Contemporary Mask Made of Paper Waste

Retno Purwanti Murdaningsih, Yunisa Fitri Andriani, and Zita Nadia

Abstract

The education sector has a significant contribution in producing paper waste, which is used as a document. Only a small part of the waste is reused through the 3R cycle (reduce, reuse, recycle). Shorter paper utilization cycles occur in documents that are private and confidential, after they are not used they will be destroyed using a paper shredder and then end up in the final disposal site. Although it has different material properties from plastic materials which are more difficult to decompose on the ground, paper is actually a material made from wood fibers that can be recycled to be reused as a sustainability cycle in an effort to reduce the use of new materials as a form of environmental conservation. One of the efforts is to process paper waste into functional object raw materials in the form of products made from recycled paper waste, including contemporary masks that are aesthetically pleasing and have a higher selling value than previous materials. Using research methods with an ethnographic approach with egocentric environmental theory and recycling and upcycling techniques, this study aims to maximize the use function of paper products as aesthetic products that are sustainable and environmentally friendly. This paper concludes that paper waste material that was previously less valuable can be transformed into various functional objects that are aesthetically pleasing and of sale value, in the form of contemporary masks that function as home decorations. Through a creative process with recycling and upcycling

techniques, the creation of contemporary masks has become one of the eco-friendly commodity objects as the embodiment of sustainable design.

Keywords

Recycle · Upcycling · Sustainability · Paper waste · Paper mask · Contemporary mask

1 Introduction

Upcycling was introduced by Cohen and Robbins as an effort to turn disposable items into useful and valuable again (Pires et al., 2019). A study on paper upcycling has been carried out by Solar et al. (2021) using an environmental and economic approach that links waste with energy which is used as an indicator of the green concept (Green process). Lopez's study mentions the connection between the community and the environment so that upcycling can run well if there is support from government policies so that upcycling can reduce dependence on imports of raw materials and create jobs. Upcycling was also written by (Sung, 2021) using an ethnographic approach and a comparative study using data sources from case studies in the UK and Korea. Sung's article concludes the important involvement of stakeholders so that the upcycling program can run well in the community. Meanwhile, based on research conducted by Nadya and Ratnaningsih, sustainable design products made from waste in the form of home decoration decorations made with recycling and upcycling techniques have received attention from the European community, especially Germany because of the emphasis on environmentally friendly production processes by paying attention to production methods that use less energy and produce less waste (Rachman & Hidayati, 2022). This paper seeks to observe the problem of paper waste in Indonesia and tries to provide a solution to this problem such as the three studies

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above, namely increasing community involvement in processing paper waste to increase the selling value of used paper materials.

The problem of paper waste is inseparable from the problem of global waste. Waste problems include technical-operational, legal, funding, social, and institutional aspects as well as management. Garbage today has become a problem at the household level, at least Asep Suhendra (56) as the manager of the Nasio Jati Asih Bekasi waste bank said (Asep, 2021). The amount of waste managed by the waste bank under its auspices once reached seven trucks in one month from two community units and all of them had to be sent to the Final Disposal Site which required quite a high cost. One of the reasons for the high cost of waste transportation is the volume of waste that must be transported and the long distance from the source of the waste to the landfill, which encourages the emergence of new problems. Efforts to reduce the volume of waste are attempted starting at the household level by separating organic and inorganic waste to facilitate its management. The establishment of the Nasio waste bank called Asep (56) was initiated by residents in 2015, and in 2017 an instruction from the mayor of Bekasi was issued which obliges every RW (citizens association) in the area to establish a waste bank. The presence of a waste bank has a positive impact on the local environment, starting from the decrease in the volume of waste per month which initially could reach 7 containers, now only reaches 3–4 containers per month. This decrease in volume is due to the sorting and processing of waste, especially organic waste from households, but unfortunately, according to Asep (56), dry waste in the form of plastic and paper has not been touched for processing. This is due to the absence of human resources capable of providing workshops in the form of waste management, especially dry waste. So far, residents and waste bank administrators have only saved waste and distributed it to collectors and then exchanged it for a certain amount of rupiah according to their respective criteria and types of waste. Table 1 shows the price range for paper-type materials valued by collectors per unit kg.

However, households are not the only producers of dry waste, offices and the world of education including schools and campuses have a role in contributing to dry waste, especially paper. Based on case studies, previous research from one location on a campus in Jakarta obtained a measurement of the volume of waste collected for 8 days in 2021, the volume of paper waste could reach 28.49% of the total waste pile (Meilani et al., 2021). One simple effort that we can do in overcoming the waste problem is by trying to reduce the volume of waste. According to Asep Hendarwan (56) as the manager of the national waste bank in the Bekasi area, at the collector's stall, the used paper is only valued in the range of Rp. 1000–3000/kg. This price is

Table 1 Price list of buying used paper from collectors

No.	Paper type	Price Rp	Unit
1	Duplex	800	kg
2	Hardboard cardboard	2000	kg
3	Cement paper	1200	kg
4	A quality newspaper	2500	kg
5	B quality newspaper	1000	kg
6	Magazine	1200	kg
7	HVS paper	2000	kg
8	Book	1300	kg
9	Tetrapack packaging	400	kg

Description list of used paper selling prices around 2020

certainly not commensurate with the cost of producing new paper which requires considerable material and energy in each production process.

To produce new paper, raw materials are needed from special types of wood, especially long fibers, while wood in Indonesian forests is generally short fiber, the production costs for running a paper factory are quite high, so cheaper alternative technologies are needed, one of which is with the recycle or recycling technique (Mulianingsih, 2002). In the manufacture of new paper, pulp is needed which is the basic material for making paper. In general, the process of making paper goes through the initial stages of making pulp followed by a process of softening the material to form a pulp, the next stage is the process of bleaching and adding fiber. Pulp is made from materials containing cellulose derived from the fibers or wood of trees. It can be said that pulp is “a soft mass” (or soft material) and “wood pulp” or wood in a soft state (Wahyono, 2000). Pulp is a crude fiber material that is produced both mechanically and chemically from fibrous raw materials. After going through certain processes that require substantial materials and energy, pulp can be converted into paper, paperboard, rayon, plastic, and other products (Stone Ground Wood, 2021).

A product that undergoes a recycling process generally aims to restore the use function of an item, while upcycling is a process where a used item is converted into a product that is of higher quality and value than the previous product. This is one of the efforts to reduce the use of materials and energy, as well as to create sustainable production and consumption (Sung & Sung, 2015).

2 Method

This research study was conducted at the beginning of 2022, taking place at the Nasio Waste Bank, Bekasi, West Java, as a partner and source of research objects for paper waste materials and the Pembangunan Jaya University

campus in South Tangerang as the location for the design study.

The research method used in this study uses qualitative methods and an ethnographic approach using environmental theory, namely the egocentric theory. This theory (Setyowati et al. 2021) sees that every individual will be centered on himself so that all actions taken are the best for him, so it will be good for the environment (Setyowati, 2021). Sonny Keraf (2010) adds that the actions taken by someone are for their own sake. by looking at how much influence the recycling and upcycling techniques have on the selling value of mask products with the previous material (Keraf, 2010). While the design method uses upcycling and recycling techniques. Upcycling is a creative process for transforming unused items into something more useful without going through the previous material/material processing process. With the aim of getting better quality goods and getting higher values and functions (Reiner Pilz, in Purwanti, 2020). The purpose of upcycling is to prevent wastage of materials by utilizing existing materials. In addition, upcycling is also useful for reducing various pollutions resulting from the production process, such as air or water pollution. While the recycle process changes the shape of goods from the old form to a new form through the processing of old materials with the addition of other materials (Purwanti, 2020).

Based on the acquisition of data sources, the object of this research is focused on two things, namely paper waste and its output by digging up data on performance, physical structure, and size. How to process paper waste into functional items that have a selling value and fulfill an aesthetic perspective with an emphasis on adding new product selling points.

3 Result and Discussion

3.1 Paper Waste Treatment with Recycle Method

Waste management is attempted to shift toward handling from the source so that it is no longer resolved by destroying the waste that has been produced but making efforts when the waste has not been disposed of in the TPA (landfills). It is hoped that this waste utilization effort can slow down the exploitation of natural resources and become a useful added value. The results of the recycling process will provide a fairly high selling value (Untari, 2020).

As an effort to increase the selling value of paper waste into products of aesthetic value, it is to turn them into functional objects. Aesthetics is a science that studies everything that related to beauty, studying all aspects of what we call beauty (Untari & Astuti, 2021). The application of



Fig. 1 Modification of the shape of the character from the Malangan traditional mask to the contemporary mask. *Source* Private document

aesthetic elements in contemporary mask works, especially masks for home decor needs, includes shape, size, texture, and color composition. The masks that were produced initially followed the structure of traditional masks from various regions such as the character of Panji from Malangan, Bujang Ganong from Ponorogo, and the Betawi Mask Dance as shown in Figs. 1, 2, and 3. But to follow market tastes, several modifications were made, including the form of the shape of the mask's face structure that seemed more cheerful and fun. In terms of size, some parts are reduced or enlarged so as to produce more dynamic shapes and styles as well as more attractive colors. It is undeniable that the aesthetic perspective will more or less affect the selling value of the product, related to market tastes and the quality of product finishing.

The Malangan mask style called by Nirwana (2015) has stylization or styling contained in the elements of the eyes, eyebrows, nose, lips, mustache, beard, sideburns, hair, forehead. As for styling, it is done by distorting the face and eye color elements in characters who have antagonistic characters. Nirwana (2015) also adds a mask shape that applies balance and stability with a sequence starting from balance-harmony-stability that is applied measurably. Meanwhile, the use of color composition on the Malangan mask is called by Nirwana (Nirwana, 2015) consisting of the following characters: 1. Clana Sewandhana, namely green, black, pink, and red. Other compositions, namely 2. Bopang Jayasentika, namely green, black, blue, yellow, pink, and red; 3. The banner of Asmorobangun is green, light blue, yellow, pink, and red.

The process of creating this paper mask is a contemporary mask, but the idea for its creation uses inspiration from the Malangan mask. Contemporary masks that are made mainly on antagonist characters do not refer to the existing



Fig. 2 Modification of the shape of the character from the Malangan traditional mask to the contemporary mask. *Source* Private document



Fig. 3 Modification of the shape of the character from the Malangan traditional mask to the contemporary mask. *Source* Private document

traditional mask characters, but the style of stylization, balance, and stability still apply the principles of traditional mask style. The use of color in contemporary masks uses bright colors such as white, red, yellow, green, and black to emphasize, from a concept point of view, the color composition of traditional masks is not applied. According to

Armayuda (2016), there are 7 types of color classification in the characterization of Malangan mask characters, werno (color) is formulated in the form of white, gold, yellow, red, green, blue, and black. These seven colors have their respective meanings (Armayuda, 2016).

This concept of creation is referred to by Kartika (2016) as a concept of symbolic expression where modern art utilizes traditional idioms as elements in its composition. As for the inspiration for stylization-balance-stability, don't use Malangan's mask color composition. The use of only a few aspects (not all aspects) of this Malangan mask feature is referred to by Kartika (2016) as a reduction in which designers use their freedom in interpreting the proposed contemporary form. The use of the Malangan mask idiom in this contemporary mask is an attempt by the designer to be able to give the aesthetic characteristics of the local culture. This cultural strategy is called by Kartika (2016) (Kartika, 2016) as responding to globalization in a way that is more local and more global, meaning that the use of traditional culture is a strategy to make works more global. However, all signs and meanings contained in Malangan masks are expected not to shift to the creation of contemporary masks. According to Shepperson and Tomaselli semiotics is often seen as having important anthropological and sociological dimensions (Yunisa Fitri Andriani, 2019). This is the basis for designing contemporary masks that reflect the signs in the original Malangan masks. According to the semiotician, Umberto Eco, every cultural phenomenon can be studied as communication. All the signs contained in the Malangan mask are also brought into the design of contemporary masks. It is intended that the meaning contained is still well communicated.

In making masks from paper waste, several specific but simple tools and materials are needed. The details of the tools and materials on making face masks are described in Table 2: starting from the core material, which is paper waste, to the materials and tools used to decorate masks.

Table 2 Tools and materials needed in the mask recycling process

No	Tools and materials	Amount	Unit
1	Shredded paper waste	500	g
2	Water	2	l
3	Tapioca flour	100	g
4	Paper glue	500	g
5	Wire molding	1	m
6	Wall putty	500	g
7	Colored paint	5	bottle
8	Paintbrush	10	stem

Description Materials and tools to produce 1 mask is about the size of an adult human face

Fig. 4 Schematic of making a paper mask. *Source* Personal document

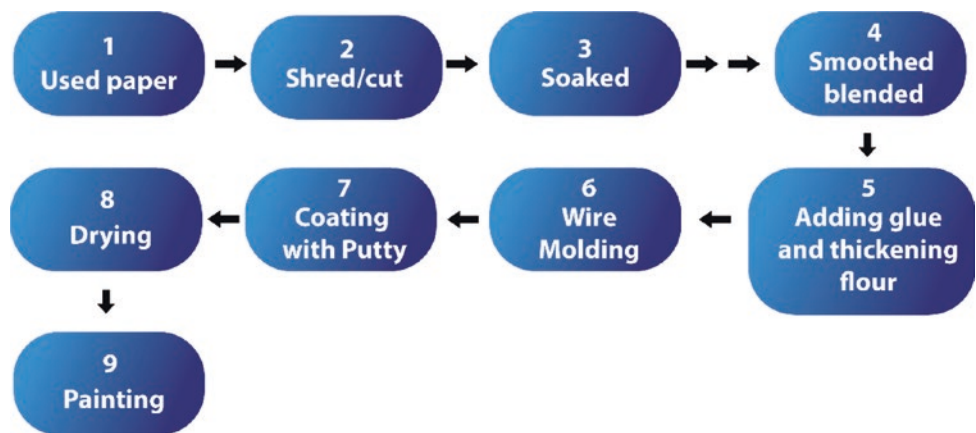


Fig. 5 Stages of making pulp and paper dough. *Source* Personal document

As shown in Fig. 4, the mask creation sequence can be divided into several steps. The first step is to prepare the wastepaper, then as shown in Fig. 5 the wastepaper is being shred into a small piece. Figure 6 shows how paper pulp and paper dough look like after mixed. The most enjoyable step of the entire build series is the last step which is decorating. Figure 7 shows the finished but undecorated mask and Fig. 8 shows the decorated mask.

As stated by Herbert Read in the book *The Meaning of Art* that art is basically a human effort to create pleasant forms. The contemporary mask entitled cyberpunk initially took inspiration from the Malangan style mask with a banner character, but to make it seem more fun and modern, some modifications were made to the visual surface

structure of the mask, especially in the eyes, nose, and jaw, to avoid a stiff or mystical impression, but in some basic colors still follow the traditional style.

In addition to the game of form, an art will basically form a sense of aesthetics or beauty which will be satisfied if it is able to achieve a harmony from a unified form that is presented such as creative expression that is poured in the form of contemporary masks. In the book *Art as Form and Idea* by Gustami, which is adapted from Feldman's book (1967), several functions of art are described which aim to satisfy them: (1) Individual needs for personal expression; (2) Social needs for display, celebration, and communication purposes; (3) Physical needs for useful goods and buildings. Among the three functions of art described by Feldman, contemporary mask art fulfills the function of art as a physical function (the physical function of art) related objects that provide benefits and functions. This is in line with the opinion of Tjetjep Rohendi Rohidi who argues that the physical function of art is seen when it is seen in parallel with culture, namely its function as a way of life, a symbol system, and an adaptation strategy to the environment (Suharson, 2018). From this definition, the physical function of mask art from a design point of view, seems to emphasize the fulfillment of practical demands and the beauty of the appearance of the goods. Neither the beauty of the form nor the ornamentation, which basically contains symbolic, magical, and spiritual meanings is not a problem. Observing the arts of crafts from the physical aspect, means pointing to works that are directly related to meeting the needs of the community as elements of home decoration.

Art style or art pattern actually deals with the outer form of a work of art, while the flow or understanding concerns views or principles that are deeper in nature. The flow or style arises because of a need, which we consciously want to achieve through works. Djelantik explained that the structure of the work of art is an aspect that concerns the whole of the work of art and includes the role of each part



Fig. 6 Stages of making pulp and paper dough. *Source* Personal document



Fig. 8 Stages of mask printing and finishing. *Source* Personal document



Fig. 7 Stages of mask printing and finishing. *Source* Personal document



Fig. 9 Results of contemporary masks. *Source* Personal document

in the whole work of art. The word structure implies that in a work of art there is an organization, arrangement, in which there is a certain connection or relationship between the parts that are composed. Included in this are handicrafts from all types of art, which are displayed and enjoyed containing two basic elements, namely form and structure. The basic forms of art are point, line, plane, space, and color.

The structure or arrangement in question is the way in which the basic elements are arranged to a form (Djelantik, 2004). The form of a work of art is that every work of art has a shape, both forms that are present as cubes, triangles, squares; length; and so on.

The production process (Picture 4) begins with Stage 1 collecting used paper and sorting the paper from the paper

clips and the contents of the staples attached to the paper. Stage 2: The paper that has been sorted is cut into small pieces or shredded with the help of a cutting tool or a paper shredder to make the paper easier to crush into pulp. Stage 3: The shredded paper is soaked in water for 24 h. Stage 4: The soaked paper (Fig. 2) is mashed using a crusher or blender to form pulp or paper pulp (Fig. 3). Stage 5: Pulp is added a little glue and flour so that the pulp becomes thick and smooth and easy to shape. Stage 6: After the mask dough is finished, put it into the wire mold that has been prepared previously as a paper mask frame. Stage 7: After the mask has been shaped according to the desired character design, the next process is the drying process under the sun. Stage 8: After the drying process in a semi-dry condition, the mask can be coated with putty so that the rough pores of the paper texture can be closed and produce a smooth mask surface. Stage 9: After the mask is completely dry, it can be continued with the visual design stage of the mask surface and finishing using paint (Fig. 5) according to the predetermined mask character.

3.2 Craft Results with Upcycle Approach

Because this material is easy to shape, contemporary masks from wastepaper can be made in various ways according to the maker's creations, as shown in Fig. 9 with white and few primary color, and Fig. 10 shows a contemporary mask with vibrant color. Management of paper waste into useful goods again in an egocentric perspective is the attitude taken by a small part of the community with the belief that they can



Fig. 10 Results of contemporary masks. *Source* Personal document

do something for the benefit of society in general. This has also been proven to encourage the concern of policy-makers by issuing regulations regarding the reuse of waste and reducing the burden of the landfill. This waste has the potential to impose costs in management but at the same time it can generate economic potential. The establishment of the Nasio waste bank in Bekasi is an example of an egocentric perspective as an effort by the community to reduce the cost of waste disposal, which is getting bigger and bigger. By converting waste paper into recycled paper you can increase the economic value of the paper object. Efforts to increase profits economically are by increasing and converting waste into goods that have aesthetic value.

One of the wastes that has economic potential is paper, but so far, according to Asep (56) at the Nasio waste bank, paper is only sold by the kilo and must be sorted by type and quality (Table 2). Given the varying quality of paper waste, the authors propose an upcycling technique for paper waste so that it has aesthetic value and is expected to increase its usability and economic benefits. This economic potential is mentioned by Asep (56) who empowers elderly mothers in managing waste at the Nasio waste bank; this activity provides space for the elderly to remain productive so that they are expected to be physically and mentally healthy. This activity proves that the elderly can continue to provide benefits not only for themselves and their families but also for the wider community. The existence of the elderly in the Nasio waste bank is increasingly widely known. Asep (56) said that the activities of the Nasio bank are examples of waste management and are often referred to by environmentalists such as academia and even industry. The development of a waste bank in Bekasi has begun to develop as support from the Bekasi city government called Asep (56) has produced a waste bank called *Apel* which is a separation from the Nasio waste bank. The establishment of a waste bank called Asep (56) is more customer-oriented because the waste bank only takes 10% where profits are obtained after all the waste obtained has been sold. Efforts to raise awareness on waste sorting are also promoted by Asep (56), namely by socializing and educating elements of the PKK community, *posyandu*.

The upcycling technique (Fig. 4) proposed by the author is a simple technology; it is hoped that this technique can be applied on a household scale or in community groups such as members of the Nasio waste bank so that it can also be easily applied at a wider level. The work of masks made from paper waste is finally able to restore the use function of a paper product even though in a different function, one of which is as an interior decoration element which not only has an aesthetic function to decorate the room but also has a selling value whose value is many times that of the basic material. In a previous study by Poernamawati on the MSME group in the Posdaya area of Edelweis Gajayana,

East Java, a paper mask could be sold for over one hundred thousand rupiah per piece depending on the size and complexity (Poernamawatie, 2018).

4 Conclusions and Recommendations

Through recycling, upcycling, and creativity techniques, paper waste can be reprocessed into functional objects that are aesthetically pleasing and of sale value, exceeding the economic value of the previous material. The use of pulp as a raw material for contemporary masks makes the product as a design product that applies sustainability principles that have a positive impact on the environment in reducing the volume of paper waste. This technique offers a solution to reduce the quantity of waste and offers economic benefits for the welfare of the community as well as real efforts in preserving the environment by managing waste properly.

Garbage becomes a problem when we are not able to manage our waste wisely and instead become a financial burden, but on the contrary with good waste management, apart from preserving the environment, we can also benefit economically. Awareness of waste management with upcycling techniques is an alternative to regenerate paper waste to be more valuable as well as a form of environmental preservation that can be started from the lowest level but has a wide impact.

The processing of paper waste into functional objects in the form of home decor masks is also tangible evidence of the contribution and responsibility of designers to the environment in reducing the volume of paper waste.

The more environmentally friendly materials that can be explored into sustainable products will certainly alleviate environmental problems, including paper waste.

The success in the implementation of this research can certainly be achieved because of the support from various parties, including the P2M Institute of Pembangunan Jaya University which has provided support in the form of research funding, and the Nasio Bank in Bekasi for the coordination of time, energy, and field data support.

Appendix

NO	Questions	Answers
1	When was this waste bank community established?	June 2015
2	How many active members are there?	30 – 40 customers out of 120 customers who Registered

NO	Questions	Answers
3	What are the routine activities carried out by the waste bank?	<ul style="list-style-type: none"> • Weighing of inorganic waste • Organic waste composting/ POP production • Utilization of solid organic fertilizer (POP)
4	What kind of waste is accommodated by Bank Nasio?	All types of organic waste are valuable economical
5	What kind of waste collected at most (paper, plastic, housestair)?	Paper/cardboard/duplex
6	Usually each type of waste is processed for anything?	<ul style="list-style-type: none"> • Sold through the Patriot Main Waste Bank Bekasi City • Sometimes there are made recycled creations
7	What is the price per kg of this type of litter?	The List Attached
8	Especially for paper waste, how many kg on average 2 per month, is there an increase or tends to decrease with the existence of a pandemic?	<ul style="list-style-type: none"> • ± 400 kg/month (during the pandemic period) • Tend to decreasing
9	Where is paper waste usually obtained from?	Household waste sorting
10	Is there already special processing for garbage? Paper? If yes, what is processed into?	None
11	Is there any training from outside parties to process waste paper?	Not yet
12	If there is an offer in the form of workshops/training about paper waste processing, what kind of workshop is expected by this waste bank?	It's good that the processed paper waste is sold well
13	If you are willing to be a partner in community service activities, how long is the duration of the workshop? Needed?	As much as the time you needed

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Innovation in Processing Rudraksha into Contemporary Sustainable Accessories with the ATUMICS Method

Elliati Djakaria, Isabella I. Andreas, and Seriwati Ginting

Abstract

Rudraksha (*Jenitri/Elaeocarpus ganitrus*) is a kind of seed from Rudraksha tree that is often used in Asia, especially in India, Indonesia, and Pakistan. It is commonly used as accessories, complements to religious rituals, and musical instruments. Based on various studies, Rudraksha has medical and spiritual benefits. However, not many contemporary accessories are made from Rudraksha nowadays. In general, trendy accessories on the market do not use natural materials and are not durable even though they have beautiful designs and low prices. Poor quality accessories add to the garbage pile and harm the environment. For this reason, continuous and sustainable efforts should start from the farmers and gatherers of Rudraksha until Rudraksha accessories designer/producer so that the making of Rudraksha accessories has a positive impact on the environment, society, and even the economy. This study used a descriptive qualitative method by comparing and analysing the innovation during the processing of Rudraksha accessories especially necklace made by a MSME called LORI (Laras Ornamen Indonesia) using the ATUMICS (Artefact, Technique, Utility, Material, Icon, Concept, and Shape) method of Adhi Nugraha. In addition, the researchers were conducting observations with farmers and gatherers of Rudraksha from Pengaringan, Central Java-Indonesia, craftsperson, designer, MSME owner,

and academics from Bandung, West Java-Indonesia. The innovations made by the artisans succeeded in changing the position of the Rudraksha accessories, which was previously considered an outdated accessory into a contemporary one that has more function and value. Innovations in environmentally friendly colouring, modern designs according to trends, and an integrated sales system until the international level can empower the community so it can improve the society's economic condition. Based on these findings, we can see that if everybody involved in processing Rudraksha accessories uses the green economy concept correctly, it can increase the value, attractiveness, and acceptance level of traditional materials like Rudraksha.

Keywords

Green economy · Necklace · *Jenitri* · *Elaeocarpus ganitrus* · MSME

1 Introduction

The development of trends, changes in economic conditions, and changes in public awareness regarding environmental issues today are some factors influencing why people shop for fashion products. The discussion of fashion products in this research is accessories, especially necklaces that use Rudraksha as the primary material. One of the authors, who has and still in the beadwork business (the art or craft of stringing beads together using thin threads or wires), tries to find innovations, so that fashion accessories with Rudraksha material become part of a sustainable creative industry. The researcher's field experience shows that the Rudraksha accessories in Indonesia are made by both large and small and medium enterprises. Still, the choice of materials has a lot of negative impacts on the environment.

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The most widely used material is plastic beads, which are not durable. Based on these observations and the effect, the choice finally fell on Rudraksha. Rudraksha tends to have a beautiful, durable shape. It can be assembled with several other materials that can also be coloured according to taste so that it has more added value.

Rudraksha contains healthy compounds such as phosphorus, manganese, iron, magnesium, nickel, and copper. Therefore, it is good to use it as a herb by brewing it like drinking tea. Various studies also strengthen the belief that Rudraksha is good for physical and mental health. People believe that Rudraksha provides calmness, improves blood pressure and circulation, repairs mental and nervous disorders, and nourishes the heart. They had many benefits because of their electric and diamagnetic properties (Naresh et al., 2013).

Indonesia is the largest producer of Rudraksha, which is 70% of all world production (Ministry of Trade of the Republic of Indonesia, 2017). Rudraksha belongs to the *Elaeocarpaceae* family and grows widely in Sumatra, Kalimantan, Bali, and Kebumen (Central Java). Currently, only Kebumen is intensively developing and making Rudraksha as souvenirs in the form of necklaces, bracelets, *tasbih*, and bags. One of the authors is the designer and owner of LORI accessories, which became the main object of this research. She arranges Rudraksha into necklace pendants with various designs, shapes, and sizes. Suhas Roy research from Benaras Hindu University proved that Rudraksha has electrochemical and physical properties in induction, capacitance, and electromagnetics. Therefore, Rudraksha can affect the central brain when used to produce bio electrochemical stimuli (Sharma et al., 2022).

Accessories are one kind of fashion product that enhances people's look. Nowadays, there are not many contemporary accessories made from Rudraksha. Some contemporary accessories made from Rudraksha are shown in Figs. 11.1 and 11.2.

Nature's shape and form inspired this necklace pendant made from Rudraksha and metal. People buy it for fashion purposes.

Even though this necklace design is not for praying, people still relate it to spiritual things because of Rudraksha's benefit.

In general, trendy accessories on the market do not use natural materials and are not durable even though they have beautiful designs and low prices. Poor quality accessories add to the garbage pile and harm the environment. Accessories from beads sometimes made from cheap plastic or other materials are not durable and harmful for the environment.

Fashion is regarded as being the pacemaker of social change and always had close ties with modern capitalism. It tends to boost consumerism if the people and society



Fig. 11.1 The latest design from LORI. (Source Research Team, 2023)



Fig. 11.2 Rudraksha necklace with gold or metal plating. (Source Gurvir Singh, 2022)

cannot control it. The price and quality of fashion products are dropping and encouraging the consumers to buy more than they should be. The low price is appealing for consumers who are yearning for happiness, because it makes them the feeling that they are saving money and becoming more fashionable (Schulze & Banz, 2015). This phenomenon is worrisome since we should be more responsible for the impact to the society and the earth. For this reason, continuous and sustainable efforts should start from the farmer and collector of Rudraksha until Rudraksha accessories craftsperson so that the making of Rudraksha accessories has a positive impact on the environment, society, and even the economy.

The uniqueness of Rudraksha as accessories material, its health benefit, and its potential to become fashion product make it a great product for sustainable MSME. The researchers view sustainability in four domains: ecology, economics, politics, and culture that intersect with other social conditions (James et al., 2015). Green Economy acts as an 'umbrella' concept for this MSME because it acknowledges the underpinning role of all ecological processes. It is not only resource-focused like Circular Economy and Bioeconomy (D'Amato et al., 2017). An inclusive green economy improves human well-being and builds social equity. At the same time, it reduces environmental risks and scarcities (UNEP, 2011). Rudraksha is a renewable resource and has a nature-based solution, so it matches with the green economy principle if used for accessories industry. Those concepts also match Indonesia

slow fashion strategies such as keeping the tradition, taking local ideas and resources and return to contribute on global movement, and making quality products to avoid excessive dispose and consumptions (Murwanti, 2017).

The purpose of this paper is to analyse Rudraksha accessories, especially the ones that were produced by LORI using the ATUMICS method. LORI (Laras Ornamen Indonesia) is a MSME in Indonesia that focused on making fashion accessories (necklace, bracelet, brooch, earrings, etc.) using natural materials. This method is developed by Adhi Nugraha and it is the abbreviation of Artefact (A), Technique (T), Utility (U), Material (M), Icon (I), Concept (C), and Shape (S). Artefact (A) is the centre of this study, while the other words reflect the six fundamental elements of the Artefact (Nugraha, 2012). The Rudraksha accessories, as the Artefact produced by LORI are made more contemporary and sustainable than the other brands.

These are some examples of Rudraksha accessories made by the researcher’s brand LORI as shown in Figs. 11.3, 11.4, 11.5, 11.6, 11.7, and 11.8 of Table 11.1. Various accessories are made with unique and original designs. The accessories such as necklaces, brooches, bracelets, and earrings use a lot of long-lasting colours and materials.

Very few Rudraksha MSMEs in Indonesia put a special concern on accessories design, mostly making products with old design or copying it from other source. So, the LORI’s designs become a fresh breeze in accessories industry. Several Rudraksha accessories in the market are shown in Figs. 11.9 and 11.10.

The ATUMICS method as shown in Fig. 11.11 is considered suitable for the objective of this research, which is to search arrangement, combination, integration, or elaboration of six fundamental elements of tradition and

Table 11.1 Example of various Rudraksha accessories designed by LORI







 <p>Fig. 11.3 Rudraksha accessories set consists of necklace, earrings, and bracelet. (Source Research Team, 2022)</p>	 <p>Fig. 11.4 Rudraksha bracelet with wooden beads. (Source Research Team, 2022)</p>	 <p>Fig. 11.5 Rudraksha earrings with various beads. (Source Research Team, 2022)</p>
 <p>Fig. 11.6 Rudraksha in different sizes are combined for necklace pendants. (Source Research Team, 2022)</p>	 <p>Fig. 11.7 Rudraksha brooches with beads and stones. (Source Research Team, 2022)</p>	 <p>Fig. 11.8 Rudraksha bagcharm with beads and stones. (Source Research Team, 2023)</p>



Fig. 11.9 Example of Rudraksha necklaces from another brand during INACRAFT 2023. (Source Research Team, 2023)



Fig. 11.10 Example of Rudraksha hat and bag from another brand during INACRAFT 2023. (Source Research Team, 2023)

modernity to add the accessories' function and value. The idea of ATUMICS method (Nugraha, 2012) is to combine some elements of tradition with modernity so the artefact is viewed from the micro level (technical and performance properties) and macro level (the spirit and the motivation). The micro level means the ideal arrangements of ATUMICS elements of Artefact (A), while the macro level means the spirit and the motivation of cultural, social, ecological, economic, survival, or self-expression in the creation.

2 Methods

This study used a descriptive qualitative method by comparing and analysing the innovation of Rudraksha accessories from Laras Ornamen Indonesia (LORI) using the ATUMICS method of Adhi Nugraha. LORI is one of the

MSMEs from Bandung, West Java-Indonesia, specializing in making contemporary accessories from natural materials. LORI is also the researcher's project, so it can be said that this research paper is research-by-design or applied research. In addition, the researchers are conducting observations and Rudraksha jewellery workshop to farmers and collectors of Rudraksha from Pengaringan, Central Java-Indonesia during the research.

The elaboration between elements of tradition and modernity are the idea of ATUMICS method. So, the object (Artefact) in this research which is Rudraksha accessories (specifically necklace) will be viewed from the micro level and macro level that were mentioned in the introduction. The theories of sustainability, green economy, Indonesia slow fashion strategies, and others will be used to enrich the explanations of those levels.

The table template as shown in Table 11.2 will be used at the end of Results and Discussion to explain the correlation between macro level and micro level of the Rudraksha seeds necklace sustainable MSME using ATUMICS method:

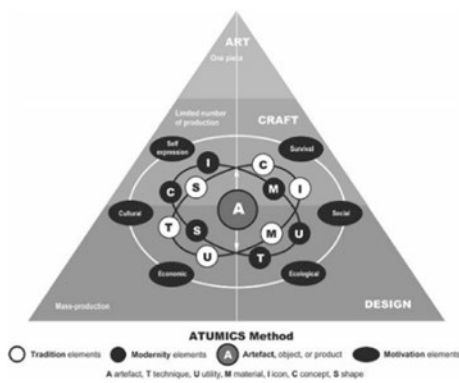


Fig. 11.11 ATUMICS Method. (Source Adhi Nugraha, 2012)

3 Results and Discussion

The authors conducted this research to find the sustainable process cycle of Rudraksha accessories from the beginning (farming and gathering) until the end when the final product is ready for sale. The authors observed farmers and gatherers of Rudraksha from Pengaringan, Central Java-Indonesia, the producer of Rudraksha accessories (LORI), and academics from Bandung, West Java-Indonesia. The

Table 11.2 Macro and micro level of the Artefact table

Macro level of the artefact	Micro level of the artefact		
1. Economic	T (Technique)	U (Utility)	M (Material)
	I (Icon)	C (Concept)	S (Shape)
2. Social	T (Technique)	U (Utility)	M (Material)
	I (Icon)	C (Concept)	S (Shape)
3. Cultural	T (Technique)	U (Utility)	M (Material)
	I (Icon)	C (Concept)	S (Shape)
4. Ecological	T (Technique)	U (Utility)	M (Material)
	I (Icon)	C (Concept)	S (Shape)
5. Survival	T (Technique)	U (Utility)	M (Material)
	I (Icon)	C (Concept)	S (Shape)
6. Creative self-expression	T (Technique)	U (Utility)	M (Material)
	I (Icon)	C (Concept)	S (Shape)



Fig. 11.12 Rudraksha beads grow on the tree. (Source Sonam Purohit, 2020)

authors also did a Rudraksha jewellery workshop while observing (Djakaria 2021) to know the opportunities and difficulties they faced in the creative process.

- a. The farming and gathering process to select good Rudraksha beads provides opportunities for people to get income even though they do not have the expertise to assemble and design Rudraksha accessories. In Pengaringan, Rudraksha is deliberately cultivated, while in Bandung it is mostly collected from the ones that fall from the trees. Farming and gathering Rudraksha is a lucrative business since Indonesia produces 70% of world production and mainly exports it (Ministry of Trade of the Republic of Indonesia, 2017). Rudraksha beads from Indonesia has high quality, and we can buy it in bulk because the price is low. It is no wonder since the Rudraksha beads are sold as raw material. Rudraksha fruits are shown in Fig. 11.12.
- b. The Rudraksha fruits are then processed by boiling, peeling the skin from its seeds, and drying them. The boiling process is intended to soften the skin of the Rudraksha. The boiled Rudraksha is then put in a sack and stepped on using sandals/shoes, so the skin comes off. The Rudraksha beads as shown in Fig. 11.13 then dried in the sun for three days at high sun temperatures to reduce the water inside.

The following process is soaking the Rudraksha beads in termite repellent. After that, the floating Rudraksha beads are discarded as it is not of good quality. Furthermore, Rudraksha is selected based on shape and size, then given a hole in the middle using a drilling machine with a hole diameter of 1–4 mm. This lengthy process is worth it because it reduces the possibility of future broken Rudraksha accessories.

- c. The colouring process of Rudraksha beads is usually by using two types of paint, namely water-based and oil-based. Water-based paint is a more environmentally friendly colouring agent than oil-based paint. LORI often picks colourful, bright, and glossy colours that are not tacky. Each paint has their plus and minus. Water-based paint is thicker, so sometimes the texture of the Rudraksha beads is too covered. Because of that, we must smear the water-based paint thinly, dried, and repeat it to ensure the Rudraksha beads' texture is still visible. On the contrary, oil-based paint doesn't cover the texture because the colour is not solid. Applying one layer of oil-based paint is enough to colour the Rudraksha beads.
- d. The following is the creative process of assembling the Rudraksha to become accessories with new designs. LORI combines Rudraksha with wood, metal, stone, glass, or other materials with various techniques as shown in Fig. 11.14, so the accessories' style is more contemporary than its counterparts. The craftsperson



Fig. 11.13 Big Rudrakshas before colouring process. (Source Rushtook, 2018)

in many Rudraksha MSMEs needs to make more new authentic designs because it can improve Rudraksha's image from outdated accessories material to stylish sustainable material. The fashion cycle in Indonesia is usually about once every six months, so it is better to have a unique design collection in a new fashion season.

- e. The next one is the marketing process of the accessories by using various means and media, including social media. Exciting pictures and stories with a great narrative about the accessories and their process can become a great marketing tool. The sustainability aspect of Rudraksha accessories' creative process is more than enough to build a great brand image and narrative.
- f. The last process is selling the accessories at various exhibitions and places. Besides selling accessories at its showroom, LORI joins the annual INACRAFT from 2011 to 2019 (before the pandemic). It has been Indonesia's most extensive craft exhibition for over 20 years, with customers worldwide. The selling amount during each event (less than a week annually) equals 18–32% of annual selling. The sales result proves that the economic gain will follow by making innovative accessories with good quality. After the pandemic, LORI starts to join INACRAFT again in 2023.

LORI used Rudraksha seeds from Pengaringan, Central Java-Indonesia, and Bandung, West Java-Indonesia. Besides buying the raw material from the farmers and gatherers, LORI and other academics gave workshops for the people of Pengaringan, Bandung, and other places in Indonesia. The goal is to teach them to assemble and design the Rudraksha to become marketable contemporary accessories.



Fig. 11.14 Assembling the coloured Rudraksha with other materials using pliers. (Source Research Team, 2022)

3.1 ATUMICS Macro Level

Based on that observation and the introduction before, these are the explanation for macro level aspects of Rudraksha accessories made by LORI and some other contemporary accessories designs:

- a. Economic: Based on some Rudraksha accessories MSME owners' experience, ordinary people and younger customers prefer colourful and bright colours. At the same time, natural colours are chosen by people with an art background and by people who need Rudraksha for spiritual functions. Nowadays, LORI produces more colourful and bright colours accessories because the market is more significant for economic benefit. The innovation in the accessories designs has proven to be impactful in increasing accessories selling. The income during INACRAFT, other large events or festive seasons, and export is 18–32% of LORI's annual sales, so it is very beneficial for the Rudraksha farmers and gatherers and also LORI as the MSME (owner, designer, and craftsman).
- b. Social: LORI and academics are developing community services such as providing socialization and assistance to increase the Rudraksha farmers' and gatherers' ability to improve the quality of Rudraksha as the raw material for accessories (dryness, colour, size). This social service provides opportunities for the community to earn income. They also give a workshop for that community to assemble and design Rudraksha accessories.
- c. Cultural: Rudraksha is used as a tool for prayer and meditation. It is commonly used in India, Tibet, and Nepal and can be found in various Asian countries. It is prevalent for Hindu people because Rudraksha is believed to be the tears of Shiva after 1000 years of meditation because of compassion for humanity. It is also a fashion accessory to beautify its user.
- d. Ecological: Tall and shady Rudraksha trees are good for the environment. If the demand for Rudraksha accessories increases, there should be more Rudraksha trees. That condition will improve the sustainability of the accessories MSME because the materials used are natural materials that do not cause pollution to the environment. Planting Rudraksha trees can be done in certain areas so that Rudraksha seeds are more widely available and provide more shade and oxygen. Planting Rudraksha trees is also relatively easy and does not

require special care. Rudraksha grows in the highlands and lowlands. The height of the Rudraksha tree is about 20–30 m. Based on much research, Rudraksha is also great for health. Good-quality Rudraksha seeds are durable. Even though it is broken, it does not harm the environment since it uses an environmentally friendly colouring agent. So, it means less pollution than trendy accessories that use bad-quality plastic materials.

- e. Survival: Seriousness, discipline, and the ability to be creative are indeed one of the keys to success. Right now, the farmers and gatherers get enough, but it is better to improve it. At least if they can't make proper design, they can process the raw material until high quality, so it is ready for the designer to make accessories.
- f. Creative self-expression. The shape of Rudraksha seeds is beautiful after the boiling, drying, and colouring process. It has textures. Various colours, materials, and layers combined create a unique one-of-a-kind design.

The four pillars essential for sustainability are economic, social, cultural, and ecological (Nugraha, 2012), while the other two are the supporting pillars (survival and creative self-expression). Those pillars are the motivation that influences the artefact's whole conception and creative philosophy. Nowadays, the innovation produced by MSMEs should have a sustainable impact. It should be a Quintuple Helix-based innovation that not only comes from higher education related to industry and government (Triple Helix) but is also applied as a synergistic solution related to the economy, society, and environment (Pangarso et al., 2022). Afterwards, suitable exhibitions and connections will boost MSME sales.

3.2 ATUMICS Micro Level

Rudraksha accessories are the Artefact that will be described with six elements (Technique, Utility, Material, Icon, Colour, Shape). These explain the micro level aspect of Rudraksha accessories sustainable MSME. The examples are mainly from LORI, though several examples are from other MSMEs. We focused on one type of accessory when describing the Artefact because Rudraksha is more commonly made as a necklace, whether for aesthetic function (fashion accessories) or spiritual function (prayer beads/meditation necklace).

a. Technique

Various techniques as shown in Table 11.3 can make Rudraksha looks more modern than before. Even though the methods are applied more to accessories for aesthetic

function, those can also be used for the Rudraksha necklace for spiritual function.

b. Utility

Utility elements differences between traditional and modern are shown in Table 11.4.

c. Material

Material elements are shown in Table 11.5. Material variation is important for contemporary accessories.

d. Icon

As shown in Table 11.6, we can see several things that are considered iconic. It means that we can see the unique characteristic of the Rudraksha necklace as the Artefact.

e. Concept

There are several design concepts as shown in Table 11.7.

f. Shape

There are several shapes used in the necklace designs as shown in Table 11.8.

3.3 The Correlation Between the Macro and Micro Level of the Artefact Based on the ATUMICS Method

The macro and micro level of the Artefact (A) cannot be separated from each other. The correlation between the macro level and micro level as shown in Table 11.9 is the result based on the observation.

From those findings, we can see a lot of uniqueness and innovation in Rudraksha accessories that make them environmentally friendly products. The consumers should get the narrative based on those findings because it can change their purchase intentions into purchasing decisions and remove the scepticism about environmentally friendly products (Bursan et al., 2022). Innovations of environmentally friendly colouring, innovative designs, and an integrated sales system until the international level can empower the community so it can improve the society's economic condition. If everybody involved in processing Rudraksha accessories uses the green economy concept, it can increase the value, attractiveness, and acceptance level of traditional materials like Rudraksha. Picking a suitable exhibition and connection to sell Rudraksha accessories is important because the relevant exhibition and connection will boost MSME sales.

