

Understanding Visual Language in Palestine-Israel conflict humanitarian Crowdfunding Campaigns: The Role of Machine Learning (AWS Rekognition)

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ABSTRACT

Indonesia is widely acknowledged for its significant generosity globally, rooted deeply in cultural inclinations towards charitable activities and donations. This study explores the role of visual language in humanitarian crowdfunding campaigns, focusing on the Palestine-Israel conflict, and highlights the pivotal role of machine learning, specifically AWS Rekognition and Digital Content Analysis, in enhancing these campaigns. It categorizes campaign images into classifications such as superior fundraising activities, success levels, and degrees of poverty porn, leveraging demographic factors and thematic content to enhance campaign effectiveness. The study emphasizes how machine learning facilitates strategic deployment of visual elements—such as optimized shot composition, scale variations, and naturalistic portrayals—to ethically enhance viewer empathy and