Table 11.3 Technique element





Picture	Description
<p><i>Traditional</i></p>  <p>Fig. 11.15 Standard Rudraksha necklace. (Source Lifestyle Kompas, 2020)</p>	<p>The necklace as shown in Fig. 11.15 has one layer of beads using leather string/clear string. The string's length cannot be adjusted. There are various lengths of the necklace. If the necklace is too long, it can be worn as a bracelet or necklace with several loops</p>
<p><i>Modern</i></p>  <p>Fig. 11.16 Standard Rudraksha necklace with adjustable string. (Source Research Team, 2022)</p>	<p>The necklace as shown in Fig. 11.16 has one layer of beads using leather string/clear string. It becomes one loop of necklace. The difference with the traditional one is the adjustable string. It has the same characteristic as the traditional one: there are Rudraksha in all parts of the necklace loop, because every Rudraksha that is already perforated are arranged together in one string</p>
 <p>Fig. 11.17 One-loop Rudraksha necklace with leather/clear string by LORI. (Source Research Team, 2022)</p>	<p>The necklace consists of two to three layers of beads using leather/clear string. As shown in Fig. 11.17, the result can be a necklace with more than one loop, or a necklace with one loop but with more complicated arrangement. As you can see in this picture, at some point the loops are united into one bead, then separated, and then united again. In some of the design, the Rudraksha is arranged sometimes only on some part of the necklace, not on all parts of it</p>
 <p>Fig. 11.18 One-loop Rudraksha necklace with thin wire/needle by LORI. (Source Research Team, 2022)</p>	<p>The necklace as shown in Fig. 11.18 has one layer of beads using thin wire/needle. In another design, the necklace can use two to three layers of beads. There is a 'permanent necklace pendant' at the centre. As shown in Fig. 11.18, sometimes the beads are arranged like some kind of bouquet, and sometimes like hair braids as shown in Fig. 11.34 of Table 11.6 Icon element</p> <p>We need several specific tools if we want to make necklaces with this technique</p>

Table 11.4 Utility element

Picture	Description
<p><i>Traditional</i></p> <div> </div> <div> <p>Fig. 11.19 Standard Rudraksha necklace with Rudraksha pendant. (Source Lazada. Indonesia, n.d.)</p> </div>	<p>The necklace with standard design as shown in Figs. 11.19 and 11.15 of Table 11.3 Technique element is for spiritual purpose. The technique and the details are very simple. Sometimes the necklace's pendant as shown in Fig. 11.19 is decorated for aesthetic purpose. Religions that use Rudraksha necklace as prayer beads are Islam, Hindu, Buddha, and several other religions from Asia</p>
<p><i>Modern</i></p> <div> </div> <div> <p>Fig. 11.20 Rudraksha <i>tasbih</i> with tassel. (Source Shopee Indonesia, n.d.)</p> </div> <div> </div> <div> <p>Fig. 11.21 Rudraksha <i>japamala</i> with variation. (Source The Half Moon, n.d.)</p> </div> <div> </div> <div> <p>Fig. 22 Rudraksha rosary with a variation. Design by shambalaindo. (Source Shopee Indonesia, n.d.)</p> </div>	<p>Rudraksha necklace for prayer rituals still has a standard design, but with modern detail it has become more contemporary. The example is modern detail as shown in Figs. 11.20 and 11.21 such as tassel in the Moslem prayer beads (<i>tasbih</i>) and the Om pendant in Hindu prayer beads (<i>japamala</i>). The small details make the design look modern while maintaining the basic function of Rudraksha necklace as the spiritual purpose</p> <p>Rosary for Catholics usually uses other materials such as stone. The innovation as shown in Fig. 11.22 is the rosary using Rudraksha as an authentic Asia local resource with an additional beautiful crystal cross pendant and fluted giant clams. It looks more contemporary than the other prayer beads because the technique and material arrangement is more modern. Even though the rosary has become more beautiful and fashionable, its function remains unchanged. One of the reasons why Rudraksha become the primary material is because of its health benefit</p>

Table 11.4 (continued)








Picture	Description
 <p>Fig. 11.23 Rudraksha necklace with double-function pendant by LORI. (Source Research Team, 2022)</p>	<p>One example of a necklace with a unique design is this double-function necklace from LORI as shown in Fig. 11.23. The necklace pendant can be used as brooch as shown in Figs. 11.24 and 11.25. So, the customer only needs to buy one accessory to enhance her/his appearance</p>
 <p>Fig. 11.24 Front-bottom detail of double-function pendant by LORI. (Source Research Team, 2022)</p>	<p>The pendant arrangements are various. There are several pendants that look like durian fruit, hair braids, long bouquet, and other unique shapes. The shapes are inspired by nature's richness and ordinary things that we can find in our daily life</p>
 <p>Fig. 11.25 Back detail of double-function pendant by LORI. (Source Research Team, 2022)</p>	

Table 11.5 Material element



Picture	Description
<p><i>Traditional</i></p>  <p>Fig. 11.26 Praying necklace with Rudraksha, pearl, artificial bead, and tassel as its materials. (Source Rushtook, 2017)</p>	<p>The traditional necklace only uses Rudraksha beads of the same size. If the necklace uses mixed materials, it usually uses various materials in the same shape, though the size of each material may vary as shown in Fig. 11.26</p> <p>A bigger Rudraksha beads size is usually made as the necklace pendant for aesthetic purposes as shown in Fig. 11.19 of Table 11.4 Utility element. In prayer beads, it functions as the necklace's divider that helps its user to count during praying/meditation as shown in Fig. 11.20 of Table 11.4 Utility element</p>
<p><i>Modern</i></p>  <p>Fig. 11.27 Rudraksha, wood, and snail house. (Source Research Team, 2022)</p>  <p>Fig. 11.28 Rudraksha and wood. (Source Research Team, 2022)</p>  <p>Fig. 11.29 Rudraksha and stone. (Source Research Team, 2022)</p>	<p>There are a lot of sustainable materials that already exist from the old days. The necklaces in Figs. 11.27, 11.29 and 1.30 are the examples of Rudraksha combined with other sustainable materials (snail house, wood, stone, freshwater pearl, and tassel from real leather). Nowadays we appreciate natural resources more because we realize that we should manage our natural resources to make a better environment condition. Besides, Rudraksha has an interesting texture and has great durability and strength if it is dry enough with a good manual drying process. It also has unique aesthetical values compared with synthetic and fabricated materials</p> <p>There are various sustainable materials around us, and they can be great necklaces if we can combine those materials properly. The combination of materials and its finishing can make the Rudraksha necklace become more interesting. It can improve the economic and artistic values of the necklace</p>

(continued)

Table 11.5 (continued)

 <p>Fig. 11.30 Rudraksha, fresh-water pearl, and tassel (<i>Source</i> Research Team, 2022)</p>	
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Table 11.6 Icon element

Picture	Description
<p><i>Traditional</i></p> <div style="text-align: center;">  <p>Fig. 11.31 Rudraksha with natural colour (<i>Source</i> Research Team, 2022)</p> </div>	<p>As shown in Fig. 11.31, Natural colours are applied to Rudraksha prayer beads. The real colour of Rudraksha is exposed. The colour is iconic for prayer beads because it symbolizes the purity of spirituality. That kind of colour is also applied to some traditional and modern Rudraksha necklaces. Nowadays the demand for a natural colour Rudraksha necklace is lower than the colourful ones</p>
<p><i>Modern</i></p> <div style="text-align: center;">  <p>Fig. 11.32 Colourful Rudraksha by LORI. (<i>Source</i> Research Team, 2022)</p> </div>	<p>As shown in Fig. 11.32, colourful Rudraksha necklace is one of many iconic thing of LORI accessories. To get the iconic colourful Rudraksha, the craftsperson paint Rudraksha with an environmentally friendly colouring agent. They use final coating to make the colour toned down. A high-quality and sustainable topcoat is very important to make the Rudraksha looks brighter and more glossy but still elegant. The finishing improves the attractiveness of the necklaces. At the same time, it increased the durability of the material</p>

(continued)




Table 11.6 (continued)

Picture	Description
<div> </div> <div> <p>Fig. 11.33 The necklace pendant arrangement shaped like durian fruit by LORI. (Source Research Team, 2022)</p> </div> <div> </div> <div> <p>Fig. 11.34 The necklace pendant arrangement with the shape of hair braids (Source Research Team, 2022)</p> </div>	<p>Several iconic designs from LORI are inspired by nature and daily life, such as the necklace inspired by durian fruit as shown in Fig. 11.33 and hair braids as shown in Fig. 11.34. Each design is authentic, and LORI never makes the same design twice even though some have similarity. Besides the shape, the iconic thing from LORI is the material combination (mixed materials). We can see in many LORI necklaces that the materials are varied</p>

Table 11.7 Concept element

Picture	Description
<p><i>Traditional</i></p> <p>As shown in Fig. 11.15 of Table 11.3 Technique element, Fig. 11.19 of Table 11.4 Utility element, and Fig. 11.26 of Table 11.5 Material element</p>	<p>The traditional Rudraksha necklace concept is mostly function/utility (prayer beads, fashion accessories) with health benefits. That's why the design is a simple one-loop necklace</p> <p>Some traditional Rudraksha necklaces have additional spiritual concepts because the quantity of mukhi ('faces' separated by a line or cleft) along the Rudraksha beads has various meanings and spiritual benefits</p>
<p><i>Modern</i></p> <div> </div> <p>Fig. 11.35 The contemporary necklace pendant by LORI. (Source Research Team, 2022)</p> <div> </div> <p>Fig. 11.36 The triangle arrangement by LORI. (Source Research Team, 2022)</p>	<p>The necklaces concepts are mostly aesthetical. Every design has a unique aesthetical value, such as the one that looks like durian fruit as shown in Fig. 11.33 and hair braids as shown in Fig. 11.34 (Table 11.6 Icon element), triangle as shown in Fig. 11.36, and complex arrangement in one-loop necklace as shown in Fig. 11.38 of Table 11.8 Shape element. Even the simple one as shown in Fig. 11.35 is also aesthetical because of its material variation</p> <p>The designer and craftsperson use any technique, material, etc., that is available to make a beautiful accessory. Nature has become the primary concept source for LORI, while sometimes, the concept is solely based on the designer's artistic/intuitive drive</p>

Table 11.8 Shape element

Picture	Description
<p><i>Traditional</i></p> <div style="text-align: center;">  <p>Fig. 11.37 One-loop necklace by LORI. (Source Research Team, 2022)</p> </div>	<p>Simple one-loop necklace with medium-length as shown in Fig. 11.37 is the most basic shape for traditional and modern necklace until now. There is also a longer one as shown in Fig. 11.16 of Table 11.3 Technique element, so people can use it as a necklace with two or more loops</p>
<p><i>Modern</i></p> <div style="text-align: center;">  <p>Fig. 11.38 One-loop necklace with additional beads arrangement in centre part by LORI. (Source Research Team, 2022)</p> </div> <div style="text-align: center; margin-top: 20px;">  <p>Fig. 11.39 One-loop necklace with two layers of simple arrangements by LORI. (Source Research Team, 2022)</p> </div>	<p>The examples are necklaces with various layers:</p> <ul style="list-style-type: none"> ● One-loop medium-length necklace with additional beads sequence in some part of its centre as shown in Fig. 11.38. The sequence is made with a specific technique ● One-loop medium-length necklace with two to three layers necklace. The simple arrangement is Fig. 11.39 while the complex one is Fig. 11.40 (using a specific technique) <p>Besides its loop and layer, the shape of LORI necklaces is various because of its material combination. Different materials have different size, shape, texture, and colour</p>

(continued)

Table 11.8 (continued)




Picture	Description
 <p>Fig. 11.40 One-loop necklace with two layers of complex arrangements by LORI. (Source Research Team, 2022)</p>	<p>Other innovative shapes:</p> <ul style="list-style-type: none"> ● One-loop medium-length necklace with additional beads sequence in durian fruit shape as shown in Fig. 11.33 of Table 11.6 Icon element ● One-loop medium-length necklace with additional beads sequence in long strings that looks like hair braids as shown in Fig. 11.34 of Table 11.6 Icon element ● One-loop medium-length necklace with additional beads sequence in triangle shape as shown in Fig. 11.36 of Table 11.7 Concept element ● One-loop necklace with additional long beads sequence on Fig. 11.41. It is similar but has a very different shape than Fig. 11.34 because of the material. The long beads sequence here uses a small necklace chain at the upper part, while Fig. 11.34 uses beads from various materials that are combined using clear string ● One-loop short-length necklace with additional beads sequence in circle (choker) on Fig. 11.42
 <p>Fig. 11.41 One-loop necklace with additional long beads sequence by LORI. (Source Research Team, 2022)</p>	
 <p>Fig. 11.42 Choker by LORI. (Source Research Team, 2022)</p>	

Table 11.9 Correlation between macro level and micro level of the Artefact

Macro level of the artefact	Micro level of the artefact			
<p>1. Economic Improvement in marketability and price</p>	<p>T (Technique) Various unique techniques make a unique shape. It will make the necklace more marketable</p>	<p>U (Utility) Necklace as fashion accessory and prayer beads for various religions</p>	<p>M (Material) MSME buy Rudraksha by bulk and there is no specific requirement about Rudraksha's mukhi amount if the size, dryness, and the durability are good. Using mixed materials for design innovation is improving its marketability</p>	
	<p>I (Icon) Colourful but elegant with glossy and matte finishing using environmentally friendly colouring agent</p>	<p>C (Concept) There are several artistic concepts and stories behind the process that are loved by the customers. The customers can choose the necklace according to their preferences</p>	<p>S (Shape) Various unique shapes and arrangements make the necklace more marketable. Such as the necklace with durian fruit and hair braids look-alike arrangements</p>	
<p>2. Social Hardskill and softskill improvement of farmers, gatherers, and MSME (owner, designer, craftperson)</p>	<p>T (Technique) Empowering the society by giving workshop about preparing good-quality materials and make necklace for the Rudraksha farmers, gatherers, and MSME</p>	<p>U (Utility) Empowering the society by giving workshop about how to make creative function innovation of necklace as fashion accessory and prayer beads</p>	<p>M (Material) Empowering the society by giving them insight about the uniqueness and quality of Rudraksha and local materials in their location. It boosts local pride and local wisdom</p>	
	<p>I (Icon) Empowering the society by giving them insight about the uniqueness and quality of Rudraksha so they have pride on their local Rudraksha product</p>	<p>C (Concept) Empowering the society by giving them workshop about making artistic concept and telling the story behind the process that enrich the value of the necklace and the society that support its making</p>	<p>S (Shape) Empowering the society by giving them workshop so they can experiment making necklace to become various shapes</p>	
<p>3. Cultural Rudraksha accessories for anyone from any background</p>	<p>T (Technique) Various traditional and modern techniques can be mixed to make design innovation</p>	<p>U (Utility) Necklace as fashion accessory for anyone. Necklace as prayer beads for various religions, not only to the religion who first used it as prayer beads (Hindu)</p>	<p>M (Material) Any good-quality natural materials from any region can be mixed with Rudraksha to improve its design</p>	
	<p>I (Icon) Icon not only for Asia (India, Indonesia, etc.) but for global citizen who loves and aware about sustainability</p>	<p>C (Concept) The accessories are accepted by local and international market (global) because the primary concept is its functionality and health benefit</p>	<p>S (Shape) Various cultural experience and everyday things can be an inspiration for the necklace's shape</p>	

(continued)

Table 11.9 (continued)

	Micro level of the artefact			
	T (Technique)	U (Utility)	M (Material)	
Macro level of the artefact				
4. Ecological Low negative impact to the environment	The farming, gathering, finishing raw materials, designing, making, and selling the accessories using techniques that are environmentally friendly	The necklace can be used according to its function and some of the designs have multiple functions so people are not too consumptive	Rudraksha and other natural local materials with environmentally friendly colouring agent for finishing. The materials have durability and strength so the accessories last longer	S (Shape) Mimicry of nature that can remind people about the nature's richness and our daily life (durian fruit, hair braids, etc.)
5. Survival Everlasting quality	I (Icon) Icon for sustainability because Rudraksha has many benefits for the people and nature if we process and make it as accessories properly	C (Concept) Environmentally friendly concept for the process, the accessories, and its packaging. It can make the customers remember to take care mother earth	S (Shape) Mimicry of nature that can remind people about the nature's richness and our daily life (durian fruit, hair braids, etc.)	
	T (Technique) Surviving any traditional and modern technique that has a good quality. Consistency in using the technique	U (Utility) Surviving the main function: necklace as fashion accessory and prayer beads for various religions. Add more function (brooch, bracelet, earrings, etc.) to make Rudraksha survive longer in the MSME	M (Material) Mixing materials to make the accessories more unique and has many different variations. Variations makes people do not feel bored with the accessories design and eager to buy more	
	I (Icon) Proof that traditional material that seems ordinary can survive the times and become great if we process it our best effort	C (Concept) Nature's beauty and Rudraksha's health benefits are the concept source that can survive time because they have lasting quality	S (Shape) Mimicry of nature is never out of date. The shape that inspired by nature's richness and our daily life are always interesting	
6. Creative self-expression Innovation in design and its elements	T (Technique) Application of various techniques in one necklace is not prohibited because there would be a lot of design innovations when we are experimenting with different techniques	U (Utility) Creatively experimenting with necklace as fashion accessory and prayer beads for various religions without losing its main function	M (Material) Mixing materials to make the accessories more unique and has many different variations. There are not many Rudraksha accessories MSME beside LORI who experimenting with various materials	S (Shape) Emphasizing nature's beauty, daily life, and artistic elements to become a unique accessories shape
	I (Icon) Each necklace (custom or ready stock) is one of a kind even though using the same materials/colours/technique. There are no two or more accessories that have the same design even though they look similar	C (Concept) Usually inspired by nature's beauty, daily life, and artistic/intuitive drive	S (Shape) Emphasizing nature's beauty, daily life, and artistic elements to become a unique accessories shape	

4 Conclusions

We must mix modern, traditional, local, and global elements to make Rudraksha accessories more appealing to customers and marketable. Rudraksha, which used to be considered too conventional and outdated, can have a new image by several MSMEs that consistently make good-quality Rudraksha accessories, such as LORI.

By looking at the various designs of the LORI necklace, we can see that the improvement of the Artefact in each element at the micro level (Technique, Utility, Material, Icon, Concept, and Shape) are making an impact on the macro level (Economic, Social, Cultural, Ecological, Survival, Creative self-expression). On the other hand, the spirit and motivation on the macro level inspire people to do something innovative on the micro level. The effort to make Rudraksha stakeholders elevate their skill and knowledge in making innovative Rudraksha accessories using ATUMICS method will make the Rudraksha accessories more sustainable.

Design innovation results determine the sustainability of Rudraksha accessories and its MSME. With innovation in making accessories (collecting, selecting, drying, colouring, finishing, designing, arranging, selling), there would be a sustainable MSME. The innovation will improve the crucial four pillars of sustainability, which are economic, social, cultural, and ecological. Quintuple Helix-based innovation should be the basis of MSMEs innovation. By doing that, the biggest producer of Rudraksha as raw material, such as Indonesia, can become the biggest producer of contemporary Rudraksha accessories.

In future research, in-depth observation about the Rudraksha accessories MSME Quintuple Helix-based innovation and its MSME owner, designer, and craftsperson after the pandemic is needed so we can learn how to make the accessories business survive and flourish in various conditions.

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Utilizing Leather Waste into Sustainable Leather Goods: A Study in Fashion Accessories Enterprise, PT. KMBS

Yoanita Kartika Sari Tahalele

Abstract

Leather goods market is rapidly growing due to its character that requires to be on trend. Fulfilling this demand require industry to produce more products which increase waste generation. One of the biggest accessories enterprises in Indonesia, PT. Karyamitra Budisentosa (KMBS) that produces more than 10,000 leather goods a month, acknowledge this problem. They contribute 20–30% leather waste from their production line. The waste consists of big leather sheets and small leather scraps. This cause a big problem because leather scraps retain a lot of chemicals added in the process of production that can contributes high degree of environmental and atmospheric pollution. To solve the problem in PT. KMBS, this study aims to create innovative and sustainable leather goods by utilizing leather waste. Primary data are gathered using qualitative method from deep interview of 8 correspondents and secondary data collection has been gathered by literature study. The study concludes that leather waste from PT. KMBS can be reduced by utilizing leather waste into fashion accessories leather products using 2 different techniques: hand-weaving and modular technique. The study is going to introduce innovative and sustainable products, give a new business or product line idea, as well as become the solution for reducing leather wastage.

Keywords

Sustainable · Leather goods · Leather waste · Fashion accessories · Sustainable · Recycle

1 Introduction

Creative economy sector has an opportunity and big potential to provides the backbone of the Indonesian economy. United Nations set year 2021 as an ‘International year of creative economy for sustainable development’ and Indonesia has become one of the countries that calculated worldwide in creative economy. As part of the creative economy, fashion becomes a significant sector in the world economic. Fashion has been growing over time and has become one of the three subsectors creative economy that contributes to the GDP and foreign exchange top export, around USD 11.9 billion.

The increasing demand in the fashion starting from the clothes until accessories make fashion industry become the major play in the global economy. However, besides having a good impact on the economy, the increase in the fashion industry also negatively impacts the environment. Fashion industry uses intensive resources in the world and have become one of the world’s largest waste contributors (Arifin, 2022). According to the data by Bappenas, per year 2021 Indonesia contributes 2.3 million tons of waste from fashion industry which is the second-largest waste stream contributor. Therefore, with the continued increase of the fashion industry in Indonesia, the amount of fashion industrial waste has also increased (Oktapiyanti & Arumsari, 2021).

The problem not only contributed from clothing/garment industry waste, but also from material/leather waste from shoes, bags and other accessories that need to be addressed. It is about 20–30% of leather from shoes and bags production that have become waste. These wastes are usually discarded carelessly to pollute the environment. The same thing happened to one of the biggest shoes and bag industry in Indonesia, PT. Karyamitra Budisentosa. Over the years, PT. KMBS has concern and battled with this problem among others.

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PT. Karyamitra Budisentosa was established in 1988 as a company manufacturing, retailing and distributing fashion accessories made of leather. PT. KMBS is developing and producing high-quality fashion accessories products (shoes, bags, jewelry) using leather. Their leather products have delivered market needs and demand and have high selling values. They have 3 factories with more than 8.000 workers who produce leather accessories. The factories are producing and manufacturing more than 20 International fashion accessories brands, such as Prada, Emperio Armani, Jimmy Choo, Valentino, Steve Madden, Aigner, Geox and many more. PT. KMBS itself has 5 local retail accessories brands, namely: Rotelli, Gosh, Bellagio, Piubella and Ruco Line. Those 5 local brands have more than 120 retail stores across Indonesia.

PT. KMBS produces shoes, bags and accessories in a large scale which leave a lot of waste ranging from big leather sheet intact to small pieces. The big leather sheet waste came from excessive purchased materials that are already outdated and no longer can be used. These kinds of waste are quite a lot which were in surplus reservations until it is piling up. As for the rest of the leather waste in the form of small pieces came from small leather scraps from cutting section in production process. The small leather scraps are usually useless, not being able to use again and therefore disposed. It consists of highly dangerous substance because of the existence of a chemical that is added during the process. So, disposal of this waste can cause a big problem and contributes high degree of environmental and atmospheric pollution along with biological chain destruction. By this means, to reduce leather waste, proper waste management is urgently needed (Jiang et al., 2016). The type of the leather waste in big sheets and small pieces can be seen in the Figs. 1 and 2.

Some companies are trying to create their products in more sustainable ways by utilizing waste to meet the demands of the environmentally conscious consumer and to reduce waste itself. Swami and Kushwaha (2016) stated that the process requires a considerable amount of creativity and vision, as well as a foundation of thriftiness and environmental consciousness. In this paper the researcher attempts to apply the concept of utilizing leather wastes generated from the PT. Karyamitra Budisentosa into leather goods, such as shoes, bags and other fashion accessories. The primary aim was to assess the leather scrap collected and to incorporate different techniques approach to develop fashion accessories and leather goods.

2 Methodology

From this study, researcher aims to find the solution to PT. KMBS problem on their access of leather waste. The researcher purpose is to answer how to reduce PT. KMBS



Fig. 1 Leather waste intake in big sheet storage



Fig. 2 Small pieces of leather waste (Source Yonanita Tahalele)

leather wastes by utilizing their wastes into leather products. To be able to answer the problem and achieve comprehensive, reliable and objective outcome, the researcher uses qualitative method used in dept. interviews and literature studies. Researcher gathered primary data using qualitative method from deep interview of 8 correspondents which are accessories/leather goods designers and makers, accessories entrepreneur, leather goods sales and marketing experts and executive from PT. KMBS. These 8 correspondents are coming from different job backgrounds, professions and

companies/institutions. Despite their differences, they were all experts in designing, producing, sales and marketing of accessories/leather goods.

The primary data collection gathered from 5 fashion accessories designer and entrepreneurs which using leather as their main materials, 2 experts in sales and marketing and 1 executive from PT. KMBS. The study focuses on understanding the best way in utilizing leather wastes into accessories products. They were questioned about the possible techniques in developing leather goods design using small pieces of leather from production waste. And for each possible technique, they were questioned in detail about the type of waste, the shape, the size and the design that could be applied. Then, the researcher evaluated whether or not those techniques could be applied in producing leather goods products and accepted by the customers.

The secondary data collection gathered by literature study, which came from books, journals, reputable articles and websites. Those public records or findings are typically published by governmental agencies, universities and research organizations. Literature review can provide an overview of research areas which is a critical component in creating theoretical framework (Snyder, 2019). It needed to give additional information and description on previous research, give strong foundation and strengthen researcher argument about leather waste management and how to utilize it into leather products (Tranfield et al., 2003).

3 Literature Study

The environmental impact of production and consumption has been addressed globally since the Rio Earth Summit in 1992. In 2002 at the Johannesburg World Summit, a framework to promote sustainable production and consumption was developed (Ferrara & Serret, 2008). One of the main focus and highlight of the framework is about controlling or reducing waste and maximizing reuse and recycling. Since waste from the fashion industry became one of the main topic of interest, fashion designers and entrepreneurs felt the obligation to address the problems, discover and propose some solutions. Therefore, throughout the process, designers and entrepreneurs shall consider how to reduce and manage waste, longer product life cycle and to protect environment.

One of the positive developments in the modern fashion industry is many international and domestic fashion accessory brands are already practicing the concept of sustainability (Hyun, 2014). They are making and integrating innovative design using improved material, utilizing waste, which is more sustainable, and turning it into the modern fashion products. One of the effective application to produce sustainable product is by utilizing waste into fashion

accessories. The material that are needed in fashion accessories can be very small even micro. So it is more likely any waste or garbage, even the smallest pieces could be significantly and effectively recycled and repurposed into great fashion accessories (Agrawal & Sharan, 2015).

Accessory designers create innovative works with almost anything you can think of, including fabric and leather waste, thrown out wood, newspaper and even discarded plastic bottle (Leungyee, 2011). To utilize those items into products needed creativity, innovative mind and designs. Innovative design became the first attraction by curator and consumer's eye. Some appealing techniques that can be applied and incorporated into sustainable design are hand-weaving, modular and laser cut. Thus, good sustainable accessories products, need a good balance between sustainable materials and sustainable design, between functional and aesthetic side. At the end of the day, sustainability is not only a matter of final product output, but also the sustainability of all aspects that not only offer function as a garment or accessories, but also create a product having the value of the innovation and aesthetic beauty (Tahalele & Widyakirana, 2020).

3.1 Hand-Weaving

Hand-weaving process works like crafting by working with one (or more) continuous weft threads (horizontal threads) passing through the warp (vertical threads) row upon row along the length of the material using hands. Hand-weaving craft can incorporate various kinds of materials from textiles, fiber, yarn, woven, leather and many more with a long stretch shape. The process can also apply various techniques and creates a lot of shapes and designs. Fashion designers and productions experience hand-weaving process in garment, footwear and accessories to be low-waste and fashionable (Pinski et al., 2021).

Handcraft practice, including hand-weaving, has been regarded as being a more sustainable alternative to mass production, as it promotes the production of high-quality goods and encourages slow rates of consumption. Hand-weaving potentially contribute to a range of various other sustainable strategies and processes, such as localized production, on-demand and added value customization, upcycled craft and modular design (Arolin, 2019).

Weaving technique itself has a lot of types and designs. Besides, the visibility and the versatile technique came out from hand-weaving, its aesthetic look also brings a big advantage into the products value. The key factor for hand-weaving is to contribute to the advance sustainable design practice, whereas the material could be utilized from leather waste and bring additional value from aesthetic point of view. The type of weaving can be seen in Fig. 3.

Fig. 3 Type of weaving
(Bettarga, 2018)



3.2 Modular

Modular technique at first constitutes as a unit of standards used for the proportion in classical architecture. As time goes modular technique is used in many areas, including fashion. For efficiency in fashion and textile design products, modular techniques are used to combine more than one piece of cloth or module into the broader fabric. Modular system has the ability to move and arrange separate module elements into one integration of shapes and function. The two forms of module has a slot to insert tab to connect one modular piece with another using interlocking technique (Hur and Thomas, 2011). The modular technique picture can be seen in Fig. 4.

The modular concept and technique allows small materials to be integrated as one shape of design. This design approach gives designers opportunity to create and increase sustainable products by recycle, reuse and reduce small pieces of waste that came from production leftover. The

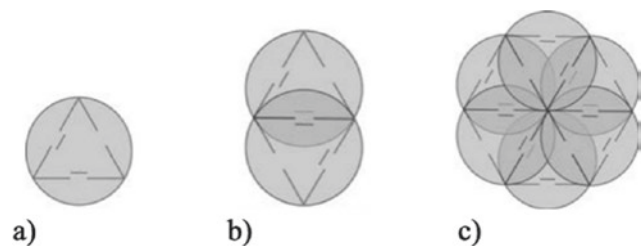


Fig. 12.4 Modular technique (Source Hur and Thomas (2011))

waste material mentioned could be varied from fabric, leathers to plastics. At this stage of design, the comprehension of the relationship between the various life cycle aspects of the product and the product design is essential (Bryant et al. 2008). At the end, modular technique is able to create innovative sustainable design products which not only incorporate pieces of materials, but also enrich the material texture itself.

4 Result and Discussion

To answer PT. KMBS challenge on how to reduce their leather waste mostly the small part that came from production leftover, researchers propose a waste management course by creating leather products using waste. Researcher study 8 correspondents using in dept. interviews on the possibility to utilize leather waste into sustainable leather goods. The correspondents were questioned not only about the sustainability aspect of the product, but also about the aesthetic aspect that can increase the value of the products. Thus considered to be an important aspect, researchers want to find which sustainable product has a long shelf life.

There are 5 questions to be asked to 8 correspondents, which include 5 fashion accessories designers and entrepreneurs, 2 sales and marketing experts and 1 executive from PT. KMBS. The research questions can be seen in Table 1, while the participants' data are shown in Table 2. The interview questions can be seen in Table 1 and its correspondent details can be seen in the Table 2.

Some findings have been identified that PT. KMBS can solve their problem and reducing their leather waste by utilizing their waste into leather goods. However, looking closely toward the interviews, the correspondents have specific insight about the detail of the certain techniques, designs and processes that take a big account toward the output of the products. The researcher believes that those aspect needed to be addressed in order to get a clear picture on the possibility to create a product that is not only sustainable but also commercial. So the products not only reduce waste, but they can also be sold and become customers' needs or demands.

Foremost, the researcher would like to figure out what kind of leather wastes are possible to be utilized and used. According to Millenia, Cerelia and Fenina, the length of the material is important, however the width is not essential. They can be utilized in any shape of waste as narrow as possible with length not less than 5 cm. Meanwhile Belinda and Gunawan believe that any shape could be used. For the quality of the waste, all 8 experts were agreed that the condition of the leather waste should be smooth in surface and clean. The type and condition of the leather waste can be seen in Fig. 5.

There are some techniques that can be used to utilize small pieces of leather into 1 big sheet which confirmed by the correspondent. Millenia, Cerelia and Fenina who are expert in hand-weaving craft said that these small pieces of leather can be put together using hand-weaving technique. To make a weaving craft, it needs a lot of long but thin width shape of leather. Small pieces of leather can be patched into a long thin shape. Then these wastes can be put together using weaving technique. While Belinda and Gunawan suggested that the best practice to make use of waste is by using modular technique because it allows treating small pieces of waste. For Wijaya, Hastuti and Jonathan as sales and marketing experts believed that hand-weaving and modular technique are both good techniques and have commercial values. The leather bag result using hand-weaving technique and modular technique can be seen in Figs. 6 and 7.

The experts believe that the best practice in designing and producing products from wastes is to maximize the use of waste, even the smallest pieces. The more versatile the usage of the waste the better it is. Thus, leather

Table 2 Interview correspondents

No	Name	Age	Occupation
1	Gabriella Millenia	22	Fashion accessories designers and entrepreneur
2	Agripina Belinda	22	Fashion accessories designers
3	Felicia Gunawan	23	Fashion accessories designers and entrepreneur
4	Chrisella Fenina	23	Fashion accessories designers and entrepreneur
5	Faustine Cerelia	22	Fashion accessories designers
6	Agnes Wijaya	28	Head of sales and marketing at accessories company
7	Hastuti	50	General manager at accessories company
8	Jonathan	40	PT. KMBS CEO

Table 1 Interview questions

No	Questions
1	What kind of leather waste (shape, size, quality) are visible to reuse and utilize into product?
2	What techniques can be used to utilize small pieces of leather into accessories leather products?
3	What is the best practice in utilizing small piece of leather waste?
4	What kind of accessories products can be made using leather waste (type, design, shape, size)?
5	How to create products that can be accepted by the customer (function, aesthetic, design, color, size)?



Fig. 5 Type and condition of leather waste (Source Yonanita Tahalele)



Fig. 7 Leather bag using modular technique (Source Yoanita Tahalele)



Fig. 6 Leather bag using hand-weaving technique (Source Gabriella Millenia)

designers and makers need to understand proper techniques that could be utilized in creating the product. Besides that, the aesthetic part of the products are very important to give commercial value and make it worth in market. According to 5 fashion designers, Millenia, Cerelia, Fenina, Belinda and Gunawan, most of all type of leather goods can be made using leather waste. The products option are limitless from shoes, bags, purses, accessories, wallet to key ring. In addition, all kinds of designs, shapes and sizes of products could be designed and created. This argument is based on the experts' experience in designing and creating product using leather waste. Meanwhile according to commercial experts Wijaya, Hastuti and Jonathan, all types of techniques are marketable and have commercial value once it is applied in all kinds of leather products and in any shapes and sizes.

Wijaya, Hastuti and Jonathan as sales, marketing experts and executives at PT. KMBS said that the right products are very important for the product sustainability. Even the concept and the product itself have already been a sustainable product, if they cannot sell it to the customer then the product itself won't be sustainable and do not have a long life cycle. Thus, to create a sustainable product that can be accepted in the market, designers, entrepreneur and industries need to make comprehensive market research and trend analysis. All experts have confidence that by market research and trend analysis, they could find market demand and need based on function, aesthetic, design, color and size. Here are the interview result, shown in Table 3.

Table 3 Interview result

No	Name	Leather waste condition and types	Best application and techniques in utilizing leather waste	Accessories products (type, design, shape, size)	Accessories design, shape and size
1	Gabriella Millenia	Condition: smooth and clean Type: length minimum 5 cm, width minimum 0.5 cm	Hand-weaving technique	The products are limitless: shoes, bags, purses, accessories, wallet, key ring	All kind of design, shape and size
2	Agripina Belinda	Condition: smooth and clean Type: any type and shape, minimum 1.5 cm	Modular technique	The products are limitless: shoes, bags, purses, accessories, wallet, key ring	All kind of design, shape and size
3	Felicia Gunawan	Condition: smooth and clean Type: any type and shape, minimum 1.5 cm	Modular technique	The products are limitless: shoes, bags, purses, accessories, wallet, key ring	All kind of design, shape and size
4	Chrisella Fenina	Condition: smooth and clean Type: length minimum 5 cm, width minimum 0.5 cm	Hand-weaving technique	The products are limitless: shoes, bags, purses, accessories, wallet, key ring	All kind of design, shape and size
5	Faustine Cerelia	Condition: smooth and clean Type: length minimum 5 cm, width minimum 0.5 cm	Hand-weaving technique	The products are limitless: shoes, bags, purses, accessories, wallet, key ring	All kind of design, shape and size
6	Agnes Wijaya	Condition: smooth and clean Type: any type and shape	Hand-weaving and modular or patch work technique	The products are limitless: shoes, bags, purses, accessories, wallet, key ring	All kind of design, shape and size
7	Hastuti	Condition: smooth and clean Type: any type and shape	Hand-weaving and modular technique	The products are limitless: shoes, bags, purses, accessories, wallet, key ring	All kind of design, shape and size
8	Jonathan	Condition: smooth and clean Type: any type and shape	Hand-weaving and modular technique	The products are limitless: shoes, bags, purses, accessories, wallet, key ring	All kind of design, shape and size

5 Conclusion

Fashion products including leather goods have now become the favorite products, where the higher the interest means more quantity of goods needed to produce. However, the effect of massive mass production is the waste produced afterward. A big fashion accessories enterprise who mostly makes leather goods, PT. Karyamitra Budisentosa (KMBS), realizes that this causes a problem. They produce more than 10,000 leather goods a month and contribute 20–30% leather waste from its production line. There are 2 types of solid wastes that they produce: (1) big leather sheets from materials that are outdated and no longer used, and (2) small leather scraps from cutting section in production process. The leather sheets can be stored and used for other purposes, but the problem lays on the small leather scraps which are mostly useless. The excessive small pieces of leather wastes can cause a big problem because it retains a lot of chemicals added in the process of production and disposal of this waste can contribute high degree of environmental pollution.

To overcome this problem, researchers try to study how to utilize this leather waste into leather products, so it can reduce the amount of polluted materials. 8 experts in accessories and leather goods from different institution, job and

expertise had been interviewed. The study introduces 2 different techniques in utilizing leather scrap into leather goods: hand-weaving and modular. These techniques contribute to reuse and recycle small pieces of leather scraps into accessories products. The techniques, designs and products resulting from the study were evaluated for their acceptability among the correspondents.

6 Recommendation

Through this study, researcher is expected to provide inspiration and ideas for creativity in academics and research in similar topics. The next project researcher will explore on the techniques, designs and applications in utilizing leather waste into commercial leather products. Great hope that in the future more researchers, designers, entrepreneurs and customers who understand how important the issue of environment, are more critical and applied a sustainable living.

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Exploring Cultural Sustainability Through Contemporary Indonesian Fashion Brands

Christabel Annora Paramita Parung

Abstract

Sustainability has been an issue in industry, including the fashion industry for a very long time. This does not exclude cultural sustainability, as it would transmit ancestral knowledge to modern society, or even, future generations. As it is as important as economic, ecological, and social sustainability, cultural sustainability needs to be explored more to support the sustainable development. This paper aims to investigate how contemporary fashion brands in Indonesia practice cultural sustainability by infusing and implementing traditional values into their brands. This study involved 2 contemporary fashion brands that infused cultural elements into their products, such as the shape of garments, textile pattern, colors, or even the craft techniques used in making the product including the dyeing techniques. Case study approach was used for this study to gain deeper exploration and understanding in the fashion brands' cultural sustainability practice. The result of the study indicated that the contemporary fashion brands respectfully implement traditional culture into the designs in various ways by adapting the cultural elements into contemporary techniques and design, shown through the collections' formative features.

Keywords

Cultural sustainability · Fashion design · Fashion brand · Indonesian fashion · Contemporary fashion brand

1 Introduction

As an industry which employs more than 300 million people, the fashion industry has evolved dramatically for the past 20 years (McKinsey, 2019). Moreover, its revenue amount has reached 1.5 trillion USD in 2021 and has been predicted to increase even more in the following years (Statista Search Department, 2022). Hence, the fashion industry is now highly competitive and dominated by big and global brands, which makes it go through a massive overhaul. Fashion in the modern era has opened up to various influences, style, and new production techniques as a result of advanced technology and globalization. As fashion today is a salient part of modern society all over the world, we cannot set fashion and globalization apart. The massive change in the fashion industry is indeed a part of globalization (Ledezma, 2017), and it results in the fast fashion phenomenon which has a big impact on sustainability in general (Gazzola et al., 2020). Fast fashion places its emphasis on very cheap production costs, which generate overconsumption and rapid trend changes (Grewal et al., 2022; Barnes and Greenwood, 2006).

Fast fashion and globalization have positive and negative impact on society and environment. On the positive side, consumers are allowed to purchase things at a cheaper price, and the products have quicker turnaround of new trends and styles (Bhardwaj & Fairhurst, 2010; Centobelli et al., 2022). However, while these consumers benefit from affordable clothes prices, fast fashion has negative sustainability consequences (Weinreb, 2019). The sustainability consequences include high water consumption and chemical waste in the environmental sector, underpaid workers and unsafe work environments for the workers in the social sector, and the risk of cultural extinction given the altered values in fashion industry in the cultural and economic sector. With globalization and the potential risk of culture extinction among us, it is important to preserve valuable cultural heritage to prevent culture extinction from

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happening (Songjie et al., 2011). The prevention can be done by a simple approach such as preserving and implementing cultural heritage to modern products and using it as a mechanism for culture to reconnect with the market (Vikas et al., 2015).

Along with environmental, social, and economic sustainability, cultural sustainability is as important as the other dimensions. Becoming the fourth pillar of sustainability, cultural sustainability needs to be applied in every sector of industry including the fashion industry to support sustainable development. The fact that sustainability also involves the cultural dimension of fashion products makes fashion products not only about the design and quality, but also about their immaterial values and meaning (Fletcher, 2008). As mentioned in the previous paragraph that globalization and fast fashion increase the risk of culture extinction, it becomes essential for us to preserve our local culture through consumed products including products in the fashion and textiles industry.

Indonesia is a country with lots of both intangible and tangible cultural heritage. It is shown in its richness in artifacts, traditional clothes, oral traditions, and traditional craftsmanship. However, even with its richness of cultural heritage, the impact of globalization and fast fashion is inevitable. A number of issues concerning Indonesian cultural heritage have occurred, for example the struggle of maintaining ancestral knowledge and the lack of traditions recognition among the youth (Asfina & Olivia, 2017). Hence, all sectors need to collaborate and support each other by integrating and applying cultural heritage in modern-day activities and consumption. According to Boṭa-Moisin (2020), preserving and applying cultural sustainability in the fashion and textiles industry also refers to transmitting traditional knowledge and values to modern generations by integrating or embedding traditional values into modern fashion collections. The preservation and application of culture into fashion and textile products needs to be studied more in order to prevent cultural heritage extinction. Initially, the sustainability study in fashion was more focused on environmental and social sectors only (Mora et al., 2014). There has not been any specific study that explores more about cultural sustainability in general or specifically about the cultural heritage infusion in Indonesian contemporary fashion brands, whereas it will actually give insight and enrichment to not only other Indonesian contemporary fashion brands, but also Indonesian consumers related to local culture implementation.

As a designer, knowledge about design concept and cultural backgrounds is a very important factor (Zhi, 2022). Hence, in this study, the visual aspects of the design and its

relationship with culture were highlighted. The purpose of this study was to give a deep analysis of contemporary fashion brands in Indonesia which apply cultural sustainability, or in other words those contemporary fashion brands which have already embedded cultural heritage into their products. The finding of this research was expected to inspire other contemporary fashion brands to make use of cultural values of Indonesia as inspiration in design, which connects the past, present, and future.

2 Methodology

Case study approach was done to investigate the cultural sustainability practices of Indonesian Contemporary Fashion Brands. Case study is considered as the preferred method as this study needs deep analysis and investigation. According to Yin (2003), the case study method makes it possible for the researcher to examine and investigate qualitative data inside the real-life condition. The research examined two (2) Indonesian contemporary fashion brands through primary data collection and secondary data collection. Primary data was collected through an in-depth interview which was conducted with the founder/owner of the brand, and secondary data was collected through the brand's websites and social media investigation. The brands chosen for case studies were IKAT by Didiet Maulana and Lemari Lila, which are famous contemporary brands that are already well known for their traditional-inspired collections. Interview questions included vision and mission of the brand, Indonesian local culture that inspires the brands' collections, production process, challenges, and opportunities that the brand faces as a contemporary brand that infused Indonesian local culture. The data was analyzed using thematic analysis, which included classifying (by coding) and describing the data that were already collected. In this research, the interview and observation data were coded and divided into several groups of formative features in fashion: shape and style, colors, and textile. Formative features were the focus since visual aspects play a significant role in fashion.

3 Literature Review

3.1 Cultural Sustainability in Fashion Industry

To make an impact, culture needs to be communicated. Culture needs a media to communicate its values to society. This way, the local culture of a community/city/

country will be sustainable. Cultural sustainability can be shaped through a cultural medium which are people or society itself, who will carry the values of their local culture (Briocchi, 2008) from their descendants. In terms of the form itself, cultural heritage can be divided into three categories: tangible culture, intangible culture, and natural heritage. Tangible culture is culture that is touchable and physical. Examples of tangible culture are physical cultural objects like traditional clothing, documents, architecture, monuments, temples, etc. Intangible cultural heritage includes those that are abstract without any physical form, like knowledge, special techniques and skills, oral tradition, performing art, and many more (Unesco, 2005). The third category is natural heritage, which includes physiographic features, or any natural areas or places with cultural aspects, such as biological or geological formation (national park, rainforest, etc.).

Cultural sustainability (CS) in fashion has been defined perfectly by Boğa-Moisin (2020) as the process of embedding traditional or local values to modern societies, and the process is sustained and can be transferred to future generations. However, the practice is not always easy. In implementing cultural sustainability, there are problems regarding cultural appropriation that are related to ownership issues, respect, and commercializing local culture in a very disrespectful manner (Vezina, 2019).

3.2 Fashion Design and Culture

Design and culture has been linked in the area of anthropology where objects found were observed and evaluated through cultural attributes. It has been found that culture creates specific identity and it is naturally revealed in human life, including products that humans use in their everyday life. This includes fashion products (Moalosi et al., 2005). As a communication tool, fashion is often used to express cross-cultural communication, and this is shown by the fact that people can always distinguish different fashion styles and associate them with certain cultures (Zou & Joneurairatana, 2020). This supports Moalosi's opinion of design and culture that has always been linked.

In the process of designing, each designer's characteristics and style can be reflected on the design elements shown from the product. Color, Textile, and Shape and other elements in design concept are determined based on the theme and big ideas of the collection. As designers are aware of cultural issues and the importance of preserving local culture, they implement local culture such as using colors, textile materials, pattern, styles, and other elements by citing culture as their references in designing (Crane & Bovone, 2006).

4 Case Study 1: IKAT Indonesia by Didiet Maulana

4.1 Brand Overview

IKAT Indonesia was established in 2011 by Didiet Maulana as the founder. IKAT Indonesia focuses on preserving Indonesian culture by consistently implementing local culture into its collections. Didiet Maulana, the founder, also stated that the brand IKAT Indonesia was made to conserve the weaving tradition legacy in fashion industries and help promote Indonesian local artisans as well. Before IKAT was built, the owner did a research on weaving services and the weavers, Indonesian market, and the brand positioning to be the brand that preserves Indonesian culture. The mission of IKAT Indonesia is to introduce and promote Indonesian Woven Textile as one of Indonesian cultural heritage to younger consumers.

4.2 IKAT Indonesia Collections' Formative Features

IKAT Indonesia has successfully combined traditional and modern and creates broad range of product types. IKAT not only sells fashion products such as blouse, outerwear, scarves, trousers, and skirts, but also sells cushion cover and house wares like tea sets. However, all of the products have the same fundamental characteristic—they are all implementing traditional Indonesian culture into the products.

4.2.1 Shape and Style

In terms of shape and style, IKAT Indonesia relies heavily on wearability. This brand's focus is at delivering the modern design that everyone, including younger generations, can wear daily and appreciate. This is shown through IKAT Indonesia's collection consistently from 2012 to 2021. The shape and style from IKAT Indonesia collections in 2012–2021 evolve as the Indonesian fashion trend also changes overtime.

In general, the collection of IKAT Indonesia can be described as casual, chic, and modern at the same time. The fit is oversized, and the style varies as well. In womenswear collection, IKAT garment types vary from peplum shapes, tanks, wrap style-tops, tunics, or even biker jackets. In menswear collection, IKAT diversely develops its garment shapes with the infusion of local culture and also culture from other country, such as Japan (Kimono) and India (Tunic).

Figures 1, 2, and 3 show the shape and style of IKAT Indonesia womenswear and menswear collection. Though the shape is not always traditional, the use of hand-woven traditional textile creates traditional vibes. In 2020, IKAT Indonesia highlights the traditional Tanimbar (Maluku/Moluccas) costume to be their main inspiration. Tanimbar is a group of islands in the south of Maluku/Moluccas. In Romansa Tanimbar collection, IKAT Indonesia took the essence of traditional Tanimbar top garment shape and infused it into their collection.

Figures 4 and 5 show the comparison of Moluccan traditional costume and the Romansa Tanimbar (2022) collection that shows the Y Line as the main characteristic of the upper part of the garment, with maxi skirt as the bottom part. From the interview, the owner, Didiet Maulana stated that the loose silhouette and the head-piece worn is the strong characteristic of Moluccan woman dancing freely.

4.2.2 Color

The color used by IKAT depends heavily on the theme and the origin of the culture that is used as the inspiration. In 2019, the “Binar Mentari” collection which means Sunlight was created based on the inspiration by positivity—which resembles through its color—extravagant and eccentric. The colors brown, orange, red, and broken white were chosen to support the big idea—positivity and hope. In 2020, during COVID-19 pandemic, IKAT created a collection called “Romansa Tanimbar” which means “Tanimbar Romance”, and the color tones used in this collection reflect the nature of Tanimbar, Moluccan. Combining shades of green, brown, and blue, IKAT Indonesia shows its love toward the nature of Tanimbar, Maluku.

Figure 6 shows the color combinations used by IKAT Indonesia for their collection from 2018 to 2020 and Moluccan traditional costumes color. From the figure, it can be seen that in 2020, IKAT Indonesia used a broad range of colors which consequently reflect Tanimbar traditional costume colors that are dominated by red, orange, blue, and green.

4.2.3 Textile

The textile used by IKAT Indonesia is mainly hand-woven. They maintain their quality by collaborating with local artisans, such as their collection in 2020 “Romansa Tanimbar”. IKAT Indonesia was collaborating with the local artisans of Tanimbar to create the Tanimbar hand-woven textile. The pattern also varied. With the vibrant colors that portray Tanimbar, the shape pattern was also meaningful and based on the local culture.

Figure 7 shows the woven-pattern of Romansa Tanimbar collection. According to IKAT Indonesia team, this original Tanimbar pattern—the arrow-like pattern—portrays how Tanimbar people are always ready for challenge in life. This shape is combined with other shapes and colors that reflect the nature of Tanimbar.



Fig. 1 Kaila top (Source: IKAT Indonesia, 2022)



Fig. 2 Kimono-shaped top (Source: IKAT Indonesia, 2022)



Fig. 3 Tunic-shaped top (Source: IKAT Indonesia, 2022)



Fig. 5 Romansa Tanimbar collection (Source: IKAT Indonesia, 2022)



Fig. 4 Moluccan traditional costume



Fig. 6 The color palette of IKAT Indonesia collection 2018 – 2020



Fig. 7 Romansa Tanimbar mask pattern

However, IKAT Indonesia does not always use hand-woven textile. In some collections, they print the woven-pattern on other fabric such as cotton voile for scarf product. In addition, the woven-pattern is also printed on other surface for house ware like tea sets. Collaborating with Disney and JD ID to support the casual-sportswear, the woven-pattern is also printed on activewear material and applied to modern and casual-activewear design.

5 Case Study 2: Lemari Lila

5.1 Brand Overview

Established in 2009, Lemari Lila is a traditional-contemporary fashion brand that is famous for its modern kebaya, batik, manual-dyed, and hand-woven fabric. With its traditional-meets-modern key style, Lemari Lila has been consistently producing modified kebaya made of various local fabric. The mission of Lemari Lila is to bring back the local culture that are already existed in Indonesia and make them fun, so that the younger generations are excited to wear them.

5.2 Lemari Lila's Formative Features

The formative features of Lemari Lila's collections are shown through the shape of the garments, the distinctive colors of the collections, and also the type of textiles used to create the garment. Different from IKAT Indonesia, Lemari Lila implements its characteristic through textile pattern that is original and combines them with Javanese batik pattern.

5.2.1 Shape and Style

Lemari Lila redefines “kebaya”, a traditional Indonesian garment, very distinctively. Lila Indrasari, the founder, has successfully managed the tension between tradition and modernization in fashion, the ephemerality, and the changes of trends by reconstructing kebaya.

From interview and secondary data, flexible, fun, and casual-traditional is how the author defines the collection of Lemari Lila in general. Lemari Lila reconstructs the basic kebaya shape by adding asymmetrical elements, by

subtracting the shape of original kebaya shape to sleeveless kebaya, or even by using several types of textile for one garment, which is quite unusual for basic kebaya.

Figure 8 shows how Lemari Lila adds asymmetrical detail into the design to create a more-modern kebaya that is likable by younger customers. Kutubaru kebaya in Fig. 8 is added with sampir (fold) details only on the left side resulting in an asymmetrical length on the front side of the garment. The interesting part is how Lemari Lila makes the kebaya looks casual by loosening the waist-cut.

However, the 2021 collection of Lemari Lila—“Lumaku”—shows a more street-wear style collection. Lumaku Collection (means walking) was created during the COVID-19 pandemic, and it shows the modern side of a Javanese woman. Lila Indrasari stated that this collection means a lot to her. Through this collection, she wants to show that this is the time when all of us are walking, slowly, together to a better future.

As seen in Fig. 9 on the left side, the top garment in the picture is a basic crop top. No traditional element can be seen from the shape itself, but the material used to make this crop top is hand-woven, made by the Indonesian local artisan. The skirt used in Fig. 9 (on the right side) is Kain Lilit (Wrap Cloth) which is inspired by the traditional cloth that is usually used in traditional Indonesian costumes.

Figure 10 shows the traditional costumes of Indonesia in which cloth is mostly worn by both women and men. Kain Lilit from Lemari Lila adapts the shape of traditional cloth used here and is deconstructed. The deconstruction can be seen from the additional handkerchiefs detail on the waist and the additional button that eases the wearer.

5.2.2 Color

A broad range of colors are used by Lemari Lila to create a fun and young collection. In terms of color, Lila Indrasari stated that the inspiration of colors is not always from the



Fig. 8 Lemari Lila kebaya (Source: Indrasari, 2022)



Fig. 9 Lumaku collection (Source: Indrasari, 2022)



Fig. 10 Traditional costumes of Indonesia

cultural heritage. However, the way to produce colors on the textile is by manual-dyeing (synthetic dyes and natural dyes).

The interesting part of Lemari Lila collection is how Lemari Lila successfully matches bold colors into one garment which makes it unique and quirky. Kebaya Mbok Jum (Fig. 11) is one of the examples. Kebaya Mbok Jum was released in 2014, the early years of Lemari Lila, and got a huge positive response. The name Mbok Jum is from Mbok Jumiye, a fictional character of a Javanese woman, who wears kebaya as her daily wear. With the bold colors Lemari Lila provides, younger generations see Lemari Lila as a contemporary fashion brand that is modern and quirky, who does not forget its root, the tradition.

From Fig. 12, it can be seen that 2021 and 2022 collections have the same earthy-color vibes. In other collections of Lemari Lila, the color range is quite broad from pink to emerald green. These muted-earthy color in Lumaku Collection (2021) is created during pandemic timing, so it might have an emotional side to it. Moreover, in 2022, Lemari Lila released Mulih Collection to portray how people want to go back to their hometown after the restrictions during the pandemic.

From the collection color, it is shown that the colors red, blue, and brown are always used in the combination. These colors are often found in Indonesian traditional batik



Fig. 11 Kebaya Mbok Jum patchwork (Source: Indrasari, 2022)



Fig. 12 Colors of Lemari Lila collection

color since these colors can be produced using natural dye. Also, the color red is usually used in Batik Lasem, one of Indonesian batik that is highly influenced by the Chinese culture. Lila Indrasari stated that the use of the dominant colors red, blue, and brown is highly influenced by the Indonesian culture.

5.2.3 Textile

The textile used in Lemari Lila collections varies from printed batik, manual batik fabric, manual-dyed fabric, to hand-woven fabric. The most noticeable aspect in Lemari Lila is its batik fabric that has a very distinctive pattern. The pattern is original, and even though it is not mimicking any existing pattern from Indonesia, it has Indonesian cultural value. Lila Indrasari explained that there are two main patterns that are designed for Lemari Lila: Ayam Jago Pattern and Mbok Jum Pattern. Ayam Jago Pattern (The Rooster Pattern) is inspired by the culture in Indonesia where people usually have roosters as their pets back home

in their hometown. In Sundanese culture, Ayam Jago (roosters) are usually kept at home for cockfighting. Therefore, this rooster pattern reminds people of going back to their hometown. Mbok Jum Pattern is the most popular pattern in Lemari Lila collections. As stated above in 5.2.2., Mbok Jum is a fictional character that represents Javanese women wearing kebaya, and usually the kebaya is worn by Mbok-Mbok Jamu (female herb sellers). This character is so strong that represents Javanese culture greatly.

Apart from batik fabric, Lemari Lila beautifully creates the collection using the hand-woven fabric that is made by the local artisans, one of them is Sekar Kawung Social Enterprises. Lemari Lila processes the fabrics created by Sekar Kawung and turn them into garments. Sekar Kawung Social Enterprises plant their cotton plants in their fields, and together with the local forms, they grow and harvest it. The crops are processed into the yarn factory in Tegal (Central Java), and then brought to Klaten to be hand-woven by the local weavers from Klaten. Slowly, Lemari Lila has gone to a sustainable direction. Even though being a sustainable fashion brand is difficult and needs a big responsibility, Lemari Lila surely has started its journey in the path of sustainable fashion.

6 Discussion

In the case studies, both of the contemporary fashion brands (IKAT Indonesia and Lemari Lila) have implemented the cultural heritage of Indonesia. Even though implementing them differently and in their own ways, surely IKAT Indonesia and Lemari Lila have helped preserve Indonesian cultural heritage and spread the awareness to the younger generation.

Table 1 shows how IKAT Indonesia and Lemari Lila practice cultural sustainability by implementing cultural heritage into their collection. From the case study, it can be seen that both IKAT Indonesia and Lemari Lila collaborated with local artisans (local weavers and batik artisans). This way, through traditional technique, the traditional way in coloring and creating pattern on fabric can be protected and get passed on to younger generations.

Figure 13 shows a diagram as a result of the study that was done by the researcher regarding the local culture inspiration and the fashion collection. The collections show their local cultural value through formative features, and in this diagram, the author classifies the actions based on the types of formative features—shape and style of the garments, the garment colors, and the textile used to create the garments.

Table 1 Cultural sustainability practices of 2 case study brands

	Cultural sustainability practices	IKAT Indonesia (Jakarta)	Lemari Lila (Yogyakarta)
Cultural sustainability in contemporary Indonesian fashion brands	Respecting and preserving local culture	Researching what is allowed or not allowed to prevent cultural appropriation Collaborating with local artisans	Researching what is allowed or not allowed to prevent cultural appropriation Collaborating with local artisans
	Design inspiration from local culture	Designs are inspired by places and local people from around Indonesia	Designs are inspired by personal experience and habits of Indonesian local
	Formative features: shape and style	Some collections mimic traditional costumes and combine them with modern design/culture from other country	All kebaya collections are based on the original kebaya, with additional details like asymmetrical folds, or subtracting part of the kebaya (sleeveless kebaya) Kain Lilit is based on the traditional kain lilit (wrap cloth), with additional button details for functional aspects and other additional decorative details
	Formative features: colors	Theme-wise, inspired by local culture and nature Synthetic-dyed, but using colors that are representative of Indonesian various cultural heritage	Red, Blue, and Brown are the main colors, and these colors are inspired by the traditional Indonesian batik color Synthetic-dyed and natural-dyed
	Formative features: textile	Using traditional weaving technique, using traditional weaving pattern that reflect local culture	Using traditional weaving technique, but create original pattern that are still inspired by local culture

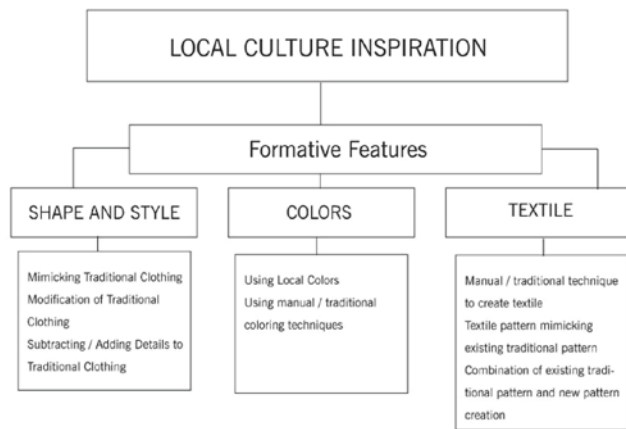


Fig. 13 Local culture inspiration and formative features in fashion collection

7 Conclusion

The implementation of local culture to contemporary fashion collection is not impossible. It surely can be done properly, and there are many opportunities in how and where we want to implement it. To apply the cultural heritage into ones collection, designers need to do deep research to prevent cultural appropriation as done by IKAT Indonesia and Lemari Lila. Moreover, cultural heritage is not only about the formative features. The way we create the collection can also reflect how local culture takes part in it. Collaborating with local artisans is one of the ways to preserve not only the visible cultural heritage, but also the traditional skills that (intangible cultural heritage) is not less important than the tangible ones. The limitation of this study was that this study only covered formative features of a fashion collection; meanwhile, there are other features inside a fashion collection. Future researches can be done to cover this area to maximize the cultural sustainability practices among the fashion industry.

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Democra-Sized Fashion to Embed More Sustainable and Personalized Approach: Digital Clothing and Accessories as the Experimental Design Process for Fashion Students

Olivia Gondoputranto

Abstract

The current shift in trend will move fashion toward democra-sizing, as well as be more personalized and inclusive to meet the needs of client. Therefore, this research focuses on the experimental process of fashion students creating sets of digital clothing and accessories using 3D modeling software to meet the needs and objectives of the client. Furthermore, it describes the design process of a fashion student assigned in groups and paired with a client to embrace the personalized needs. Exploring this state is vital for each group to gain client's fashionable expressions and translate them into their desired. The experimental process is carried out by analyzing each client's style, then using the design creative process as a strategy to create a set of clothing and accessories. This is carried out by achieving the implementation of zero-waste design with digital prototyping. The outcome of this research revealed that the experimental design process with digital prototyping could meet the needs of the client. Also, it could drive a positive change by achieving the implementation of zero-waste design for a more sustainable approach with the help of digital 3D modeling software. Therefore, this research revealed the significant role of fashion designers and portrays more explorative and sustainable actions based on digital fashion for academic research and the client's personal needs.

Keywords

CAD design · Digital fashion · Digital prototyping · Personalized fashion · Zero-waste

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1 Introduction

Edward Castranova (2007), in the book “Exodus to the Virtual World,” stated that there would be a massive migration from the physical world toward a synthetic and online three-dimensional world. In the next few decades, these changes will significantly affect the political, social, cultural, and economic fields. This is currently happening because technological advancements and digitalization have brought the world to a paradigm shift. Therefore, technology as a medium has duality and paradoxical properties. Even though technology is disruptive, it can be used in a better direction. This is seen during the pandemic, with lockdowns and social distancing severely limiting people's mobility worldwide. Hence, digital technology is one of the driving wheels that is very helpful for the world economy, including the fashion sector.

The limitations caused by the pandemic have triggered the survival instinct of the world community toward technological transformation. This has led to changes in the fashion system, as well as formed an ecosystem order and changes in consumer behavior (McKinsey, 2020). Furthermore, the digital fashion phenomenon has led to the rise of digital-only fashion houses such as the Fabricant or Auroboros as Luxury houses in the Metaverse realm. This phenomenon further enhances color in the fashion field. This is considered significant in the fashion industry because using CAD (Computer-Aided Design) software is one step in the “digitalization” process of Fashion 4.0. (Srmäkari, 2021). In the post-pandemic era, digital technology has become part of the lifestyle and habits of people in various sectors. It is very visible today that technology and digitalization are involved in the entire fashion value chain process. Based on the rise of Fashion Technology, the rapid development of digital fashion is seen in the use of CAD 3D software and automation in the production process. The transformation from physical to digital brings effects and changes in the sector. Therefore, the integration between

producers and designers affects client experience, and an effective production process affects sustainability (Bulović & Čović, 2020).

The use of 3D technology in fashion is increasing along with efforts to implement sustainable practices. This is due to the effectiveness factor, which can increase speed in making designs, decision-making processes, cost savings, and reduce the creation of physical sampling (Luu, 2021). Also, McKinsey & Company, through the Business of Fashion (BOF), stated that CAD in fashion produces a creative process through 3D CAD programs. This company has a major effect on reducing the number of physical sampling and prototypes, increasing production speed, performance, and cost optimization, as well as supporting the sustainability movement by eliminating production waste (McKinsey, 2022). The fashion industry is currently adopting CAD technology due to efforts for efficiency and time saving, as well as providing solutions to complex problems that previously occurred between designers, manufacturers, and retailers. This is because they can bridge the communication process between the involved parties (Sayem et al., 2010). However, most industrial efforts to reduce waste are carried out during the production process and not during the design creation (McQuillan, 2020). This research explores how online collaboration between fashion designers and clients can produce a series of digital fashion and accessories that implement zero-waste digital prototyping. Furthermore, this research is expected to contribute and make recommendations in the fashion sector, the world of education, and other academics.

1.1 Research Scope and Aim

This research focuses on conducting an experimental process of a design in manufacturing digital fashion and accessories using 3D CAD software. The class of Digital Fashion Design consists of 10 students who are divided into 5 groups of 2 designers. Each group will be paired with one client to answer their wishes and personal briefs. The software used for making clothes is Optitex, and Rhinoceros for making 3D accessories and designs. The creation and communication processes are digitally carried out online. The creation results will be displayed in a virtual form to be presented to the client without any physical interaction. The process of activities in this class is specified by the sampling used, which can then be developed on a wider scope. Therefore, this research shows the process of applying 3D software by students in creating digital fashion for their clients. It involves the use of digital prototyping to implement a zero-waste design process, which aligns with the sustainability approach.

1.2 The Embodiment of Digital Fashion

Digital fashion started with the introduction of the CAD system. Ontologically, science is based on facts and ratios. At the end of the twentieth century, Artificial Intelligence was adopted as a term in the sense of “specification of a conceptualization,” an ontology that states a set of primitive representations of knowledge domain models (Nasution, 1995). In Rationalism, reason is argued to be the source of truth, while empiricism believes that facts manifested through a series of human experiences are the source of truth. Meanwhile, science based on its object is divided into the first vertical (transcendental) objects related to the Creator, and the horizontal involving humans, animals, and others. The third engineered natural objects are man-made products. The oldest technology concept was originally man-made goods, and the next concept of understanding technology emerged, namely human activities that are efficient and have clear goals. Efficiency is a concept that shows a straight comparison of human work with its results, where human activities are carried out to solve problems, overcome difficulties, and meet needs. Furthermore, another concept states that technology is a collection of knowledge. According to Harvey Brooks (1980), the main task of technology for humans is to expand the world of practical possibilities, therefore, it has a role in enlarging and expanding human potential in fulfilling practical needs. Assuming science can translate its knowledge products into more advanced technology, then it will be very helpful in growth and development, including in the field of fashion. The assumption that technology changes the material world is not entirely true because it directly changes the realm of thought and response. Additionally, the material world is changed by producing objects, and the world of responses is altered by the results in the form of signs (Adib, 2010). When reviewed and viewed taxonomically, it can be seen from the following figure:

Figure 1 shows the branches of fashion taxonomy. It is consistent with the explanation given above showing that technology is a subset of the fashion taxonomy. Furthermore, it bridges the synergy between fashion and computer science, algorithms, as well as information systems. A branch known as CAD (Computer-Aided Design) has emerged, which is more centered on the diffusion between fashion and computers. It involves machines and supporting software without leaving a touch of design and fashion. Furthermore, when viewed through the Epistemology side, the development of design computer technology began when Howard Hughes designed a program that involved computer equipment, which was contained in a two-dimensional application. This led to the phenomenon of drawing (Design and Pattern making),



FASHION TAXONOMY

Fig. 1 Fashion taxonomy (generated by author)

cloth cutting, which is applied to the garment industry and is operated with digital media. According to Hermansyah (2018), Computer-Aided Design is a form of automation applied in product design to improve images, compose specifications, or combine various elements. This relates to the design process using certain graphic effects, algorithms, and calculations with computer programs. CAD (Computer-Aided Design) and CAM (Computer-Aided Manufacture) that are integrated with supporting software and the compactible production machine would be very effective and profitable for the Fashion Industry (Gondoputranto & Purnomo, 2020). Bryden (2014) stated that CAD is a series of processes using computers and special software to create a 3-dimensional model and a virtual 2-dimensional image of a product. Furthermore, CAD allows for a faster ideation process, producing a variety of alternatives, as well as accuracy when prototyping products. Kaystha and Sharan (2017) stated that CAD in the fashion field is a computer system used in design development, pattern making, and grading, as well as setting markers for pattern arrangement and efficiency. The design computer is a network of technological devices with high capabilities controlled by a designer who has the competence to support the process of creating fashion works. This smart technology will produce and display the designer's ideas in a practical and efficient way.

Digitalization is often associated with a dynamic process that represents reality because digital technology has the essence of mimesis. In this context, mimesis is not just an imitation but the formation of a figuration, configuration, and reconfiguration. This represents a human habit in the real world and then makes it happen in a meaningful form

(Romele, 2019). Also, the fashion world has a digitalization practice that connects virtual and digital with the real world. This is mediated in the contemporary dimension of virtual fashion (Crewe, 2017). The CAD system and the dynamics of digitalization have merged into what is currently known as the digital fashion phenomenon. Therefore, digital technology can present and interpret the world that is displayed in the form of digital impressions.

1.3 Digital Fashion—the Role of Fashion Designer and Their Relation with Clients

In the process of creating a dress, fashion designers have a vital role because they are involved in data collection, from ideation to production. This process involves decisions related to aesthetic factors and is associated with responsibilities related to sustainability. The responsibilities of a fashion designer are diverse and complex depending on the market level, the size of the business, the designer's personality, and other factors (Risannen, 2013). In carrying out the process, many designers use traditional methods, paper, and draped fabric on mannequins. However, now it has been perfected, or in some cases, designers have completely replaced the traditional process by using computer technology. Therefore, current designers should have a combination of aesthetics, technical skills, creativity, and sensitivity in their work (Särmäkari, 2021).

The industrial revolution and technological acceleration have brought significant advances in CAD technology. It has become a medium that represents realistic designs created by displaying through other supporting software (Easters, 2012). Fashion designers use the existing CAD applications to produce both 2D flat images and 3D designs. Also, with the current information technology, it is possible to communicate with various parties involved. This allows the designers to make changes and provide alternatives to silhouettes, material selection, trimmings, and other elements. These changes can be communicated to colleagues or clients. Furthermore, it is important to master business strategies with an understanding of “personal factors” and “personal interactions” with consumers (Jain et al., 2018). Hall (2022), through WGSN, stated that the macro fashion trends in 2024 are fluid states as well as democra-sized. In the fluid states, it is predicted that consumers will be closer to the virtual world, where they enter and exit without limits. Therefore, digital assets will become as important and valuable as physical products. In this condition, fashion brands and designers will have the opportunity to generate more interactions with clients that lead to collaboration and valuable long-term value for the sustainability of a fashion brand. Due to the increase in the synergistic community and network of digital fashion,

professional and material (physical) boundaries of designers have become fluid and blurred. This has transformed a new understanding of the figure of the fashion designer (Särmäkari, 2021). Furthermore, it is stated that fashion will prioritize democra-sizing with more emphasis on personalized elements and inclusive aspects of the design. Therefore, digital fashion is an inclusive medium for creating more personalized designs and accessories for the client. This is in line with Bertola and Teunissen (2018) that technological transformation through the fashion sector in the 4.0 era would bring a change in views regarding integration and approaches that show potential in terms of returning to design and the role of the client.

1.4 Digital Fashion for a More Sustainable Approach

In the pre-pandemic period, the process in the fashion industry was carried out by involving physical aspects, such as attendance at the textile trade and exhibition. The suppliers gathered by bringing samples to be shown to clients, while designers sourced to manufacturers. However, in the digital era, many parties already understand the implementation of technology and digitization in the value chain to be more adaptive and flexible. The challenges that fashion designers will face in the future will be more centered on the process and level of hybridization between the physical and digital worlds. The transformation of the design process in this fluid state can produce a process that is free of waste, environmentally friendly, and appropriate to the application of the sustainability principle (Galushko, 2021).

Digital prototyping allows designers to explore various possible design styles, create digital fashion collections, and see client reactions before making their products in physical versions as needed. This is because the virtual 3D simulation system can produce a prototyping process. Besides saving time and labor, it also produces efficiency and functional realism in the fashion simulation process by displaying realistic 3D digital results that resemble the physical prototype. Therefore, users can directly conduct evaluations and considerations through the displayed results (Choi, 2022; Porterfield & Lamar, 2017). Furthermore, they can sell the products in digital assets with the current development of the metaverse. There is a recent trend of increasing interest in Digital Collectibles in the form of NFT, which also provides opportunities to sell digital fashion assets and additional revenue opportunities for designers (Särmäkari, 2021).

In summary, it is said that digital fashion has helped designers save 3300 L of water for one shirt produced and reduced carbon emissions by up to 97% (Gonzalez, 2022). It is also stated that technology and digitalization lead to a

paradigm in fashion and economy, as well as provide solutions to brands in responding to challenges regarding sustainability issues (Lee et al., 2014).

2 Methodology

This research used an experimental process, where the format shows the existence of experimental designs, models, and prototypes until they become the final presentation (Koskinen et al., 2008). In its implementation, this method included major phases, namely:

- (1) Meet the clients with groups of fashion design students (fashion designers) using online platform, then the clients delivered the briefs;
- (2) each group of fashion designers then proceed to ideate and brainstorming the design concept based on the client briefs and research;
- (3) the digital 2D design process using CAD 2D Design softwares send the design alternatives to clients, and the client chose one design;
- (4) the digital prototyping process (communication between designers and clients); and
- (5) final design presentation and gain client feedbacks. The experimental process carried out in this class is to determine the vital role of the designers, as well as the client's participation in creation through digital prototyping. It also aims to observe whether the design process results accommodate the needs and desires of the client.

The qualitative method through interviews will be conducted throughout these process to gain the brief of the clients, the alteration processes, and finally the feedback from the final outcomes. The goal of the interview is to elicit individuals' perspectives, experiences, beliefs, and/or motives on specified topics (Gil et al., 2008). This will provide recommendations for the design process that involves computing the 3D software in creating Digital Fashion and Accessories through prototyping and observing whether this approach effectively supports sustainability.

2.1 Experimental Process of Digital Fashion Design Class

This research used an experimental process, where the format shows the existence of experimental designs, models, and prototypes until they become the final presentation (Koskinen et al., 2008). This research was conducted in a fashion design class with total of 10 students. The students were divided into 5 groups of 2 persons. Each group was paired with a client to produce a digital fashion and accessories set. Meanwhile, the client paired with a designer group was selected from different geographic, demographic, and behavioral segments. The needs of the selected client were identified through this segmentation (Niculescu,

2019). Subsequently, the identification results were synthesized briefly for the designers. This segmentation shows each client has varying differentiation, uniqueness, and style. Therefore, the personalization side of the experimental design process is shown at this stage.

Furthermore, the creation was carried out by combining digital 2D software such as Adobe Photoshop, Adobe Illustrator, Coreldraw, and others. The 2D design was then transformed into a 3D version using 3D Software. Optitex software was utilized in the creation of digital garments, and Rhinoceros 3D for the accessories. The result of the class was compiling digital clothing and accessories in the form of virtual displays designed according to the brief and characteristics of the client. This process is divided into 5 major phases. The following is a methodological overview of the digital fashion creation process used in this research:

As depicted in Fig. 2, the first phase was carried out by virtually bringing a fashion designer group with a client to produce a design brief. After the brief design has been obtained, each group begins to research designs, colors, and materials based on segmentation and client profiles, as well as the brief received. Furthermore, in the second phase, brainstorming and ideation were carried out from the research conducted in the previous phase. In the third phase, the designers began to abstract the results of their ideation in the form of clothes and accessories designs. The initial design process used a mix of several CAD 2D software such as Adobe Photoshop, Adobe Illustrator, Coreldraw, and others. Furthermore, several design options were given to the client in this phase. According to the diagram above, there can be repeated communication processes between the fashion designer and the client until a final design is chosen. The next step is where fashion designers start converting their selected designs into a 3D format. To make the clothes design in 3D, the designers used Optitex software to create a digital pattern, followed

by carrying out a simulation by attaching the created pattern to the virtual model, sewing digitally, then showing the finished design, which has become a 3D digital fashion form. The results are communicated to the client in this process, hence alterations to the clothes can be digitally carried out, such as changes to the sleeve length, skirt model, or the fabric material. It can be seen that digital prototyping is time saving because alterations can be conducted in real-time. In addition, this phase is vital in the implementation of zero-waste prototyping.

The designers also use Rhinoceros 3D software in the accessories design process in the form of 3D models. Therefore, the client can finally see a virtual simulation of the accessories design in 3D rendering model format. In this fourth phase, communication between the fashion designer and the client occurred repeatedly until the final design was obtained. Furthermore, each team will develop all the selected designs into a mini virtual display format containing the client's clothing sets and accessories. This is carried out for the client to get a virtual image of the product in an attractive form. Subsequently, each team will make a virtual presentation, and each client will be asked for feedback and responses from the final design results.

2.2 Experimental Process of Digital Fashion Design Class

Five designs are shown as samples from this experimental process of creating digital fashion. The first phase involved interaction between the designers and the client to produce a brief for follow up. Subsequently, the designers began to brainstorm, ideate, and create alternative designs using 2D CAD software. The alternative is sent to the client, and the selected design will be used for processing and transferred into a 3D form. Table 1 shows the design process of the two initial phases.

Fig. 2 Digital fashion design process in this methodology (generated by author)

Digital Fashion Design Process Fashion Designers - Clients

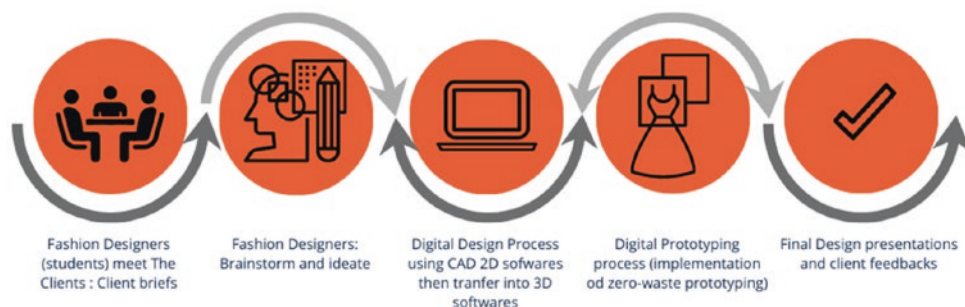


Table 1 Phase 1–2 in the process of creating digital fashion





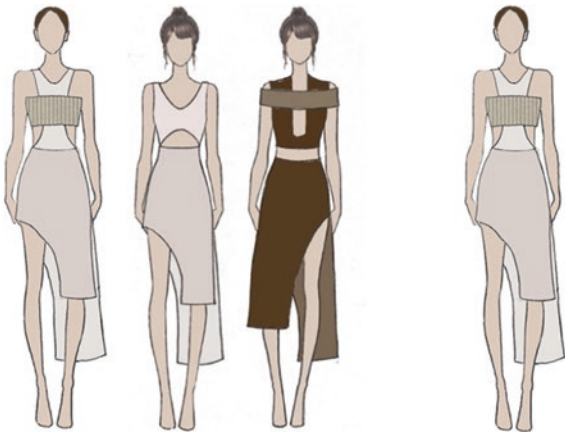

	Profile and segmentation	Client’s brief	Alternative design	Selected design	Companion accessories design
Client 1	15 years old, female, high school student, living in an urban area	Needs a party dress for 16th birthday with a feminine style and a touch of a fairytale feel			
Client 2	46 years old, female, housewife living in the rural area	Needs semi-formal clothes to wear at community gatherings			
Client 3	27 years old, female, single, interior designer, living in urban area	Wants a design with a rustic touch, natural color combination, with edgy cutting			

Fig. 3 Design for client 1

Fig. 4 Design for client 2

Fig. 5 Design for client 3

Table 1 (Continued)







	Profile and segmentation	Client's brief	Alternative design	Selected design	Companion accessories design
Client 4	26 years old, female, Chinese lineage, college student and content creator, living in urban area	Needs a stylish outfit which can be used while streaming, touch of oriental feel			
Client 5	21 years old, female, college student and fashion model, living in urban area	Wants a unique mix for a photoshoot, combining dark and contrasting bright colors			

Fig. 6 Design for client 4

Fig. 7 Design for client 5

Figures 3, 4, 5, 6, and 7 in the center rows show the alternative design made by the designer to be selected by the clients, while figures on the right rows are the companion accessories set design made to match for each clothes. After each client selected the design, the designers can proceed to the following steps.

The next stage is to create a design selected to be processed until the 3D version is obtained. During this process, designers combine their technical skills in operating the supporting software, namely Optitex, which is used to virtually create and process patterns. The designers are compelled to explore their creative ability in the process of design alteration, selection of colors, textures, types of fabrics, and the selection of details. During this stage, designers can use the material library provided by the software to experiment with different materials and textures to meet

the needs of the client. In addition the designers can also adding some custom textures, motifs, or any specific materials to be put into the material library. Also, realistic and detailed simulation results are applied at this stage for the client to see the real image. In addition, changes or alterations can be made until an agreement with the client is reached.

The process of making accessories also involves similar stages. However, the difference is that in the Rhinoceros 3D software, creating accessories is not carried out virtually by making patterns and sewing. It is carried out by making 3D modeling designs from approved accessories designs, selecting and processing selected materials, and adding details to achieve the desired look.

Table 2 is a digital prototyping process for clothes and accessories from 2 to 3D designs.

Table 2 Phases 3–5 on the digital fashion creation process

	Selected design	Digital prototyping process on clothes (optitex) and accessories with (rhinoceros 3D)	Final presentation set digital fashion (clothes and accessories) in the virtual display
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Client 1

Client Feedback:

Seeing my clothes and a virtual model is very interesting. The process is very interactive. When I see the design displayed virtually, I already know and imagine the materials and details used when the physical version is made.

Digital Prototyping Process

Fig. 8 Digital prototyping process for client 1

Table 2 (Continued)



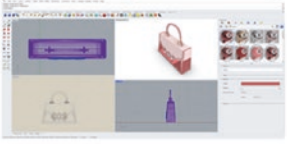

	Selected design	Digital prototyping process on clothes (optitex) and accessories with (rhinoceros 3D)	Final presentation set digital fashion (clothes and accessories) in the virtual display
Client 2		 <p>Digital Prototyping Process</p> 	 <p>Client Feedback :</p> <p><i>There was a miscommunication problem at the beginning regarding differences of opinion and perception on this technology. However, after seeing the results, I can understand that without the need to make a physical sample, it is possible to see and imagine the final result I will get if I make a physical version of this design one day.</i></p>

Fig. 9 Digital prototyping process for client 2

Table 2 (Continued)

	Selected design	Digital prototyping process on clothes (optitex) and accessories with (rhinoceros 3D)	Final presentation set digital fashion (clothes and accessories) in the virtual display
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Client 3



Digital Prototyping Process



Client Feedback :

Designers can adapt well to the brief given. The wood nuances displayed are very suitable with the criteria I proposed. I enjoy seeing the digital simulation process displayed through this technology.

Fig. 10 Digital prototyping process for client 3

Table 2 (Continued)

	Selected design	Digital prototyping process on clothes (optitex) and accessories with (rhinoceros 3D)	Final presentation set digital fashion (clothes and accessories) in the virtual display
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Client 4

Digital Prototyping Process

Client Feedback:

I can imagine wearing those clothes and accessories when I create content. The final design is completely in line with the brief, and to my liking, a touch of ornamental style is still visible but still looks modern. This process will be very efficient, and if an NFT version is made, I will buy it and apply it to my avatar.

Fig. 11 Digital prototyping process for client 4

Table 2 (Continued)


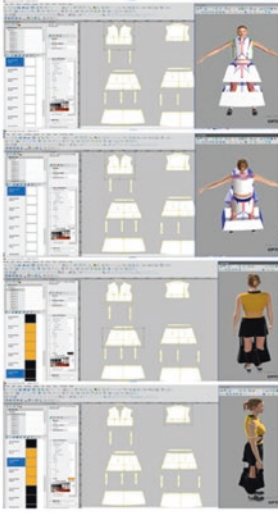


	Selected design	Digital prototyping process on clothes (optitex) and accessories with (rhinoceros 3D)	Final presentation set digital fashion (clothes and accessories) in the virtual display
Client 5		 <p style="text-align: center;">Digital Prototyping Process</p> 	 <p>Client Feedback:</p> <p><i>The results are amazing. I will soon make a physical version of this digital fashion. I enjoy the fast alteration process, providing a variety of alternative alterations, and carrying out it in real-time with the designer, which is difficult to do without the application of this technology.</i></p>

Fig. 12 Digital prototyping process for client 5

Before making a presentation, designers are asked to prepare a virtual display to give the maximum appearance. The design of the virtual display is the result of the designers' creativity that is tailored to the set of clothes and accessories, considering the style and characteristics of each client. Hence, it adds to the virtual fashion experiences (Petreca, 2017). According to Figs. 8, 9, 10, 11, and 12 in the center rows, it shows the process of digital prototyping generated with the 3D software models. While on the right rows of the Figs. 8, 9, 10, 11, and 12 show the final virtual display presented to the clients, and below them are the statements and reviews of the client's feedback.

The process of applying this digital fashion can be used as an inclusive technique to accommodate the needs of clients and show the significance of designers in creating a digital artifact. In addition, the effectiveness of digital prototyping has a positive influence such as time efficiency, and also proves that there are steps to create a more sustainable fashion design.

Based on the experimental process below, there are some recommendations that can be applied for further researchers and designers. For instance, as by combining 2D and 3D digital design softwares, designers can have the unlimited possibilities to easily alter the design based on client's requests. The design can be "virtually manifested" and the result of the 3D high quality rendering can show the detailed materials and the specific detail from each design. It assists the client in visualizing the outcome of the design. The use and addition of the software's material libraries can encourage designers to offer more options and variations of clothing detailing. While implementing these processes, some dynamic interaction between designers and clients occurs. As a result, the exploration of these changes may match to the diverse expressive needs of each client. This study also suggests that adopting the digital prototyping process to decrease physical waste is effective. It is critical for designers to get realistic results and details so that clients can envision the end result without

physical prototyping. These steps can be used to describe the effectiveness of digital prototyping in achieving zero-waste practices. Finally, by following these processes, the designer will be able to create Digital Fashion assets, as well as actual clothing if necessary. The digital assets can be sold into the metaverse or into the digital fashion marketplace that nowadays became more and more popular. The designer should also explore becoming a digital fashion creator because their design can be recognized and monetized in the digital fashion sector.

3 Conclusion

Digital fashion provides a more structured and efficient design process. Furthermore, prototyping has a significant impact on sustainable steps because the design process can be carried out without producing waste (zero-waste). The results of the experimental process of making digital designs allow fashion designers to be creative because of the ease in making alterations that can be carried out through the 3D software feature. In addition, the time for physically meeting clients can be minimized through online communication. It also reduces the frequency of designer mobility, which is usually carried out by physical transportation and produces fuel consumption.

The ability of 3D software, both for the process of designing clothes and accessories, has features that allow high quality and realistic rendering results. The rendering display makes it easier for clients to see an image of the final result that resembles the product's appearance when physically produced. The implementation of the methodological process carried out in this research resulted in recommendations for design practice steps by utilizing 3D technology as an inclusive medium to provide personal designs appropriate to client needs.

The clients can see the designs they want through a virtual display. Due to the technological gap, only one client with an age level above 40 years has a little difficulty during the online communication process. However, with this 3D software, they clearly see the finished image of their clothes and accessories. Usually, in the traditional fashion design process, they only get the image when they see the physically generated samples which often produces much waste. The results showed the experimental design process recommendations have a positive impact on using CAD 2D and 3D software to produce a series of digital fashion and accessories that are more personal and meet client needs. This practice makes the role of fashion designers to be more exploratory, creative, and in line with the client's desires. This proves that the practice can positively contribute to supporting the sustainability movement through digital prototyping and zero-waste fashion in education.

As a result there are some recommendations from the design process like how designers can have endless possibilities by integrating 2D and 3D digital design softwares, allowing them to effortlessly adjust the design based on client needs. The recommendation also stated that it is important to "virtually manifested" the design output into the 3D high-definition rendering in order to demonstrate the detailed materials and individual details from each design. The designers are encouraged to produce digital fashion assets because the digital assets can be sold in the metaverse or in the increasingly popular digital fashion marketplace. The designer should also consider becoming a digital fashion creator because their design can be acknowledged and monetized in the digital fashion business. These recommendations will add up advantages for the designers to gain more knowledge and understanding that the implementation of using 2D and 3D softwares in their design process can lead to the zero-waste prototyping.

The fashion industry increasingly believes that through a digital approach, clothing can be marketed to places that are still difficult to reach without consuming existing natural resources. The 3D CAD design technology helps designers to focus on the client's personal needs without producing waste and this research is expected to be one of the educational recommendations that enrich the application of digital prototyping and personal clients in creating fashion and accessories, as well as related to sustainability practices.

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Explorations of Multi-dimensional Advocacy Through Media and Design



Impactful Storytelling and Social Advocacy in Documentary Filmmaking: Studies of Documentary Impact Methods

Ellen Agustine Saputra

Abstract

Impactful documentaries often provide ideas, inform messages, and inspire positive actions among society. These documentaries aim to persuade society in support of a social issue that is raised by many non-profit organizations to compel social change. Comparative research is used to decipher the similarities and differences between two methods, which are documentary impact methods that are researched by HotDocs and Center for Media and Social Impact (CMSI) of American University. The data collection technique uses observation, literature study, focus group discussion which are carried out both online and offline. The results in this study showed that both advocacy documentary approaches are driven by impact campaigns, especially using websites to evaluate its impact. CMSI methods appeared to be different in terms of impact categories, CMSI methods focused on capturing a spectrum of impact from individual to public interest to institutional impacts. Also, CMSI provides comprehensive assessments with specific rubrics. That brings consequences which will take a longer process of research, documentary production and impact evaluation. To conclude, both use mixed methods and have its own capacities to allow growth and impacts. This comparison will bring a level of awareness for Asian filmmakers especially who closely work with non-profit organizations to create stories based on impact values thus documentary storytelling has possibilities to change certain attitudes and behaviors among society.

Keywords

Documentary for impact · Impact methods · CMSI method · HotDocs method

1 Introduction

In *The Power of Film to Inspire Social Change* seminar, Taherzadeh (2020) stated that a film has power to bring social change. Taherzadeh created a documentary film *Mercy's Blessing* as a media advocacy to lessen injustice in particular toward women in South Africa. That film was an experience observed in Malawi, the hometown of May Taherzadeh. Women did not have equal rights with men, in that film it was told that Blessing got a chance to go to school, not because Blessing was an elder sibling and more intelligent, but because Blessing was a boy. That film won 12 international accolades and got recognition from all around the world, specifically the *Mercy's Blessing* inspired the Brazilian government to reduce the dropout rate, and inspired 450 Malawian women to remain going to school and achieving their dreams. When a film is presented in a communicative way and emotionally relevant in the midst of the society, it will become a tool for provoking people's mind, reflecting what they get after watching the film, and opening a room for discussing various topics. A film can be a tool for changing a closed individual's heart, mind, and desire to be more open (Scharmer, 2007). And when the individual's heart, mind, and desire are open, the new idea, perspective, and thing can happen. That openness will trigger an action and bring change for both oneself and others.

Non-profit organizations, government, and private organizations have long-term purposes of encouraging social change in the midst of society. As having been stated by Dunfey (2019), sociologists defined social change as the change of interaction between people which can transform socio-cultural culture. A change is a constant thing, so humans must understand its capabilities and abilities in influencing social change into a better way. Self-change is a complex thing, even more collective change or social change. The rationale of social change is not thinking conventionally, but thinking systematically. Stroh (2015) stated that thinking systematically will encourage the process of

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change because through that way of thinking, society can be influenced in terms of behavior, emotionally, and spiritual. The discussed aspect is not only behavior aspect, but also the whole aspect in the life of society so that social change happens continuously. Thinking linearly or thinking conventionally is no longer the solutions for problematic things, for instance for overcoming poverty problem happening in Indonesia is not only providing social relief and groceries. As an agent of change, the problem identification should be done systematically so that it can make a long-term impact. *System thinking* is a framework introduced by Peter Senge in his book *The Fifth Discipline*, that book discussed how to create an organization that keeps learning. Collectively, change can be started with sharing the similarities of aspiration, that are usually expressed through vision, mission, and life values. Society should build an aspiration aligned with the faced reality. That alignment is known as *creative tension* (Stroh, 2015). The use of documentary film by private organizations, government, and non-profit organizations has often been used because this media is deemed useful in reaching society awareness and persuading society to pay attention in certain issues (Tumas, 2017). In the context of documentary film, this media becomes one of the effective strategies through approaches: story elements, outreach program, impacts, and society's involvement in becoming change agent.

1.1 Storytelling

The narrative aspects in film storytelling become essential things in communicating the messages. Documentary film is a reality recording expressed in moving recording. Documentary film has subjective perspective due to the filmmaker's interpretation in describing reality which is then expressed in narrative frame (Hasan, 2020). Documentary as a medium for storytelling has two approaches: creative representation and social representation. As discussed in his book *Documentary Storytelling: Making Stronger and More Dramatic Non-Fiction Films*, Bernard (2007) explained that documentary film originally had unique narrative structure, characters, perspective, and storytelling. Seeing the development of documentary film types in market, the combination of strong narration and character attitude, the filmmaker will support the good documentary storytelling style (Bernard, 2007). Creative representation will form documentary into an aesthetic product which is not only accepted contextually, but also encourages audiences to empathize with and be emotional with its story so that they then feel incredible watching experience. Social representation describes the functions of documentary film in telling the facts of which truths can be claimed (Borum

Chattoo & Feldman, 2017). Eitzen quoted Brody (2018), explaining that fundamentally the function of documentary is telling the facts, so that the obligation of a documentary filmmaker is not making merely an entertaining film, but also respecting reality and being objective in expressing that reality. The popularity of *The Jinx* (2015) and contemporary documentary films lied on the audience response toward a discovery. Whether the discovery is emphasized on dramatization, music, or *storytelling* technique aspects, documentary film still has to give *engagement* with the audiences, not only provides absolute facts. Documentary is not journalism but has journalism aspects in documentary film. Practically, the making of documentary should pay attention to the principles of journalism. Wright (2009) explained that documentary has a purpose of providing facts accurately. Although in terms of storytelling methods, documentary has certain perspectives. The similarity of documentary and journalism is in the process: in which the fact-telling essence is looking for and digging new knowledge (Eitzen, 2018). According to Falcon (2019), documentary film represents social issues in the midst of community life. *Super Size Me* (2004) film changed the community talk about *junk food*, whereas *Inconvenient Truth* (2006) changed the community talk about climate change. The documentary film production is a *storytelling* process, bringing certain perspectives with certain goals (Falcon, 2019).

1.2 Outreach Program

In accordance with filmmaking, after the documentary film has been produced, it will immediately be distributed. The film distribution mechanism evolves from time to time, in particular the current era of information technology. The development of technology encourages contemporary filmmakers to distribute digitally, in which this digital distribution is specifically aimed to be distributed online to virtual audiences (Ryan & Hearn, 2010). Digital distribution spreads because filmmakers do not have limits in reaching their audiences and can spread the given contents to the general public. Furthermore, last year's pandemic served audiences to access many films easily through OTT (Over-The-Top) *media service* or content provider service which can be accessed with internet (Meidiksa, 2022).

1.3 Documentary Impact

In the context of documentary films created to encourage social change, the definition of impact according to *Deepening Engagement: A Framework for Measuring Media Performance and Results* is explained below:

We define impact as change that happens to individuals, groups, organizations, systems, and social or physical conditions. Typically, long-term and affected by many variables, impact represents the ultimate purpose of community-focused media efforts—it's how the world is different as a result of our work.

Therefore, the change context is meant especially for documentary storytelling and outreach program campaign intended to encourage social change, happening in both micro scales that are individuals and macro scales that are cultural and normative changes. This impact cannot be removed from measurement or assessment context (Napoli, 2014). The difference between *outcome* and *impact* lies on the duration of the effect given to the audiences, in which *outcome* only gives short-term influence, whereas *impact* gives long-term influence. This short-term influence simply attracts audiences, provides information, and offers invitation to the audiences. On the other hand, long-term influence gives larger influences, starting from the behavioral change of audiences or the change of public policy. It is according to Fig. 1 that is described in *Impact Playbook* (Pule et al., 2021):

According to (Whiteman, 2004), *coalition model* can be an accurate measuring instrument for assessing and evaluating the impacts of a film. The offered model (1) sees film as a product of which processes are considered starting from production to distribution; (2) macro and collective impacts from the audiences that are for producers, participants, activists, organizations, and decision makers; and (3) ensures that film has a purpose of creating social change and planned activities. This *coalition model* avoids traditional assessment model which only focuses on assessing a film as final product. The assessment methodologies involve interview process, observation toward participants, and content analysis (Whiteman, 2004). Similar *framework* was developed by Diesner and colleagues which is called CoMTI (*content, medium, target, and impact*) method (Napoli, 2014). The approach of its assessment sees documentary film as two-way communicative media, not only a film which brings messages to audiences. This two-way communicative media means there is interaction and involvement between the two. The needed data analysis uses *social network analysis* and *natural language processing* (NLP) *analysis* approaches especially toward Twitter and Facebook. Besides, *The Harmony Institute* creates several other methods for analyzing the impacts of

film, television program, or media contents. Data analysis methods include press coverage content analysis, directed discussion with audiences, online survey, and in-depth discussion with experts. The behavioral change of an individual can be measured through *online analytics* and *social media analysis*, as having been done by The Harmony Institute in the direction of its assessment toward MTV (*Dis*)*Connected* film (Napoli, 2014).

1.4 Engagement and Advocacy Practice

Documentary observers, practitioners, and academics are convinced that documentary can encourage social change according to the missions from the majority of non-profit organizations. Grierson's definitions of the emerging documentary and social theories ultimately form the interactive method of film storytelling as advocacy practice. Documentary film telling about human stories with its social complexity makes documentary functions capable of involving many people in actively participating in becoming better citizens. (Lay, 2015) Patricia Aufderheide, the director of *Center for Social Media* at American University, analyzed strategical steps and methods in doing *engagement* and *advocacy practice*. Several parties involved in the first place together with non-profit organizations and filmmakers in formulating social change practice are *engagement strategist*, *impact producer*, or *media producer*. Collaborative efforts done together in the beginning will determine the direction of motion and define clearer goals at post-production phase particularly at film distribution (Hepler, 2012).

In the research of Borum Chattoo and Feldman (2017), two documentary films about global poverty succeeded in influencing audiences, bringing around society, and making knowledge and real actions to help the poor economically grow. *Stand Up Planet*, a documentary film focusing on advocacy regarding health and sanitary issues in India and HIV in South Africa, was compared to documentary film *The End Game*, which told about malaria disease in Tanzania. The result was that both films produced really satisfying public engagement. The approach of *Stand Up Planet* was dominating because the advocacy approach used in the documentary film storytelling used comedy genre so it produced positive emotions and larger effects toward the audiences (Borum Chattoo & Feldman, 2017). Digital



Fig. 1 Spectrum of outcomes versus impact. *Note* This model was adopted from Pule et al. in 2021. From “*Creative Entrepreneurs Impact Playbook*,” by Pule et al.

strategies used in the *Stand Up Planet* for doing advocacy were the usage of several various digital media like website; social media accounts like Facebook, Twitter; downloadable infographic; *Stand Up Planet* interactive project maps both in India and South Africa; videos and other media which can be found online (Borum Chattoo, 2014).

2 Research Method

This research used qualitative research method with data analysis method using comparative approach. This approach was used to compare and assess the similarities and differences between the two documentary impact methods suitable for the design of a documentary film. According to Sumartono (2017), comparative research is divided into three types, that are: (1) symmetrical comparative research; (2) asymmetrical comparative research; and (3) triangle comparative research. In this research, the used comparative approach was symmetrical comparative research. In that analysis process, each of the two *documentary impact* method subjects has been completely discussed so that they can be compared. The discussion of each method will refer to the observation results, literature studies, and directed discussion both online and offline.

3 Results and Discussions

3.1 Methods Developed by HotDocs, the Harmony Institute, and Story Matters

In 2014, in *People Change the World* session, *HotDocs* published a study supported and funded by Inspirit and Panico Foundation. That research was in 28 pdf pages which can be accessed by everyone in the *HotDocs* website pages. As the organizer of the largest documentary film festival in the world, *HotDocs* became a pioneer in global discussion about the functions of documentary in bringing social impact in the midst of society, particularly because this research was developed together with *The Harmony Institute* and *Story Matters*. In the research titled *Documentary Impact: Social Change Through Storytelling*, this research discussed 5 documentary film case studies from Canada and United States which successfully created social change: starting from documentary films *Bully*, *Tales from the Organ Trade*, *Herman's House*, *The Invisible War*, and *How to Survive a Plague*. The benchmark of the social change discussed in those documentary films had several indicators: (1) the change of audiences' behavior; (2) the change of the audiences' outlook and value; and (3) the change of policy in institution, organization, and government arrangement. This researched aimed to: (1) understand

the dimension of change which can be created through documentary film media; (2) describe the factors of determinant of success of documentary film media which had social impact; (3) know how to measure *media impact*, particularly *documentary impact*, and (4) promote 5 documentary film case studies which had been successful with the description of film goals, strategies, and achievement. The depiction of the dimension of impacts is visualized through Fig. 2.

Social impacts and change are divided into two types: (1) *Bottom Up* and (2) *Top Down*. The change types are described from social authority structure and level. In that *bottom-up* change includes *public awareness* and *public engagement*, whereas *top-down* change includes political change or public policy involving authorized parties.

3.2 Method Developed by Center for Media and Social Impact

In 2014, in the same year, *Center for Media and Social Impact* from Communication Faculty, American University published its research titled *Assessing the Social Impact of Issues-Focused Documentaries: Research Methods and Future Considerations*. The result of the research was in 26 pages pdf fully discussing change ecosystem in media field and how to define social impact in *storytelling* context. This research was aimed for being one of the mapping tools in the scope of the measurement of strategical success and impact evaluation provided by a documentary film which particularly discusses social issues. There were several indicators used for measuring the strategical success and evaluation of *documentary impact*: (1) the change of an individual's behavior; (2) the change of public policy and (3) institutional change. Four main assessment points were measured from: (1) *digital and media coverage metrics*; (2) *audience impact*; (3) *content and cultural impact*; and (4) *institutional impact*. Analyzing the aforementioned four aspects, the assessment of the impacts becomes more comprehensive and has various impact perspectives and depths as seen in Fig. 3.

3.3 The Similarities and Differences of the Methods

After both methods had been described in detail and discussed through in-depth interview and directed discussion with some experts, the similarities and differences offered by the two methods about *documentary impact* achievement on documentary film design with the purpose of encouraging social change can be concluded. Here is the (Table 1) for describing the similarities and differences between the two methods:

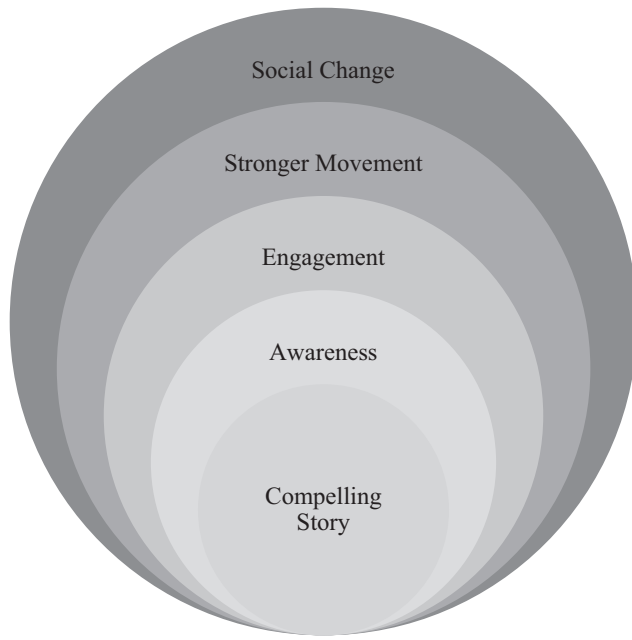


Fig. 2 Dimension of documentary film impacts. *Note* This model was produced by HotDocs in 2014, summarizing the dimension of documentary film impacts. From “Documentary Impact: Social Change Through Storytelling,” by HotDocs

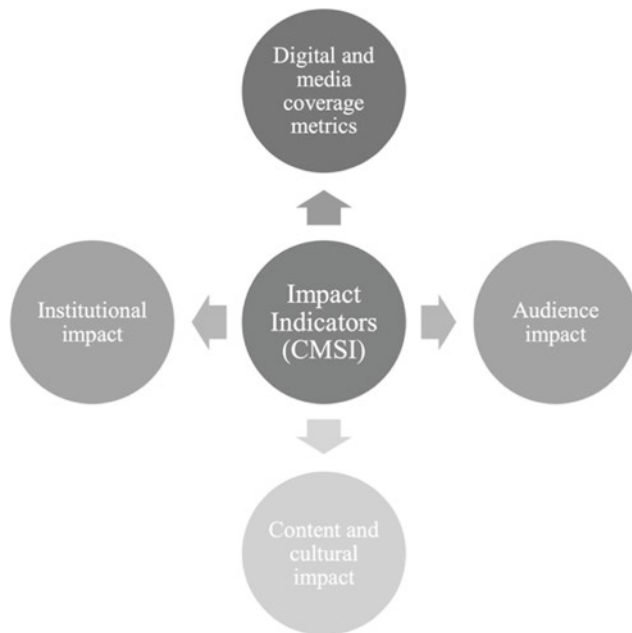


Fig. 3 Impact indicators by center for media and social impact. *Note* This model was produced by CMSI in 2014, summarizing the impact indicators. From “Assessing the Social Impact of Issues-Focused Documentaries: Research Methods and Future Considerations,” by CMSI

Both methods emphasize on scientific research approaches with the methods which have been used often in various discipline. The processes passed by these two

methods are according to activity model *roadmap* chart done in arranging *documentary impact*. It is described by Pule (2021) as shown in Fig. 4.

Methods developed by both *HotDocs* and *Center for Media and Social Impact* are based on the *roadmap* in which the research processes have been initiated from the beginning of *inputs* phase until the last phase that is *impacts*. The two have approaches in team establishment and cooperation with the thirds part as parts of social change strategies particularly done in the first phase. Some forms of data digging in each phase can be seen in these steps:

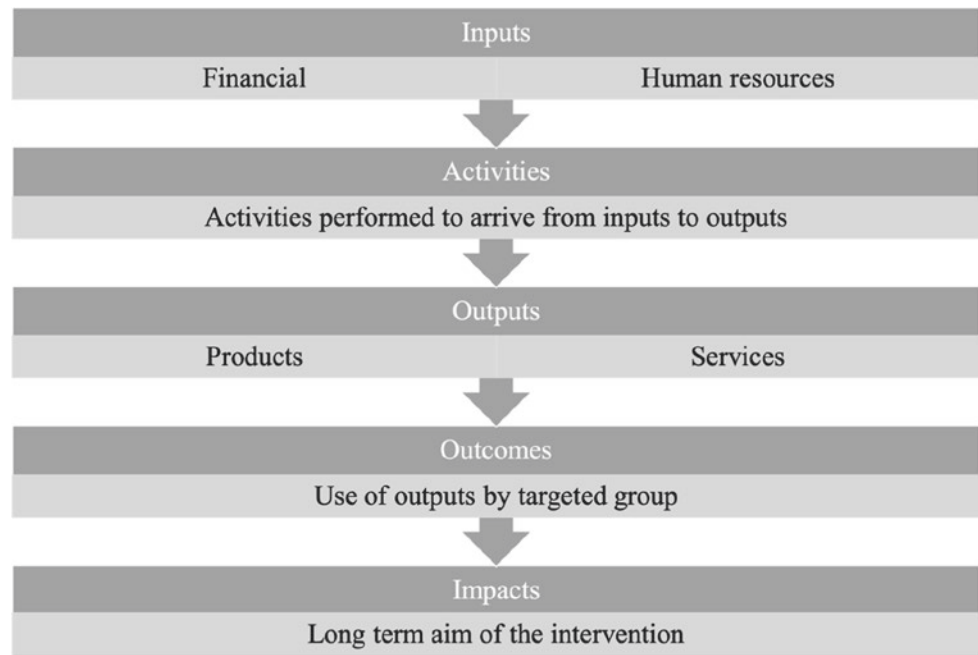
- *Inputs*, the phase of data source gathering used in the main activity, in which the main activity refers to activities such as *screening* or *online campaign*. The phase in which strategy forming is done with *impact strategists*, or *expert* in marketing and social change fields.
- *Activities*, the data phase pulled from its main sources. By emphasizing on the main points in defining who the audiences watching documentary films are. In this phase, *timeline* has to be owned as the form of outreach program and is made in time duration of each year, not only each month. It is because the focus on film distribution does not stop with doing screening, *theatrical*, or *festival release*, but on the final result of social impact through the change of an individual or public policy.
- *Outputs*, the result which can be immediately felt while film and program *campaign* are being carried out.
- *Outcome*, short-term impact of a designed program usually happens a year after the film has been released.
- *Impact*, long-term impact of a designed program usually happens 2–3 years after the film has been released.

Methods developed by *HotDocs*, *The Harmony Institute*, and *Story Matters* are initiated first and based on some theories and interdisciplinary methodologies. On the other hand, *Center for Media and Social Impact* methods have more expanding essence and are based on the research initiated by *The Harmony Institute*. *Center for Media and Social Impact* method provides detailed explanation and applicative rubric so that not only organization scale can use it, even amateur filmmakers who will design their films can refer to this method. As for the rubric developed by *The Harmony Institute*, it is also published in several other researches, in which the last research discusses the successful documentary films case studies more. However, the owned rubric refers to the *website metrics* evaluation so it is not that easy to be used by amateur filmmakers, without the help from professional parties in research and analytical fields. In a used case study, *HotDocs* evaluated 5 films: *Bully*, *Tales from the Organ Trade*, *Herman’s House*, *The*

Table 1 Method comparison

Variable	HotDocs, the harmony, and story matters method	Center for media and social impact method
Quantitative research approach	<p>Quantitative approach was done with this way:</p> <ul style="list-style-type: none"> • Hi Score Matrix, the data was taken from Twitter, Google search, or the search of the latest articles and news 	<p>Quantitative approach was done with this way:</p> <ul style="list-style-type: none"> • Web Matrix, <i>digital metrics tracking</i> • Audience survey with web application and the usage of specific measurement test that is <i>The Participant Index (TPI)</i> • Content analysis and <i>network mapping</i> methodologies • Laboratory experiment
Qualitative research approach	<p>Qualitative approach was done with this way:</p> <ul style="list-style-type: none"> • Q methodology, in which for gaining data, the audiences were asked to agree or not and then give comments about what have been watched • Case studies 	<p>Qualitative approach was done with this way:</p> <ul style="list-style-type: none"> • Ethnography • Case studies • Interview and directed discussion • Audiences and participants observation
Assessment criteria	<p>Standardized based on passive and active interaction spectrum on audiences:</p> <ul style="list-style-type: none"> • Experience indicator (assessed from <i>website views</i>, <i>Twitter followers</i>, the number of <i>likes</i> on Facebook, and <i>screening attendance</i>) • Sharing indicator (comments, rating, petition signature, website registration number, forum or blogpost, share, and mention) • Participation indicator (<i>user-generated content</i>, event participation or relative invitation activity) • Action indicator (donation, becoming a volunteer, organizing an event) 	<p>Not standardized, determined based on wanted characteristics and objectives. For example, the measurement of the impact of <i>The Inconvenient Truth</i>, utilizing carbon satisfaction data for reviewing environmental care attitude and continuous development (Hirsch, 2007)</p>
Assessment Focus	<ul style="list-style-type: none"> • <i>Reach</i> • <i>Engagement</i> • <i>Influence</i> 	<ul style="list-style-type: none"> • <i>Digital and media coverage metrics</i> • <i>Audience impact</i> • <i>Content and cultural impact</i> • <i>Institutional impact</i>
Assessment measuring instrument	<p>Assessment measuring instrument specifically developed by the third party, or a research agency such as <i>The Harmony Institute</i> itself. Website is the main platform used for looking for data</p>	<p>Some used assessment measuring instruments vary both free and paid. Some examples are:</p> <ul style="list-style-type: none"> • Harvis (<i>mobile</i> application which takes <i>real time</i> data about actively participating audiences, starting from the data of demographics, comments, emotional or motivational responses) • Media Cloud (<i>web-based</i> application designed for analyzing online data related to the latest articles and news) • OVEE (<i>platform</i> for watching videos and evaluating watching experiences at audience <i>screening</i> can interact with chat features, polling, <i>emoticator</i>, and social media pages) • And many others

Fig. 4 Roadmap of impact-based work design. *Note* This model was adopted from Pule et al. in 2021. From “*Creative Entrepreneurs Impact Playbook*,” by Pule et al.



Invisible War, and *How to Survive a Plague*. Meanwhile, *Center for Media and Social Impact* had 6 films to be evaluated: *A Lion in the House*, *The Line*, *Lioness*, *Not in Our Town*, *Out in the Silence*, and *State of Fear*. Both methods conducted case studies based on documentary films which had outreach program with pretty long duration and were proven to have impact and encourage social change in the midst of society. Some approaches that can at last be concluded to bring social change are these factors (Clark and Abrash, 2011):

- The number and variety of new audiences watching the films.
- The number of the film selling.
- The increasing provided investment.
- Films and the attached social issues as new subjects of conversation both *online* and *offline*.
- The presence of discussion and reframing regarding social issues, talked about through both mass media and other public media.
- The presence of various activities after the films have been released for public, such as event, training, or the change of individual scale activities.
- The presence of creative initiative which encourages the forming of community building.
- The discussion macro scale social issues in higher institute and organization level.
- The change of public policy.
- The action stimulation regarding the social issues.
- The new relation among ethnics, classes, and groups with different religions and beliefs.

Social issue documentary films become advocacy media in organizing, encouraging collaboration, and creating information sharing culture. *Out of Town* film became a change agent in the community where it was shown, which initially occurred in small scale regionally, and now became national movement. Meanwhile, *Lioness* film was adopted as a theory for military health agency and advocacy of women fighting in the battlefield (Borum Chattoo & Das, 2014). On the other hand, *Bully* film gained media attention and petition ultimately supported by thousands of youngsters. Ranging from children to teachers watching it together. That film was successfully chosen as the official program at thousands of middle schools in Ontario. These online film audiences also became change agents and *Bully* film campaign advocates spreading even more in America continent. As for the other film, *Tales from the Organ Trade*, succeeded in forming coalition with many organizations to extend the duration of its campaign. Aside from becoming the talking point in the highest international and government conferences, this film encourages the change public policy in terms of medical thing (*Documentary Impact: Social Change Through Storytelling*, 2014).

After learning the similarities and differences that are illustrated in Fig. 5, several interesting things emphasized by these two approaches are found: (1) there is a strategic campaign planning with clear audience goal and target; (2) *storytelling* in a documentary film becomes a driver of social issues talking together with public, *storytelling* becomes a room of each individual interaction; (3) the biggest challenges faced when a film is designed to have



Fig. 5 Contribution factors of documentary impacts. *Note* This model was produced by comparing CMSI and HotDocs methods, summarizing the similarities and differences. From “Documentary Impact: Social Change Through Storytelling,” by HotDocs and “Assessing the Social Impact of Issues-Focused Documentaries: Research Methods and Future Considerations,” by CMSI

documentary impact are the film capacity as a *sustainable* product and huge funding; (4) the definition of *impact* measurement particularly in social change scope not only focuses on the final result of *metrics*, but also the depth of target audience interaction and activeness in behavioral change; and (5) the development of media and technology will always move so how the film is shown and distributed should pay attention to audiences’ behaviors.

4 Conclusion

The obtained result from this research is that the two advocacy approaches are followed by *campaign* activities and at least have various media such as website as a medium for evaluating the impact of a documentary film which has been made. Furthermore, the evaluation focuses on *media impact* in which the process is done by appealing to data internet, using algorithm, and utilizing various existing platforms both free and paid. There are significant differences between methods developed by *Center for Media and Social Impact*, in which *Center for Media and Social Impact* method provides the evaluation of more comprehensive impacts from audiences, contents, and institutions. *Center for Media and Social Impact* is complemented with applicative rubric so the process is longer compared to the methods developed by *HotDocs*. It can be concluded that both methods use *mixed methods* which have their own strengths in their applications for program campaign and *documentary impact*.

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The Shifting Paradigm of Visual Communication Design Profession

Christian Anggrianto

Abstract

The disruption of the COVID-19 pandemic and the progression of technology have changed how humans respond to their daily lives, habits, needs, and living standards. Technology has presented new approaches to simplify human life; everything that was analog has turned digital with the help of automation and artificial intelligence through developed hardware and software. The change also happens in the creative industry, where new media emerge, such as computer-aided design, and the need for different design approaches and strategies is needed to become more relatable to the current target market. The researchers utilized focus group discussions as a data collection method in this research to gain a better understanding of the changes. The Indonesian Visual Communication Designer Professionals Association (AIDIA) is the representative of the designers' perspective, The Association of Indonesian Visual Communication Design Study Programs (ASPRODKVI) is the representative of the design education perspective, Lia Sidik and Associate and Apple Developer Academy (ADA) as the representatives of industries involved in technology development are some of the stakeholders invited to take part in the FGD. The researchers use thematic analysis of the data acquired from the FGD to establish the paradigm shifts in visual communication design as a component of the creative industry and to determine the necessary actions that educational institutions must take to prepare their graduates for the new era of the creative industry.

Keywords

Creative industry · Visual communication design · Disruption · Technology progression · Design education · Design industry

List of Abbreviations

ADA	Apple Developer Academy
AI	Artificial Intelligent
AIDIA	The Indonesian Visual Communication Designer Professionals Association
ASPRODKVI	The Association of Indonesian Visual Communication Design Study Programs
ATM	Observe, Imitate, Modify
CFR	Case Fatality Rate
Covid-19	Coronavirus disease
FGD	Focus Group Discussion
HIV	Human Immunodeficiency Virus
IoT	Internet of Things
IT	Information Technology
MERS	Middle Eastern Respiratory Syndrome
UI	User Interface
UX	User Experience
WFH	Work From Home
WHO	World Health Organization
SARS	Severe Acute Respiratory Syndrome
SARS COV2	Coronavirus Disease
VCD	Visual Communication Design

1 Introduction

A wide range of areas of human life, including daily routines, habits, wants, and living conditions, have undergone dramatic changes due to the COVID-19 epidemic and the rapid growth of technology. The field of visual

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communication design has been notably affected by this paradigm shift, which has changed how designers connect with their target audience and prompted the development of new ideas and strategies to stay relevant in the digital age. In this study, we examine how the field of visual communication design is evolving and what changes in design education are required to educate incoming graduates about the changing needs of the creative business.

The rising use of automation and artificial intelligence has altered how humans engage with the world. Analog processes have given way to digital platforms, and design tools have become increasingly sophisticated through the development of cutting-edge hardware and software; therefore, visual communication designers must navigate this new terrain by incorporating computer-aided design and other emerging media into their practice, allowing them to effectively connect with their target market in the contemporary context, for example, it has led to a greater demand for designers with skills in digital media and user experience (UX) design. Second, it has emphasized the importance of collaboration between designers, developers, and other stakeholders. Third, it has required designers to become more adept at using data and analytics to inform their work.

In order to prepare for the future of visual communication design, educational institutions must adapt their curriculum to reflect the changing needs of the profession; this means incorporating more courses on digital media, UX design, and data analytics. It also means providing students with opportunities to collaborate with other disciplines and to gain real-world experience through internships and projects.

The first section of the article will cover the historical growth of visual communication design, the acknowledged paradigm shifts, and the influence of digital technology on the field. The following section of the essay will cover the knowledge and abilities crucial for visual communicators in the digital era. The paper's final section will cover the impacts of the changing paradigm on educational institutions. In the end, this research contributes to the provision of recommendations for design education to a deeper understanding of the changing role of professionals in visual communication design. It offers insights that will help shape the trajectory of design education in the face of technological advancement and shifting market dynamics.

2 The Four Industrial Revolutions

The advancement and invention of technology are solely to aid humans, making their lives easier and increasing their quality of life. It revolves around finding a better way for humans to live. The term Industrial Revolution is used to

identify these changes, not by the length of time but by the disruption of technology in human life. During the first Industrial Revolution (1784), people utilized steam engines and water power, the construction of railroad networks to replace human and animal power, and the advancement of the Industrial Revolution over time, as depicted in (Fig. 1). The second Industrial Revolution began when humans discovered how to harness electricity and use it to power machines, enabling them to mass produce their needs (1870). The development of electronic, IT, and automated devices that aid humans in their daily activities marked the third Industrial Revolution (1969) (Groumpos, 2021).

2016 marks a new era for humans: the beginning of the fourth Industrial Revolution. This revolution is named after world-renowned economist Klaus Schwab, founder and executive chairman of the World Economic Forum. The year 2016 has come to symbolize a new stage in human history. Previous industrial revolutions allowed humans to stop utilizing animal power, enable mass production, and provide digital technology to billions of people. However, the fourth Industrial Revolution is fundamentally unique in some ways. The physical, digital, and biological worlds are becoming increasingly intertwined, affecting all fields of study, economies, and industries and even challenging ideas about what it means to be human.

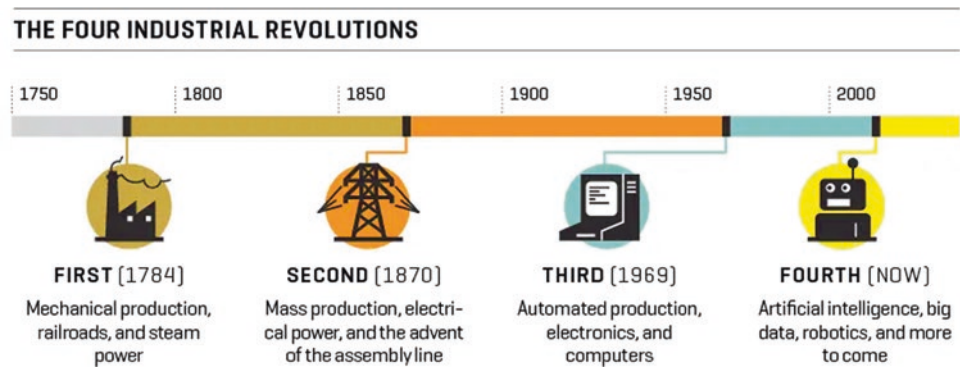
New technologies, including the Internet of Things (IoT), cyber-physical systems, augmented and virtual reality, machine learning, and big data, drive the fourth Industrial Revolution. These technologies are fusing the physical, digital, and biological worlds, creating new opportunities and challenges. The fourth Industrial Revolution could improve the quality of life for billions of people. For example, it can improve health care, education, and transportation. However, it also has the potential to create new risks, such as job displacement and cybercrime. It is essential to carefully manage the risks and opportunities of the fourth Industrial Revolution. By doing so, we can ensure that this revolution benefits humanity (Schwab, 2017).

The fourth Industrial Revolution is the advent of cyber-physical systems, providing people and machines access to new capabilities. These capabilities require the infrastructure and technologies of the third Industrial Revolution. The fourth Industrial Revolution ushers new technological developments, such as genome editing, new forms of artificial intelligence, revolutionary materials, and governance schemes relying on cryptographic methods like blockchain.

Here are some specific examples of how the fourth Industrial Revolution is changing the world:

- Genome editing: Scientists are using genome editing to develop new treatments for cancer and HIV.
- Artificial intelligence: AI automates tasks, improves decision-making, and creates new products and services.

Fig. 1 Industrial revolution progression. Source <https://www.cubienergia.com/desafio-da-nossa-revolucao-industrial/>



- Revolutionary materials: New materials, such as graphene and 3D-printed plastics, are being developed that are stronger, lighter, and more efficient than traditional materials.
- Blockchain: Blockchain is a secure and transparent way to track transactions and is used to develop new financial, supply chains, and voting systems.

The fourth Industrial Revolution is still in its early stages, but it can potentially transform the world in ways we cannot even imagine. It is essential to be aware of these changes and prepare for the challenges and opportunities they will bring (David, 2016).

The World Economic Forum published a report titled *The Future of Jobs 2020* in 2020. The report predicts that by 2025, medium-sized and large businesses across 15 industries and 26 economies will remove 85 million jobs due to automation and a new division of labor between people and machines. The impact will vary to a greater or lesser extent depending on the type of labor required. For example, as workplace automation and digitalization increase, demand for roles in industries like data entry, accounting, and administrative support will decrease. More than 80% of business executives are rapidly shifting to adopt new technologies and digitizing work processes, and 50% of employers expect to accelerate the automation of specific tasks within their firms.

This potential could please consumers. If we embrace algorithmic (and mechanical) perfection instead of relying on human error, service will improve, become more affordable, and accelerate. The current trend shows a decrease in the number of jobs being created compared to previous years, accompanied by an increasing number of jobs being eliminated.

Like all of its predecessors, the Industrial Revolution aimed to improve the quality of human life. They wanted to make every aspect of life faster and more accessible and reduce the likelihood of failure resulting from human error. To do this, they used technology to gather data, which was then processed using artificial intelligence and machine

learning capabilities to produce more precise outcome prediction, decision-making, and recommendation. However, there was a cost associated with these revolutions: as machines took over jobs that people formerly held, local unemployment rates rose.

The fourth Industrial Revolution is no different. It is bringing with it new technologies that have the potential to automate many jobs. However, it is also creating new jobs that require new skills. The challenge is to ensure that everyone has the opportunity to acquire the skills they need to succeed in the new economy.

3 The Millennials Kill Everything

According to William Strauss and Neil Howe's generational theory, generations move through a cycle of four distinct eras: (1) the Height, where institutions are strong, and individualism is weak; (2) awakening, in which individuals start to understand how unpleasant institutions are and express a wish to reclaim their independence; (3) the Unraveling, a time of significant institutional decline and the rise of individualism; and (4) the Crisis, a time of unrest and strife (Strauss & Howe, 1991). We live in the Crisis age because the Baby Boomers were most productive during the Golden Age of capitalism, Generation X rebelled during their Awakening, and Millennials or Generation Y fully embraced their individualism during the Unraveling (Lozovik, 2021). Generation Y, also known as "Millennials," describes a generation by demographically grouping all people born between 1981 and 1996 and will be between the ages of 26 and 41 in 2022 into one group.

Millennials account for 66% of the workforce by 2022 and will account for 75% of the workforce worldwide by 2025. Despite the high number, there is much anxiety about the Millennial generation. Businesses across all industries and countries have faced higher turnover as workers continue to quit their employment in record numbers. The pandemic-induced sentiment that life is too short to waste it doing a job they hate has contributed to the departures. According to

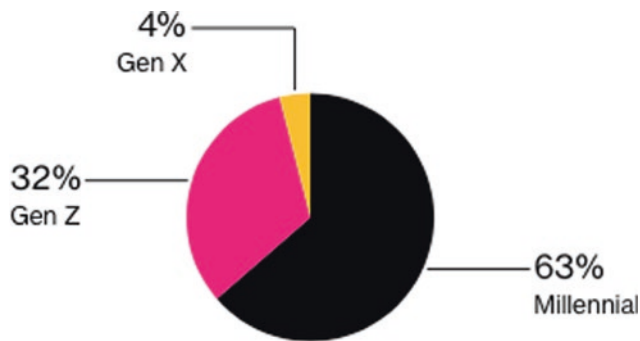


Fig. 2 Generations that are most likely to quit a job. *Source* Bloomberg

a WorkJam poll of 72 executives whose companies employ close to 400,000 people in May 2022, Millennials in their 40 and 50 s are the most likely to leave their jobs, followed by Gen Z at 32% and Gen X at 4%. (Fig. 2).

Generation Y, also known as Millennials, is characterized by confidence, connection, and creativity. They are self-assured to carry out any bright ideas that come to mind successfully. Additionally, their solid social skills assist and promote the current rapid development. According to research on the Human Capital Management Coat by Langkah Mitra Selaras and Lita Mucharom, Millennials are creative workers constantly looking for employment in settings that allow for recreation; most members of Generation Y experience constant feelings of wanting to stand out and be better than those around them as a result of this. Behind the apparent positive traits, Generation Y also exhibits certain negative traits, such as being impatient, egotistical, emotionally unstable, promiscuous, and individualistic in real life.

4 COVID-19 Pandemic

The COVID-19 pandemic is the third disruption, significantly impacting how society's social structure changes. The pandemic has become a significant issue that governments in all regions must address.

The World Health Organization (WHO) declared the onset of COVID-19 in early March 2022, stating that the world is currently dealing with a pandemic known as COVID-19 or Coronavirus Infectious Disease 2019 (Li et al., 2020). The pandemic was initially discovered in Wuhan, China after some tourists contracted the plague from one of the animals sold in the city's market. COVID-19 has a fast spread rate, and as of October 2020, the WHO stated that there were already 200 countries affected by the virus with varying mortality rates. The WHO also noted that COVID-19 had caused the death of 1 million people worldwide (WHO, 2020).

Based on the statement of Morens et al. (2020), a pandemic is an epidemic that occurs as a whole. Pandemics are also often associated with the spread of infectious diseases, such as HIV, Ebola, and Singapore Flu. An event with a certain prevalence level related to the time and speed of its spread defines a pandemic. Based on the scope of occurrence, including global (occurring in all regions), transregional (happening in one region/continent), and interregional (appearing in two or more areas), experts categorize pandemics into three categories. Even though this is not the first occurrence of such a pandemic, the COVID-19 pandemic continues to rank among the most significant in human history regarding its scope of spread, mortality rate, and number of positive cases (Morens et al., 2020). SARS-CoV-2 is the virus that caused the COVID-19 pandemic that claimed millions of human lives. In addition, SARS-Cov-2 is also included in one part of the Coronavirus family that caused the SARS and MERS pandemics (Liu et al., 2020). Furthermore, SARS-Cov-2 is relatively easier to transmit when compared to SARS and MERS.

COVID-19 is a respiratory disease in humans with symptoms ranging from mild to severe. Generally, the symptoms of COVID-19 include cough, fever, bone pain, and heavy breathing (Li et al., 2020; Liu et al., 2020; Sun et al., 2020). Nevertheless, some people are exposed to mild indications such as loss of sense of smell and taste. The existence of these mild symptoms causes many people to be reluctant to report that they have been positive for COVID-19, so there is a probability that the actual number of positive cases of COVID-19 is small (Noh & Danuser, 2021). Furthermore, the high transmission rate makes unrecorded cases without symptoms even greater. In certain groups of COVID-19, some experience severe symptoms that cause high mortality rates. At the beginning of the pandemic, COVID-19 had a high fatality rate but was relative in various regions. Oke and Heneghan (2020) explained that until April, the fatality rate of COVID-19, or the Case Fatality Rate (CFR), was between 0.08 and 15.49. Several countries reported that the CFR had decreased when entering the second wave of the pandemic. However, several countries still show high COVID-19 mortality rates, including Indonesia.

The impact of the COVID-19 pandemic is quite significant and affects all aspects of human life, be it in terms of the environment, mental, and physical. The aspect most affected by COVID-19 is the health aspect due to the high number of positive cases and death rates during the pandemic. However, other aspects have also undergone many changes, along with preferences, lifestyles, and priorities, leading to new patterns. The fast and expansive spread of the Coronavirus imposes limitations on all activities and routines. Transmission is also easy to occur when there is physical contact between one person and another. Hence, people must re-learn how to keep interacting during the

pandemic without hampering their daily routines. The government also declared policies to limit activities where people gather, such as worship, school, and work activities. The pandemic forces people to adapt and change amid many activities that must continue; as a result, a new lifestyle emerges, which is called the new normal. This new pattern allows humans to continue their activities on the condition that they must comply with health protocols to avoid exposure to the Coronavirus.

If observed, the current socio-cultural situation is also experiencing changes. Usually, there is always a habit of shaking hands in the surrounding community, but people are advised not to do so due to the pandemic. The whole community is expected to be able to maintain physical distance (Physical and Social Distancing) in daily activities with friends and relatives. Over time, the role of mass media and technology began to increase rapidly, whereas previously, this was minimal or rarely done by the government or the community. The pandemic makes every individual switch from conventional media to digital media. With the help of digital technology, people can stay connected to one another in real time. This pandemic certainly has many positive and negative effects on life; before the pandemic, most individuals were required to work away from the house. After the pandemic, several activities can be done by Working From Home (WFH). Work can also be completed only by communicating online through applications such as Zoom, Google Meet, and email.

5 Visual Communication Design

Visual Communication Design (VCD) is an activity to convey a message. VCD is designed to share certain information with the audience and get the expected impact from them by displaying a summary of information in visual media (Liu, 2020). Communication designers can create new values in society and enhance the communication process between people. The term VCD was originally very closely related to graphic design. However, VCD has continued to proliferate since the industrial revolution until now. Visual communication science has become increasingly complex over time. It has resulted in the emergence of various professions in the Visual Communications field, such as animators, game designers, and web designers (Marsudi et al., 2020). Of the different professions and VCD media that have emerged, all remain focused on transmitting information and visual aesthetics.

From the traditional perspective, Visual Communication Design is considered a problem-solving tool. However, in recent years, the practice of VCD has changed. The emergence of a new view that designers act as problem solvers and problem finders requires designers to have authorship

in their design content (Kim, 2019). The designer's mindset began to shift. They no longer only think about "What needs to be designed" but also "Why is this necessary to be designed" impacting a designer's professional, ethical, and socio-cultural responsibilities. Plus, the fourth Industrial Revolution's emergence and the accompanying technological developments.

Visual Communication Design is a science that integrates visual art, science, and technology. Therefore, the influence of technological developments is not something VCD can avoid. The fourth Industrial Revolution made many designers focus more on new digital technology media (Kim, 2019). Some examples include the Internet of Things (IoT), cyber-physical systems, augmented and virtual reality, machine learning, and big data from integrating humans, machines, and the Internet. The development of this technology certainly opens up many opportunities for designers.

Moreover, the form of message delivery has changed in today's era. In previous periods, message delivery was only one-way and passive. Currently, the exchange of information can be done more interactively. The presentation of information media, previously dominated by print media, has also shifted to the digital realm. Indirectly, this era has given birth to a new visual language.

Not only VCD output and media are affected by this change, but also the design production process has also changed. Everything completely computerized makes it easier for designers to express their creative ideas. In the previous era, traditional work tools were needed, and the work process to visualize a design was complicated and time-consuming. Certain areas of VCD can only be done by people with a specific skill set. Today, the help of technology makes this much easier to achieve. Easier and more seamless access to information also helps designers get the necessary resources. The presence of technology has changed the way designers work in the current era.

Industrial Revolution 4.0 has increased design work efficiency and encouraged changes in the design workforce toward digitalization (Harsanto, 2019). This fact is both a convenience and a challenge for designers. Technological advances, especially concerning the 4.0 Industrial Revolution, bring assumptions about humans' competition against machines. Undeniably, technology has taken over the traditional fields of work and replaced them with more efficient machines in terms of time and cost. In response, designers must seek to improve their competence, especially in the ability to adapt and master new technologies that continue to emerge; that is important so that designers can provide more value that machines cannot offer.

The COVID-19 pandemic has also played a role in this change. The COVID-19 pandemic is accelerating the digital transformation process. The limitations of mobility make

various aspects of human life, including health, education, employment, government services, and even social interaction, dependent on technology. Even though some online activities will be reduced and replaced by direct interactions when the COVID-19 pandemic can be better handled, it is undeniable that digital technology will still be embedded in people's daily lives. Some examples are new technologies such as telework, e-commerce, e-health, and e-payments. This reality adds to the pressure to improve the ability of people, businesses, and professionals to adapt to increasingly sophisticated digital technology solutions, including designers in the field of VCD.

As digital activities increase, people become increasingly dependent on digital solutions (OECD, 2020); this also affects the VCD, and the pandemic has triggered an increasing need for digital design. In the digital era, VCD undergoes changes in media and materials that make things previously impossible to visualize possible. Integrating voice, text, and visual information also strengthens the communication power of VCD. In the current era, visual elements are one of the essential factors in constructing the facts of a message to be conveyed.

On the other hand, design content is increasingly more closely related to daily human life, requiring designers to pay more attention to human needs. An outstanding design is a design that can fully meet human needs. Nowadays, designs increasingly pay more attention to human nature, focusing more on feelings, experiences, and habits.

However, visual communication media that are increasingly closer to technology result in a potential risk of manipulating the message or information being conveyed. Therefore, designers need to be more sensitive to the circumstances around their work area. Technological developments facilitate designers to acquire and become involved in various social projects, allowing designers to be proactive in taking action and intervening to impact society positively.

VCD continues to experience continuous development in the current era; this growth indeed cannot be separated from the use of technology. Even so, the primary purpose remains the same, as a transmitter of information that requires designers to adapt to new modes of communication continuously. When faced with this situation, designers must consider integrating technology with design better. Designers must use technology to deliver messages more effectively and accurately. Through the practical application of technology, designers can better overcome the challenges and limitations of traditional design models; this has also made VCD touted as one of the promising sub-sectors of the creative economy. The transition to the digital realm has opened ample space for designers to spread their wings, continue to work, and explore new media and opportunities while remembering their responsibility to become quality designers.

6 Method

This research also includes several parties from academia, professions, and companies associated with visual communication design to establish the best new definition of visual communication design that the three existing disruptions have inspired. This study used a qualitative approach to explore the shifting paradigm of visual communication design. The researchers utilized focus group discussions (FGDs) as the data collection method, as FGDs provide a valuable means of gathering in-depth information about people's experiences and perspectives. They allow participants to share their thoughts and ideas in a group setting, and they can provide insights that would not be possible to obtain through other methods.

According to Irwanto (2006), Focus Group Discussions (FGD) are a research technique currently used increasingly to collect data for social research. Typically, researchers gauge the validity and reliability of the focus group discussions by using the confidence level of the participants. To enhance understanding of these shifts, the researchers employed focus group discussions (FGDs) as the primary method for collecting data. FGDs offer a valuable platform for gathering insights and perspectives from various stakeholders involved in visual communication design, including industry professionals, design educators, and representatives from technology development industries. In this study, the following stakeholders participated in the FGDs:

1. The Indonesian Visual Communication Designer Professionals Association (AIDIA): AIDIA represents the viewpoint of visual communication design professionals and offers valuable insights into the practical aspects of the field.
2. The Association of Indonesian Visual Communication Design Study Programs (ASPRODKVI): ASPRODKVI represents design education, providing a comprehensive understanding of the educational landscape and its role in preparing future designers.
3. Lia Sidik and Associate: As representatives of industries involved in technology development, Lia Sidik and Associate bring a unique perspective on integrating technology and its impact on visual communication design.
4. Apple Developer Academy (ADA): ADA, as a renowned institution in technology development, offers valuable insights into the latest trends and innovations in the field and their implications for visual communication design.

The researchers conducted the FGDs with careful consideration of ethical guidelines and ensured the informed consent of the participants. The discussions focused on eliciting rich qualitative data regarding the paradigm shifts in visual

communication design brought about by technological advancements and the COVID-19 pandemic. Participants were encouraged to share their experiences, observations, and perspectives on the changes in design approaches, strategies, and the evolving target market.

Thematic analysis was employed to analyze the data acquired from the FGDs. This approach involves the identification of recurring themes, patterns, and critical insights that emerge from the discussions. By systematically analyzing the qualitative data, we aim to comprehensively understand the paradigm shifts in visual communication design and their implications for design education. The objectives of this study's qualitative research are to characterize the things that have changed in the field of visual communication design while also determining whether these changes have altered VCD.

7 Disequilibrium

According to a study conducted with the Association of Visual Communication Studies Programs (ASPRODI DKV), the essence of visual communication design, as a representative of academics in the field, is to express a message visually with a specific goal. The definition of VCD remains the same despite the expansion of technology. Exactly all of the fundamental design principles will remain the same as before. VCD is still seen as a communication medium, no longer as an instrument for expression.

The disruption had several impacts on VCD in many ways, including introducing new professions and design software that would simplify it for anybody to create designs. Along with the appearance of these advantages, many regular people also start to work as designers suddenly. However, this is unimportant because a designer's skills generally extend beyond the technical realm. Designers must demonstrate their superior worth. The value in this situation may come from the ability to solve problems. The ability to become a designer sensitive to the human element of design and understand how to provide meaning to each visual work generated is required.

Sending a message is communication's primary goal. However, communication becomes more profound and is much simpler to understand when the designer can communicate meaning to the audience. In addition to solving problems as they arise, designers must also be able to examine the sources and implications of these difficulties thoroughly, and this requires analytical ability. In addition, according to representatives of the Association for Visual Communication Design Study Programs (ASPRODI DKV), designers must also have the 4Cs contained in twenty-first-Century Skills: Communication, Critical Thinking, Collaboration, and Creativity. These four things can be described as follows:

1. Communication means the designer must be able to offer himself to the market.
2. Critical Thinking refers to the message conveyed by the designer as a result of the critical thinking process on a problem that exists in society.
3. Collaboration allows designers to bring communication and critical thinking into a more complex realm where designers can work together in the industry.
4. Lastly, creativity enables designers to think ahead. Determine what steps to take next so that they can continue to grow and think outside of the ordinary.

As technology advances, visual communication design will also change. A designer must correctly comprehend how to implement a design to serve the goals and objectives. The ability of a designer to adjust to the new technology that is developed every day is the next factor that needs to be taken into account. In addition, the Association of Visual Communication Design Professionals (AIDIA) spokesman claimed that there is not only one definition of visual communication design (VCD) but also a more flexible definition because the field encompasses a wide range of specialties. Some are more traditional (print), while others have shifted to more advanced technologies. Therefore, creating value for problem-solving constitutes the definition of VCD. There are situations where everyone does not possess this problem-solving talent, which is challenging to apply because a procedure and extensive critical thought are required.

Today, people understand that the value of design is focused solely on the aesthetic appeal of the visuals. However, the most crucial skill for a designer is developing previously unimaginable solution strategies, which are then revealed to be a visual that can address issues as they arise. The Observe, Imitate, Modify (ATM) designers frequently teach approach, but it is part of lower-order Thinking. All things must be explored and solved until they find the best answer; the resulting design can have less value if creativity is limited. Therefore, developing new design applications and technological developments should not be considered a threat to designers. Nevertheless, with new technology, designers may be more imaginative and not just focus on skills but also consider the reasoning behind the design technology.

The Lia Sidik Associates Branding and Design Team expressed the same idea when they mentioned that the concept of VCD is "a solution for delivering communications through visual language". The main point of Visual Communication Design lies in its communication which aims to convey a message. A visual communication tool is needed for the message to be received well. The term "VCD" has not changed; innovations have led to a more extensive range of media and types of work than in past

years. Graduates of VCD programs are starting to see growth in their careers, including the introduction of a new occupation called content creator.

Modern designers also need help with other difficulties, one of which is that their soft skills could be more mature due to their overemphasis on mastering only hard skills, thus making it easier for them to give up when a task is difficult. This can be avoided if education promotes the growth of future designers, for instance, through the use of academics and practitioners working together. Additionally, it would be fantastic if the lecturer could assist students in identifying their design objectives. The professor often sees three different categories of students: generalists, specialists, and generalists and specialists. Both generalists and specialist typically put their safety first while designing; a type of designer who has the potential to become a leader is the person who decides to be both. In addition, since there will be a lot of new issues in the future and a requirement to adapt to these changes quickly, designers who can lead rather than survive will be needed. Emerging technology can make designers obsolete, but this only applies to designers constantly eager to learn. Instead of viewing technology as a danger, consider the advantages that might be gained from current breakthroughs. VCD was once considered unimportant, but as consumer demand has grown, more individuals are starting to see its significance for promoting businesses and goods.

The designer now has complete control over the options and may decide whether to be the ant's head or the dragon's tail. The VCD creator must be able to become a good passenger if the dragon's tail is his or her only chance of survival. Accept self-capacity as it is and be a helpful passenger. However, if they are up for a challenge, have a capability of a leader, and have good communication skills, designers can lead their band of brothers as "head of an ant." Today's designers need to understand how to position themselves rather than just prioritizing their existence to the exclusion of the world around them. The key is to choose the positioning suited to their capabilities so that the outcomes can be generated more effectively.

Last but not least, according to Apple Developer Academy personnel that speak for the industry sector that encompasses the job of Visual Communication Design, VCD is defined as a design process to convey information through a visual language. There has always been and always will be a need for communication. The use of visual language can facilitate this communication process.

Visual language is used in a wide variety of ways. VCD had a close relationship with print media before contemporary technologies upended it. Hard skills primarily drove the demand for VCD around that time. At that point, their problem-solving skills are not required; only their skill in creating visual communications is. Things have changed.

Due to advancements in technology, designer capacity keeps growing. One of them is associated with modifications to communication media. Designing websites, mobile apps, and video games is the current VCD trend. This transformation affects not only the media but also people's perspectives. VCD is currently considering what to say before how to say it. The methodologies utilized in the design process may alter today due to the complexity of the social challenges. In their efforts to solve these issues, modern designers are becoming more user-oriented (user-centered design), which is inextricably linked to the iterative process.

Access to the visual world has become more widely available due to technology. In theory, technology constantly seeks to simplify human labor; on the other side, the outcome is the presence of tasks that do not require humans to perform them. The realm of design is similar. When everything is considered, the designer's function as the person who "operates" a tool is replaced because it is no longer required. A machine's design will not quite meet the designer's expectations. However, the problems encountered can be quickly resolved soon. This is a challenge for designers to have added value compared to this new technology. If designers are convinced of the value they have, this technology can be an asset that can make design work more efficient.

On the other hand, there are benefits to this transformation. New job prospects appear in addition to helping to create new jobs and expand upon existing ones. Although some professions may be displaced by technology, new demands will also be created. Examples include UI/UX and social media.

These developments will keep taking place. Designers must be agile for this. The ability to react fast to changes defines one as an agile designer. Become a designer who can accommodate the community's wants. Instead of focusing on aesthetics to make one's appearance, one should now consider practical demands. Agile designers must be capable of making quick adjustments and be open to lifelong learning and growth. Designers need to improve their design basics and skills, such as the ability to think clearly and coherently, read patterns, and classify these patterns, in addition to their agility. In an age where technology has replaced craftsmanship, these skills must be refined. Technology is merely a tool, no matter what occurs. Its use is still reliant on the individuals in charge. Therefore, we must return to the fundamentals. Remember that every design issue is complex and individual. The key to surviving in this period is the designer's ability to read these difficulties and ultimately offer a suitable solution. Designers must also be able to communicate their thoughts and creations so that others can understand them.

8 Conclusion

Technology is constantly evolving to accommodate human needs, make daily tasks more manageable, and address societal issues like poor health, poor communication, poor transportation, poor decision-making, and many others. Millennials do not eliminate jobs, goods, or services; new technology will gradually or quickly replace established practices and technologies; this will impact human behavior as people will have to adapt to new technologies, develop skills in line with market demands, and form habits, mindsets, and activities appropriate to the period in which they live. What was common in the past will now be considered unusual.

Similar to visual communication designers, the target audience of their designs has changed due to technology. Demands, expectations, habits, mindsets, and audience behavior have all changed, and new media has been produced due to this audience change. However, these modifications did not alter the fundamental nature of visual communication design (VCD), which still has to produce a visual communication display that can speak clearly to a particular target audience to influence them to act (call to action).

Visual communication designers need to be adaptable, open to new ideas, and able to see technological advancements and the advent of new media as new chances and tools rather than as a threat to their line of work. Designers and the business sector must be able to adopt a broader look that acknowledges designers' strategic role in developing strategic approaches and problem-solving techniques in addition to their aptitude for producing beautiful and appealing visual appearances. Designers will be able to adapt to changing target audiences by using empathy as the foundation for their designs; ideation and prototyping will allow them to explore new approaches and media to communicate with their audience effectively, and testing will allow them to gauge the success of their designs in comparison with their audience's expectations. Thinking iteratively and being open to continuous improvement is crucial in designing.

The visual communication design education field must also evolve and adapt in line with the needs of the times; this means that visual communication design education must be redefined to include teaching other hard skills necessary in the workplace, such as research, marketing

research, human management, project management, and data analysis, in addition to teaching design hard skills to produce visual experts who can create aesthetic designs. Additionally, it is balanced with the growth of soft skills like leadership, teamwork, communication, anger management, time management, and critical Thinking.

The most pressing concern is: "Are the individuals who become the new generation of visual communication designers able to be open and agile in accepting the challenges of today's changing times?"

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Instagram Microblog Design as Information Media About Toxic Family in Indonesia

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Abstract

The family environment is the first environment where a child gets the first experiences that affect their lives. But sometimes, family doesn't work as it should. One of the criteria of family dysfunction is bad parenting from parents (toxic parents), which leads to negative environmental conditions (toxic family). The lack of information and public understanding about toxic families is the main cause of these problems, especially in a big city in Indonesia. Therefore, this social campaign is designed to inform the public about matters related to the toxic family. This social campaign uses qualitative research methods with data collection through observation and interviews with sources related to toxic families, literature studies, and other sources from the internet. The design process begins with a background analysis of the problem, formulating campaign objectives, determining the theme of the campaign message, creating a campaign program, identifying campaign targets, developing strategy and tactics, formulating the message, and selecting the media. The final result of designing this social media campaign is microblog content uploaded on Instagram called "welcomehomeproject.id" as the main media. The total amount of Instagram feed content is 90 posts that raise the topic of information about toxic families, from introduction to support and advising the

community, both from the perpetrator's and the victim's sides. In addition to microblog content, some interactive content in games and quizzes, simple illustrations, and quotes about family are also uploaded. Several supporting media are useful to increase the audience's enthusiasm for this social campaign.

Keywords

Family dysfunction · Awareness · Psychology · Harmony · Microblog Instagram

1 Introduction

Family is a forum for the formation of each family member, especially children who are still under the guidance and responsibility of their parents. The family environment is the first environment in which the child acquires the first experiences that affect his life. The family is very important for the personal formation of the child (Gunarsa & Gunarsa, 1995). Erik Erikson says that human growth is influenced by environmental and cultural factors (Erikson, 1993). That can mean that social factors are family, where children learn everything from their parents who care for them from infancy to adulthood. In this problem, people grow based on how parents educate their children. Parents must set a good example for their children to form a good personality. In other words, the family serves as a means of socializing.

According to its function, families can be divided into functional and dysfunctional groups. Dysfunctional families can cause various problems; one example is bad parenting, which creates a negative family environment. Sometimes, a family does not run as it should and does not function properly. Its failure to function has negative influences on humans and is the cause of various problems (health, psychic, and social) when humans are growing up.

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It can be said to be a failure to function as a family when the child feels hatred toward his parents because they feel too restrained and have to obey their parents' orders. The child usually feels uncomfortable, giving rise to an inferiority complex, insecurity toward oneself, or even an unstable personality. This condition is called a dysfunctional family. According to data from the Ministry of Women's Empowerment and Child Protection, from January 1 to July 31, 2020, there were 4116 cases of violence against children committed by parents, including 1111 physical violence, 979 psychological violence, 2556 sexual violence, 68 cases of exploitation, and 346 cases of child neglect. According to psychologist Anita, many people still misunderstand toxic families. Meanwhile, in terms of solutions, many people still have not found a way to overcome the problem of toxic families. Even if some understand toxic families, most people remain silent and do not dare to act to overcome these problems.

Dysfunctional families can cause various kinds of impacts, one of which is the negative family environment or what is commonly called the toxic family. Based on the above circumstances, the lack of information and public understanding of the topic of toxic families is the main cause of this problem in many families in Indonesia. Welcome home! The social campaign aims to be a medium that is capable of increasing public awareness about the topic of toxic families through an approach using social media that is commonly used daily by the community with a target audience of people in big cities, especially young families with an age range of 20–35 years. Microblog content uploaded on Instagram is the main media that applies a simple illustration style and is adapted to the theme of the social campaign, namely warm and minimalist, and also adapts to the target audience of adults, especially young couples. The purpose of this social campaign is as a medium that can provide information about the toxic family to Indonesian people.

The reason for choosing the Instagram platform is based on data; according to Napoleon Cat, it is said that until the period January–May 2020, Instagram users in Indonesia reached 69.2 million users, dominated by the productive age group, namely in the age range of 18–34 years or commonly called the millennial generation. Instagram users from the millennial generation group dominate as many as 25 million users, or around 36–38% (for 18–24-year-olds), and 21 million users, or around 31–33% (for 25–34-year-olds).

Based on the problem above, the following problem formulation is obtained: (1) How to design informative media about toxic families through microblog content on the social media platform Instagram? (2) How to design a social campaign on the Instagram platform to increase

public awareness about toxic families in Indonesia in an interesting and informative manner?

2 Method

This social media campaign uses qualitative research methods to understand the object under study as well as possible and participate in exploring the things experienced by the object in everyday life. Interviews, observations, literature studies, and data sources from the internet are used to collect qualitative data. The campaign design methods used include the phenomenon analysis phase, formulating campaign objectives, determining campaign themes and messages to be conveyed through the campaign, determining campaign programs, determining campaign targets, determining strategies and tactics in disseminating messages, composing the message in the social media campaign so that is easy to understand by the target audience, and finally determine what kind of media is suitable for use in the campaign.

2.1 Research Methods

According to psychologist Anita Carolina M. Psi, a toxic family is a condition where the family environment is negative. The negatives referred to are the environment and family conditions that are not good regarding emotions or psychological, verbal, and physical. Usually, the environmental conditions of a toxic family have several characteristics, such as controlling (authoritarian/always demanding and imposing the will without tolerance), manipulation (manipulative, using various improper methods to family members to get what they want), blaming each other, harassing, and degrading, verbal violence, and physical abuse. There are various kinds of factors that cause toxic families, some of which are family parenting (hereditary). These negative life experiences affect the way of thinking and behaving and the presence of mental disorders in family members. In terms of understanding, people already know enough about toxic families. But many of the public have misperceptions on this topic. While in terms of solutions, many people do not yet understand how to overcome toxic families. Some already understand but have not dared to act or make decisions to overcome toxic families. The most effective way to reduce the existence of a toxic family is when the victim and the perpetrator are both aware of what they are experiencing in their family, then jointly see a psychological expert for consultation.

The second speaker was Rose Merry Purnomo, a housewife with daily care for her two children, who are still

studying. Merry admitted that she did not understand the topic of toxic families or things related to dysfunctional families. But in everyday life, she said that he often finds people around him, be it his friends or others, committing acts of violence against children in public places. When asked further, it seems that the act of violence has almost the same reason for everyone, for the sake of the child becoming a better person. But she felt she could not stop these people from committing violence because she was reluctant to give advice. According to Merry, childcare patterns based on violence are not effective enough in educating the child because it will make the child afraid and like to cover up things, become unconfident, or even traumatize the child or keep anger toward his parents. Merry reinforced this because she had experienced family violence and parents who dominated at an early age. For her, a fairly effective way to educate children is to be a support system, a good listener, and a friend to the child.

The third speaker was Stefanie Tessa Hutyama, a Faculty of Law, Narotama University, Surabaya student. Tessa was one of the victims of a toxic family from an early age. In her case, her father always dominated every decision and tended to pose a threat if the decision was not implemented. According to Tessa's view, many people still do not understand the topic of toxic families. Some people understand the topic but still have a misperception, so the toxic family circle continues.

3 Literature Review

3.1 Dysfunctional Family

A dysfunctional family does not function as the family it should. Family dysfunction can also be explained as a situation where there is a conflict or dispute between one individual and another, resulting in a loss of affection, family warmth, and mutual respect. A family is said to be dysfunctional if; the family experiences disturbances in wholeness, parental roles, interpersonal relationships with families that are not good, and others (Sarwono, 2006). When a condition interferes with the functioning of a good family, such as an act of violence occurs in the family. This condition can cause "toxic" internal family relationships or toxic family, which is a condition of a negative family environment and between family members hurting each other damaging each other physically, mentally, and psychologically.

According to Science of People, toxic family has behavioral patterns that do not have the application of boundaries. Some of the descriptions of the characteristics of the toxic family include tending to overreact to the situation and

enjoying making noise by exaggerating the problem. When conflicts occur often use emotions and behave unreasonably, then try to control the lives of other family members. Perpetrators tend to compare and criticize without listening to other family members' feelings. The condition can worsen when manipulating other family members based on guilt so as not to respect physical and emotional boundaries, then never apologize and admit mistakes.

3.2 Social Campaign

According to Venus (2009), a social campaign is an effort to create certain changes in social life that are carried out with a purpose and in a certain period. Social campaigns can focus on one of the concepts or combine different concepts into a single message. The process of conveying information or messages should be able to pay attention to the information. In essence, social campaigning is a goal-oriented communication action because there are always goals to be achieved in campaign activities. In a campaign situation, the messenger seeks to influence others with the help of communication media. The campaign tries to make an impact and focus on human aspects, including knowledge, attitudes, and behaviors. After paying attention, the audience will feel interested in the message and want to participate in the campaign. After that, the audience will begin to perform the same actions or actions that have been directed at a social campaign. People will generally be happier processing information without thinking too hard, especially in advertising. For the message to be conveyed well to potential audiences, designers must have the right media.

3.3 Microblog Instagram

A microblog is a blog that allows users to create short messages of less than 200 characters and publish them on social media platforms to be seen by all specific people or groups. The difference between a microblog and another blog is that the microblog is smaller than the actual size of the blog but has the same purpose of briefly and concisely providing information to others. The form of microblog can be created in various formats, for example, audio, photo, video, and text. Instagram is also used as a microblog because of its features and ease of user access. In the microblogging process, there are several advantages obtained by users, namely: content is easy to create, understanding is faster, can communicate directly, and reach millions of social media users.

4 Media Selection

The design of this social campaign is divided into several selected media that are included in the category of main media and supporting media. The selection of media designed by the author has a role and purpose in each of its uses. The following is the selection and approach to the role of media design, including:

- Instagram Microblog Content, this microblog content on the Instagram platform is the main media for the campaign, which will later present various information and interesting content about toxic families.
- Instagram Story Content, Instagram stories contain light daily posts that will be uploaded daily to increase engagement with the audience. This content will have various interactive content, such as quotes, games, question-and-answer content with the audience, and sharing sessions.
- GIPHY Sticker, GIF stickers on the GIPHY platform are in the form of illustrations and motion text (GIFs), which can later be used by the audience as decoration for Instagram story uploads and can also be used as GIF stickers on other social networking applications.
- Instagram Filter, filters on Instagram are used as interactive decorations that the audience can use and share through their respective Instagram story features. The use of Instagram filters is expected to increase engagement with the audience.
- Merchandise, this social campaign merchandise is in the form of an Instagram Story, Instagram Filter, GIPHY Sticker, Tote Bag, Notebook, T-Shirt, Cloth mask, Mug, and Pouch. Merchandise will be given as a gift from simple games to increase engagement with the audience.

4.1 Content Planning

The design of this social campaign uses the Instagram platform as the main medium with the main focus of the microblog. Feed content will be uploaded daily on the Instagram platform for three months. Each month will contain 30 contents, with 12 microblogs, single posts in quotes and illustrations, and interactive posts in games and quiz content. Here is the content planning arrangement for this social campaign:

- First Month Instagram Feeds Content:

In the first month, the content topic focused on introducing social campaigns and toxic family problems and their description. The purpose of the content in this first month is to provide information to the public about

matters surrounding toxic families to gain awareness from the public about the importance of this topic to be discussed.

- The Second Month of Instagram Feeds Content

The second month focused on tips and advice on how to relax and control yourself and your emotions to minimize problems in the family environment. The purpose of this second month's content is to make people feel inspired by the tips provided, from tips for activities at home to tips for controlling negative emotions, which will then be encouraged to apply in real life to build a better home atmosphere.

- The Third Month of Instagram Feeds Content

The content in the third month focuses on support and self-development to the audience in the form of words of motivation and support, as well as discussing the review of social campaign activities from the beginning so that it can leave an impression on the minds of the audience. This third month of content aims to end the social campaign with memorable content in the audience's mind. Of course, this social campaign can better impact toxic family problems in Indonesia.

- Instagram Story Content

Interactive story content will be uploaded regularly every week. In addition, the story will be uploaded as a medium to repost microblog content uploaded previously to get attention from the audience. The focus of interactive story content is to create content that can build engagement with the audience through interactions that can be done on the Instagram story feature, for example, the poll feature and the questions feature. In addition, the topic of this interactive Instagram story aims to encourage people to participate in social campaigns by actively participating both in disseminating campaigns through reposting content and being active in sharing sessions and games.

5 Visual Approach

This social campaign has a target audience, especially young couples aged early (20–35 years), societies of various types of work with a millennial lifestyle, living in big cities in Indonesia. This social campaign was created to be a medium that can increase public awareness about the topic of toxic families. This campaign includes three aspects, Dynamic, Harmony, and Awareness, where each aspect contains the theme, message, and purpose of the campaign to be conveyed to the public. Based on the three keywords, it was found that the main word points were the focus of the right keywords and could answer the design of the social campaign, namely "Welcome Home!" which is a

depiction of the word greeting commonly used by people in everyday life.

The main media generated through the design of this social campaign is in the form of microblog content uploaded on Instagram. Visualization is applied in microblog design using a combination of simple illustrations and informative text. The purpose of creating a microblog on Instagram is to make it easier for the audience to receive information from social media platforms often used in everyday life. In addition to the main media, this social campaign is also supported by several supporting media that are packaged in an interesting and informative manner, with the hope of arousing curiosity and attracting audience interest in this social campaign. The concept for supporting media is to use a minimalist and clean-themed visual application according to the intended target. Some supporting media are Instagram Story, GIPHY Sticker, Instagram Filter, Twibbon, and merchandise.

The visual style in this social campaign design applies a minimalist and warm-themed visual style. The application of minimalism to social media is to take advantage of lots of white space in the layout so that the audience is more focused on the information conveyed and is not distracted by the many other visual elements, as shown in Fig. 1a. The

minimalist theme is also applied to the illustration style used in each media by using simple illustration forms that use thin line art and one-color blocks in each illustration. The warm theme is visualized in illustrations of people, families, and hearts. Symbol as a form of love. The warm theme represents family warmth, as shown in Fig. 1b.

5.1 Color

Color has a certain impression and influence on people's thoughts and emotions. The color selection combines blue, yellow, magenta, and white, as shown in Fig. 2. Wexner (1954) explains that blue is the second color group that describes cold colors or often called low-temp. Blue color communicates peace and trust. Based on the perspective of psychology, the blue color can calm the mind and increase concentration. Yellow color psychologically has the happiest meaning, namely warmth, optimism, enthusiasm, cheerfulness, and a sense of happiness. Yellow is usually used to attract attention. In addition, yellow can stimulate the brain and mental activity and has an aura that can help in logical reasoning. Magenta color has the meaning of emotional balance, harmony, intuitiveness, spirituality or change, and

Fig. 1 a First variety illustration style. b. Second variety illustration style. *Source* Personal documentation

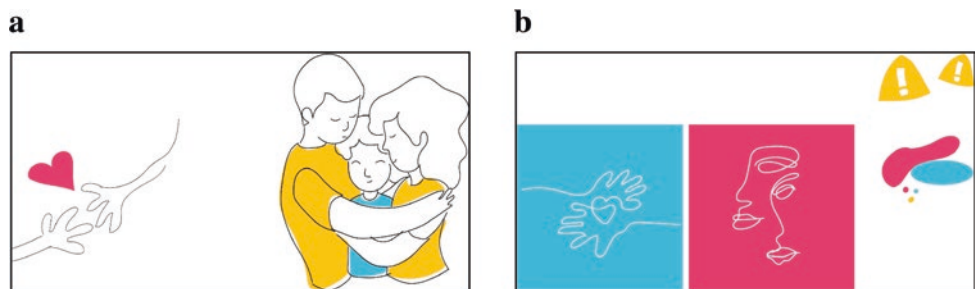



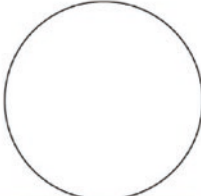


Fig. 2 Color palette. *Source* Personal documentation

	R : 95 G : 195 B : 219 #5FC3DB		R : 233 G : 66 B : 112 #E94270
	R : 253 G : 200 B : 24 #FDC818		R : 255 G : 255 B : 255 #FFFFFF

uplifting. In addition, magenta also describes love, joy, and happiness, as well as responsibility. And white color has a meaning that is closely related to the impression of being clean, light, holy, and bright.

5.2 Typography

The selection of typography in the campaign design uses typefaces included in the Sans-serif type category, namely Poppins Family, and Script-handwritten typeface, namely Tentang Nanti as shown in Fig. 3. Poppins typeface is used because it has a fairly high level of readability, making it easier for the audience to understand the content more quickly. Meanwhile, the Tentang Nanti typeface can give a personal and friendly impression so that it makes

the audience think that the content from this campaign can be felt and experienced by the audience in their daily life, seems relaxed and friendly so that it is easier to increase engagement with the audience.

5.3 Layout

The campaign design uses an axial layout, where illustrations and text are the main focus while other visual elements adjust. The purpose of using the axial type layout is so that the audience can focus on the information conveyed from the campaign, either in the form of text or illustrations, as shown in Fig. 4. In the microblog content design, the main illustration is placed at the bottom of the right with a fairly large size so that it looks dominating from the appearance of the content. Then on the supporting medium, illustrations are used as the main focus without any other elements around them.



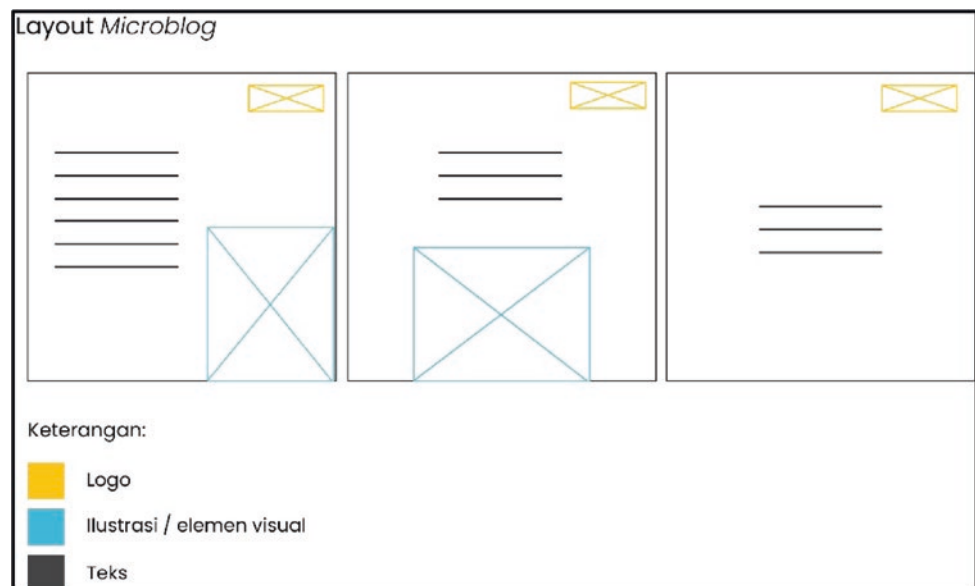
Fig. 3 Poppins and Tentang Nanti typeface. Source Personal documentation

6 Communication Approach

6.1 Campaign Name

Welcome Home! is a greeting sentence in English that describes a welcome to newcomers. The meaning of Welcome Home, when translated, is “Welcome.” This greeting is widely used in the family circle to greet other family members who have just returned home. The campaign name Welcome Home! raised the “warm and caring” element from a simple greeting sentence. This social campaign aims

Fig. 4 Axial layout. Source Personal documentation



to describe a warm and caring atmosphere between individuals in the family. Name Welcome Home! is also supported by selecting appropriate campaign colors following the customized theme.

6.2 Tagline

“#Imhome” is a tagline sentence that comes from the word “I Am Home,” which explains that the audience has “go home” after seeing the social campaign. This tagline sentence relates to the social campaign in terms of the name and the purpose of the campaign itself. The words “welcome home” and “I’m home” are interrelated words when associated with greeting sentences after returning home, so the use of the tagline does not deviate from the campaign concept with the theme of “warm” and family.



Fig. 5 Microblog design. *Source* Personal documentation

7 Result

7.1 Main Media Design

The main media is Instagram microblog content with a size of 1080 × 1080 px. The content on the microblog contains information about toxic families, as shown in Fig. 5. Other content created is interactive content in the form of quizzes and games, as well as some visual content in quotes and simple illustrations as a compliment, as shown in Fig. 6.

7.2 Supporting Media Design

The first supporting media is the Instagram story. Instagram Story functions as a promotional medium and a medium that can increase engagement with the audience. Instagram

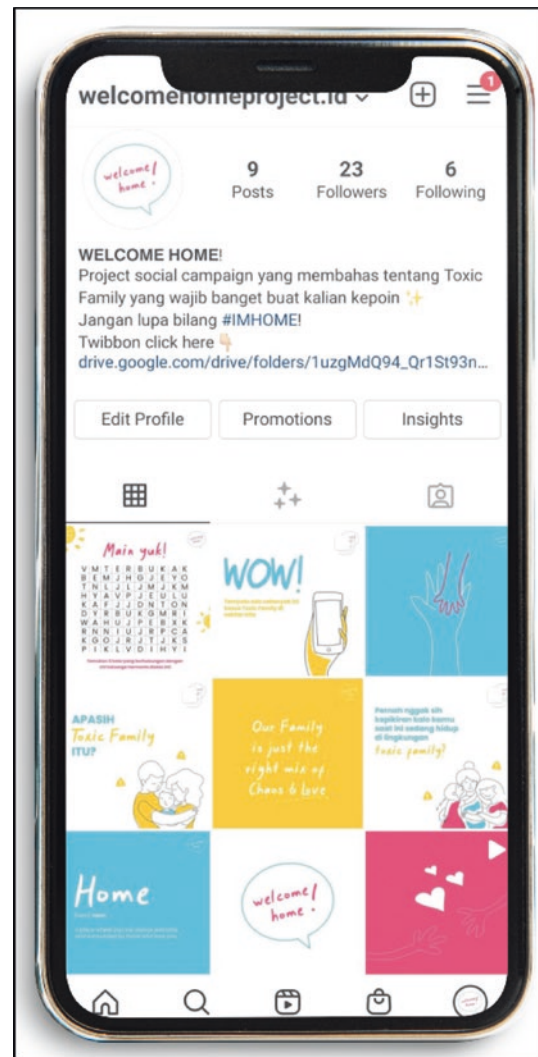


Fig. 6 Microblog Im Home. *Source* Personal documentation

Fig. 7 Supporting media. *Source* Personal documentation



stories contain interactive content and as a medium to repost content that has been uploaded previously. The second is the GIPHY sticker which functions as a decoration for the story and can later be used by the audience through the Instagram story feature. Next is the Instagram Filter, a form of campaign support media that can be used and spread by the audience through Instagram stories. Then there is a 5×5 printed sticker with bontax sticker material as shown in Fig. 7.

The illustrations used as stickers depict social campaigns about toxic families, which are also used in the main media. Supporting media uses a minimalist and clean design but still adapts to the themes and concepts raised in the social campaign, namely family.

8 Conclusions

The main media chosen in the social campaign design is microblog content uploaded on the Instagram platform with the [welcomehomeproject.id](https://www.instagram.com/welcomehomeproject.id) account. The purpose of the social campaign is to serve as a medium that can provide information about toxic families to the public in Indonesia. The process of delivering information requires a visual stimulus in the form of illustrations so that the intent of each content can be conveyed more efficiently. The content on the main media uses a simple illustration style adapted to the theme of the social campaign, namely warm and minimalist. It adapts to the target audience, namely early adulthood, especially young couples. Several supporting media

also support this social campaign in the form of Instagram stories, Instagram filters, Twibbon, GIPHY stickers, printed stickers, mugs, pouches, t-shirts, tote bags, notebooks, and cloth masks that are packaged in an attractive, creative, and informative way. Hopes to increase curiosity and stimulate the audience about this social campaign. With the social campaign “Welcome Home!” it is hoped that the audience with early adulthood in Indonesia can be more aware of the toxic family problems that are rife in many families in Indonesia.

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Application of the Earthquake Disaster Evacuation Principle at the Borobudur Temple World Heritage Site Through Infographic Socialization Media

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and Mutiara Cininta

Abstract

World heritage sites, especially the Borobudur Temple Complex, have the potential to be hit by natural disasters such as earthquakes, volcanic eruptions, climate change, and man-made disasters. An earthquake disaster has the potential to occur in the Borobudur Temple Complex. This is because it is on the Eurasian plate and is in an earthquake zone. This potential raises the urgency of preparing information media related to evacuation guidelines in the face of earthquake disasters to support the sustainability of the Borobudur Temple area as a cultural heritage. The method used in the design of infographics begins with data collection, namely observation, interviews, and expert reviews, and is continued with the application of the principles of evacuation of the four earthquake hazards and drop-cover-hold-evacuate in existing conditions. The results of the planning are realized in the form of infographics aimed at one of the stakeholders who can act as an evacuation guide, namely a tour guide. The purpose of this research is to describe the process of compiling earthquake evacuation guides for tour guides in the form of informative, communicative, and sustainable infographics. Infographic design produces the main media in the form of print and digital posters that can be easily used for various groups, both

now and in the future. Infographics are a simple way to convey information to readers using less text and more visual communication.

Keywords

Earthquake disaster · Infographic · Borobudur · Evacuation · Waterfall method

1 Introduction

The Borobudur Temple Complex is located in Magelang Regency, Central Java Province, which is one of 28 areas in Indonesia that are prone to earthquakes. Borobudur Temple was built between three mountains, namely Mount Merapi, Mount Sumbing, and Mount Merbabu, which are volcanoes, so there is the potential for volcanic eruptions that can cause earthquakes. Because it is in an earthquake-prone zone, stakeholders in the Borobudur Temple Complex must be prepared and always aware of the situation and conditions of an earthquake that will occur in the future.

Physically, the Borobudur Temple is composed of stones that are installed without reinforcement and can shift and then fall. This can have a bad impact on the structure of the Borobudur Temple itself and can endanger visitors. Information regarding rescue and evacuation standards due to earthquakes in the Borobudur Temple area is urgently needed. The Borobudur Conservation Center (BKB) has created a Standard Operating Procedure (SOP) as a form of disaster management for the events that occurred in the Borobudur Temple area. The standards issued are in the form of regulations, evacuation procedures, equipment standards, and flow of activities. In the Standard Operating Procedure (SOP) for the Borobudur Temple Security Obvitnas compiled by the Borobudur Conservation Agency, natural disasters such as volcanic eruptions and earthquakes are considered very vulnerable.

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The first thing that must be done when an earthquake occurs in the Borobudur Temple area as stated in the Borobudur Temple Obvitas security SOP document is that the Borobudur Temple Obvitas security officer can contact PLN to request a power outage to prevent unwanted things. In the event of a natural disaster, terrorism, or other dangerous things that could endanger the lives of visitors to Borobudur Temple, the Head of the Borobudur Conservation Center in coordination with the Head of the Borobudur Tourism Park Obvitas Management Unit may order visitors to be evacuated from the Borobudur Temple Obvitas to a safe place by asking for help from the local SAR team.

However, these guidelines do not accommodate the participation of stakeholders around the Borobudur Temple complex, one of whom is a tour guide. In the absence of stakeholder contribution information in the form of informative and communicative infographics, the division of roles for disaster management at the Borobudur Temple Complex was only carried out by the Borobudur Conservation Agency.

Based on the information obtained during a face-to-face meeting with the head of the guide association in the Borobudur Temple area, currently guides in the Borobudur Temple area are required to have certification from a training institution in charge of: English basic level of proficiency, basic level of English writing, knowledge of the tourism industry, and development of ecological tourism materials. Currently, in the training module, there is no disaster training in tourist areas given to tour guides. This is certainly quite risky considering the position of the Borobudur area, which has the status of a cultural heritage that must be protected and has many tourist visits that are often hit by earthquakes. This unpreparedness can increase the impact if, at any time, a disaster occurs in the Borobudur Temple area.

Therefore, a disaster evacuation guide that is educational, informative, sustainable, and based on standards issued by the Borobudur Conservation Center is needed. Borobudur Temple buildings and temple grounds in Zone 1 and parks in Zone 2 have limited space for tourists to visit. The area of Borobudur Temple that can be visited in the form of a floor hallway is only 8725.50 m², and the temple courtyard that can be visited is 17,012 m². In Zone 2, this park has an area of 670,000 m² that can be visited (Ministry of National Development Planning et al., 2020). The number of visitors in 2018 based on the annual report of PT. Borobudur Temple Tourism Park (TWC) and BKB totaled 3,699,942, with details of 3,361,178 domestic tourists and 308,764 foreign tourists.

Based on the existing problems, this infographic makes it possible to explain earthquake evacuation guidelines in the Borobudur Temple area, which will be given to stakeholders to remember and study. Through infographic media, it is hoped that the evacuation guide material in the Borobudur Temple area will be more easily understood by stakeholders. In addition, it is hoped that through this infographic medium,

it can support aspects of sustainability in protecting the Borobudur Temple area. Infographics (or information graphics) are graphic visual representations of information, data, or knowledge. These graphics present complex information quickly and clearly (Newsom & Haynes, 2004). Infographics comes from the word infographics in English, which stands for information+graphics. It is a form of data visualization that conveys complex information to readers so they can understand it easier and faster (Saptodewo, 2014). And based on Krum's statement, the purpose of infographics is the same as public speaking. The purpose of infographics can be divided into three categories: to inform, entertain, and persuade the audience so that the audience pays attention, takes the time to read, concludes, and takes action according to what is in the infographic (Krum, 2013). An infographic visual approach is able to replace exposure to information and data that is complicated (Arigia, Damayanti, & Sani, 2016). Strong visuals are also easier to remember; research proves even just looking inside for a short time can help humans remember up to thousands of pictures (Senjaya et al., 2019).

Based on previous research that has been carried out by (Saputri, Imaniar, & Putri, 2019) regarding the design of infographics in order to increase disaster preparedness, the results show that an infographic design was created to help explain to the target audience the paradigm of natural disaster management, whose core is to provide visuals about the danger if society does not change its perspective or paradigm. The visual style, colors, and fonts are chosen to give a simple and balanced impression while still being able to attract attention. Infographics as informative media simply aim to convey messages easily understood by the target audience (Saputri, Imaniar, & Putri, 2019).

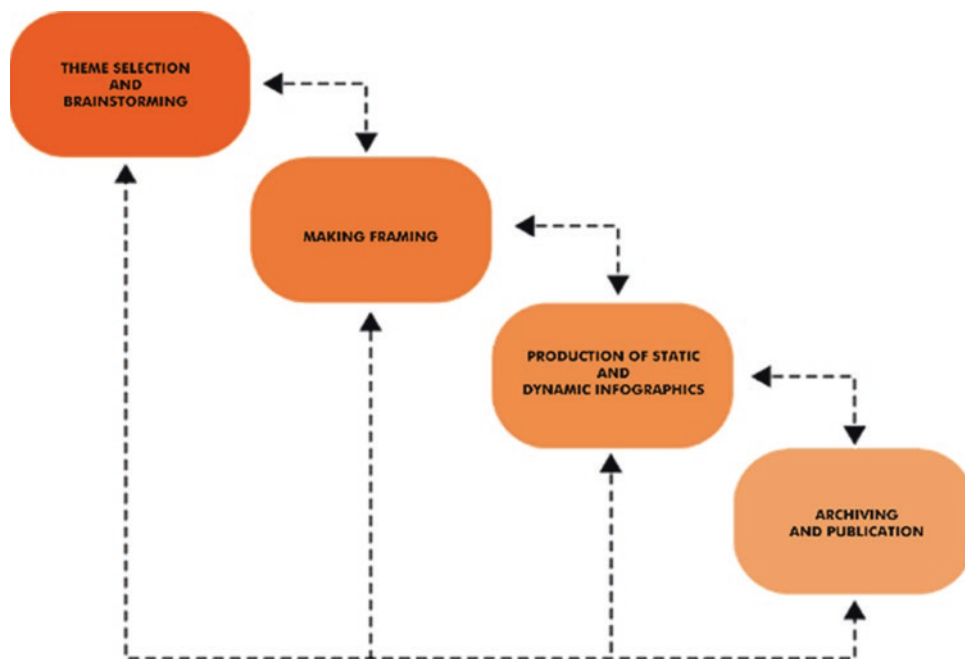
The aspect of sustainability in question is the protection of the existence of the Borobudur Temple itself as a world heritage site from the threat of disasters that can damage it and the ease with which everyone can understand the safety guidelines contained in the infographic. Because stakeholders in the Borobudur Temple area continue to experience regeneration, a disaster evacuation guide is needed through easy-to-understand media for various generations, both now and in the future.

This study aims to explain the process of compiling an earthquake evacuation guide in the Borobudur Temple area in the form of infographics, which will later be used by stakeholders to explain the evacuation process in a more communicative, informative, interesting, and sustainable way.

2 Methods

The method used in this research is the waterfall method. The waterfall method is included in the classic life cycle because this method emphasizes sequential and systematic

Fig. 1 Waterfall method on content production workflow. (Source Pressman, 2015, 42)



phases from top to bottom. In compiling infographics, this method is used to make them more organized and follow the basic steps of disaster evacuation (Pressman, 2015). The following in Fig. 1 is the waterfall method used in designing this infographic, as shown in the waterfall method figure on content production workflow:

In Fig. 1 waterfall method on content production workflow, the initial work process (stage 1) is gradual, starting from the initial idea (planning), data collection, data classification (data source), data compilation (analysis), sketches, and rough storyboards. Next, it will enter the infographic design stage, starting with the initial concept created through the initial process (stage 1), then proceeding to the design process (stage 2).

3 Result and Discussion

1. Beginning Idea

In accordance with Fig. 2 flowchart for compiling infographics, the initial idea is also called the planning process. Planning is one of the most important processes when starting an infographic design. Through this process, the type of infographic, the delivery method, the purpose of the infographic, the data to be researched, the target audience, and the source of the data can be determined. This process

becomes the initial excavation process, where there will be a lot of criticism and suggestions from related parties.

2. Data Collection

In accordance with Fig. 2 flowchart for compiling infographics, data collection is a very important part of a study. The data collection method used is a qualitative data collection method through literature studies and interviews, as shown in Fig. 3. The literature study was carried out by reviewing documents issued by the Borobudur Conservation Center regarding Standard Operational Procedures for Borobudur Temple Disaster Management and earthquake evacuation standards, as shown in the figure below. Furthermore, input is given by the Expert, which in this case is the Coordinator of the Borobudur Temple and Area Maintenance Working Group. The collected data is processed in the data analysis process to look for its relationship with the existing conditions in the Borobudur Temple Area.

3. Data Classification

The third step corresponds to Fig. 2 flowchart for compiling infographics, namely the data classification section. According to the KBBI, evacuation is the evacuation or transfer of residents from dangerous areas. Drop, hold, and cover are three steps that a person can take when an earthquake occurs. Drop, hold, and cover are the recommended

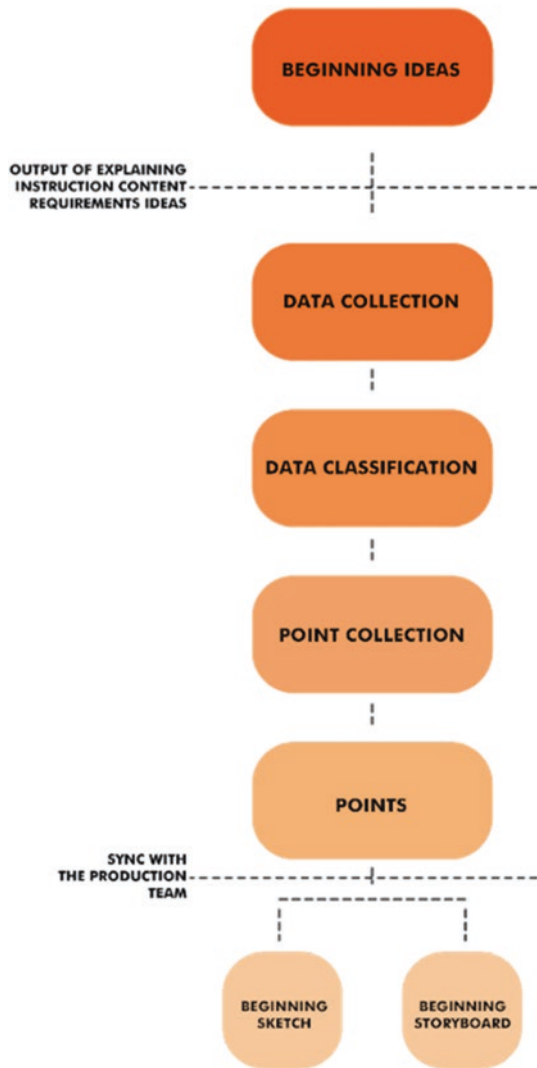


Fig. 2 Flowchart for compiling infographics. (Source Author's Analysis)

methods as one of the approaches that can be used because it is simple, systematic, and easiest to explain about earthquakes. The drop, hold, and cover approach is aimed directly at people to maintain their calm when an earthquake occurs by dropping the body down, leaning as far

forward as possible (cover) to get protection, and hiding under a table to get help (hold).

In addition to the principle of disaster evacuation, there is also the principle of four dangers as a form of early prevention before a disaster. Based on the Non-structural Risk Mitigation Against Earthquake, there are several activities that objects can cause during an earthquake and must be avoided, namely easy to roll over, break easily, move easily, and toxic substances. This can be the first step in determining location points in the Borobudur Temple area so that areas prone to the occurrence of one of the four dangers can be identified.

4. Point Collection

The next step is in accordance with Fig. 2 flowchart for compiling infographics namely the point collection section, the preparation of points is included in the analysis process. The purpose of analyzing data is to explain it so that it is easier to understand, and then a conclusion is drawn (DQ Lab, 2022). In this case, the data analysis will match the evacuation principle, four dangers, and data obtained from the SOP of the Borobudur Conservation Center and Expert judgment.

Based on the Standard Operating Procedures issued by the Borobudur Conservation Center, which is in Fig. 3 data source for this research, there are several activities that can be identified as being part of the four dangers. The identification is between an earthquake on a small scale, which will not affect the structure of the temple, and a large-scale earthquake that affects the structure of the temple components, such as falling and breaking.

This, of course, will affect the evacuation process for visitors who are in the Borobudur Temple area. In general, early handling of disasters can also be carried out in an open area by protecting the head from dangerous objects using bags or items carried. The principle of drop, cover, hold disaster evacuation is a simple principle that can be applied when a disaster occurs in the Temple area due to an earthquake. This identification and principle can

Fig. 3 Data source about this research. (Source Author's Analysis)



be arranged into a schematic evacuation process to make it easier for visitors to do it. These processes include:

- (a) When an earthquake occurs, visitors are advised to protect their heads with a bag (cover).
- (b) Visitors can duck down to ensure they are not safe from the large temple rocks.
- (c) Stay close to the relief wall or stupa during the earthquake (hold).
- (d) The tour guide ensures personal safety by wearing a helmet before assisting with the evacuation.
- (e) Position yourself at the nearest guide point at least 1 tour guide per point (evacuate).

From the data analysis process, it produces an overview of the evacuation process through data that is identified as suitable for the Borobudur Temple area. The evacuation process is organized and systematic.

5. Storyboard and Sketch

The fifth step corresponds to Fig. 2 flowchart for compiling infographics namely storyboard and sketch sections. A storyboard, or better known as a storyboard, is a sketch of images arranged according to the script. Through storyboards, the ideas conveyed are expected to be easier for others to understand. This storyboard can be a tool for us in the design process in the form of rough drawings before being executed into a real form. In designing the infographic, the application of the Earthquake Disaster Evacuation principle aims to sketch ideas and evacuation routes in the form of steps during evacuation according to evacuation standards, SOPs from the Borobudur Conservation Center, and expert judgment.

6. Production Process

And the last step is according to Fig. 2 flowchart for compiling infographics namely production process. Infographics are one of the most important ways to convey information in different variations. The most important part of the infographic preparation process is design. Because the design will be the allure for readers, the infographic on the application of the principle of earthquake evacuation is classified as a process-based infographic because it explains the evacuation routes when an earthquake occurs in the Borobudur Temple area. When viewed from the type of infographic content, the application of the principle of earthquake disaster evacuation is classified as Educational

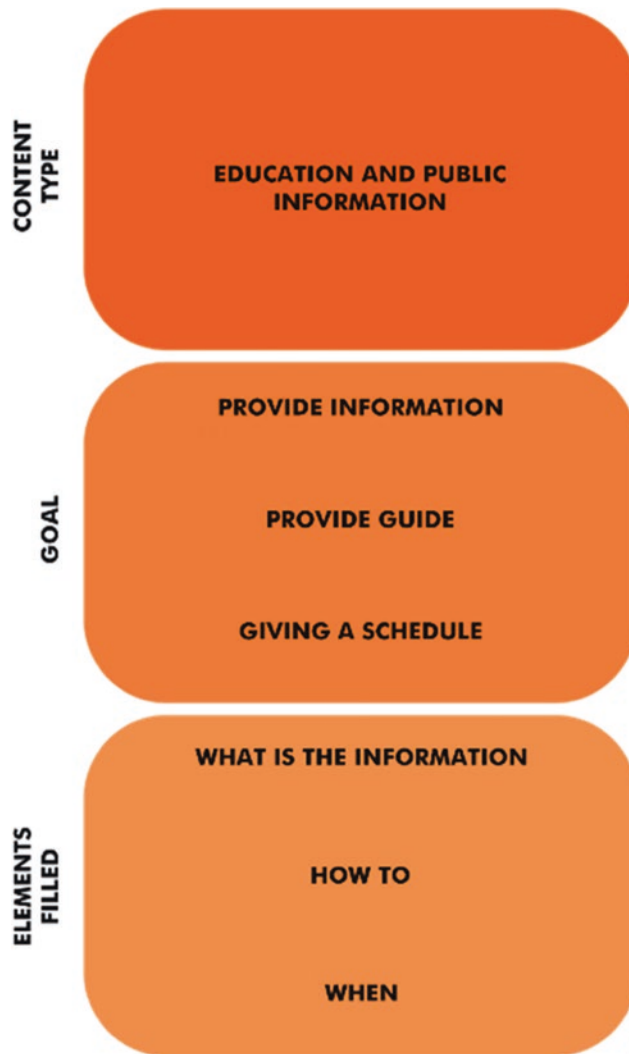


Fig. 4 Diagram of the contents of educational content and public information. (Source Author’s Analysis)

Content and Public information, so there are several points of objectives and elements that must be met, as shown in Fig. 4 diagram of the contents of educational content and public information below:

There are several design elements that must be considered when compiling an infographic so that it becomes a communicative and attractive design. The design elements are line, shape, texture, space, size, and color (Supriyono, 2010). There are also design principles, including unity, balance, pressure, rhythm, proportion, and dominance.

Based on the classification, this infographic includes a static infographic in the form of a poster. Static infographics have several elements that must be met (Kementerian

Komunikasi dan Informatika Republik Indonesia, 2018), as shown in Fig. 5 static infographic elements below:

1. Title

The first part of Fig. 5 static infographic elements is the title. The title is the main element in an infographic. The title becomes the main focus of the reader when viewing the infographic to find out the outline of the content of the infographic. The criteria that must be followed in writing an infographic title are:

- (a) Maximum of 5 words.
- (b) A title that catches the reader's attention.
- (c) Represents the entire content of the infographic.
- (d) Use active sentences in writing.

2. Layout

The second part of Fig. 5 static infographic elements is the layout. The layout is quite important because it shows the flow of reading infographics, so it needs to be considered

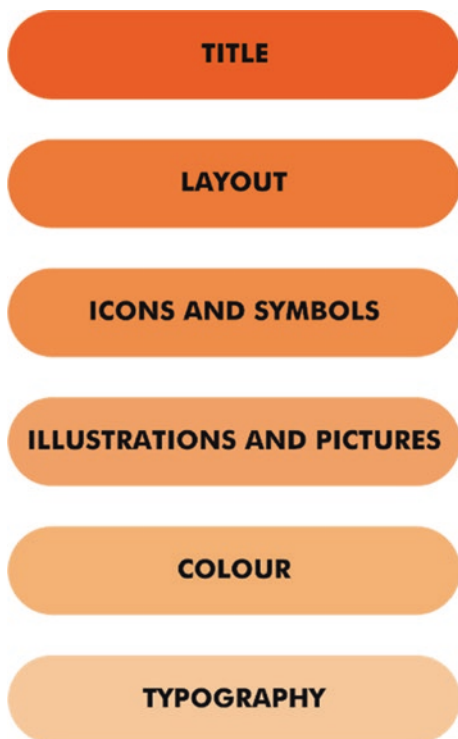


Fig. 5 Static infographic elements. (Source Ministry communication and information of the republic of Indonesia, 2018, 9)

to position the content correctly. There are several layout styles in the design. Good layout criteria, among others:

- (a) There is a difference between main content and supporting content.
- (b) Visual focal points are positioned appropriately.
- (c) Have consistent margins and be in accordance with the type of infographic created.
- (d) There is a clear separation between subtopics that are not directly related.

3. Icons and Symbols

The third part of Fig. 5 static infographic elements is icons and symbols. A symbol is a sign that can replace an object. Icons and symbols are used to make it easier for readers to read the data presented and make infographics look more attractive. The following are the criteria for using icons and symbols properly and correctly:

- (a) General and symbolic.
- (b) Easy to recognize.
- (c) Helps in understanding infographics faster.
- (d) Using licensed or homemade icons.

4. Illustrations and Pictures

The fourth part of Fig. 5 static infographic elements is illustrations and pictures. Illustration is information that is poured into the form of an image to make it easier for readers to understand the purpose and intent of the content of the infographic. The criteria for an appropriate illustration include:

- (a) The illustrations used make it easier to understand the data or infographic content.
- (b) Have harmony in the illustrations used in one infographic.
- (c) Using licensed or homemade illustrations.
- (d) The resolution and image quality are quite good.

5. Color

The fifth part of Fig. 5 static infographic elements is color. Color in infographics is an important element because it has an influence on aesthetics, interest, and memory. The use of color is important in order to make the visuals of an image

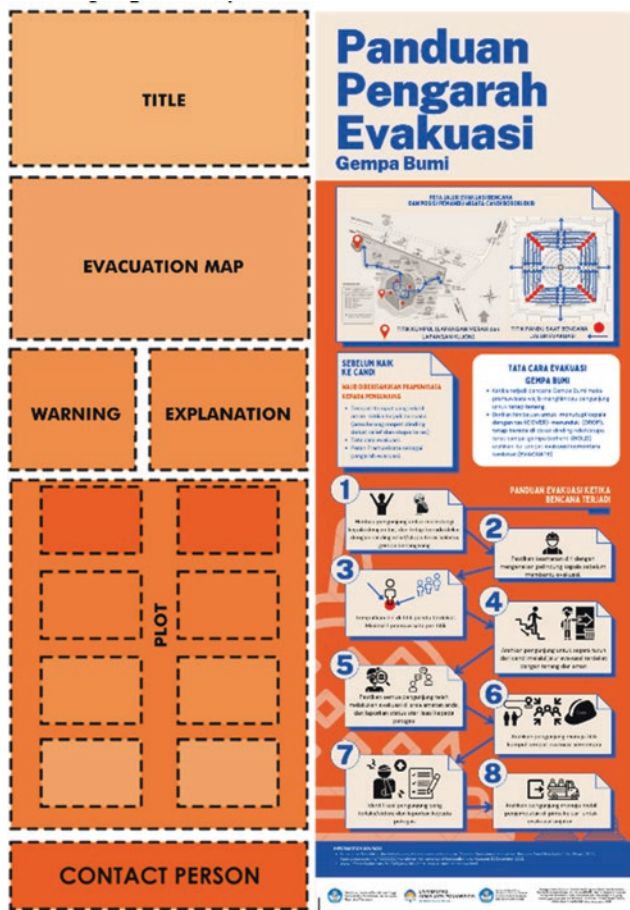


Fig. 6 Infographic layout that has been created. (Source Author's Analysis)



Fig. 7 The condition of the reliefs in Borobudur Temple

memorable and affect the initial impression. The criteria for choosing colors in the design are as follows:

- (a) Using color psychology.
- (b) The background color and text color have a contrast that is comfortable to read.
- (c) Use a color palette that doesn't dazzle the eyes.
- (d) In accordance with brand guidelines and consistent with one design.
- (e) The color used is in accordance with the object's identity and color familiarity.

6. Typography

And the last part of Fig. 5 static infographic elements is the typography. Typography is a way to make words more visible. The designer forms language equivalents by giving active words and having the courage to pronounce sentences well (Cullen, 2012). Words, sentences, and paragraphs are messages that are assembled from a letter. Typefaces created manually or digitally are unique. Here are some typographic criteria that can be applied to infographics:

- (a) Selected title and subtitle fonts according to the mood or style of the infographic.
- (b) The font in the title is recommended to be a Display type font.
- (c) The recommended text is Sans-serif type with a minimum size of 20 Points on 300 dpi (dots per inch) documents.
- (d) It is recommended to use two different font types. Maximum of three types of fonts.
- (e) Create a font palette (color, size, and thickness) for a single infographic.
- (f) Make sure the spacing between letters is not too wide and the spacing between lines is neat so that it is easy to read.

The following below is Fig. 6 infographic layout that has been created of this research.

The infographic has provided safe location points for evacuating and explained safe points in the event of a disaster, such as standing close to the relief and being able to evacuate. Figs. 7 and 8 for the condition of the reliefs in Borobudur temple below show the condition of the reliefs in Borobudur temple, which consist of many 3D images.

Figure 9 the callout section of the infographic above shows the two main sections of the infographic. In the advisory table, an explanation based on Standard Operating Procedures is given to visitors regarding evacuation procedures, safe places, and the role of tour guides. There is an explanation of the principle of drop, cover, and hold evacuation so that the end user will understand the procedures that must be carried out during a disaster.



Fig. 8 The condition of the reliefs in Borobudur Temple (Source Authors)

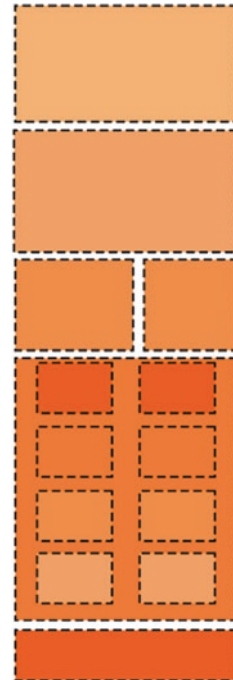


Fig. 10 Composition of infographic layout frames. (Source Author's Analysis)

SEBELUM NAIK KE CANDI
MAJIB DIBERITAHUKAN PRAMUNISATA KEPADA PENGUNJUNG

- Tempat-tempat yang relatif aman, ketika terjadi bencana
- Titik-titik evakuasi
- Penet. Pramunisata sebagai pengarah evakuasi.

TATA CARA EVAKUASI GEMPA BUMI

- Ketika terjadi bencana Gempa Bumi maka pramunisata wajib menghibau pengunjung untuk tetap tenang.
- Berikan himbauan untuk menutupi kepala dengan tas (tas) atau menggunakan alat pelindung diri yang ada di sekitar.
- arahkan ke tempat evakuasi sementara terdekat (EVACUATE)

BEFORE GOING TO THE TEMPLE

1 Hibau pengunjung untuk melindungi kepala dengan tas, dan tetap berada diikat dengan dinding relief/stupa teras selama gempa berlangsung

2 Pastikan keamanan diri dengan menggunakan pelindung kepala sebelum membantu evakuasi.

3 Tempatkan diri di titik pando terdekat. Minimal 1 pramunisata per titik

4 Arahkan pengunjung untuk segera turun

5 WHEN A DISASTER HAPPENS

6 Pastikan semua pengunjung telah melakukan evakuasi di area aman anda dan laporkan status sterilisasi kepada petugas

7 Arahkan pengunjung menuju titik kumpul tempat evakuasi sementara

8 Arahkan pengunjung menuju mobil penyelamatan di pintu keluar untuk evakuasi lanjutan.

Fig. 9 The callout section of the infographic. (Source Author's Analysis)



Fig. 11 Complementary color in infographics. (Source Author's Analysis)

The evacuation route is given clear framing and numbering of steps. This procedure was reviewed by considering SOPs, General Standards, and expert judgment, namely

by Brahmantara, S.T., M.A., as the Head of the Borobudur Temple and Area Maintenance Working Group. And the image below, entitled Fig. 10 composition of infographic layout frames shows the composition of the contents of this infographic.

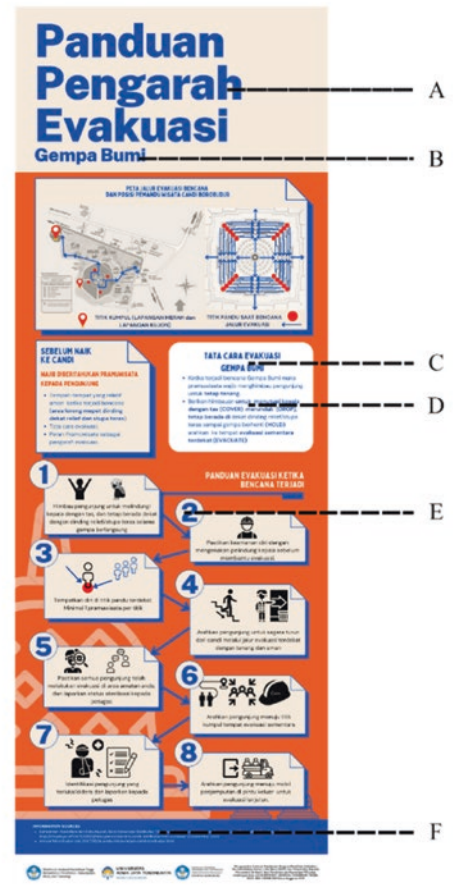
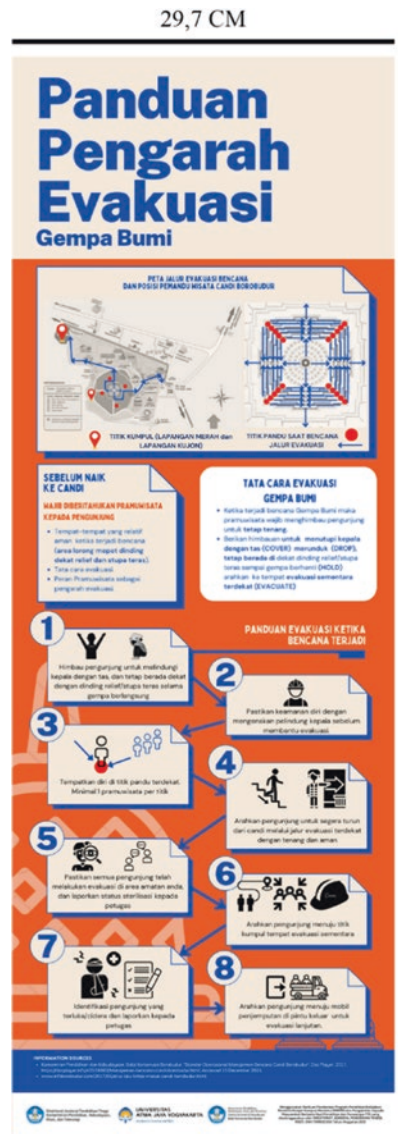
In the infographic design section, the Earthquake Evacuation Guidance Guide is laid out by providing a compositional frame layout with a title as an explanatory focus on top of the infographic. Then proceed with the main points, namely evacuation maps, appeals, explanations, and a small framing on the flow so that the process is more organized and each of its parts has been divided into the composition of the infographic, as shown in the figure composition of infographic layout frames.

There are several design principles and elements that are applied to this infographic design, including:

1. Color

The choice of colors in infographics as shown in Fig. 11 complementary color in infographics comes from the principle of complementary colors. Color selection using complementary colors is based on Brewster's theory. Complementary colors are colors that are opposite each other on the color wheel, creating a color combination that stands out (Meilani, 2013). The colors used are a combination of orange, blue, and cream colors that create contrast in important areas such as contrasting text and smooth

Fig. 12 Size on infographics. (Source Author's Analysis)



Code	Part	Size (pt)	Font type
A	Title	124	Public Sans Bold
B	Sub Title	50.2	Public Sans Bold
C	Title Information	24	Bobby Jones
D	Information	14.1	DM Sans
E	Number	71.1	Public Sans Bold
F	Resources	9	Livvic

backgrounds. The use of contrasting colors and soft colors is the main point of infographics that can be seen more clearly. Some use black to emphasize icons or illustrations of activities that are highlighted with images (Lin-Ping Yuan, 2021).

2. Size

The size used in the infographic is 84 cm x 29.7 cm, as shown in Fig. 12 size on infographics. The title size used is 124 pt, and the font size for the information description is 14.1 pt, according to what is listed in the font code table, which is in the figure size on infographics. The selection of the size of the image adjusts to the available space in the infographic area but still makes it easier to read. The use of icons is made larger than the explanatory text with the aim of making it easier for readers to read the illustrations from the explanations given.

3. Space

The third part is space. As shown in Fig. 13 of the infographic, the space in the area that is an important element is given more space and space between points so as not to

disturb the reader. In the designed infographic, there is a distance between one piece of information and another so as not to create a visual that is too dense in the infographic arrangement.

4. Line

The lines created are contrasting enough so that they match and provide an outline like a frame and group an object, as shown in Fig. 14 lines on infographics. A line creates a box shape to provide a boundary between its subdivided areas. There is also an arrow line to provide an explanation of the evacuation flow in stages based on drop, cover, hold, and evacuate. The line between an area is shaped like an outline that is different in color from the base color so that it becomes more contrasted and creates a shape.

5. Form

The basic form of an infographic is a rigid rectangular shape, as shown in Fig. 15 form in infographics. The shape used is predominantly a box with slight modifications in the corners so that it is not too rigid but consistent so that it becomes more organized. The numbering is combined



Fig. 13 Space in infographic. (Source Author's Analysis)



Fig. 14 Lines on infographics. (Source Author's Analysis)



Fig. 15 Form in infographics. (Source Author's Analysis)

with a circular shape to emphasize the steps that must be followed in stages. The shape of an important object is given a difference by using a shape that is not a square but a shape that has an obtuse angle, so that it becomes a differentiator from other shapes. The order of each form is arranged in stages, as is the importance of each form.

6. Domination

In the infographic, there are three parts that dominate its arrangement. These three parts are obligations that must exist and be fulfilled, as shown in Fig. 16: the dominance of infographics. Visually, the first thing that stands out is the color used because it is a complementary color between orange and blue. The next is icons and illustrations that are used in various ways and each plot is described using icons as a form of illustration that must be done. Then there is

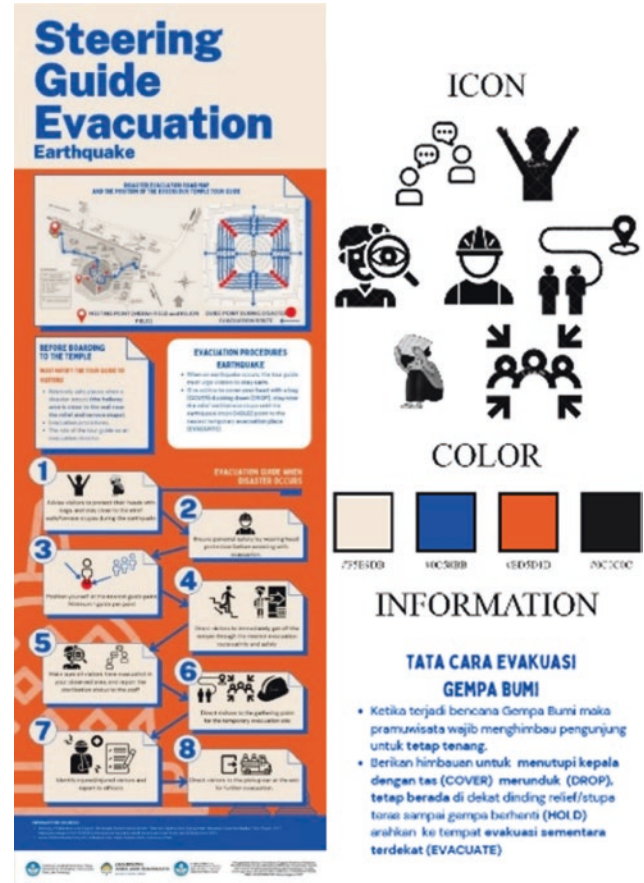


Fig. 16 The dominance of infographics. (Source Author's Analysis)

writing or letters; this is an important part because of the form of conveying information in writing on this static infographic. And lastly, the title is the most dominant thing that is located above this infographic because of the very large proportion of writing, and the color is striking compared to the background.

7. Balance

The first balance seen in this infographic is in the layout, as shown in Fig. 17 which is balanced on the left and right, with the same number of squares and the same proportion between the top and bottom. In the quiet and uninformed section (in the title), a dominant text is given, both in terms of size and color. Meanwhile, in the crowded part, the tendency to dominate icons or image illustrations is given.



Fig. 17 Balance in infographics. (Source Author’s Analysis)

The next balance is in the colors used with complementary theory—contrasting colors but also soft color tones such as white and cream to balance visually.

4 Conclusion

Research on the application of the principle of earthquake evacuation at the Borobudur Temple World Heritage Site through Infographic Socialization Media aims to describe the systematic process of compiling infographics using the waterfall method to increase disaster preparedness within

the Borobudur Temple World Heritage Site and ensure the sustainability of Borobudur Temple’s status as a world heritage site. In addition, infographic socialization media is one of the media that is easy for various groups to understand, so it is suitable for use both now and in the future. The process of forming an infographic certainly requires accurate data so as not to give wrong information, so that data collection is carried out from accurate sources (BKB SOP, General Standards, Expert Assessment), and then the relationships are analyzed and arranged in a clear flow.

The application of design principles and design elements that pay attention to color composition, size, reading space, lines, dominance, balance, and proportion is important, so pay special attention when looking at infographics as a whole or in detail. A clear flow becomes a good design process and produces good results.

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Implementing Narrative Method in Installation Design Project for #NoPlastic Campaign by Greenpeace Indonesia Organization

Alfiansyah Zulkarnain and Eunike Florencia

Abstract

Indonesia is one of the top five countries contributing to plastic emission in the world's oceans (Meijer et al., Meijer, L. J. J., Van Emmerik, T., Van Der Ent, R., Schmidt, C., & Lebreton, L. (2021). More than 1000 rivers account for 80% of global riverine plastic emissions into the ocean. *Science Advances*, 7(18). 10.1126/sciadv.aaz5803). As an undergraduate final project, the authors decided to create a design installation as part of the #NoPlastic Campaign by Greenpeace Indonesia to raise awareness of the impact of plastic pollution in the ocean and its solution for urban public. The research methodology is done through qualitative research from direct site observations, expert interviews, and literature analysis. The narrative design was the chosen method in designing the installation as its capabilities to effectively question, engage, and empower audience (Austin, Austin, *Narrative environments and experience design: Space as medium of communication*, Routledge, 2020). Austin's Narrative Environment theory is used as the design framework and the installation is designed in sequences through several stages using Freytag's Dramatic Narrative Structure and Norman's Three Layers of User Experience theory. The installation also utilizes interactive storytelling because it creates a more impactful message through audience involvement as an active participant of the design. The result is a social campaign to raise awareness of plastic pollution conveyed through design installation using narrative framework and utilizing visual storytelling and interactivity as its communication tools.

Keywords

Design narrative · Installation design · Social campaign · Plastic pollution · User experience design

1 Introduction

Indonesia is the fifth largest carbon-producing country in the world (Meijer et al., 2021). From the conversion of forests and peatlands to the issue of plastic pollution in Indonesia, they are significant factors in increasing carbon dioxide emissions in the earth's atmosphere. Indonesia's Badan Pusat Statistik (Central Statistics Agency) shows that plastic waste in Indonesia reaches 64 million tons per year and the 3.2 million tons are plastic waste that is thrown into the sea. This makes Indonesia the second largest contributor to plastic pollution after China. This is indeed inseparable from the excessive public consumption of single-use plastics and poor waste management in Indonesia.

If no real change is made consistently and simultaneously—even if it is small, climate change can become a permanent phenomenon that brings various disasters to our planet in the future. Extreme weather, economic disruption, well-being, loss of habitat, and species living in it to the emergence of various diseases can be a consequence of disruption of ecosystem balance that can threaten our food supply, water, and quality of life.

Greenpeace Indonesia is an environmental campaign organization that acts to save the earth with peaceful action and promote solutions. One of the campaign actions that Greenpeace Indonesia carried out was the #NoPlastic action which was formed in 2018 and stated through the creation of petitions and various activities aimed at suppressing waste from all parties who contribute to plastic pollution, starting from the upstream, namely producers, and downstream, namely the community. Greenpeace is an independent organization that uses volunteer assistance and individual donations to carry out its various actions, so

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anyone can contribute materially, sign a petition, become a digital activist, or join as a volunteer. The authors chose to focus on one of the environmental issues, which is plastic pollution because it is close to our daily life.

The title of the campaign is #NoPlastic campaign and it is still ongoing. Considering that this campaign aims to deal with problems from upstream (producers) and downstream (communities), the authors see that there has been no exploration of message delivery mediums that is unique to be able to persuade changes from the downstream side (community).

The downstream campaign is targeted at the younger generation, namely Gen Z but specifically in the age range of 18–22 years who lives in the Jakarta area. The authors chose to use installation media in communicating messages because the target audience, namely Gen Z, does not prefer information in the form of long narratives (Ali & Purwandi, 2020). By presenting the message visually and interactively, it can attract more attention and grow the desire of the target audience to be part of the solution to plastic pollution.

Based on the background above, the design objective of this project is to support the goals of Greenpeace Indonesia's #NoPlastic campaign to raise awareness of the impact of plastic pollution within the young urban community. This awareness is delivered by informing solutions that the community can do by reducing the use of single-use plastic packaging, which can indirectly urge changes from the upstream side (producers). The authors hoped that there could be an increase in awareness and a sense of urgency on the downstream side to reduce the use of plastics which can ultimately contribute to encouraging various changes that can have a significant impact on the upstream side (producers) as well.

This paper will focus on the design of the installation as the medium of the campaign. The narrative design is chosen as its capabilities to effectively question, engage, and empower the audience (Austin, 2020). Austin's Narrative Environment theory will be used as the design framework and the installation is designed in sequences through several stages using Freytag's Dramatic Narrative Structure and Norman's Three Layers of User Experience theory. By catering to the Gen Z audience, the installation will also utilize interactive storytelling as it creates a more impactful message through audience involvement as an active participant in the design. The result could be used as a reference in creating a social campaign using installation design as the media and narrative theory as the structure.

2 Theoretical Studies

2.1 Installation and Narrative Environments

An installation is a three-dimensional visual work often designed to change the perception of space. The installation can intervene the observer to see the messages and issues that want to be presented in an attention-grabbing way that also can impress and educate the observer. In the visual context, the installation also provides a three-dimensional visual that takes into account the elements of space, time, and sound. Through installation, the observer can also experience and blend in with the work so that the message can be conveyed better (Bishop, 2005).

Installation design as a three-dimensional visual communication media can also be interpreted as a spatial narrative experience. Austin argues that we interpret our socio-spatial environments similar to the way we follow literary stories and we use narrative to make sense of the world around us (Austin, 2020). It means implementing the narrative method in an installation design is about how to design a compelling experience of content (story) progressing in space and time through form and materiality.

2.2 Three Layers of User Experience

The design of an installation will always be connected to the audience's experience (Rahman et al., 2021). Don Norman, an expert in usability theory, explained that experience is influenced by emotions, and there are layers to it (Kominos, 2020). Norman divides user experience into three phases, namely *visceral*, *behavioral*, and *reflective*. The *visceral* phase or component is the phase by which a person sees and processes directly what he/she sees. The *behavioral* phase includes the actions or actions that the user performs after processing what he/she sees and feels. Last is the *reflection* phase, in which the user remembers what they have experienced through emotional associations that arise after experiencing and interacting with the work (Lupton, 2017). Through emotions or feelings that occur with a combination of colors, light, textures, or sounds that regulate the atmosphere in an installation, a person can be moved to act after experiencing various changes in emotional energy. The authors will use this theory to understand the stages in *user experience* so that it can present the right visual strategy in the installation medium.

2.3 Freytag's Pyramid Framework of Narrative Arc

The dynamics of storytelling technique in raising the stakes and tension of plot and characters is essential to keep the audience's attention. Gustav Freytag, who analyzed ancient Greek and Shakespearian drama, created a model of narrative arc based on dramatic structure (Austin, 2020). Freytag's Pyramid is Gustav Freytag's modification of the structure initiated by Aristotle and offers a conceptual framework for writing a story that can build compelling storytelling. Bunting modernized Freytag's Pyramid story structure and proposed six stages in analyzing the structure, namely *the exposition stage, initial incident, rising action, climax, falling action, and denouement*, as shown in Fig. 1. By adhering to this structure in designing the installation, the authors hope to create effective visual communication media through dramatic storytelling. When storytelling works, the audience can remember the story conveyed personally (Lidwell et al., 2003).

The exposition section is an initial depiction of a topic that contains the introduction or opening of the problem that will later be discovered, providing a context and information that the audience needs to know first. Then the audience will be given information about the initial problems or conflicts that will occur in the inciting incident and problems that become more serious or complex in rising action but still have not reached their peak, providing data support can be what triggers this rising action stage. Then the culmination of the existing problem or conflict will only be shown in the climax stage. Freytag said that this part is the climax of a story and is the most critical part of the structure, whereas the part before the climax will go to this part, and the part after it will stay away from this climax position. Therefore, problems or conflicts will begin to subside with a lighter intensity in the falling action section. After that, the audience will enter the area for them to reflect on what they have seen and prepare the next section in resolution. Then the audience will go through the end of the entire series of stories containing solutions to problems or conflicts that have occurred during the denouement.

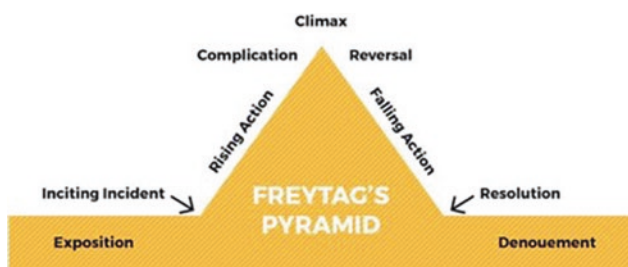


Fig. 1 Freytag's pyramid structure by Joe Bunting

3 Design Methodology

The research methodology is done through qualitative research from direct site observations, expert interviews, and literature analysis. After the research step, the project continues toward the design stages based on the design method by Karjaluoto (2013).

Based on the results of interviews with Greenpeace Indonesia as the stakeholder and literature studies related to plastic issues in Indonesia, some critical insights were gained. Greenpeace Indonesia is trying to encourage change from the upstream (producer) and downstream (community) sides. However, by pushing on the upstream (producer) side, it still has not produced satisfactory results, so more encouragement is still needed from the downstream side (community). Another important one is that through the visualization of campaign messages in different media, namely installations, it is hoped that the public can be reminded and moved to be part of the solution to handling plastic pollution by doing the easiest and most crucial stage in the management hierarchy waste, which is the *reduce* stage so that indirectly it can slowly encourage changes from the upstream side (producers).

The stages of design carried out by the authors have been exposed in outline with the diagram in Fig. 2. In detail, the stages of authorship design are as follows:

- **Discovery.** At this stage, the authors will conduct research related to the problem of climate change to determine the background of the problem, then identify the problem in more detail related to the issue by looking for additional information and the urgency of the situation, namely from the many factors that cause global warming and climate change, the authors found one of the factors that are also a severe problem in Indonesia and very closely related to daily life, which is the issue of plastic pollution. Then the authors determine the limitations of the problems that will be discussed later, namely using installation media as a medium for designing visualizations to deliver values and messages about environmental issues in Indonesia. Then after identifying the problem and determining the limits of the problem to be discussed, the authors conduct theoretical studies and observations related to the things that will be the basis to support us in creating the installation media.
- **Planning.** In the planning stage, the authors will conduct a literature study related to data that supports the purpose of making the final project and conduct interviews with the relevant speakers from the Greenpeace Indonesia organization to complete data related to the #NoPlastic campaign background and search for the content of the campaign that needs to be visualized. We will also analyze the interview results to determine the

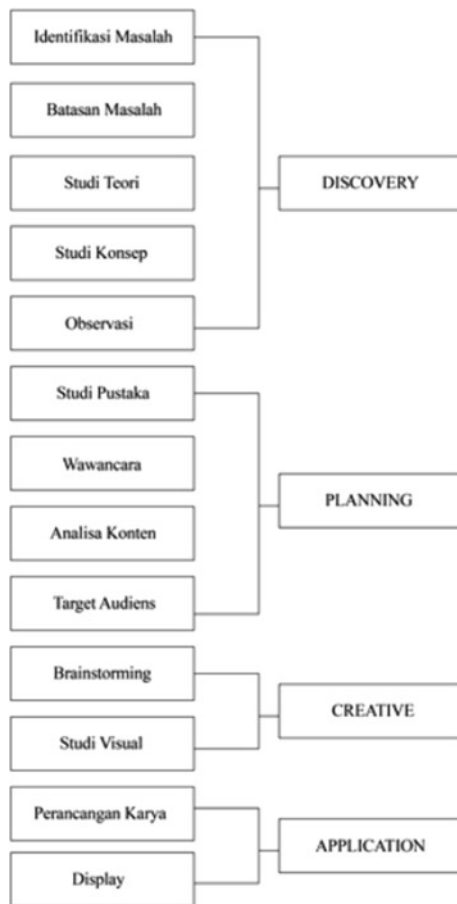


Fig. 2 Diagram of the stages of design based on method design by Eric Karjaluoto

right target audience for the visualizations in this installation medium.

- **Creative.** In the *creative stage*, the authors will *conduct brainstorming* and visual studies related to the visual installation that will be generated to effectively convey the message of the #NoPlastic campaign based on the data that has been collected.
- **Application.** Then in the last stage, namely *the application*, the authors will design and install or *display* the installation based on research, plans, and also visual studies that have been obtained in the previous stages.

4 Design Result and Findings

The design of this installation is based on the user experience stages (which are divided into visceral, behavioral, and reflective stages) and Freytag's Storytelling Pyramid Theory. The authors divide the content of the #NoPlastic message into five parts, as follows:

- **Visceral Stage (Introduction and Inciting Incident).** The first part is the visceral stage and is the part where the audience sees and processes what they see. This part aims to attract the attention of the audience first so that at this stage, the author thinks of a visual idea that can be used as an introduction to the installation message to be presented, but with an approach that can cause a sense of curiosity from the audience in its visual depiction. The author uses the following sentence: "The issue of plastic pollution is something that we find every day."
- **Behavioral Stage (Rising Action and Climax).** In this second stage, the installation will be divided into three parts that bring data about the impact of plastic pollution in Indonesia today. In the second part of the installation, the audience will be educated regarding the effect of plastic pollution itself with the following narration, "Did you know that Indonesia is the second most contributing country to plastic pollution in the world's oceans?". Then in the third part of the installation, the audience will be given a depiction of the impact of plastic pollution in the previous stage with the narration, "If no changes are made, the amount of plastic could even exceed the number of fish in the ocean by 2050." Furthermore, in the fourth part, the audience will be given a depiction of what they will face in the future if plastic pollution is not addressed immediately. This section is the climax part of the message flow in the installation, with the narration, "Plastic pollution can poison animals and threaten food safety and quality, threatening our health and quality of life."
- **Reflective Stage (Falling Action and Denouement).** The reflective stage is the stage where the audience remembers what they have seen and experienced through the emotional associations that arise after interacting with the work. In this stage, the authors present the final part of the installation, which aims to provide a space for the audience to reflect on what they have done. It will also ask them how to contribute in the future to the solution of the plastic pollution problem in Indonesia. The audience will also be invited to scan a barcode where they can sign the #NoPlastic petition, get further guidance on the Greenpeace organization and the solutions they can do. They will also be invited to reflect and then share it through social media. This section will be supported by the following narration, "Let's reclaim our right to have a future with a comfortable and quality environment to live in." and "A cleaner world starts with you. #NoPlastic."

The design of this installation form will be in the form of a process stage that can make the audience aware of the

impact of plastic pollution. To achieve this, the authors want to create an installation that feels private so that the audience can focus on seeing message after message presented in each part of the installation. In addition, given that campaign messaging is sorted by Freytag’s Pyramid storytelling structure, showing the messages in sequence becomes crucial in this installation. Based on anthropometric theory, the authors chose a closed room with a size that is not too large, with a room height of 250 cm based on the optimal height of the average men and women (Panero & Zelnik, 1979). There are also walls to separate rooms to make a systematic flow, ensuring that the audience can see and experience each stage according to the order of each room (Fig. 3). Based on the height of the installation room, the authors will also present text messages at a height in the range of 91–182 cm or also known as an eye-level area based on the theory of installation zone (Calori, 2007).

The installation form is a combination of four trapezoidal-shaped rooms. When combined, they produce a shape that resembles the shape of the mall atrium chosen by the authors. It is located in West Jakarta and is surrounded by universities. It is also one of the hangout spots for the target audience. The shape of the installation is also an application of design principles namely the principle of similarity and the place aspect in the theory of installation art. Figure 4 shows the result of the design from the top view.

4.1 Visceral Stages

The installation starts from the visceral stage, which is located on the exterior design of the installation (Fig. 5). The design contains illustrations of a group of people representing the target audience, namely young Gen Z, whose eyes and gestures show a sense of curiosity that also functions as leading lines to the installation’s entrance. The subject in the illustration also holds a collection of products with single-use plastic packaging, either bottles, snacks, or

plastic bags in their hands. They serve as additional forms of hints to the issues that will be brought up in this installation. The front of the entrance is also given a large inscription on the top, which is an invitation to “Let’s peek into the future!” that is placed on various sides of the visceral section so that the solicitation sentence can also be read on the other side of the room. In addition, the shape of the door is made in the form of a silhouette of a plastic bottle. At the entrance, there is also a net chain and some plastic waste that comes from the third room in the installation as an additional hint to the contents of the installation.

The color selection in this stage uses contrasting and vibrant colors following the intended *bold* visual keywords to attract the attention of the target audience. The door is also covered with PVC curtains so the inside of the installation can be slightly visible when peeked from the outside. At this stage, the author uses message delivery with a connotation approach or implicit delivery of the message in semiotic theory.



Fig. 4 Three-dimensional digital render of the installation from the top view. *Source* Personal documentation

Fig. 3 Initial sketches of the installation design. The illustrations shown are drawings of room installation height compared to the average height of the target audience and the floor plan of the installation. *Source* Personal documentation

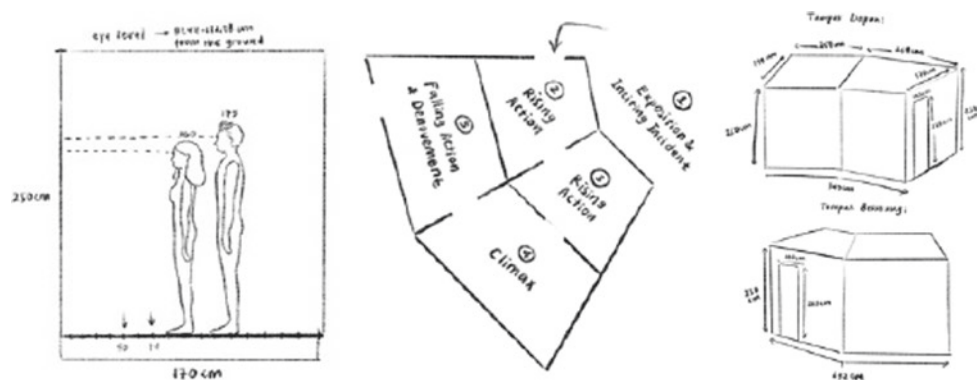


Fig. 5 Visual design of the visceral stage of the installation in three-dimensional digital renders. *Source* Personal documentation



4.2 Behavioral Stage

When visitors enter the first room in the installation, they will see a large vertical screen that acts as a handheld cellphone screen. It displays an Instagram Story post containing the question, “Did you know that Indonesia is the second most contributing country to plastic pollution in the world’s oceans?” (Fig. 6). The question is then supported by an illustration of the sea filled with plastic waste that seemed to come from the cellphone screen. The main depiction in this room seeks to explain the facts about the state of Indonesia’s plastic pollution to the world and how it is a real thing that does not only exist on our cellphone screens. The entire side of the room wall is also filled with pop-up alerts that say, “Declaring emergency!” and “Climate emergency!” as well as news from social media displays such as YouTube and Instagram, equipped with headlines and

photos as the use of gadgets and social media is a familiar thing and close to the target audience.

This first room also uses the color red to convey dangerous messages and cause feelings of *urgency*, and *alert* visitors. It is combined with yellow and blue colors to bring vibrant colors. Before entering the next room, visitors will pass through a collection of hanging plastic bottles, creating a repetitive rhythm. This room is the first opening related to the topic raised in the installation, which is packaged as a news story on social media. Some of the bottles were designed to cover the door to the next room. The audience must go through the bottles to proceed to the next room. It is intended to create an experience of annoyance, representing the problem of plastic waste given to the ocean.

In the next room, visitors will enter a blue room that seems to bring visitors to enter life under the sea (Fig. 7). This room is filled with plastic waste that is trapped in the



Fig. 6 Visual design of the behavioral stage, showing the first room in the installation in a three-dimensional digital render. *Source* Personal documentation

nets not filled with fish catches. This situation is then supported by a narration in the middle of the room that reads, "If left unchecked, the amount of plastic can even exceed the number of fish in the ocean in 2050." The room is also equipped with dim and dramatic lighting to add to the dirty atmosphere of the situation the authors want to portray. The placement of net elements and surrounding garbage is also arranged to force visitors to bow their heads and feel uncomfortable, making them experience the distress resulting from plastic pollution. The use of diverse media such as nets and plastic waste is also a form of using contemporary keywords that the authors aim for and want to achieve in supporting the delivery of the message.

In the next room, namely the climax section of the installation, the authors present a visual in the room in dark gray color to bring a serious and tense impression (Fig. 8). In this room, the message conveyed is how in the end, the problem of plastic pollution will threaten the quality

of human life. It will eventually reach inside our bodies through the fish and animals we consume that have previously eaten the plastic waste we produce. It is depicted through an illustration of a girl that tore her body and a pile of trash that came out of her. The authors present a collection of fish that seem to swim toward one point as leading lines that direct the visitor's gaze to the focal point that the authors want to emphasize. The use of dark gray is also combined with vibrant colors such as red, yellow, and blue to bring bold and contrasting colors. The purpose of this room is to confront visitors with the terrible impact they will face if the plastic pollution problem is not addressed.

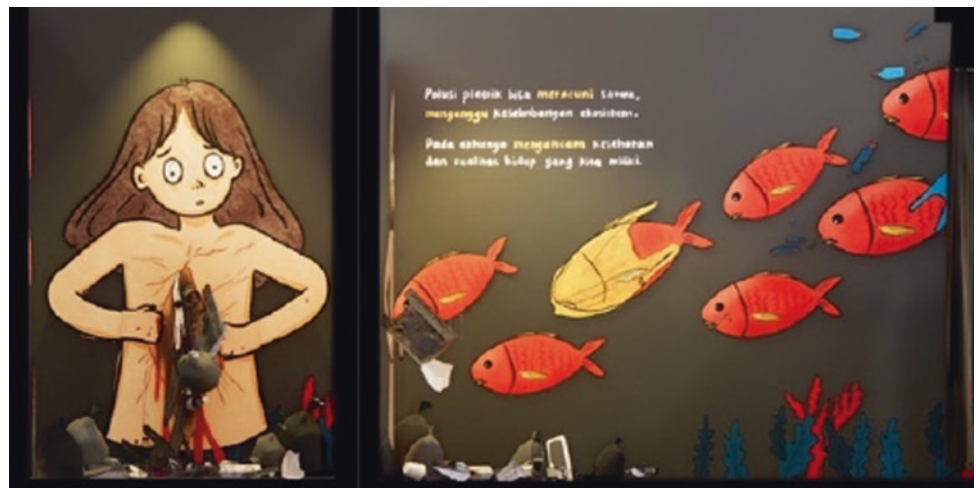
4.3 Reflective Stage

In the last room, before visitors exit the installation, they will enter a blue room whose four sides are equipped with

Fig. 7 Visual design of the behavioral stage, showing the second room in the installation in a three-dimensional digital render. *Source* Personal documentation



Fig. 8 Visual design of the climax stage of the installation in a three-dimensional digital render. *Source* Personal documentation



glass that is half the size. They are covered by an illustration of a pile of plastic waste equipped with the phrase, “Let’s seize our right to have a comfortable and quality future to live in.” In this room, visitors will be invited to take a mirror selfie where their image in the mirror will be blocked by the existing pile of plastic waste as a representation of how urgent the issue of plastic pollution is. Audiences are also invited to reflect on what they will do with the information they have obtained in previous rooms. The middle part of the floor of this room will look clean with a narrative that says, “A cleaner world starts with you #NoPlastic” (Fig. 9).

Before leaving the installation, visitors can also scan a barcode listed before the exit, which will direct them directly to the petition page #NoPlastic. It will also direct them to Greenpeace Indonesia’s website, which contains more information regarding what they can do about these environmental issues.

4.4 Further Findings

Based on the visual design, the authors can summarize that installation media not only has a high attentiveness value but can also provide audiences with a different experience of engaging a story or message. The narrative structure creates sequential steps of storytelling with gradual tension and dynamics that need to be conveyed through its visual forms. From the installation, we can identify the visual elements that contribute to the narrative experience. The authors identified five factors from the installation that contribute to a compelling narrative experience: color, lighting, imagery, material, space, and interactivity.

First, color is one of the strongest visual elements able to convey visual tension effectively. The bright blue color

opens up the visual experience that is welcoming to the audience and brings interest to come closer and inspect the installation. Yet, the contrasting red color emanating from the entrance invites curiosity in the eyes to find out what is inside the installation. Inside, the colors and the lighting build a specific tone and atmosphere in each room. Lighting could also help isolate important areas such as the subject matter and central message of each room. There is alertness of the red color in the first room; uneasiness of the blue-green color from the ocean in the second room; the bleakness, doom, and gloom atmosphere from the dark background in the third room; and the dark blue color that invites reflections in the final room. The way the various colors are used creates tensions, bringing drama that could excite and engage the audience. Yet all of these major colors that bring tensions are balanced with bright, bold, cartoony colors to instill casualness and attention toward subject matters and texts in each room, where there is still a sense of optimism and youth from these colors.

Imagery through illustrations is also an essential aspect, as it is the main form of communication to deliver message of facts and persuasions. The specific cartoon style of illustration is a deliberate decision of the authors to represent the youth and instill the same sense of optimism that is complemented by its bright, contrasting colors. The style also tries to ease the young audience into the bleak facts and build an emotional attachment to the issue. The illustrations of a lot of urban youth are designed to represent the target audience. As the subject matter of the imagery in the climax stage of the installation, the decision to visualize a young female full of plastic waste pouring out of her body is meant to mirror the audience and build empathy. It shows that plastic waste is not a faraway, irrelevant matter as it directly impacts our daily life and health. The denotative approach of the imageries helps communicate its messages



Fig. 9 Visual design of the reflective stage, showing the fourth room in the installation and the smartphone screen display after the audience scanned the barcode. Shown in a three-dimensional digital render. *Source* Personal documentation

yet can still be interesting through the playful and dynamic visual composition. Text caption near an illustration also helps contextualize the imagery presented.

Materials can bring aspects of reality into an imaginative and artistic environment. The dimension and reflectiveness of actual bottles, amplified by the sheer numbers presented in the audience's view in the first room, try to bring them out to consciousness as the water bottle has become a ubiquitous object in our life. The intention of creating an installation from the garbage in the second room is designed to force the audience to pay attention to it, where usually we tend to avoid looking as much as paying attention to them. The way garbage in its materiality is presented not in its proper place (garbage bin, sidewalk, or garbage dump) but in an artistic situation is intended to make the audience care deeper about them and the issue it brings to the environment (in this case, the ocean). A literal mirror material produces reflection both in a literal and figurative sense. It is one of the most effective, if not obvious, ways to invite the audience to reflect on it in the last stage of the installation.

Spatial elements play a further role in designing how the audience experiences the installation, how the shape and size of the space contribute to directing the audience's orientation, flow and direction, and emotional feelings. The different trapezoid space of each room brings dynamism that opens and closes space, which directs the audience to the following rooms. The small section connecting the first and second rooms drives the audience to confront the bottles hanging in the doorway directly, and the low-hanging garbage installation can bring cramped feelings to the audience.

Lastly, interactivity can play a significant role in creating memorable engagement, which is vital in delivering important environmental issues or messages like plastic waste awareness. The interactive elements in the first and second rooms with other visual elements above help create annoyance and uncomfortable experience. That kind of experience might produce relatability toward certain issues or situations. In the fourth room, which is the reflective stage and falling action/denouement, the mirrors act as an interactive element with the audience. It asks them to look at themselves both figuratively and literally. Figuratively, it asks the audience to reflect on what they had experienced in the previous rooms, and how important and immediate the issue is. Literally, with the aid of an invitation from the text present, the installation in the last room asks the audience to take a selfie with their smartphone and immortalize their attendance in the installation experience through visual documentation. With social media being prevalent, especially to the target audience, it drives them to share the experience with the public and global sphere through their preferred social media platform (the copywriting through the #NoPlastic hashtag helps push this too). This activity

acts as a call-to-action. As a follow-through, the audience can interact with the barcode provided by scanning them with their smartphone's camera app to go to Greenpeace Indonesia's website for further information and calls to action.

5 Conclusions

Visualizing the campaign message #NoPlastic into the form of installation as the delivery method can give a more tangible impression in describing the impact of the plastic pollution issue. Through installation media, the authors were able to explore many visual arts elements to deliver an environmental issue: experimental materials; visual designs such as colors, lighting, and imagery; spacing and scaling; and various modes of interactivity. The authors managed also to design an installation that builds on narrative structure and interactivity. The narrative arc provides various experiences that gradually affect different tension of emotion and engagement to its audience. Meanwhile, the interactivity creates persistent engagement as the audience is situated as an active participant of the installation. The design result is a manifestation of the possibility of design installation created with narrative in its framework and utilizing visual storytelling and interactivity as its communication tools.

Of course, this project is far from its intended goal. The design needs to be realized in physical form to be experienced. Producing and assembling the installation design could generate further problems that need to be solved and could change the final design result. Further adjustments could be made when the authors experience the design in physical space to deliver the best experience intended, such as the scale and size of the room, the colors, text sizes, materials, and also interactivity. Then, it would need to be tested toward the intended target audience to find whether the installation design could be effectively communicated. Based on the result, there might be a need to iterate the design to be more effective in communicating its message. In the long term, a further study could be conducted to see whether there is a rise in awareness level toward the plastic waste issue.

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Textual Hermeneutics Interpretation of Chinese Descendants in the Animated Film “Turning Red”

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Abstract

In early 2022 Pixar Animation Studios launched the animated film “Turning Red”. Pixar markets the film as the first animated film to feature Chinese culture and characters. The aim of this study is to find out how the characters and culture of Chinese descendants are shown in the film. The research will be carried out with a qualitative approach, through documentation from previous studies, as well as direct observation of the film being studied. Observations will be made on the narrative elements of the film, namely story, plot, chapter, setting of space, and time; as well as film cinematic elements: *mise-en-scene*, cinematography, editing, and sound. Since the film is 90 min long, the observation will focus on one key scene from each phase of the film’s main structure, namely exposition, complication, and resolution. Animated film is a psychological and sociological reflection of the context in which the film is produced. Therefore, the depiction of Chinese descendants in the film “Turning Red” will be analyzed using Paul Ricoeur’s hermeneutic theory. The results of this study indicate that “Turning Red” has presented Chinese culture in its narrative and cinematic elements. In addition, the depiction of Chinese descendants in this film is not only shown in visual elements such as the spatial setting, but also in the narrative aspect of the film. In particular, the main plot of the film explores the conflict between generations and the conflict between heritage culture and popular culture, which are common among Chinese immigrant groups.

Keywords

Animation film · Chinese culture · Representation · Teks Film Animasi · Hermeneutika

1 Introduction

The term Chinese descendant refers to ethnic Chinese living outside of Mainland China, Hong Kong, Macau, and Taiwan. From various studies, it is estimated that the total population of Chinese descendants worldwide is around 30 million people (lowest estimate) to 40 million (highest estimate). Peter S. Li and Eva Xiaoling Li of the Overseas Compatriot Affairs Commission in Taiwan reported that in 2009, there were 39.5 million Chinese descendants spread over 130 countries (CB Tan, 2013).

Chinese descendants make up one of the largest immigrant populations in any country in the world, which influences the lives of indigenous people and sometimes creates challenges and competition for both immigrants and natives. The biggest challenge is especially experienced by the second-generation Chinese descendants who experience cultural gaps. They do not fully identify with either the culture of their home country or the culture of the host country (Benton & Gomez, 2014).

Discrimination and racial hatred are also experienced by Chinese descendants around the world. Various efforts were made by the groups of Chinese descendants to reduce discrimination and cultural gaps. An example is the Museum of the Chinese Historical Society of America, where education, visual arts, and regular cultural events are held as a means to bring Americans closer to the Chinese minority. Some of the traditional Chinese events have spread throughout the world and are adopted by the people of the host country. For example, a large number of people around the world celebrate Chinese New Year or the Chinese Spring Festival, which lasts for several days.

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In a multicultural society, the depiction of diverse cultures, especially minority cultures, is very important. Appropriate and in-depth descriptions can guide and set the society's behavior toward and acceptance of diversity, especially in the popular media that reach more people. The contemporary media of the twenty-first century, especially the Internet, have allowed new forms of display for diverse cultures. Exposure to stories, images, feelings, and viewpoints of different cultures is the key to unlocking the hearts and imaginations of media viewers, to start thinking and caring about people and issues that are far beyond themselves. In order for the depiction in the media to function as an agent of change for the audience, the depiction must be accurate and not merely presenting minorities as stereotypes (Orgad, 2014).

The animated film "Turning Red" is a production of the animation studio Pixar Animation Studios, an American computer animation studio known for its commercially successful computer animation films. Pixar is a subsidiary of Walt Disney Studios, which is owned by The Walt Disney Company. "Turning Red" is a Pixar animated film released in 2022. This film is interesting to study because "Turning Red" is the first Pixar animated film to feature a 13-year-old Chinese pre-teen girl as the main character. The film is produced by Domee Shi, a woman of Chinese-Canadian descent. Shi is Pixar's first female director and she formed the first female team at Pixar to produce "Turning Red", consisting of producer Lindsey Collins, production designer Rona Liu, cinematographer Danielle Feinberg, and animation supervisor Patty Kihm.

Animated film, or simply called animation, is a film consisting of a series of two-dimensional or three-dimensional images that appear to be alive and moving. Animated films consist of a combination of images that are filmed one by one by paying attention to the continuity of motion so that it appears as a whole film. The history of animated film began in 1883 with the discovery of stroboscopic, which became the basis of cinematography. The invention of stroboscopic and celluloid films became the forerunner of moving images that could be displayed on walls. In 1937 Walt Disney made history as the producer of the longest animated film and the first one in color, namely "Snow White and the Seven Dwarfs". Walt Disney's achievement became the beginning of what is known as The Golden Age of Animation.

The development of digital technology has also influenced the history of animated films. In the 1990s, animated films produced using 3D animation began to appear. One of them is "Toy Story", which is the first animated film by Pixar Animation Studio, the studio that produced "Turning Red", the subject of this research. Regardless of the media used, an animated film is a combination of acting, performing arts, fine arts (character design and artistic

arrangement), architectural art (setting design), and even music. As opposed to action films, which involve real people or animals in their creation, animations are created exclusively from human's ideas and thoughts.

Animation is the embodiment of the creator's ideas; animated films represent these ideas through images of the characters, backgrounds, and scenes. Animated media offer creators the freedom and flexibility to express themselves when compared to live action films. Consciously or unconsciously, the creators of animated films have used this medium to make films with messages hidden beneath the surface (Wells, 2013). Elements that make up the film can be found in animated films. Among other things, narrative elements that include story information such as plot, chapter, as well as the time and space of the story, and cinematic elements, namely (1) *mise-en-scene*; (2) cinematography; (3) editing; and (4) sound (Pratista, 2017). All of these elements become the text that forms the structure of the animation and can be studied using the hermeneutic method.

2 Research Methodology

The data in this study were obtained from the film "Turning Red". Published by Disney films, it can be accessed through the Disney+Hotstar paid application from March 2022. The method used in this research is a qualitative approach and direct observation of the film studied. To find out how Chinese descendants are depicted in the animated film "Turning Red", the film is interpreted using a hermeneutic method. According to Palmer, hermeneutics is a theory that regulates the method of interpretation, namely the interpretation of texts and other signs that can be considered as texts (Palmer, 1969). The research focused on examining the depiction of Chinese descendants in the elements that make up the film, namely narrative elements and cinematic elements.

3 Results and Discussion

The term Chinese descendant includes people living outside of China who were born in China or who identify as Chinese based on the language they speak and/or their ancestry. According to International Organization for Migration (IOM) data, the majority of the world's Chinese descendant communities reside in Southeast Asia (75%) and the United States (19%). Based on the current world population growth rate, it is estimated that by 2030 the Chinese population worldwide will grow to 52 million people (CB Tan, 2013).

Chinese immigrants are among the largest immigrants in the world. The history of ancient Chinese migration began

with the opening of the maritime Silk Road more than 2000 years ago, with immigrants moving mainly to Southeast Asia. In the early fifteenth century, several Chinatowns—each housing thousands of overseas Chinese—were established in Sumatra and Java (now Indonesia). The large-scale dispersal of Chinese descendants throughout the world can be traced back to the history of the phenomenon commonly known as the “Chinese Diaspora” that occurred in the mid-nineteenth century (Van Dongen & Liu, 2018).

Between the 1850s and the 1950s, Chinese workers, mostly male farmers from the coastal provinces, left their homeland in search of job opportunities in Southeast Asia. Between the 1950s and 1980s, widespread violence and political instability in the region shifted the destinations of Chinese immigrants to other areas such as North America, Europe, Japan, and Australia. By the mid-nineteenth century, the number of Chinese immigrants had increased to 1.5 million, with most of them settling in Southeast Asia. Most of the immigrants in this era were manual laborers; this is also driven by the increasing demand for cheap manual labor in various parts of the world. However, since the 1980s the image of Chinese immigrants has developed into workers with various skills in line with the needs of industry and the increasingly advanced global economy (Ding, 2010).

The main driver of Chinese immigration in the nineteenth century was economics. China’s economic growth, which was the result of economic reforms and the “openness” policy that began in the 1970s, has led to major changes in all areas of society. The labor surplus and privatization left a large number of workers unemployed and unable to be absorbed by the domestic market. Rural–urban mobility, the polarization of wealth distribution, and the widening gap between rich and poor were also factors that encouraged migration. This is in accordance with the research by Díaz (2012), which stated that one of the main factors driving migration worldwide is the desire to get a better quality of life.

There are currently two hundred million immigrants worldwide. China is the country with the largest number of immigrants in the world, with 40 million immigrants of Chinese descent spread across 130 countries (Díaz, 2012). Chinese immigrants from China, Hong Kong, and Taiwan are of diverse ethnicities. They brought their respective ethnic and cultural diversity to build a community of Chinese descendants in the new area where they settled. These communities encourage interaction between the various initially separated ethnic groups and the local population.

Overseas Chinese communities have developed non-traditional means to increase contact with the population majority and accelerate assimilation. This process is described by Philip Q. Yang as three stages of immigrant assimilation, namely sojourning, settlement, and transnationalism. Sojourning means to live temporarily, settlement

means to settle down and build a community, while transnationalism refers to the spread of economy, politics, and culture beyond national borders. This shows how immigrants of Chinese descent have adapted to the changes in local and global circumstances.

Philip Q. Yang concluded that transnationalism emerged as a new way of adapting Chinese immigrants in the era of globalization (Yang, 2013). However, at the same time, these three stages also pose a problem of identity crisis, especially in the generation of Chinese descendants. Growing up between two different cultures, generations of Chinese descendants are influenced by the local culture in the new area they live in, and the ancestral culture carried by the generations before them. Concepts such as new ethnicity, cultural uncertainty, new identities, and diverse identities are examples of various identity problems that occur in generations of Chinese descendants (Benton & Gomez, 2014). In addition, the media often propagates the idea that popular culture is superior, and peer pressure makes generations of Chinese descendants feel pressured to choose between two worlds, unable to discover their authentic selves.

Chinese descendants overseas have a reputation for being hardworking and thrifty. Another characteristic of Chinese descendants around the world is that they recognize the importance of educating the next generation. Overseas Chinese families, both rich and poor, are willing to make sacrifices to ensure their children get the best education. This is also a pressure for the next generation of Chinese immigrants who are expected to always excel academically and listen to the wishes of the previous generation.

Another problem faced by Chinese descendants is the issue of racial hatred and discrimination. Racial discrimination has occurred since the early days of immigration in the 1850s and continues to this day. One of the causes of hate and racial discrimination is the lack of a positive portrayal of the Chinese community.

In a multicultural society, a positive portrayal of each group that is part of the society is very important to reduce the occurrence of racial hatred and discrimination. Television, movies, and popular media can influence how we see others, and how we see ourselves. Accurate and authentic depictions can break down barriers, open us up to ideas of diversity, and encourage acceptance within the society. Media and popular culture have the power to shape society; therefore, media content creators play an important role in providing a positive portrayal of minorities.

The popular culture industry took shape in the post-industrial era in the late 1990s when consumerism became part of global culture. But long before this industry was formed, cultural products have been used as a tool to influence perceptions and thoughts (Hy & Chiahian, 2018).

Because the role of media is so important, media must be placed as an institution that encourages the acceptance of diversity and not just as a custodian of cultural diversity (Fürsich, 2010). Thus, creators of media and popular culture have a responsibility to create content and stories that promote inclusion and understanding of minority cultures. The media and popular culture need to ensure that they do not continue to produce content that reinforces negative stereotypes or eliminates portrayals of cultural minorities in a multicultural society. This is especially the case for the majority community group that may not have experience interacting with minority groups other than through media portrayals of these groups (Kidd, 2016).

Based on this idea, “Turning Red”, the animated film produced by Pixar Animation Studios, is chosen as the subject of the research study. Pixar Animation Studio, a subsidiary of Walt Disney Studio, is an American film studio known for its popular culture products. “Turning Red” is also visualized using a visual style inspired by Japanese animation with a very distinctive drawing style and character design that is loved by Generation Z (Tsukamoto, 2004). Domee Shi, the director of “Turning Red”, mentioned the Japanese animated series “Sailor Moon” as one of the main inspirations behind “Turning Red” visual style. The soft color palette and landscape of the “Sailor Moon” night scene affect the overall look and feel of the film (Egan, 2022).

This film is an example of a case where a product of the popular culture industry serves to present a positive portrayal of minorities, namely citizens of Chinese descent in Canada. To examine this film, a Hermeneutic analysis is used to determine whether “Turning Red” has portrayed the culture of Chinese descendants positively.

To conduct a Hermeneutic study on a film, an analysis of the elements that make up the film will first be carried out. Himawan Pratista divided elements of a film into two, namely narrative elements and cinematic elements. These two elements interact and are continuous in forming the fabric of a film (Pratista, 2017).

Animated films, like action films, also consist of narrative and cinematic elements (Alfathoni & Manesah, 2020). Narrative elements are raw ideas that are processed into stories. Included in the narrative element is story information such as plot, chapter, and the time and space of the story. While the cinematic element is the way or style of the filmmaker in processing narrative elements into the visual aspects of the film. The narrative element of a film consists of: *mise-en-scene*; cinematography; editing; and sound. These elements become the text that forms the structure of a film.

3.1 Narrative Element

This section will discuss the space and time of the story, and information about the story in the movie “Turning Red”.

The setting in an animated film is the place, time, and social environment in which the story takes place. A story will always occupy space and time. Film settings are not only related to geographical and temporal locations, but also have sociological meanings, such as traditions, beliefs, ideologies, and others. From the observations of the film “Turning Red” it can be seen that this film takes the geographical and temporal location in Toronto, Canada in 2002. The film “Turning Red” tells the life of a girl of Chinese descent named Mei, so the setting of this film is dominated by Mei’s school environment, and the community of Chinese people living in Canada’s Chinatown area. By using Chinatown as a geographical setting, the film “Turning Red” presents a depiction of Chinese culture at a surface level. Mei and her family were also said to be living and working at a traditional Chinese temple located in Chinatown. The temple also symbolizes the identity conflict that many young people of Chinese descent experience, who grew up at the intersection of tradition and modernization. This is reflected in the focus of the story “Turning Red”, namely the conflict between Mei and her mother, Ming. The conflict stems from the conflict between tradition and personal freedom described in the story of “Turning Red”.

Next, the information in the story “Turning Red” is discussed. The story in this film is presented using a three-act narrative with a conventional structure consisting of an exposition phase, a complication phase, and a resolution phase, which will be discussed sequentially.

(a) Exposition Phase

The exposition phase of this film begins with the story of Meilin Lee (Mei), a 13-year-old teenager who always tried to be the perfect daughter. At school, Mei was an outstanding student who always got straight. As, and also had many friends. Mei and her friends were very close and they were all fans of the idol group 4-Town. But Mei often passed on the opportunity to go out with her friends so that she could return home to help her mother, Ming, to clean the temple where their family lives. As an only daughter, Mei always tried to make her mother proud and happy, by being an obedient and accomplished daughter, though sometimes that

means suppressing her feelings and sacrificing her own happiness.

(b) Complication Phase

The complication phase occurred when Mei woke up and found herself transformed into a giant red panda. It turns out that long ago Mei's ancestor, Sun Yee, was left by her husband to go to war. Sun Yee asked the gods to give her strength to protect her daughter, and she was given the ability to turn into a giant red panda. Since then, Sun Yee passed this ability down to her female descendants from generation to generation. Ming said that on the following red moon, May 25, they will perform a ritual to seal Mei's panda power, just as they sealed Ming's panda power and all the women of the Lee family. But Ming warned Mei not to turn into a panda, because the more she changes, the harder it will be to seal her power.

With the help of her friends, Mei is finally able to control her panda transformation. Her parents are impressed, but when Mei asked for permission to go see a 4-Town concert with her friends, Ming didn't allow it and that made Mei sad. Mei and her friends then got the idea of using Mei's red panda form to make money from their classmates to gather the money needed to buy 4-Town tickets. Trouble ensued when Ming found out that Mei is secretly turning into a Panda, even using her Panda form to make money. Ming scolded Mei's friends and forced Mei to side with her mother in this regard.

The peak of the conflict occurred when on the 25th, Mei's friends went to the 4-Town concert while Mei stayed at home with her family to perform the sealing ritual of the red panda. However, as she was undergoing the ritual, Mei began to remember how the red panda had changed her life and she finally refused to be cured. The ritual failed and Mei ran to the concert in her red panda form. Ming, angry that her daughter was against her, caused the overwhelming emotion to break the seal and turned her into a red panda.

(c) Resolution Phase

The resolution phase began when Mei realized that she liked her red panda side and revealed that her friends were never at fault for her decisions.

Mei ended up running away from the family ritual. She arrived at the concert and was reunited with her friends. They forgive each other and enjoyed the concert together, but Ming suddenly appeared in the form of a giant panda. Everyone ran away from the concert when Ming scolded Mei for her disobedience. Mei's family arrived to complete the ritual before the red moon disappeared and helped Mei turned her mother back into a human.

When the ceremony was over, Mei found herself in the spirit realm. She encountered Ming's teenage form who was sad and afraid because she had disappointed and hurt her mother. Mei finally understood that she and her mother weren't really that different. Ming was once a teenager like herself, and disappointed her parents, which was why Ming was so protective of Mei.

Mei finally told her mother that she will not give up her panda form because she has accepted herself as she is. Despite her worries, Ming finally believes that her daughter knows how to choose the best for herself. In the end, things got better for Mei as she now knows herself better and is able to balance her role as a daughter with her social life.

3.2 Cinematic Element

In addition to the narrative elements above, text analysis of the cinematic elements of the film "Turning Red" will also be carried out. Cinematic elements are often used in works of art such as films to add complexity and depth. Characters and objects in animation are not real unlike movies in general. So even though film and animation are shown in the same media, it is said that animation has its own visual language that is different from film (Bratt, 2011). In an animated film, the creator expresses narration and messages using various elements, especially visual elements such as *mise-en-scène*, cinematography, and audio elements such as sound. In this study, the study of hermeneutics in the text of the cinematic elements of the film will be carried out on the visual elements, namely *mise-en-scène* and cinematography.

Cinematography is the art and skill of making films by assembling stories through pictures or visuals. Meanwhile, *mise-en-scène* is all the visual elements of the film that are presented on screen. *Mise-en-scène* in a film consists of composition, setting, props, actors, costumes, and lighting.

There is a close relationship between the visual elements of *mise-en-scène* and cinematography. Both elements will be analyzed through important scenes selected from the exposition, complication, and resolution phases.

In the exposition phase, *mise-en-scène* is mostly used to make an establishing shot, which is to give an actual picture of each character. The following is a *Mise-en-scène* analysis of the film "Turning Red" from the Exposition, Complications, and Resolution phases.

(a) *Mise-en-scène* and Cinematography: Exposition

The scene in Fig. 20.1 is an establishing shot at the beginning of the film, which is when Mei was with her friends Mir, Gaby, and Priya. In this scene, you can see the general picture of Mei's character as a 13-year-old teenager. Like teenagers, they are also fond of popular culture. In this

Fig. 20.1 Mei and Her friends. Source “Turning Red” Disney + Hotstar



scene, Mei and her friends were singing and dancing to the song of the idol group 4-Town. As teenagers, Mei and her friends seem to have their own world; this is shown by the setting of the highway used by these teenagers to dance and sing. They don't care about other people's views and were enjoying their own world.

The scene in Fig. 20.2 is an establishing shot of Mei's house and the scene when Mei was cleaning the temple with her mother. The two characters were dressed in modern clothes juxtaposed with a traditional Chinese temple setting, showing a general picture of a Chinese immigrant family living in the modern world and preserving the traditions of the past. When together with Ming, Mei's body

Fig. 20.2 Mei and Ming's house. Source “Turning Red” Disney + Hotstar



language is more orderly and organized, in this scene Mei is even shown as if she is a reflection of Ming. Doing what Ming was doing and, a reflection of the figure her mother hoped for.

(b) *Mise-en-scène* and Cinematography: Complication

The scene in Fig. 20.3 is an establishing shot when Mei turned into a red panda for the first time. In this scene, you can see the general picture of each character. Mei, who was experiencing a major change in her life, namely puberty, is symbolized by the red panda. Like teenagers who are experiencing big changes in their lives, they do not want to share

Fig. 20.3 Ming and Red Panda. *Source* “Turning Red” Disney + Hotstar



them with their parents. While Ming behind the curtain is a parent who always wants to be close and wants to know everything her daughter is going through.

The embarrassment and awkwardness that Mei felt could be seen from the red light that appeared from the bathroom curtain. The curtain is also a barrier between Mei and her mother, indicating that there are things that Mei is keeping from her mother, even though Ming considers her and Mei very close. Ming, who mistakenly thought that Mei was having her first period, brought a pile of sanitary napkins. The pile of sanitary napkins shows the role of a mother who is too protective and always provides for her daughter's needs.

The scene in Fig. 20.4 is an exposition when Mei's friends finally found out about Mei's red panda. This scene contrasts with Fig. 20.3 even though it is taken from the same angle. In this scene there was no shower curtain that

indicates Mei wanting to keep a secret from her friends. Mei's secret was not hidden behind closed curtains in a dark place, but was illuminated by the light from the window for her friends to see.

(c) *Mise-en-scène* and Cinematography: Resolution

The scene in Fig. 20.5 is an exposition of the “Turning Red” resolution phase. This scene shows that even though Ming finally understood Mei's feelings and desire to maintain her red panda form, she herself still chose to seal her panda form. However, Ming understands and supports her daughter's decision.

This is indicated by the background color where each character was located. Mei was in the bamboo forest, which was bright and luminous, showing herself, while Mei was

Fig. 20.4 Red Panda and Mei's friends. *Source* “Turning Red” Disney + Hotstar



Fig. 20.5 Ming and Mei. *Source* “Turning Red” Disney + Hotstar



in the dark and hiding herself. Even though they were in different places, Mei and Ming are shown looking at each other, they understood each other's decisions.

3.3 Text Analysis of “Turning Red” Film

After analyzing the narrative and cinematic elements of the text of the film “Turning Red”, the next step will be to examine these elements using Hermeneutics theory. According to Barker (2018), text is anything that forms meaning through the practice of signification. Paul Ricoeur explained that understanding the text occurs in three stages, namely: semantic, reflective, and existential understanding (Ricoeur, 2012).

According to Ricoeur, understanding a text is not the same as simply explaining. When explaining the text, the interpreter only clarifies and opens the range of propositions and meanings. Meanwhile, when understanding a text, the interpreter must take on the text as a whole and not partial. According to Ricoeur, the text gives suggestions to the interpreter. Some of them are indeed the intention of the creator, some are interpreted by the viewer or discovered by the viewer in the subtitles (Sastrapratadja, 2012).

Based on Ricoeur's hermeneutic theory, there are three steps of understanding. First, the symbolic step or understanding from symbol to symbol. Second, giving meaning by symbols and careful exploration of meaning. Third, thinking by using symbols as the starting point.

These three steps are closely related to the steps of understanding language, namely: semantics, reflection, and existentialism. The semantic step is understanding at the pure linguistic level, while reflection is understanding at a higher level, which is close to the ontology level. Whereas existential is a step of understanding at the level

of existence of meaning itself. On the basis of these steps, Ricoeur stated that understanding is basically a “way of existing” or “a way of being” (Wachid, 2006).

(a) Semantic Understanding

Semantic understanding is the first step in the process of interpreting text. At this stage, the interpreter begins by guessing the meaning of the text, because the interpreter does not have the means to know the intention of the text creator (Susanto, 2016). The narrative of this film tells a very general story; About what it means for a mother who loves her daughter so much that she unconsciously pressures her child to grow up to become the person she thinks is ideal, and what happens when the daughter doesn't want to be that person. Several interpretations resulting from the film's text are: (a) Mei's character as a representation of the younger generations of Chinese immigrant families who want to show their identity and existence among existing paradigms or values in society; (b) Ming's character as a representation of a Chinese immigrant mothers who have high expectations for their children with a strict upbringing and do not understand their daughter's feelings; (c) the form of a red panda as a representation of suppressed and hidden emotions and personality, and symbolism of a sense of individuality.

Through this interpretation, it can be seen that even though it is set in space and time in Toronto, Canada in the early 2000s, the film “Turning Red” also features fantasy elements in the form of Mei's red panda. Fantasy-fiction films combine real-world information with an imaginary world premise.

In his 1908 essay Sigmund Freud identified the process of creating a fantasy work as follows: “Every child

at play behaves like a creative writer, that they create their own world, or rather, rebuild their world in a new way that pleases them. Creative writers do the same thing with playing children. They create imaginary worlds that they take very seriously while separating them from reality”.

Because fantasy-fiction works are based on reality, these works are often used as allegories of problems that are often encountered in the real world (Weisberg, 2016). An allegory is a type of story that is built on a thoroughly extended metaphor—where the core story, characters, plot, and even setting are used to represent something else.

Allegory can be abstract ideas, sociological problems, mythological stories, political events, and more. In an allegory, two stories are told at the same time. The first story is one that appears on the surface that can be directly observed, filled with characters from the author’s imagination in a completely imaginary world; and the second story is a deeper story that conveys the message the creator really wanted to convey (Callaghan, 2022).

So that the imaginary setting in the works of fantasy-fiction can be studied from a philosophical and psychological perspective, and in order to interpret the fantasy element in the film “Turning Red”, especially Mei’s red panda form with implicit meaning, can be further studied at the reflective understanding stage.

(b) Reflective Understanding

In the second step, the interpreter begins to look for a critical and methodical explanation of the initial meaning generated by pre-reflective understanding. The initial meaning can be validated, corrected, or deepened by considering the objective structure of the text (Irwandra, 2018).

At this stage, the implicit meaning or hidden meaning in the film is obtained. As discussed in the previous stage, fantasy genre films display supernatural elements as one of the elements of plot, theme, and setting in a film. The interpreter then uses personal interpretation to interpret the fantasy element in a work, so that there is a dynamic meeting point between the creator, the copyrighted work, and its viewer. The red panda as a fantasy element in this film is used as the creator’s style of expression, therefore, the red panda will be studied using references and scientific relevance from interpreters.

In the film “Turning Red” the red panda can be interpreted as a symbolism of the transition from childhood to adolescence, and the symbolism of the cultural transition and identity crisis experienced by Mei. As a second-generation Chinese-Canadian, Mei is attached to an Asian culture that values community over individuality. For families of Chinese descent, it is very important to maintain dignity and conduct in public, and it clashes with the western

culture where Mei grew up, where self-expression in public places and individualism are the norm.

Mei also represents the next generation Chinese immigrants who are always pressured by their parents in terms of academic achievements. Often this pressure arises from the past trauma of the previous generation who experienced difficulties in society because they were uneducated manual laborers. Therefore, previous generations use their past experiences to emphasize the importance of education for their future generations, so that the new generation does not experience the same difficulties. Pressure and demands from parents are often the root of problems for the next generation Chinese descendants. They do not dare to express their wishes because they are afraid to disappoint their parents and buried their feelings and desires.

The creators of “Turning Red” use the red panda as a symbol of these things. The red panda symbolizes the courage to express feelings, show identity, and individualism, as well as the symbolism of conflicts between generations and between traditional and modern cultures. The hidden reflective meaning of the text elements of this film shows the importance of finding one’s identity and the courage to express feelings in a healthy way and healing past traumas, and to appreciate the culture of the past while living in the present.

(c) Existential Understanding

The third stage is the culmination of the interpretive process, where the interpreter understands the deepest meaning projected through the text. In this context, Ricoeur incorporated existential aspects into his hermeneutic theory. Understanding a text means illuminating one’s own existence by entering a world free from particularity. At this third point, there is a dialogue between the interpreter and the text (Irwandra, 2018). This existential understanding is temporary, because each interpreter can interpret the same object differently (Ricoeur, 2012).

Based on the results of the analysis of the text on the narrative and cinematic elements of “Turning Red”, the existential meaning of “Turning Red” is the relationship between mother and child in a family of Chinese descent, which is strongly influenced by identity conflicts, cultural conflicts, and intergenerational trauma. For generations of Chinese descendants overseas, adolescence is the most confusing time, not only because of the changes they go through physically and hormonally, but they also have to deal with problems common to the next generation of Chinese descent. Starting from the pressures and demands of the previous generation caused by intergenerational trauma. Intergenerational trauma generally refers to the ways in which trauma experienced in one generation

affects their relationship with the next generation, as well as affects the mental health and well-being of future generations (Sangalang, 2017). As previously mentioned, one of the hallmarks of Chinese families is the awareness of the importance of education.

Often, the previous generation is willing to sacrifice so that their next generation can get a proper education. This is rooted in the trauma of the past experienced by their generation and the generation before them, which is then passed on to the new generation. As a result, the next generation is under pressure to get the best academic achievement, or to be accepted in a certain school and to work in certain professions because they do not want to disappoint their parents. Many young generations of descendant families sacrifice individual desires and freedoms to make their parents happy. This is at the root of many conflicts in Chinese descendant families.

In addition to facing pressures as a result of intergenerational trauma, future generations in descendant families also face problems such as identity conflicts and cultural conflicts due to differences between the ancestral culture and the dominant local culture. Choosing between being the children that their parents expect them to be and uphold the culture of the family heritage, or becoming a free individual and living life according to their own wishes.

From the explanation above, it can be interpreted that the film “Turning Red” contains an existential meaning, namely that conflicts in families of Chinese descent can be traced to their roots in relationships in the form of self-actualization of the two main characters, Mei and Ming. The red panda in this film is an allegory of Mei’s desire to be herself and express her individuality. In the end, the relationship between Mei and Ming can recover after they learned to accept the red panda (change) and heal wounds and traumas in the past.

4 Conclusion

On the surface “Turning Red” seemed like a family fantasy film with very universal issues. The narrative of this film tells a very general story. About how parents respond to change and realize that a child cannot continue to live to please their parents. About what it means for a mother who loves her daughter so much that she unconsciously pressures her child to grow up to become the person she thinks is ideal, and what happens when the daughter doesn’t want to be that person.

After conducting a Hermeneutic analysis on the cinematic and narrative elements of the film, and from the

fantasy allegory shown, it can be concluded that the film has a deeper meaning, namely the real problems faced by families of Chinese descent.

As a product of popular culture, “Turning Red” does not just describe the culture of Chinese descendants at the surface level in the form of characterizations, background settings, and visuals. In addition, this film also explored intergenerational conflict, cultural conflict, identity conflict, and intergenerational trauma experienced by Chinese descendants, which is conveyed using elements of fantasy as an allegory.

As a final conclusion from the Hermeneutic analysis based on references and scientific relevance of film interpreters, it can be concluded that the creators of the film “Turning Red” have identified social and cultural conflicts experienced by the Chinese descendants as an effort to present a positive portrayal in the process of producing and creating the film.

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The Acceptance of Indonesian Local Market Toward Garudayana's Comic by Is Yuniarto Which Adapt the Characters from Traditional Javanese Shadow Puppet Design

Hutomo Setiabudi and Rendy Iswanto

Abstract

Garudayana is a comic originated from Indonesia which takes figure and character designs inspired by Javanese shadow puppet. The Garudayana comic was created by Is Yuniarto, which targets the millennial generation and generation Z. In this comic there are various traditional design elements inspired by Javanese shadow puppet as a source of basic design ideas such as the figures of Gatotkaca, Bima, Nakula, and so on, and then re-visualized using the popular manga style. There are many elements of traditional Indonesian design which later on used in this Garudayana comic. The purpose of this research is to determine whether traditional design elements adapted into pop culture products can be well accepted among Indonesian millennials and generation Z, as well as their response toward comic works that use traditional Indonesian culture in the form of Javanese shadow puppet as a source of design inspiration. This research was conducted using literature studies, phenomena observation, and using qualitative methods by interviewing the author of the Garudayana comic (Is Yuniarto) to collect data related to comics. To find data regarding the acceptance of generation Z and millennials, regarding the adaptation of the traditional culture of Javanese shadow puppet characters in Garudayana, structured interviews were conducted to respondents of generation Z and millennials shown by the Garudayana comic book. The results of this research showed that the design adaptation originated from traditional Javanese shadow puppet culture in Garudayana and received a

positive response from generation Z and millennial generations; they can accept the design adaptation of traditional cultural elements in pop culture well.

Keywords

Garudayana · Indonesia · Local market · Pop culture · Wayang

1 Introduction

Indonesia is an archipelagic country located around the equator. Indonesia is an archipelagic country. According to data from the Indonesian statistical agency, *Badan Pusat Statistik* (BPS) released in 2019, the total area of Indonesia is 1,916,906.77 km² and the number of islands in Indonesia reaches 16,056 (Synthesa, 2021). Of the many islands in Indonesia, there are 5 of the largest islands, namely Papua, Kalimantan, Sulawesi, Sumatra, and Java.

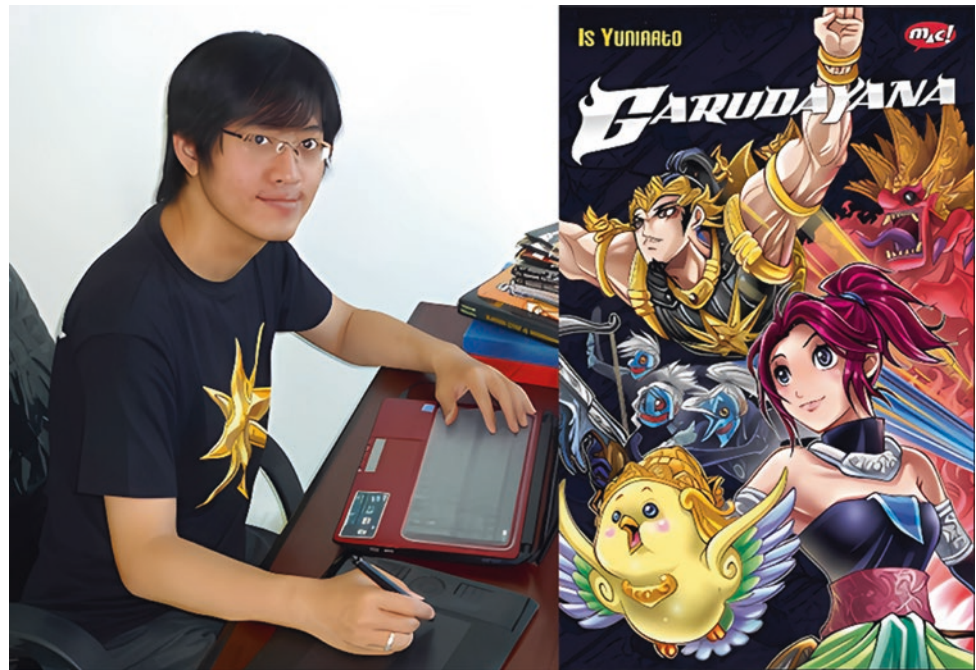
Due to geographical factors, Indonesia has various ethnic groups and cultures. This study will discuss the analysis of local Indonesian market acceptance of comics with the title “Garudayana” which adapted the design of “the world” and characters from Javanese shadow puppets. Garudayana is a comic created by an Indonesian comic artist, Is Yuniarto and Garudayana comic book cover, as shown in Fig. 1. Garudayana comics have a target market of millennials and generation Z. Garudayana comic was first published in 2009 by the publisher “Koloni” (Siahaan & Tanti, 2021).

According to Is Yuniarto, the primary target audience of Garudayana is the Y and Z generations. According to Manheim in Putra (2016), generation is a social construction in which there is a group of people who have the same age and historical experience. The grouping of generations occurs due to the premise that a generation is a group of individuals who are influenced by historical events and cultural phenomena that occur and are experienced in their life

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Fig. 1 Is Yuniarto and Garudayana comic cover. *Source* Laytno and Waluyanto (2014)



phase (Putra, 2016). These events and phenomena lead to the formation of collective memories that bring an impact on their lives.

Generation Y is known as the millennial generation or millennials. The phrase Generation Y began to be used in editorials of major US newspapers in August 1993 (Putra, 2016). Generation Y emerged in the last two decades of the twentieth century where people in this generation are identified as people who have high self-confidence and master technological developments. This generation uses a lot of instant communication technologies, such as email, SMS, instant messaging, and social media such as Facebook and Twitter. In other words, Generation Y is the generation that grew up in the internet booming era. Furthermore, Lyons revealed that the characteristics of Generation Y are: the characteristics of each individual are different, depending on where they grew up, their family's economic and social strata, their communication patterns are very open compared to the previous generations, fanatical social media users and their lives are greatly affected with technological developments, are more open to political and economic views, so they look very reactive to environmental changes that occur around them, and pay more attention to wealth.

The definition of generation Z, according to (Singh & Dangmei, 2016), is a generation born in the 1990s and raised in the 2000s that experienced rapid development in internet technology, smart phones, laptops, affordable internet networks and media. Generation Z is the generation born between 1995 and 2010, where in general they share similarities with generation Y, but generation Z is better at

multitasking or able to apply different activities at once. Such multitasking activities include using social media through mobile phones, searching data using a PC, and listening to music with a headset at the same time. The activities carried out are generally related to the virtual world. This is not surprising because since childhood they are familiar with technology and are accustomed to sophisticated gadgets that indirectly affect the individual personality of this generation (Kusumaningtyas et al., 2020).

Generations Y and Z have something in common in a way that they have been exposed to a rapid flow of information due to the influence of technological advances that have affected them to foreign cultures. Pop culture is something that is familiar to this generation and affects their lives. One of the foreign cultures that influence this generation is Japanese pop culture.

According to Aisyah (2019), the inclusion of anime as a form of Japanese culture in Indonesia has caused a social phenomenon among the Indonesian people, including students. Students who are considered as intellectuals in the community and tend to have a broader view in responding to something are not spared from the invasion of Japanese culture. Nowadays, it is not uncommon to find people on several campuses who look more like drivers of Japanese culture than the Indonesian culture itself. The massive consumption of typical Japanese animated products is also marked by the emergence of Japanese anime-themed events in various countries, especially in Indonesia such as 100 Doraemon, Secret Gadget Expo, Anime Japan, World Cosplay Summit, Anime Fest, HelloFest, Anime Festival Asia, Class: H.

The phenomenon of the development of Japanese popular culture is marked by the increasing number of anime and Japanese communities among students. Lately, anime-themed events are often found in the campus environment and the organizers are mostly students. Some of them are also active in similar events as part of a community or association of people who like things about Japan, including the anime they participate in. The existence of this community is quite intense in holding meetings in the campus area. The existence of this community has indirectly made the existence of Japanese culture to increase in Indonesia (Aisyah, 2019).

According to research conducted by Purfitasari on Aisyah (2019), these anime fans often express their express, through the use of Japanese nicknames, the intensity of Japanese nicknames, the intensity with which they watch anime, and the buying collectibles, expressing themselves through fan communities, becoming cosplayers, and also through social media. The interest or attraction in anime makes anime and manga fans tend to prefer things related to Japanese culture that they see from the anime, for example (a) in choosing foods such as onigiri, takoyaki, sushi, ramen, okonomiyaki, mochi, Japanese curry, omurice, gyoza, (b) choosing hobbies, such as collecting anime knick-knacks, making food like those in anime, and drawing manga (Japanese comics), (c) filling out holiday activities, such as visiting Japanese festivals and even the desire to traveling to Japan, and (d) liking Japanese culture more broadly, such as dance, Japanese language, and Japanese people's habit.

As a result of the Japanese pop culture influence on generations Y and Z in Indonesia, manga (Japanese-style comics) has become familiar among generations Y and Z. Started from the influence of Japanese pop culture on generations Y and Z, Is Yuniarto decided to make comics Garudayana which adapted the design of the Javanese Shadow puppet (*wayang*).

The purpose of this study is to discuss the analysis of Indonesian local market acceptance of the Garudayana comic where the design is inspired by Javanese shadow puppets (*wayang*). This research will be conducted using qualitative methods, namely interviews and Forums Group Discussion (FGD) to collect the data from the respondents. In addition to qualitative methods, a literature study was also used to collect the related data.

The Indonesian local market was chosen because Indonesia has the 4th largest population in the world. As of April 25, 2022, Indonesia's population reached 278,752,361. This data is based on the world meter elaboration of the most recent data from the United Nations. From this data, it can be concluded that the Indonesian local market has a large market share, so it is worth to be studied.

The benefit of this research is to understand how the Indonesian local market accepts works that are adapted from the Indonesian culture and has been adapted into pop culture. The results of this study are expected to be one of the references and considerations for creating pop culture works that adapts to the local culture.

2 Research Methodology

The methods used in this research are qualitative method and literature study. According to Gunawan (2013), the definition of qualitative methods is a type of research whose findings are not obtained through statistical procedures or other forms of calculation. The qualitative methods chosen were interviews and FGD (Forum Group Discussion). According to Yuhana (2019), interview is a form of verbal communication carried out in a structured manner by two or more people, either directly or remotely. According to Moleong in Yuhana (2019), the notion of an interview is a conversation with certain goals. The interviews will be conducted with the creator of the Garudayana comic, namely Mr. Is Yuniarto, using Zoom meeting media, and WhatsApp. The interviews were conducted to collect data about the Garudayana comic itself, the development of the Garudayana comic, and the market response to the Garudayana comic.

FGD is a qualitative data collection method that brings together one or two researchers with several participants as a group to discuss a research topic (Mashfufa, 2018). For the FGD (Discussion Group Forum), the selected speakers are the target market of Garudayana comics, namely 20 people consisting of 10 men and 10 women with the criteria of those who likes comics, and who are included in the generation Z and millennial groups. The FGDs were conducted online. The FGD was conducted to collect data on how the audience responded to this work, their acceptance of pop culture works inspired by local culture, and their interest in Garudayana comic.

Literature study was used to find a data on theories related to this research to provide a deeper understanding of cultural adaptation, Japanese popular culture, Japanese-style comics (manga), adapted Javanese shadow puppet designs, adaptation of traditional culture to pop culture, and to provide an overview.

3 Result and Discussion

There is a cultural adaptation that can be seen in the Garudayana comic. This cultural adaptation can be seen from the type of Garuda's work in the form of comic. Comic is one of the pop culture products. The comic style

displayed by Garudayana is strongly influenced by the Japanese comic style which is also known as the “manga” style. Creator Is Yuniarto’s decision to display the traditional elements of Javanese *wayang* in adapting traditional culture into pop culture products will be discussed further in this chapter, including how is the acceptance of millennials and Z generations toward this work.

3.1 Several Cultural Adaptation Form in Garudayana

The definition of cultural adaptation according to Castro et al. (2010) is a complex adjustment process in which daily experiences and individual, family, community factors affect the quality of life of individual immigrants. While according to Liliwari in Pongantung et al. (2018) the definition of Cultural Adaptation is a process of adjusting the values, norms, or behavior of 2 or more cultures. According to Kim in Savitri et al. (2015) there are 2 stages of cultural adaptation, namely cultural adaptation as a basic process in communication where there is a message delivery, medium and message recipient so that the encoding and decoding process occurs. And the second stage is cross-cultural adaptation which includes 3 processes, namely acculturation, a process in which an individual immigrant begins to interact with a new and foreign culture, and over time, the individual understands the new culture. The second process is deculturation, which is the process of adapting to a new culture. The third process is assimilation which is the process of assimilation of the old culture with the new culture. According to Kim in Savitri et al. (2015), the process

of cultural adaptation is an interactive process that develops from the communication of immigrant with the local cultural environment. Adaptation can be seen from the compatibility between the communication patterns of immigrants and local communication patterns, where this conformity is what supports the occurrence of cultural adaptation.

In Garudayana’s work, cultural acculturation can be seen in which the characters displayed have visualization of “manga” style illustrations with traditional accessories and costumes. Cultural acculturation also occurs from the characters that appear in the story such as the figures of Gatotkaca, Garuda, Punakawan, Ashura, and so on. As shown in Fig. 2 (Gatotkaca wayang orang version, wayang kulit version, Warrior illustration with pop culture style and Gatotkaca in Garudayana version by Is Yuniarto). The acculturation of culture in Garudayana becomes the main attraction and uniqueness of this comic.

From the sample pictures above, the manga styles in the Garudayana version of the Gatotkaca character illustrations are clearly visible. The cultural acculturation of Javanese wayang to figures from Gatotkaca can be seen from the semiotic sign, that is mustache, which can be seen from the Gatotkaca version of puppets and shadow Puppets. For the clothes worn by Gatotkaca, the Garudayana version uses references from the “*wayang orang*” version. The accessories worn such as crowns, arm bracelets, and back wing accessories were adapted from Gatotkaca versions of *wayang orang* and *wayang kulit*. For the pants design, it appears that there is a jarik cloth accessory that adapts the *wayang orang* version. In both of *wayang orang* and *wayang kulit* versions, Gatotkaca is depicted not wearing footwear, however, in the Garudayana version, Gatotkaca

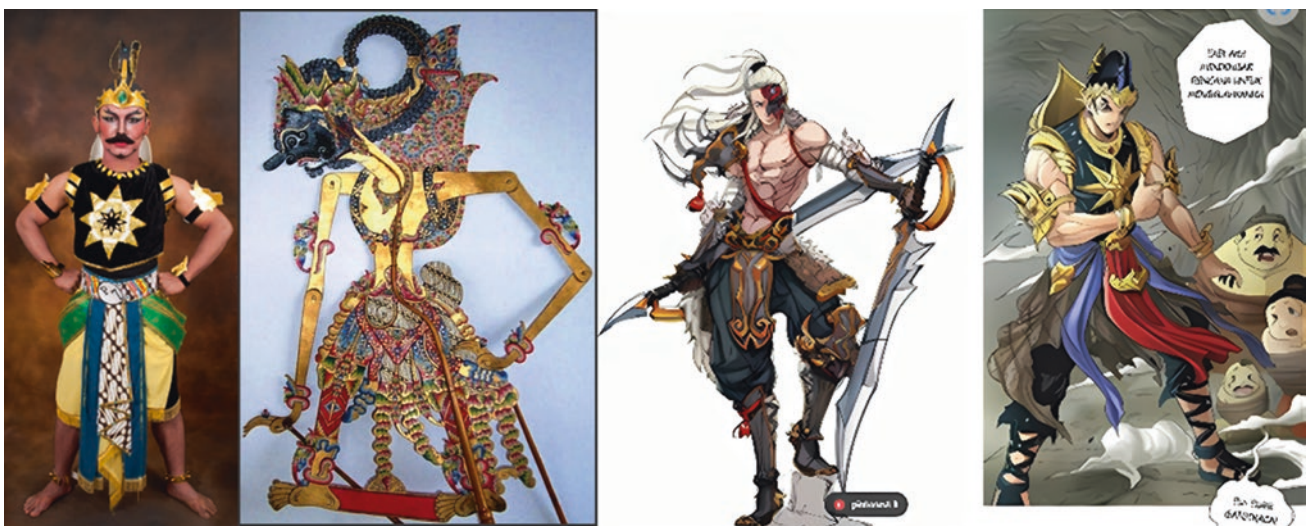


Fig. 2 Gatotkaca “Wayang Orang” version—Gatotkaca “Wayang Kulit” version—warrior illustration with manga style—Gatotkaca “Garudayana” version. Source Garudayana (2018). [https://web.](https://web.facebook.com/garudayana/posts/webtoon-garudayana-episode-24-gatotkaca-sakti-sudah-update-ada-giveaway-berhadiah/10156757420963331/?locale=id_ID&rdc=1&_rdr)

[facebook.com/garudayana/posts/webtoon-garudayana-episode-24-gatotkaca-sakti-sudah-update-ada-giveaway-berhadiah/10156757420963331/?locale=id_ID&rdc=1&_rdr](https://web.facebook.com/garudayana/posts/webtoon-garudayana-episode-24-gatotkaca-sakti-sudah-update-ada-giveaway-berhadiah/10156757420963331/?locale=id_ID&rdc=1&_rdr)

is depicted wearing classical era sandals. This is an adaptation and adjustment from the imagination and references obtained from classic clothes by Is Yuniarto as the creator.

3.2 Javanese Wayang (Shadow Puppet) as a Reference of Garudayana Comic Character and Universe

According to Widyokusumo et al. (2010), each character in *wayang kulit purwa* has their unique characteristic in the appearance of their hair bun, as shown in Fig. 3. There are also kinds of hair bun (*Gelung*), namely (1) *Gelung Cupit Urang* is a type of bun that is usually worn by Arjuna, Gatotkaca, Nakula, Sadewa, etc. This type is plain, but they use *jamang*; (2) *Gelung Keling* is a bun commonly worn by Yudhisthira, King Drupada, Gandamana, etc. Even though this type is plain, but some are wearing *jamang*; (3) *Gelung Gembel* is a bun for a character with curly hair; (4) *Gelung Bundel* is similar to a bundle. This type is intended for puppets with curly/curly hair; (5) *Gelung Pogok Lungsen*, there are two types, namely using *jamang* and plain; (6) *Gelung*

Pogok without *Lungsen*, there are two types, namely using *jamang* and plain; (7) *Gelung Ukel Keyongan*, this bun is often worn by female puppet characters; (8) *Gelung Kembang*, a bun stylized with flower decoration in the hair; (9) *Gelung Endel*, a bun decorated with a *garuda mungkur*; (10) *Gelung Malang*, a transverse bun; and (11) *Gelung Ageng*, similar to the *ukel* but wearing a large *garuda mungkur* as a decoration.

The characteristics of hair bun (*gelung*) in *wayang purwa* are adapted in the visualization of characters that appear in the Garudayana comics such as Gatotkaca, Yudhisthira, Sadewa, and so on as shown in Fig. 4. The visualization of the hair bun (*gelung*) accessories shown in the Garudayana comic is a distinctive feature and represents the character of the *wayang purwa*.

According to Widyokusumo et al. (2010), the shape of the *wayang's* eyes can represent the character of each puppet figure, several forms of *wayang* eyes are (1) Gabahan, shaped like a grain. Usually, these eyes are used by characters including Arjuna and all Bambang, Krishna, and other princess figures, describing the character of *wayang* with subtle, sharp, tough, and skilled behavior in war; (2) Kedhelen, shaped like soybean seeds. Usually used on visual figures, such as Baladewa, Setyaki, and Patih Udawa, depicting *wayang* characters with tough and fierce behavior; (3) Kedondhongan, shaped like a *kedondong* fruit. Usually used on *wayang* characters, such as Patih Sengkuni and Kartamarma, showing *wayang's* characters with lively behavior but often doing bad actions; (4) the calendar, shaped like a crescent moon, describes the character of the *wayang* who is always suspicious and disdainful of others. Usually used on the Blind Cakil character, also on the Batara Narada and Drona characters; (5) Kelipan, half-closed eyes are usually used for giant characters, but Semar also uses this type of eye, describing the character of the puppet as witty and friendly; (6) Telengan, this eye shape is like bulging, and the eyeballs look round. Characters such as Bima and Duryodhana use this type of eye. The characters are often a type of giants who have tough behavior, scary when they are mad, and dangerous; (7) Plelengan, this eye shape is more bulging than Telengan's eye, where almost all large giants wear this eye shape, and portrays a pushy and careless character; (8) Plolon, the shape of the eye that seems to have no eyelids, some characters who use this are Togog and Bagong. They are innocent characters, who acts just like themselves, and funny.

According to Widyokusumo et al. (2010), there are various types of *wayang's* nose shape of the shadow puppets, namely (1) *Wali Miring*, the nose is like the tip of a kitchen knife, usually for small or princess puppets; (2) *Bentulan*, the nose is shaped like the tip of a machete; (3) *Pangotan*, the nose shaped like a knife to sharpen wood; (4) *Pelokan*,

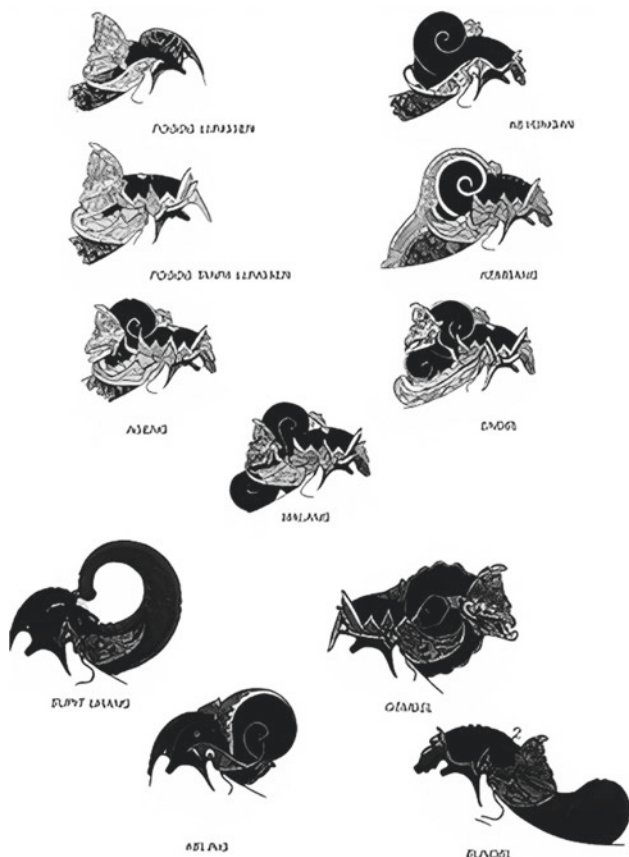


Fig. 3 Type of Wayang's Gelung. Source Yuwono (2017). <https://docplayer.info/47698223-Wayang-suket-purbalingga-karya-badriyanto-skripsi.html>



Fig. 4 Character in Garudayana comic—Gatotkaca—Bima—Yudhistira. Source Zero (2009), Vadis (2012). <https://www.deviantart.com/vanguard-zero/art/Garudayana-chara-Gatotkaca-147212886>; <https://www.deviantart.com/vadis/art/Garudayana-Five-Against-the-World-330947333>

the nose resembles the shape of a mango, usually for giant figures; (5) *Bruton*, the nose shaped like a chicken's tail, such as Bagong character; (6) *Sumpel*, the nose that sinks into the face/pug (figures like Semar and Limbuk); (7) *Glatik*, the nose shaped like an eggplant (Gareng character); (8) *Camepluk*, elongated nose shape like a sour fruit (Petruk character); (9) *Terong Kope*, round nose hanging like an eggplant; and (10) *Pisekan*, similar to a stuffy nose.

Because it uses the manga style, the *wayang* characters that appear in the Garudayana comics do not adapt the eyes and nose characteristics of the *wayang*. The eye image of the characters shown adapts the manga illustration style. There are several characters who follow the typical facial expressions of *wayang*, namely the characters of Gareng, Petruk, Bagong, in *punakawan*, however, these characters are depicted wearing masks adapted from the *wayang* version, as shown in Fig. 5 in Illustration version and Garudayana version.

3.3 Garudayana as a Form of Adaptation from Traditional Culture to Japanese Pop Culture

Comic is one of pop culture. The definition of popular culture according to Delaney (2007) is a product and form of expression and identity that is often encountered or widely accepted, liked by the general public or approved, and becomes a characteristic of a particular society at a certain time. According to Venus and Helmi (2010), one of the most important differences in a complex society is the difference between popular culture and high culture. High culture usually includes classical music, poetry, dance, paintings, to serious novels, and various other cultural products that are appreciated by a small number of educated or high social status people. On the other hand, popular culture (often equated with mass culture) is much



Fig. 5 Petruk, Gareng, Bagong—*Wayang* version—Garudayana version. Source Zero (2010), Adha (2021). <https://www.deviantart.com/vanguard-zero/art/Garudayana-Chara-Punakawan-149734574>;

<https://timesindonesia.co.id/gaya-hidup/347203/berkenalan-dengan-punakawan-tokoh-wayang-yang-lucu-namun-bijaksana>

more widespread and accessible to everyone. The main interest of this popular culture is for entertainment and its form is dominated by recorded music, comics, films, sports, and fashion. According to Amalia (2012), the definition of popular culture is a culture of lifestyles, styles, ideas, and attitudes that cross the traditional cultural boundaries and can attract a large mass. Japan, besides being famous for its technological advances and traditional culture such as samurai, kimono, tea ceremony, is also famous for its popular culture or subculture which is also known as Japanese popular culture (Azizah, 2015). One of the most popular cultures is Japanese Popular Culture whose influence has been widely circulated in Indonesia. One form of Japanese popular culture is Anime which is an animated film from Japan, Manga which is a type of comic from Japan, and Cosplay which comes from the word costume play from English which means a hobby to dress and dolled oneself to look like a character from a manga or anime (Amalia, 2012). Japanese Popular Culture consists of several things, namely Japanese Manga or comics, Anime, or Japanese animated cartoons, video games, and Idol culture. Anime itself has quite a striking difference when compared to other cartoon films, such as American-style Disney cartoons. The difference lies in the visual appearance/drawing style of the anime itself, where the character designs are described as having big eyes, compared to the visual style of Disney cartoons where the visual style is still close to human anatomy in general. Timothy J. Craig said that the unique characteristics of these Japanese anime popular culture works are the quality values, namely artistic values, high precision, and workmanship techniques and often incorporate elements of a combination of modernity values and traditional Japanese values.

The Garudayana comic is a product that adapts Japanese pop culture. Indonesian Millennials and Generation Z are heavily influenced by Japanese pop culture. The adaptation of comics with Japanese-style makes Garudayana easier to be accepted by Indonesian Millennial and Z Generations. because this form of comic is familiar among them. The influence of Japanese pop culture can also be seen on

several fan meeting events for the Garudayana comic were held with the author, Is Yuniarto with several fans cosplaying the characters featured in the Garudayana comic, as shown in Fig. 6 there is Petruk, Gareng, Bagong cosplayer, Is Yuniarto with Gatotkaca copysyaer and the main character of Garudayana character Kinara cosplayer. This point represents the acceptance of this comic among the younger generation and generation Z.

Besides to comics, products from pop culture can be in the form of merchandising related to comics as shown in Fig. 7, there is Gatotkaca figure in Chibi version, and T-shirt printed with Gatotkaca Garudayana Chibi and manga style.

3.4 Acceptance of Millennials and Z Generation of Garudayana in Manga Style

Manga is a form of Japanese popular culture that is very close to the daily life of Japanese people—children, teenagers, adults, men, and women—where everyone like to read manga because the price is affordable and practical to carry and read anywhere either in homes and schools, in trains, buses, restaurants, and beauty salons, waiting rooms for hospitals and clinics, etc. Besides, manga is also easy to get, either in supermarkets, shopping centers, bookstores, and others. Consuming Manga and Anime is part of the daily life of Japanese people, reading levels, newspaper circulation, TV ratings in Japan are the highest in the world (Macwilliams, 2015). Manga is not only popular in Japan, but manga is also popular in Indonesia, where manga was published by one of the publishers in Indonesia, namely Pt Elex Media Komputindo in 1990 (Streit, 2014). The manga are Candy Candy, Kung Fu Boy, Dragon Ball, etc. Not only in Indonesia, but manga is also popular in other Asian countries such as Malaysia, Thailand, Hong Kong, Korea, and many other Asian countries. Besides reaching Asia, manga also penetrated other countries, such as America.

Kankei in 1771 is entitled Mankaku Zuihitsu, the Shiji No Yukikai by Santo Kyoden in 1798, and the Hyakujo

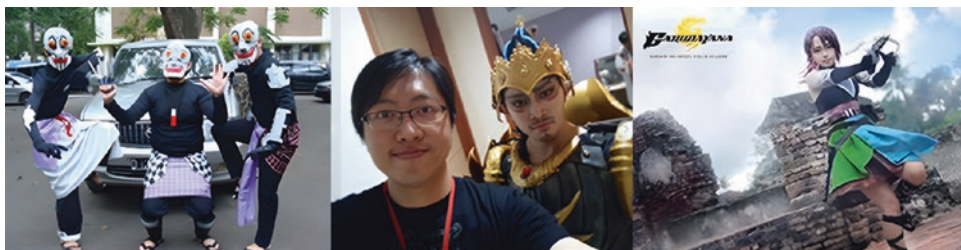


Fig. 6 Garudayana cosplay—Punakawan—Gatotkaca—Kinara. Warrior illustration with manga style—Gatotkaca “Garudayana” version. Source Garudayana (2016). <https://web.facebook.com/>

[garudayana/photos/with-kevin-oinky-cosplay-as-garudayana-gatotkaca-winner-of-cosplay-competition-a/10154273238958331](https://www.instagram.com/garudayana/photos/with-kevin-oinky-cosplay-as-garudayana-gatotkaca-winner-of-cosplay-competition-a/10154273238958331)

Fig. 7 Garudayana merchandise. Source Garudayana (2017). https://web.facebook.com/garudayana/photos/kaos-chibi-gatotkaca-garudayana-ready-stockharga-rp-135-k-ongkir-sesuai-alamatba/10155688255918331/?paipv=0&ea v=Afa1CGBxeDg7srORRekFDUI2cEoF6ndNypEaKeqnObLez_pfdoS15Afpel_Zy6PKyc4&_rdc=1&_rdr



Manga by Aikawa Minwa in 1814 (Streit, 2014). But there are also those who say that manga first appeared in the twelfth century. The early generation of manga was titled *Chōjū Jinbutsu Giga* which contained various cute pictures of animals and humans. At first, manga was heavily influenced by Western comics such as Walt Disney, but Manga began to find its trademark after the Second World War. One of the pioneers was Fujiko Fujio who was successful with *Doraemon*. Its characteristics include the facial characters and the storytelling. Manga characters tend to have big eyes, smooth faces with round cheeks, narrow noses, and thin lips (Streit, 2014).

Here are the types of manga based on the type of reader (STORY).

- Manga specifically aimed at children is called *kodomo* (子供)—for children.
- Manga specifically aimed at (female) adults are called *josei* (女性) or *redikomi*—women.
- Manga that is specifically intended for adults is called *seinen* (青年)—men aged 18–30 years.
- Manga specifically aimed at girls is called *shōjo* (少女)—teenage girls.
- Manga specifically aimed at boys is called *shōnen* (少年)—teenage boys.

Successful manga titles will usually get an animated adaptation or also known as anime. In addition to getting an anime adaptation, a successful manga will also develop its IP (Intellectual Property), producing various kinds of merchandise related to the manga title, such as merchandise character figures from the manga and game adaptations from the manga as well as other types of merchandises.

The Garudayana comic by Is Yuniarto adapts the manga style (Devanie et al., 2020). This comic received good appreciation from comic lovers in Indonesia. This can be seen from the printed data up to 2022 where Garudayana comics have been published in 6 volumes, and each volume has been respectively reprinted once with MNC Gramedia publisher (a total of about 11 thousand copies per volume,

with an initial 8 thousand print and 3 thousand of reprint). After being published by MNC Gramedia, Garudayana comics changed publishers to Mizan publishing. At Mizan publishing, Garudayana comics were first printed with 3 thousand copies, then reprinted 2 times per volume (a total of 3 thousand copies per print per volume). The total number of copies of Garudayana comics circulating in the local Indonesian market reaches 20 thousand comics per volume, with a total of 120 thousand copies (volumes 1–6), as shown in Fig. 8, there is Garudayana comic cover and its content in volume 5.

Apart from products in the comic books format, the response from fans toward collectible items related to a product (in this case Garudayana) can become an indicator of market acceptance of a product. The response to collectible items in the form of merchandise from Garudayana is also very positive. This can be seen from the high demand for merchandise from Garudayana figures.

4 Conclusion

Garudayana comics use manga illustration style. Manga style is a Japanese comic drawing style that is characterized by large eyes, smooth facial features with round cheeks, narrow nose, and thin lips (Streit, 2014). Javanese Shadow Puppet is used as a source of inspiration and reference, Garudayana's design itself has a variety of unique designs. Javanese *wayang* is a type of performance that is often interpreted as an unclear or vague shadow, moving back and forth (Anggoro, 2018). There are several Javanese *wayang* characters that appear in the Garudayana comic, some of which are Gatotkaca, Yudhistira, and Punakawan (Semar, Petruk, Gareng, Bagong). The Punakawan characters themselves are an illustration of the realization of character education teachings, especially the Javanese. *Wayang* mythology is a tradition and culture that has underpinned and played a major role in shaping the character and existence of the Indonesian nation (Narimo & Wiweco, 2017).



Fig. 8 Garudayana manga cover and Garudayana manga adaptation. Source Garudayana (2015). [https://web.facebook.com/garudayana/photos/komik-garudayana-saga-volume-5-yang-](https://web.facebook.com/garudayana/photos/komik-garudayana-saga-volume-5-yang-akan-terbit-bulan-ini-akan-diluncurkan-saat-p/10153549568183331/?paipv=0&eav=Afb06f1YxkdD0XvT02fjxFdFPE8YH-fGzY3Pk9-cml6u7mU1DCxUbl5vFxcGwrrs5EA&_rdc=1&_rd)

[akan-terbit-bulan-ini-akan-diluncurkan-saat-p/10153549568183331/?paipv=0&eav=Afb06f1YxkdD0XvT02fjxFdFPE8YH-fGzY3Pk9-cml6u7mU1DCxUbl5vFxcGwrrs5EA&_rdc=1&_rd](https://web.facebook.com/garudayana/photos/komik-garudayana-saga-volume-5-yang-akan-terbit-bulan-ini-akan-diluncurkan-saat-p/10153549568183331/?paipv=0&eav=Afb06f1YxkdD0XvT02fjxFdFPE8YH-fGzY3Pk9-cml6u7mU1DCxUbl5vFxcGwrrs5EA&_rdc=1&_rd)

The adaptation of traditional culture into pop culture is one of the unique features of Garudayana comic. According to Liliwari in Pongantung et al. (2018), cultural adaptation is a process of adjusting the values, norms, or behavior of 2 or more cultures.

The target market for the Garudayana comic is the millennial generation and generation Z. The millennial generation is a generation who intensely use instant communication technology, such as email, SMS, instant messaging, and social media such as Facebook and Twitter (Hidayatullah et al., 2018). This generation has different characteristics, depending on where they grew up, their family's economic and social strata. Their communication patterns are very open compared to previous generations, fanatical social media users, and their lives are heavily influenced by technological developments, more open to political and economic views, so they look very reactive to changes in the environment surround them and pay more attention to wealth.

Generation Z is a generation born between 1995 and 2010. In general, they share similarities with generation Y, but generation Z is better at multitasking or able to do several activities at one time (Kusumaningtyas et al., 2020). This generation has the characteristics of being accustomed to multitasking activities, for example, using social media via mobile phones, searching data using a PC, and listening to music with a headset all at the same time. The activities are generally related to the virtual world. This is not surprising because since childhood, they are familiar with technology and are accustomed to sophisticated gadgets

that indirectly affect the personality of this generation Z (Kusumaningtyas et al., 2020).

The results of interview conducted with Is Yuniarto as the comic artist from Garudayana show that initially, the decision to use Javanese *wayang* designs in Garudayana comics was inspired by the high popularity of *wayang* as an entertainment in the ancient times. Along with the development of progress and technology, the popularity of *wayang* is getting eroded, and the audience for *wayang* has decreased. Due to this matter, Mr. Is Yuniarto was inspired to adapt the Javanese *wayang* designs combined with manga drawing styles and local Indonesian elements which are quite rich. Garudayana is rich with traditional Indonesian local nuances to show that Garudayana comics are comics from Indonesia and are promoting local content. The design elements of the Javanese *wayang* are shown from the costumes and clothes worn by the characters. For example, one of the characters, namely Gatotkaca, is shown with a Javanese version of the original character with the characteristics of clothing, dorsal wings, mustache, complete with a crown. Other characters are also displayed using accessories whose designs are taken from designs that often appear from Javanese *wayang*.

The response of the local Indonesian market to Garudayana comic is very well. This can be seen from the data that up to 2022, there are 6 volumes of comics that have been published, and each volume has been reprinted once with MNC Gramedia publisher (a total of about 11 thousand copies per volume, with an initial print of 8 thousand and reprinted by 3 thousand). After being published

by MNC Gamedia, Garudayana comics took over the publisher with the publication of Mizan. At Mizan publisher, Garudayana comics were first printed with 3 thousand copies, then reprinted 2 times per volume (a total of 3 thousand copies per volume). The total number of copies of Garudayana comics circulating in the local Indonesian market reaches 20 thousand comics per volume, with a total of 120 thousand copies (volumes 1–6). Apart from the number of reprints per volume, the response from fans of the Garudayana comic itself is also very positive. This can be seen from the high enthusiasm of fans at fan meetings at comic events. In several events that have been held, some fans were also seen cosplaying the characters that appear in Garudayana comic.

The results of the FGD (Forum Group Discussion) with the respondents from the millennial generation and generation Z obtained that they liked the setting and the designs in Garudayana comic. Traditional Indonesian elements combined with the pop culture influenced the interest of the respondent toward Garudayana comic. In terms of design, the elements of pop culture (manga drawing style) make the readers feel that they can relate because they are familiar with the illustration style. For characters who come from local figures, such as Gatotkaca, Arjuna that are shown are also known to the millennial generation and generation Z in Indonesia.

The study concludes that the local Indonesian market accepts Garudayana comics well. This can be seen from the number of copies circulating in the market, and the fact that this comic has been reprinted several times. The design that adapts to the traditional culture (Javanese *wayang*) is the strength of this comic and is a supporting factor that attracts the local Indonesian target market.

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Transmedia Storytelling Method as Sustainability Brand Study Case: BTS

Lala Palupi Santyaputri

Abstract

Every brand has a story, but not every person behind the brand realises it or has ever thought about it. Using elements to develop a brand's own story and building a campaign with a brand's own story has benefited from the exposure of an existing product. This study employs a mix method to examine brands that used transmedia based on several applications. Brand information spreads through culture via a range of media platforms, with content on one channel frequently leading to interaction on another. Started with a print ad and spread the word about the film on social media sites like Instagram and Facebook. In a series of YouTube and TikTok videos, the company eventually reacted to make some languages visible. Netizens made and shared memes, as well as posting their own versions of the video on their own platforms. In a highly engaging manner, the basic tale was spread across distinct story contributions using user-contributed content across numerous mediums. Transmedia branding is one of several viable alternatives to the traditional definition of public relations, which remains overly focused on media relations to this day. As sustainability of the brand, the media landscape changes, media relations, targeted multimedia content creation, and social media campaign execution become more important.

Keywords

Transmedia · Storytelling · Sustainability · Brand · BTS

1 Introduction

Transmedia storytelling is a multi-directional communication network where the construction of the fictional world becomes a social practice for the artists as a brand and consumers to remain in dialogue long after the release of a media product because of how the media is consumed and how the audience reacts to the narrative (Atarama-Rojas, 2019).

Henry Jenkins is credited with being the one who first proposed the concept of transmedia storytelling in response to the modern digital era of media convergence, in which content is distributed through a variety of media channels. Transmedia storytelling is an evolution of convergent storytelling that acknowledges narrative extensions that are distributed through multiple media channels and adds new levels of comprehension to the overall narrative.

Brands and consumers are interdependent in such a way that customers determine brand development and success, while brands impact and steer consumer behaviour in the opposite direction. As a result, branding has become “the story of belonging and pervasion” since it allows consumers to express their interests, attitudes, preferences, and general personalities through the brands they use (Erdil, 2013). Furthermore, they are a reliable source of information and a wonderful mediator in the education and employment of a large group of customers, which, when formed into a brand community, may be a powerful force in society (Erdil, 2013).

When a viewer wants to look at the narrative, they are required to look at all of the media content in order to comprehend the entire event, which will enhance the viewer's overall experience and level of engagement with the narrative. In contrast to intertextuality, which Scolari defines as “a connection of different parts that are related to each other”, this idea is “a connection of different parts that are related to each other” (Atarama-Rojas, 2019).

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In order to forge a stronger bond between the audience and the characters, a transmedia narrative will make use of tangents that not only connect back to the primary narrative but also broaden its scope in a number of different ways (Atarama-Rojas, 2019).

1.1 Bangtan Sonyeondan, or BTS

BTS or Bulletproof Boy Scout was established in 2013, initially as an idol and boyband, with BigHit as the company behind. Subsequently, the company expanded its operations to include film production, merchandising, apps, and a museum. BTS gained widespread popularity in late 2017, and the company licensed a large number of products featuring multiple brands and characters. For many years, BTS was the only one of the idol K-Pop groups that operated essentially according to the franchise principle. In addition to producing tie-ins, BTS also regularly re-released his variety shows, concert videos, and reality shows. The merchandising surrounding these BTS as brands remained perpetually current and desirable throughout this time.

Even before licensing existed, the BTS universe was conceived of in the earliest BTS shorts as a place that was both strange and recognisable at the same time. It is true that populated characters served as the most recognisable symbols of the BTS brand; however, as I will demonstrate in the following section, the fictional storyworld in which those characters were developed was not any less significant. BTS frequently releases series with particular ideas and motifs, concentrating on a single story that takes place within a much larger and more expansive universe.

It goes without saying that this is not the first time a musical group has incorporated a meta-narrative into their body of work. Concept albums have been at the forefront of expanding the capabilities of music as a medium for the telling of stories for many years. The British virtual band Gorillaz took this concept to an extreme by creating fictitious backstories for each member of the band as well as incorporating alternate reality games into its websites.

On the other hand, multi-platform storytelling in the realm of music has traditionally been the purview of side-projects undertaken by niche artists; it has never been attempted on the commercial scale that Bangtan Universe has achieved with Big Hit. It is requested that sustainable development be practically implemented into everyday company operations. Traditional sourcing and selling will be neglected in the near future, and so being on a sustainable path will be the primary criterion for remaining in business (Erdil, 2013).

A technique known as “transmedia storytelling” involves delivering different parts of a story through a variety of media platforms, with each one serving to complement the others.

Even within these thematic classifications, there are specific icons and signs that relate to other music videos, short films, member video logs, Twitter posts, webcomics, game apps, and a variety of other media. Because they are the first medium that fans have unrestricted access to, the music videos and short films released by BTS are sufficient for evaluating the expansiveness of the BTS universe.

2 Research Method

The current era of digital content streaming has made it impossible to analyse the majority of narratives by focusing on a single channel or point of view. The best way to present fictional worlds in this day and age is to disperse their elements across a variety of different media (Dena, 2009, p. 322).

This is the reason why this paper examined all of the multiple apps and variety shows that BTS has released since 2013 on the company-owned YouTube channel for the group (Big Hit Labels) in order to comprehend how the group has utilised transmedia storytelling to advance their storyline. Atarama-Rojas (2019) discusses a number of different ideas, one of which is that of the transmedial world, which he defines as an “abstract content system (...) from which a repertoire of fictional stories and characters can be actualized or derived across a variety of media forms”.

This world is frequently a complicated system that includes multiple characters and storylines that are connected to one another, and there are sufficient gaps in the narrative to allow the audience to bring their own assumptions and theories to the table (Atarama-Rojas, 2019). These omissions from the story, which are referred to as ellipses, provide the audience with the opportunity to piece together the transmedia narrative (Atarama-Rojas, 2019).

Traditional narratives, on the other hand, typically follow the main plot in a chronological sequence of events, with smaller, related storylines weaving throughout the story until it all joins together in the end, leaving a conclusive ending. This contrasts with more modern narratives, which tend to be more open-ended and less structured.

This narrative is presented with a distinct point of view, typically concentrating attention on just one or a few of the characters. A transmedial world is fragmented since each medium brings a unique or fresh viewpoint to the narrative and due to the fact that there is sufficient ellipsis in each

medium and in the overall narrative for it to never be satisfactorily resolved. Scolari suggests the following four methods to broaden the scope of the narrative:

- (1) interstitial microstories, which expand the main story by filling in gaps;
- (2) parallel stories, which take place at the same time as the main story;
- (3) peripheral stories, which are only tangentially related to the main story; and
- (4) user-generated content platforms, which enable fans to expand the world.

The producers are responsible for the implementation of the first three strategies, which are designed to expand the storyline. The fourth strategy, however, requires the participation of the audience members' imaginations and active participation in the story. Analysing fictional worlds and other possible strategies brands may use to expand the narrative would be beneficial to further research on transmedia storytelling. User-generated content has a significant impact on transmedia storytelling, particularly because the content is dispersed across numerous media channels, and it is the responsibility of the audience to locate all these channels and piece together their own narrative.

2.1 Transmedia Storytelling, Multiplicity, and Social Media

Concepts are perhaps the most recognisable aspects of K-pop, and for good reason. A term commonly used in the creative industries to refer to the ideas that serve as the basis for a long artistic project. The engine that drives spectacles has drawn teenagers into K-pop, and it is a powerful one. The extravagant stage sets and outlandish costumes are just as important to the overall experience as the music itself.

These ideas are often incorporated into narratives, such as the ones that certain bands have conveyed through their music videos and other promotional materials. In their music videos for "Idol", "Fire", and "Dynamite", Bangtan Sonyeondan alluded to a possible narrative connection between the three songs. On the other hand, most of the time, these are one-off projects.

But in a field that thrives on conceptual experimentation, there is one act that has taken the concept of expanding on a general concept to an entirely new level. This act's name is The National. The global sensation BTS, whose value is estimated to be around \$3.6 billion for the economy of South Korea, and their agency, Big Hit Entertainment, have been quietly building a universe for years by integrating storytelling across a variety of platforms. This has resulted

in BTS's value being estimated at around \$3.6 billion for the South Korean economy. Not only does this effort bring marketing to new heights, but it also brings other benefits. Additionally, it helps cultivate a more meaningful connection with the fans. Sustainable strategy necessitates holistic business model reform and a synergetic approach—in other words, the participation of many stakeholders around a single goal, with a focus on the consumer (Grubor & Milovanov, 2017).

What do you do if you have a fanbase that devours music videos and merchandise but still craves more content from you? The response from Big Hit Entertainment is that you give them more. Bangtan Sonyeondan is not only an idol group or boy band; they are seven young men who are also best friends.

Enter the Bangtan Universe, a meta-narrative that spans multiple media platforms and was created to engage with fans on every level that is possible. The Bangtan Universe, also known as BU, tells the tale of a young boy named Seokjin who repeatedly travels through time to avert the tragic outcomes that await his six closest friends. Although the universe was not introduced to the public until January alongside a preview of its webcomic *Save Me*, the story had been ongoing since 2015, when it was introduced in the music video (MV) for the song "I Need U", which served as the title track for the album *The Most Beautiful Moment in Life, Pt. 1*.

It highlighted the close-knit, defiant friend group of the seven boys (all of whom were portrayed by the members), and it did so by providing snippets of each character's troubled backstory. Over the course of many years and through a variety of mediums, more and more of the story's details have become public. At first, it was only through music videos and additional videos that had been covertly labelled as official BU content in the descriptions of their YouTube pages. However, in the physical copies of their album *Love Yourself: Her*, which was released in 2017, there was a booklet titled *The Notes* included.

This was the beginning of a tradition that would continue with their subsequent albums, *Love Yourself: Tear* and *Love Yourself: Answer*. The fact that each booklet contained entries written by all the characters on a variety of dates added to the sense of intrigue surrounding the progression of the story.

In 2019, a separate book with the working title *The Most Beautiful Moment in Life: The Notes 1* was released a few days after the webtoon's big reveal. After that, in the month of March, copies of the book were made available to the public. The telling of the story takes place on many different levels, so it is important to keep in mind that the narrative does not adhere to a single path in the same way that more conventional forms of storytelling might. The idea of transmedia storytelling is to create a parallel

world between others; this is shown to be the best way to look at it, almost as if the different elements of the plot are networked with each other. The audience is free to begin wherever they like, and all they need to do is piece these things together.

2.2 A Universe Filled with Experiences

These communities are ideal for the growth of ardent fans, which is a fact that Big Hit makes use of to cultivate an energetic and involved fanbase for BTS. BTS fans refer to themselves as ARMYs, and they spend countless hours mining materials and digging deep to create their own timelines and theories. They then take to social media platforms like Twitter and YouTube to share their mind-bogglingly specific breakdowns.

According to Table 1, BTS's narratives are never-ending. Since 2013–2021, Big Hit has prepared numerous series of reality television shows annually. Each reality show has its own unique storyline. To introduce and establish the existence of BTS in the K-pop world, the group appeared on national television as a guest star, and after 2017, they were invited to the Ellen Show in the United States of America when they were nominated for Top Social Media Artist at the Billboard Music Awards 2017. Started 2017, as shown as Table 2 BTS became guest stars on numerous varieties shows in the United States and worldwide.

Big Hit gives the fans a sense of ownership over the Bangtan Universe by giving them some leeway in determining how these stories should be interpreted. Producers, the men behind the big design, were making the experience more immersive. So, with the different rhythm, emotion, and pace of these stories, there are more surprises, which makes the story more addictive.

K-pop is already filled with acts, with dozens of groups making their debut each year and every group that achieves even a modicum of success staging multiple comebacks (an industry term for new albums or single releases). According to the International Federation of the Phonographic Industry, BTS was the second best-selling artist in the world in 2018, placing them firmly in their position as a global act. This achievement solidified the group's position as a global act. This also indicates that they are competing against more well-known and larger brands, each of which engages in its own set of marketing endeavours.

As a result of the devoted fanbase, BTS has become a money-maker, and Big Hit is able to dominate the finite resource that is human attention, giving them a significant edge over their competitors. This is due to the scarcity of available human attention. Every single member of BTS has often stated that Army is the driving force behind their success. They have identified the Army as being 50% of the reason for their success.

Big Hit is aware that the many personalities of the BTS members are significant and parallel to what has kept them

Table 1 In-house reality shows

2013	2014	2015	2016	2017	2018	2019	2020	2021
Rookie King	American Hustle	BTS Gayo	Run BTS	Run BTS	Run BTS	Run BTS	Run BTS	In the Soop
	Go BTS	Run BTS	Summer Package	Summer Package	Bon Voyage	Bon Voyage	Bon Voyage	
			Winter Package	Winter Package	Burn The Stage	Love Yourself	Bring The Soul	
							Break The Silence	

Table 2 BTS as guest star on variety shows

2013	2014	2015	2016	2017	2018	2019	2020	2021
After School Club	Hope Delivery Love Food Bank	A Song For You	Idol Star Athletics	New Yang Nam Show	The Graham Norton Show	Stephen Colbert Show	Jimmy Fallon	Special Talk show 2021
		Yaman TV	The Boss is Watching	Idol Party			James Corden	Jimmy Fallon
		Idol Star Athletics	Running Man	Knowing Brothers				James Corden
			Star Show 360	Ellen Show				

from putting out that variety of opinions from the Army, who come from a range of ages, economic statuses, levels, and cultures. It is quite evident that to interact with the myriad of different markets that they service, they try to utilise a variety of different strategies. The Bangtan Universe is consistent with the level of expressed depth as well as the design aesthetic that they have always displayed. The personalities of the band members also came through in their music, with each era having a distinct theme that represented how they were feeling through the lyrics and the way they made music.

2.3 Fandom as a Social Media Agent

This was the key to sustainability: an engaged and intellectually stimulated following that evaluates the intention and quality of the content that they are being given is what constitutes a fandom, rather than the mindless devotion that is frequently portrayed as a defining characteristic of fandoms.

One of the reasons that BTS's fans admire the group is because of the music that the band creates. Putting further effort into the degree of telling their story through this transmedia campaign, the everyday campaign and content put forward by Big Hit have further ignited the fervour of ARMY. As a member of a fan base, they are not only a customer but also an active participant on social media. They try to pay attention to every circumstance in which BTS is present.

In this way, Big Hit has found its own form of creativity, which consists of walking the tightrope between musical craftsmanship and commercial viability. This is the kind of artistry that distinguishes Big Hit from its competitors. And preserving that sense of equilibrium is something that the audience appreciates tremendously.

Whenever BTS publishes something, whether it be a song, an album, a music video, a photocard, a magazine, or goods, all the property exhibited on screen or at an event that is embodied in each member is a treasure for them, and it is another way that the fandom feels close to the member.

After the spread of licensed intellectual property across a range of media platforms, there was a subsequent extension of the fictitious story worlds established by those platforms. BTS was one of the most prominent names of the era, and it was a part of this expansion. Big Hit crafted dynamic personas for each member of BTS, which were then marketed in a variety of media around the globe, most prominently through audio-visuals and products.

Intertextuality, the idea that multiple texts exist and operate in relation to many others, and immersion, which Jenkins defines most simply as "the consumer entering the world of the story" are two distinct but equally related

concepts at work in this process of BTS world building. BTS story world believable form of fantasy, it was developed and expanded across media with the help of intertextuality and immersion.

The ARMY has been demonstrating various feelings towards BTS by posting short movies or memes on a variety of social media platforms and applications, including Twitter, YouTube Reels, TikTok, and Instagram Reels (Fig. 1). Even Weverse expanded to become an app to express their love and gratitude to members of BTS.

BTS established their brand identification using shared social media accounts, which is a departure from conventional practice. Which includes a YouTube account with music videos, an account on TikTok, an account on Instagram, and a Twitter account. Even though this may not be the standard for other bands, there is a school of thought that maintains the opinion that this tactic may be convenient for fans. Through this collectively managed Twitter account, the band would communicate with their devoted followers, who were referred to as ARMY's. Through the posting of photographs, movies, and even birthday greetings to one another, members of the group share their day-to-day lives with one another.

ARMY's have a centralised area where they can get interesting stuff about their favourite group; this eliminates the need for fans to follow each individual member of the group and hunt for information about their idol. After reading these posts, ARMY members have the same sense of connection to the other members that they get from scrolling through the news feed of a buddy.



Fig. 1 BTS in social media (Author)

BTS also provides updates about their lives on the exclusive ARMY platform on Weverse, which allows members to read and comment on postings made by fans. In addition to that, they will occasionally broadcast themselves live using the video website or app Vlive, which is based in Korea. BTS has made repeated efforts, both planned and spontaneous, to communicate with its followers in real time via live streaming and keep their supporters updated on the group's activities. They offer coverage of the time members spend waiting backstage before performances, in addition to the members' spontaneous lives, either collectively or individually, with or without a specific aim. Because participants can view fan comments as they come in and respond to them in real time, live streaming is a particularly participatory form of video distribution. By maintaining a high level of interaction with their ARMYs across all their social media platforms, BTS can forge a profoundly meaningful connection with its devoted fanbase.

To get the most out of any fictitious story world, customers must put themselves in the role of both the hunter and the prey. In terms of economics, worldbuilding is predicated on the assumption that audiences will acquire both a deeper and a more comprehensive understanding of a fictional story world because of their consumption of more and more media texts that narrate adventures that take place within that story world. This is because it is presumed that audiences will acquire such an understanding as they consume more and more media texts that narrate adventures that take place within that story world.

3 Conclusion

Since 2017, when BTS began collaborating their music with international artists such as Steve Aoki, Halsey, Lauv, Sia, Nicki Minaj, Ed Sheeran, Charlie Puth, Cold Play, and Snoop Dog, the group has been able to capitalise on the group's exposure among the millions of social media followers of these artists. Steve Aoki, Halsey, Lauv, Sia, and Nicki Minaj are just some of the artists who have worked with BTS. Every international artist has millions of followers on Instagram; this translates to multiple millions of additional individuals who can learn about BTS.

Another strategy that BTS implemented for their social media campaign was called influencer marketing. Beside becoming guest stars on international talk shows or variety shows like The Ellen Show, The Graham Norton Show, Jimmy Fallon, James Corden, Stephen Colbert, and many more, BTS's ability to demonstrate their charisma and bond with fans is facilitated by the relatability of the members of the group, the interactivity and variety of the members' social media accounts, and the quality of their music.

One of the benefits of using social media is the increased likelihood that content will get widely shared. However, success through viral distribution is just temporary. Most of the viral material has a pretty limited shelf life, and you should determine whether or not the overall amount of traffic you receive from viral content still generates an equivalent amount of quality traffic. Building authentic, long-lasting relationships with your target audience is one of the most important goals that should be pursued while developing a strategy for social media. In the case of BTS, this is an amazing example of sustainable brand on music industry.

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Semiotic Meaning in the Hyundai IONIQ 5 “Power Up the Future” Advertisement Video from an Audio-Visual Perspective

G. W. Leonardus Aryo, Januar Ivan, and Elda Franzia Jasjfi

Abstract

Sustainable energy and eco-friendly innovation ensure continuous technological development and the provision of energy for current as well as future generations. There are two main pillars of sustainable energy: efficiency and renewable energy. Energy sources that are included in the sustainable group include the development of electric-powered vehicles. Hyundai recently released its newest electric car, the IONIQ 5. The Hyundai IONIQ 5 is the first environmentally friendly electric car made in Indonesia to be sold for the Southeast Asian market. Hyundai introduced the IONIQ 5 to the public through an advertisement video on YouTube. In this Indonesian version of the video advertisement, the launch of IONIQ 5 is shown through audio-visual elements with a futuristic theme and accompanied by the slogan “power up the future with Hyundai”, which slogan is not found in other countries versions of the video. This research is questioning how the Hyundai IONIQ 5 advertising uses audio and visual elements to send a message about the future. The research method is qualitative with a semiotic approach to analyze the IONIQ 5 advertisement video from an audio-visual perspective. In this study, data collection was carried out using visual observation of the IONIQ 5 advertisement video on YouTube. The result is that the Hyundai IONIQ 5 depicts the future with visual symbols of IONIQ 5 as sophisticated vehicles from the future that is available now. From the visual point of view, IONIQ 5 futuristic impression is

shown by its advanced features alongside nature and space with the narrative about the hopes of a family in the future. From the audio point of view, this video ad uses a long tone, and a calming yet mysterious chord as a sound to represent the future.

Keywords

Sustainable energy · Future car · Electric car · Advertisement video · Futuristic impression

1 Introduction

Indonesia has abundant natural resources and has the potential to be used as various types of renewable energy sources. In 2019, the supply of primary energy such as oil, coal, and gas amounted to 91.45% of total energy, and 8.55% of which was a renewable energy source. In the electricity sector in Indonesia, 85% of energy is supplied by energy derived from fossils, even though Indonesia has the potential to create renewable energy power plants that reach 432 Gigawatt or 8 times greater than the current total power generation capacity. Renewable energy currently used commercially is only 10.3 Gigawatt, so to achieve the government’s target, the Ministry of Energy and Mineral Resources is committed to continuing to encourage the development of renewable energy to reach 23% by 2025 through the Energy Indonesia program. President of the Republic of Indonesia Joko Widodo in his speech said that electricity is not only used for lighting, but electricity also provides opportunities for Indonesian people to improve their quality of life. He also said that Indonesia is a tropical country where the sun shines all year round, and this is an advantage that should be taken (KementerianESDM, 2019).

To support the use of electric vehicles and also to improve the quality of life of the nation, the government issued a Presidential Regulation of the Republic of

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Indonesia No. 55 of 2019 concerning the Acceleration of the Battery-Based Electric Motor Vehicle Program, considering (c): “that to encourage mastery of industrial technology and vehicle design and to make Indonesia a production and export base for motorized vehicles, it is necessary to accelerate the battery-based electric motor vehicle program (battery). electric vehicle) for road transportation (Hyundai, 2020)”. Also issued the regulation of 0% Tax Imposition Basis on the Battery Electric Vehicle (BEV) selling price (Lathifa, 2020). Hyundai responded by building its first manufacturing center in ASEAN for \$1.55 billion. The factory is located in the Deltamas area at Bekasi, has an area of 8.35 million square feet (77.6 ha), and is operated by PT Hyundai Motor Manufacturing Indonesia (HMMI) (Hyundai, 2020). On Hyundai’s official website it is stated that Hyundai Motor Indonesia (HMID) is a distributor which focuses on selling vehicles and upholds the company’s vision of “Progress for Humanity”. Hyundai focuses on innovation that emphasizes the human element, including providing products with technology that supports solutions for a sustainable future.

Hyundai recently released its newest electric car, the IONIQ 5. The Hyundai IONIQ 5 is the first environmentally friendly electric car made in Indonesia to be sold for the Southeast Asian market. Introduced as a high-end car that is friendly to nature for sustainable living, Hyundai IONIQ 5 used environmentally friendly materials in every part of the cabin. In January 2022, automotive.bisnis.com declared Hyundai the king of electric vehicles in Indonesia (Shahnaz, 2022a). In the automotive exhibition data from the Association of Indonesian Automotive Industries (GAIKINDO) 2021, it was noted that sales of Battery Electric Vehicle (BEV) types were led by Kona Electric with sales figures reaching 366 units, followed by IONIQ Electric which sold 239 units. In GAIKINDO 2021, total BEV sales from all brands reached 693 units, and from this data, 605 units or 87.3% of them were Hyundai’s BEVs. This makes Hyundai even more enthusiastic to continue to be creative with technology to build an electronic vehicle ecosystem in Indonesia. This is evidenced by the emergence of the Hyundai IONIQ 5 in 2022 (Shahnaz, 2022b).

Hyundai Motors Indonesia released the IONIQ 5 video advertisement on its official channel on YouTube on April 1, 2022. The video title is “Power Up the Future with Hyundai IONIQ 5” (Hyundai, 2022). It reached over 1.6 million views in August 2022 and was liked by 1.9 K users. A senior Indonesian automotive journalist, Fitra Eri, also reviewed IONIQ 5 on his YouTube channel with the title “IONIQ 5—Walkaround with Fitra Eri”. In the video, it is stated that the IONIQ 5 is an innovative vehicle, with a super spacious interior with the slogan smart living place, has high performance, is comfortable, features fast electric charging, and has a long mileage.

Advertising is not only a promotional tool for goods and services but also to build an image to consumers and potential customers for the brand (Heriwati, 2018). The presence of good communication can influence, persuade, and convince the consumers to do something. The appeal uses emotional attraction conveyed through visuals of advertising. Images not only transfer essential information, but also create the spectator’s mood with colors, shapes, fonts, and music. Music is the most used audio element in advertising (Solík, 2014). A previous study showed that Indonesian consumers have a moderate preference for purchasing BEV influenced by criteria as follows: emotion (42.64%), functionality (25.94%), car identity (21.87%), and cost of ownership (9.55%) (Febransyah, 2021), and audio-visual is potentially enhanced consumer’s emotion for the brand.

The Hyundai IONIQ 5 advertisement is considered green advertising. Green advertising is defined as a promotional message that attracts consumers’ needs and desires related to the environment. Green products are more environmentally friendly than traditional products, and advertisers include maximum information about products, relevance, and environmental behavior for disseminating a green image and building environmental awareness. Green advertising or sustainability advertising also built a positive impact on brand personality and hence on credibility and attitude toward the ad and the brand (Sander et al., 2021).

In line with the growth of energy-friendly innovation products in Indonesia that are supported by advertising to increase brand awareness and positive attitude toward the brand itself, research on green or sustainability advertising is furtherly needed. This research is focused on Hyundai IONIQ 5 official video commercial’s meaning and questioning how the Hyundai IONIQ 5 advertisement uses audio and visual elements to send a message about the future.

2 Method

The research method is qualitative with a semiotic approach to analyze the IONIQ 5 advertisement video from an audio-visual perspective. Video is seen as a structured whole of sign or semiotic resources belonging to several representational modalities (including image, music, sound, and audio-visual). These signs play the role of annotated data and the meanings refer to the configuration of sensorial qualities of signs (expression) and arrangement of semantic entities (narrative content) as annotating data (Toppano, 2017). These meanings depend on the socio-cultural environment of the interpreter.

Data collection was carried out using visual observation and documentation of the IONIQ 5 advertisement video on YouTube. Visual observation was conducted by

watching the video repeatedly to understand the point of view, the scenes, and the visual transition. This 1 min video is divided into 12 scenes representing signs based on the video storyline, then every section was documented by screenshotting the YouTube video on the screen.

Audio-visual elements in the 12 scenes the of Hyundai IONIQ 5 video advertisement are then analyzed with Roland Barthes’ two levels of denotation and connotation. The level of denotation corresponds to the literal meaning of an image, or the immediate meaning relating to what is represented in the image. The level of connotation corresponds to the symbolic or ideological meaning of the range of possible meanings of an image inscribed by cultural codes. The ideological meanings of the image are context-dependent and related to the cultural context of the viewer. In this research, the representation of the future is concluded from the two levels of semiotic analysis. The denotation level is conducted by describing the literal meaning of image and sound in scenes, and the connotation level is conducted by cross-referencing with the symbolic meaning of those images and sounds.

3 Result and Discussion

Hyundai IONIQ 5 was released in January 2022 as the first electric car made in Indonesia. It showed the parametric pixel design style that blends analog and digital nuances to give original characteristics to the car Fig. 1. The exterior supported the cabin’s interior design positioned as a living space on the road. The friendly nature materials are used in the cabin to support sustainable living (Hyundai, 2022).

IONIQ 5 video advertisement is a 1 min-length video on the YouTube channel of Hyundai Indonesia. The title “Power Up the Future with Hyundai IONIQ 5” then continues with the question: Have you ever imagined what a bright future would look like? The question was answered with the video description: The future is the best manifestation that we can give to everyone we love, like a future full of comfort, security, and convenience. The definition of future according to the Oxford Dictionary is the time that will come after the present or the events that will happen then (idioms); the time or a period of time following the moment of speaking or writing; time regarded as still to come (noun) and at a later time; going or likely to happen or exist (adjective) (Oxford, 2022).

There are a set of beliefs shared by the general public about possible future scenarios, or myths of the future. The myths of the future represent values, fears, and hope. The myths of social crisis, eco-crisis, techno-optimism, power, and economic inequality, and social transformation, are connected with psychological and cognitive considerations. Techno-optimism describes beliefs that science and technology are likely to create innovations that can improve quality of life (Boschetti et al., 2016). In popular culture, the representation of technology is often represented in advertising and commodified as the ultimate object of our desires (Page, 1992). Technology has become bonding with human relationships in an attempt to explain beyond the image.

The future stated in the title “Power Up the Future with Hyundai IONIQ 5” is represented in Hyundai IONIQ 5 video advertisement’s scenes below.

The opening scene showed the scenery of a long road across the woods Fig. 2. The Hyundai IONIQ 5 is on the road with a family inside. Denotatively, this scene displays

Fig. 1 Hyundai IONIQ 5. Source e-brochure (<https://hyundaimobil.co.id/vehicle/assets/files/e-brochure-ioniq-5.pdf>)



Fig. 2 Source www.youtube.com/@HyundaiMotorIndonesia, 2022



colors that belong to the cold color category, with the dominance of the green color of the trees and the blue color of the road and mountains in the background. The dark colors are offset by the bright colors of the light in the sky that show the morning light. The calm atmosphere is displayed through color supported by quiet camera movement and not much movement. The audio at the beginning of this video presents the ambiance of the wind to accompany the visual where the vehicle is moving with a picture taken from a height (bird's eye). The sound of the wind amplifies the message of the movement of vehicles that are speeding across a path surrounded by dense trees. Then the scene continues in the car with a small rumbling ambiance sound that indicates the vehicle is moving but the cabin sound remains calm and comfortable.

The long winding road shows the car's journey that continues until the end of the video. This long journey sent a message about the long road metaphor and product's advantage. Connotatively, the long road means the journey to the future. The long and winding road is often used to describe life journeys and the challenges encountered (Helm, 2018). For the product's advantage, the Hyundai IONIQ 5 is an electric vehicle that is capable of driving all day long and can cover very long distances because it has a fairly large electrical power reserve in its battery. On the official website, it is stated that the IONIQ 5 has three battery options, and all of them are capable of traveling very long distances. For the standard range type only, the IONIQ 5 can be driven up to 384 km. As for the maximum distance, the IONIQ 5 provides a battery option with a maximum range of up to 481 km (Hyundai, 2020).

The second scene is a little girl playing with a paper space shuttle at the window inside the car Fig. 3a. The girl shows a smiling expression which indicates joy and enthusiasm. Like a child fantasizing about his favorite toy, this

scene depicts the child's imagination and hopes for the future. The voice-over in this scene is: "menurutku, masa depan itu..." (in my opinion, the future is...).

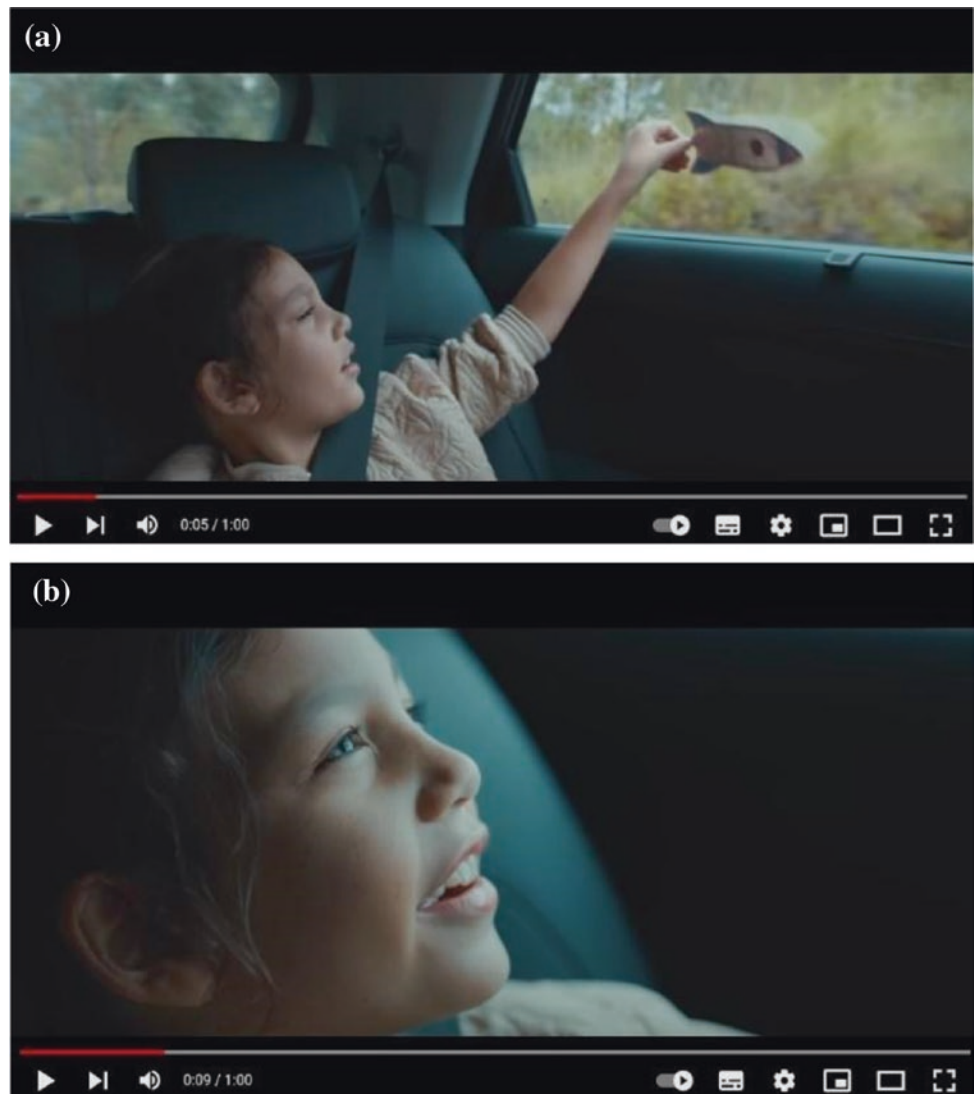
The child is a universal symbol of future potentiality as well as the carrier of the heritage of the past. The child is symbolic of the past, coming into being from generative forces that preceded it, yet for it, the future is an open possibility. The child represents innocence, purity, wonder, receptivity, freshness, non-calculation, and the absence of narrow ambition and purpose Fig. 3b. As yet innocent of life, the child portrays the beginning, the origin of all. The child represents incredible power, vitality, and persistence toward growth (Encyclopedia.com, 2018).

The use of the symbol of a young family consisting of parents and a small child symbolizes human life which still has a long life ahead, especially for small children. The narration of the voice of a child who is explaining what the future according to her version is, as well as being a representation of the meaning of the future according to Hyundai. The relationship between the use of children's symbols and the future is intended to illustrate everyone's hope for a good future, where the environment remains sustainable even though technological advances are also increasing rapidly.

From inside the cabin, the girl saw a space shuttle passing by with the roar of its engines. Denotatively, this scene shows a space shuttle made of paper being played by a girl Fig. 4a, followed by a view of a rocket flying in the air in the distance Fig. 4b. The space shuttle flew swiftly through the clouds while the girl watched with a smile.

The space shuttle or rocket is a symbol of collective endeavor and scientific progress. It is also more like one of reckless daring and staggeringly blind trust in technology. Connotatively, this scene symbolizes seeing hope or progress upon us. In general, humans are currently guessing

Fig. 3 a Hyundai IONIQ 5 advertisement video 00:05. b Hyundai IONIQ 5 advertisement video 00:09. Source www.youtube.com/@HyundaiMotorIndonesia, 2022



and worrying about what the future will be, will nature be destroyed because of technological advances? How about the current young generation, will they live comfortably and be able to achieve their goals? This question was then processed and used as a marketing strategy for Hyundai, where the IONIQ 5 was launched as an environmentally friendly vehicle with advanced technology that seemed to come from the future and used the visuals of the universe and the human environment that remained sustainable and comfortable in its commercial videos.

Then the scene continues with a shot of the vehicle passing through the forest Fig. 5a. The voice-over continues: “(menurutku masa depan itu...) ketika aku dan papa mama bisa jalan-jalan dengan senang dan aman” (when I with my father and mother can travel happily and safely). This scene shows the Hyundai IONIQ 5 from various sides. A view from the front, the steering wheel with control panels aside, tires, side view, and rear view Fig. 5b.

Steering feature Smart Cruise Control with Stop and Go Function is focused on in this video advertisement. This feature is claimed to make driver feels safer and less stressed. It maintains a set distance to the vehicle ahead and automatically reduces or increases speed to a pre-set limit. In “stop & go” traffic, the set distance is maintained. With this feature, it can provide a more secure and comfortable feeling for the rider (Hyundai, 2020).

Safety features are one of the values that can be an advantage of a product. The features embedded in the Hyundai IONIQ 5 are centered on a technology called Smart Sense. This futuristic-looking technology is a preventative safety feature to help drivers stay on the right track and away from danger due to the involvement of internal radar, sensors, and engine sense. This car is equipped with a 7-Airbag System, Electro Chromic Mirror (inside rearview mirror), and Forward Collision-Avoidance Assist (FCA) technology which is a system designed to prevent or reduce

Fig. 4 a Hyundai IONIQ 5 advertisement video 00:04. b Hyundai IONIQ 5 advertisement video 00:07. Source www.youtube.com/@HyundaiMotorIndonesia, 2022



the effects of collisions. Safe Exit Assist (SEA) functions in harmony with the electronic child safety lock system on the second-row passenger door.

The Hyundai IONIQ 5 is free from traffic restrictions based on the odd–even license plate. The combination of narration with visuals in this video can be perceived as Hyundai’s attempt to describe the feeling of “happy” and “safe” through the smart cruise control feature which is certainly fun because the driver doesn’t have to always step on the gas and brake pedals. This is because the smart cruise control feature can be programmed to automatically follow the movement of the vehicle in front of it. In addition, the convenience of the Hyundai IONIQ 5 is also added with features for a universal island sliding console. Furthermore, the next meaning of “happy” is the privilege of Hyundai IONIQ 5 to be free from traffic restrictions based on the odd–even license plate number. According to the policy, electric vehicles are free from the odd–even license plate

restriction rules. With this feature, IONIQ 5 is free from these regulations and can traverse freely in odd–even special areas.

Then the scene continues with a shot of the vehicle passing through the forest but the sound of birds chirping can be clearly heard. The sound of the IONIQ 5 itself is barely audible. The voice-over is the girl saying: “Bisa merasakan udara segar, dari hutan rimbon di sekitarku” (Can feel the fresh air, from the lush forest around me). This scene also shows the girl’s connection with nature. Denotatively, it starts from a view inside the car when she puts her hand on the car window while crossing the forest Fig. 6a and continues to the visualization of her being in the middle of the forest and touching the leaves Fig. 6b.

Up to this point, the sound element shown by the Hyundai IONIQ 5 video has a strong message. The Hyundai IONIQ 5 is an environmentally friendly vehicle and is designed to have very good soundproofing, as well as

Fig. 5 a Hyundai IONIQ 5 advertisement video 00:12. b Hyundai IONIQ 5 advertisement video 00:13. Source www.youtube.com/@HyundaiMotorIndonesia, 2022



the absence of noise pollution caused by Hyundai IONIQ 5 to the surrounding environment. The surrounding environment is more audible than the IONIQ 5 itself. The concept of comfort due to the silence of the IONIQ 5 cabin is also supported by the music scoring elements. This video advertisement is dominated by the strains of a grand piano with consonants played at an andante tempo to provide a sense of calm and comfort. A consonant tone is a tone that makes you feel comfortable to hear because every note that sounds is a progression or derivative of the main tone.

In Greek culture, the Roman empire, and the revival of Greek thought in the Renaissance, the trees are associated with spiritual and intellectual shadow. Forest and their seasonal cycles of falling and growing leaves are acknowledged as the symbols of eternal and indestructible life force. Trees and forests also are the symbol of divine characteristics, representing superlative forces such as courage, endurance, or immortality (Crews, 2003).

Sunlight appears several times in this video advertisement. The scene continues with the atmosphere of dawn which is shown by the visual light of the rising sun emerging from behind the trees. In this video that tells the story of a journey, the coloring in the video advertisement also shows the information about time. The family in the Hyundai IONIQ 5 is driving in the morning which tends to be dark. Then in the next scene, it appears that they are still driving at noon, until nightfall.

This scene shows the visual of this girl sitting in the car but then being able to see outside through the vision roof. The voice-over is the girl saying: “Bisa menikmati bintang, di tenangnya malam” (Can enjoy the stars, in the quiet of the night). This scene shows one of the features of the Hyundai IONIQ 5 which has a vision roof with a large size so that the child looks free to look at the beauty of the sky filled with stars and other planets Fig. 7. After a long journey at night, the scene shows the darkness of the night in

Fig. 6 a Hyundai IONIQ 5 advertisement video 00:20. b Hyundai IONIQ 5 advertisement video 00:31. Source www.youtube.com/@HyundaiMotorIndonesia, 2022



the area of the trees with a glimmer of light in the distance Fig. 8b.

The opposition of darkness and light is a vernacular metaphor that we must seek the light and avoid the dark. Seeing the light is implying a sort of futural thinking, a goal of the light of tomorrow. As an opposition, light subordinates' darkness. Light is positioned as the desirable and the implication of beginnings, whereas dark is positioned as an emptiness, an absence of light that implies an end (Stock, 2021). Visual sunlight behind the trees can also be interpreted as a new optimism, where electric vehicles will become a reliable means of transportation, especially to answer doubts that they will run out of electric power in the middle of the trip.

The sky was still starry but it was starting to lighten up Fig. 8a until they reached their destination. The voice-over then continues with: "Bisa semakin dekat, dengan alam semesta kita" (can get closer to our universe). This visual

tells that the IONIQ 5 has a very large battery that allows it to be driven all day long, even the next day Fig. 9a. The infinite galaxy can be interpreted as human nature which is always faced with limitations, but everything is very possible to find a solution to the problem and made to simplify human life. The relationship between the galaxy and humankind symbolizes the optimism of humans' ability to always innovate and make the future no longer something scary and interesting to face.

In the final scene, the father can be seen plugging the charger into the IONIQ 5, then an electric current appears on the outside Fig. 9b. When an electric current appears to go out, several projectors immediately turn on Fig. 10a and project a globe with the territory of the Indonesian state being dominant Fig. 10b. The visualization of IONIQ 5 as a source of electrical energy to power several projectors that form a globe with Indonesia as the main display can be interpreted as follows Fig. 11b; after a very long journey,

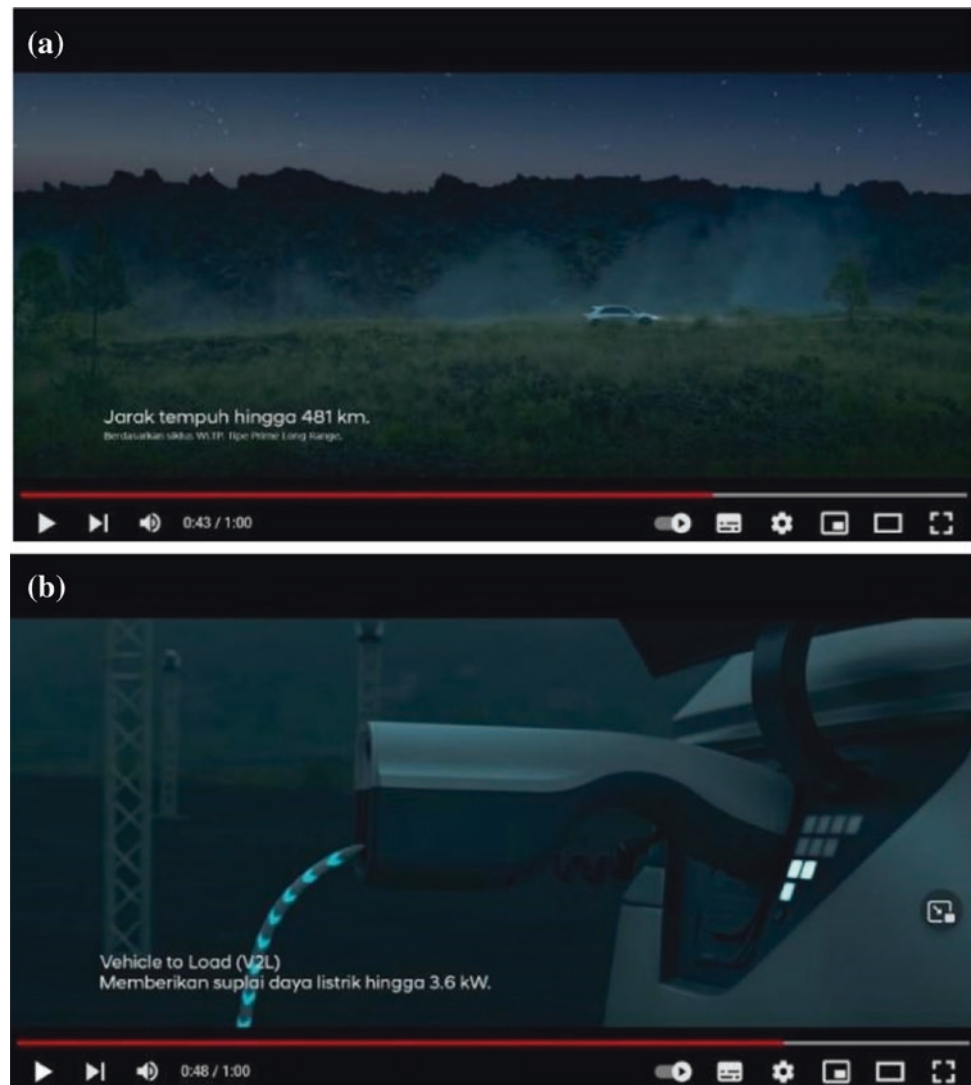
Fig. 7 Hyundai IONIQ 5 advertisement video 00:38.
Source www.youtube.com/@HyundaiMotorIndonesia, 2022



Fig. 8 a Hyundai IONIQ 5 advertisement video 00:41. **b** Hyundai IONIQ 5 advertisement video 00:42.
Source www.youtube.com/@HyundaiMotorIndonesia, 2022



Fig. 9 a Hyundai IONIQ 5 advertisement video 00:43. b. Hyundai IONIQ 5 advertisement video 00:48. Source www.youtube.com/@HyundaiMotorIndonesia, 2022



there are still plenty of IONIQ 5 batteries available and can even be converted to activate several other electrical equipments with Indoor and Outdoor Vehicle to Load (V2L) technology, just like a running power source that can provide up to 3600 watts of power.

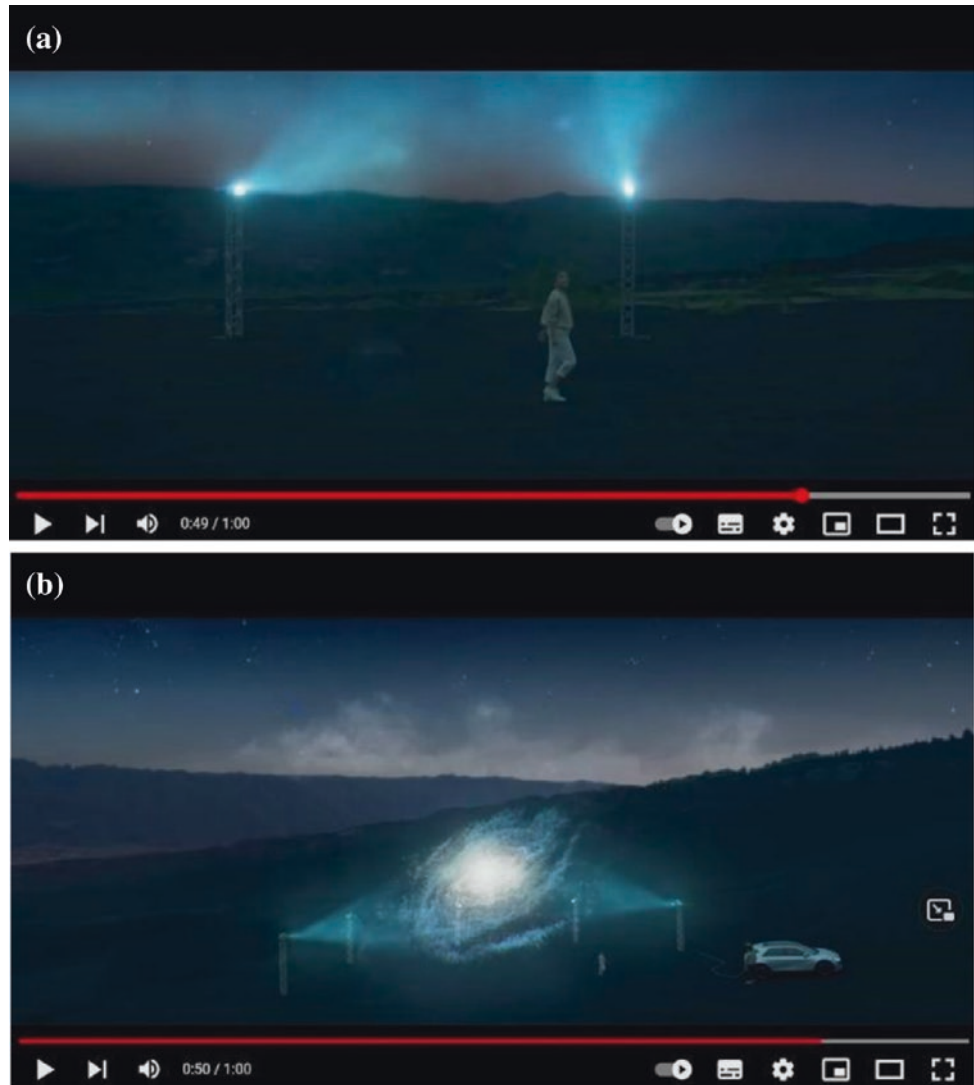
The scene visually transforms from darkness to light. The connection between light and dark also connects to binary opposition. Light relates to the ability to see and knowledge or reasoning, while dark relates to the inability to see and the absence of knowledge and education (Martinek, 2019). The voice-over is the girl who says: “inilah masa depanku, yang terjadi.. sekarang” (this is my future, what’s happening... now).

Admiring the galaxy, interpreted as human nature is always insatiable to find out everything, and continues to strive to meet the needs of his life, and make life more comfortable by creating various kinds of equipment and

vehicles that support his daily activities. Technology is interpreted the same as the galaxy because human creativity has no limits, and we do not know what kind of technology will be created in the future. According to Atwell-Vasey, a vast array of clusters or a galaxy, a collective of stars, planets, and moons are representing our aspects-of-self (behaviors, competencies, beliefs, identities, and missions). The aspects-of-self is the filter to interpret and make sense of space in humankind (Gomez, 2020). A galaxy exists within an endless universe, which is the open possibility one might inhabit in a lifetime. Thinking and touching the galaxy is a metaphor for connecting ourselves with the aspect-of-self and open opportunities in front Fig. 11a.

The visual of reaching the galaxy can be interpreted optimistically by Hyundai, where they want to prove that all possibilities in technology, especially automotive, can still be “touched” or able to be created by Hyundai engineers,

Fig. 10 a Hyundai IONIQ 5 advertisement video 00:49. b Hyundai IONIQ 5 advertisement video 00:50. Source www.youtube.com/@HyundaiMotorIndonesia, 2022



and the results can be enjoyed by the public. In this ad, Hyundai depicts it with galaxies and stars that even a child can touch. This scene is accompanied by long notes of cello and violin, followed by rising piano rhythms with added cymbal accents to create emphasis on the visuals as the family drives into the night and looks up at the stars. Minor chords that are played in this scene also give the impression of being mysterious and majestic to describe a very wide and mysterious universe.

At the climax of the series of scenes in this video, the visual shows how the Hyundai IONIQ 5 turns on five projectors and projects a globe with the Indonesian region as the emphasis. In the ad description, it is stated that this vehicle is the first electric car made in Indonesia and is followed by the text of the Hyundai IONIQ 5 “Power up the future”. In this scene the chords being played change to major chords which give a sense of relief, according to the

visuals when they have reached their destination along with the emphasis on the narrative “...sekarang” (now). In this scene, the music scoring that is presented wants to raise the main message, namely relief from a future that was previously full of mystery, which has now been presented in the form of a sophisticated vehicle Hyundai IONIQ 5 Fig. 12.

The visualization at the end of this video can be interpreted that even though Hyundai is an automotive manufacturer from Korea, the IONIQ 5 is a sophisticated innovation from Hyundai that entrusts all component production and assembly in Indonesia so that the IONIQ 5 can be claimed as an electric car made in Indonesia that can be relied upon from the moment this is for the future. Then the visualization of the ASEAN region with the Indonesian area as the emphasis wants to show that Indonesia’s work is capable of making sophisticated electric cars with marketing that covers all of ASEAN.

Fig. 11 a Hyundai IONIQ 5 advertisement video 00:51. b Hyundai IONIQ 5 advertisement video 00:54. Source www.youtube.com/@HyundaiMotorIndonesia, 2022

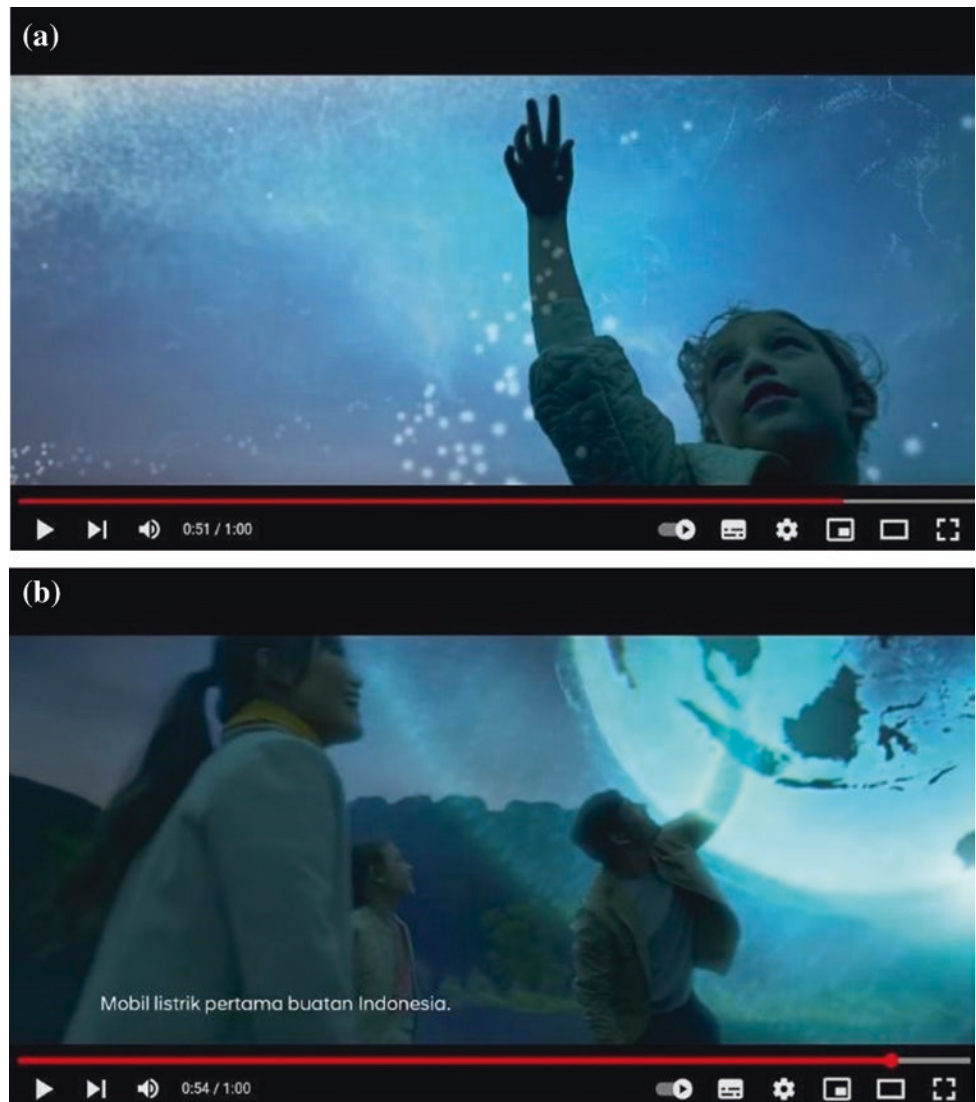
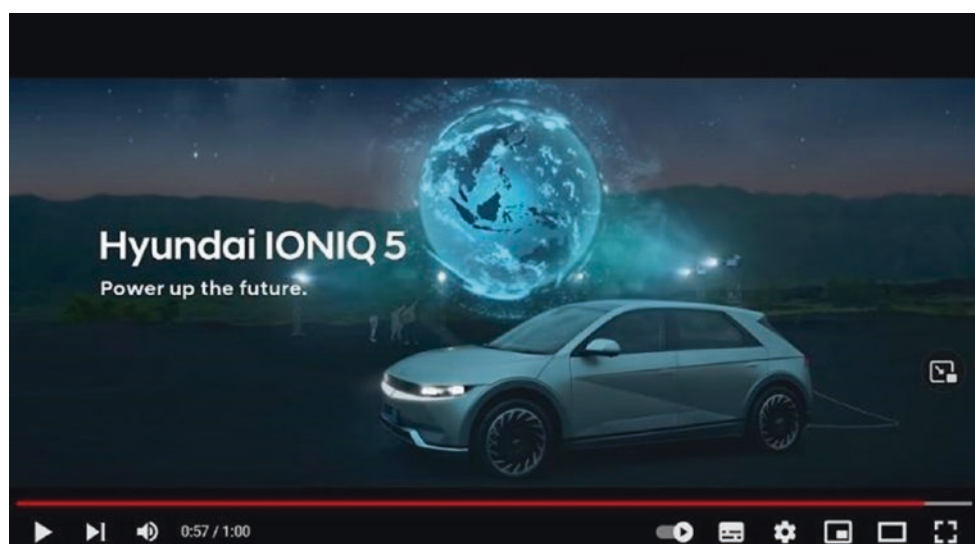


Fig. 12 Hyundai IONIQ 5 advertisement video 00:57. Source www.youtube.com/@HyundaiMotorIndonesia, 2022



4 Conclusion

In general, humans are currently guessing and worrying about what the future will be, will nature be destroyed because of technological advances? How about the current young generation, will they live comfortably and be able to achieve their goals? This question was then processed and used as a marketing strategy for Hyundai, where the IONIQ 5 was launched as an environmentally friendly vehicle with advanced technology that seemed to come from the future and used the visuals of the universe and the human environment that remained sustainable and comfortable in its commercial videos.

The Hyundai IONIQ 5 depicts the future with visual symbols of the IONIQ 5 as sophisticated vehicles from the future that are available now. From the visual point of view, IONIQ 5 futuristic impression is shown by its advanced features alongside nature and space with the narrative about the hopes of a family in the future. From the audio point of view, this video advertisement uses a long tone, and a calming yet mysterious chord as a sound to represent the future.

Denotatively, this video advertisement describes the journey of a family using a Hyundai IONIQ 5 down a long road and through the forest until it turns into days. The journey ends in a dark open space, where the energy from the car can turn on the lights that project the galaxy and the earth where Indonesia is located. Connotatively, the journey depicts a future that was previously out of reach to be experienced now, through the technology of the Hyundai IONIQ 5 car. An affordable future is depicted through the projection of the galaxy that arises from the energy generated by the electric car.

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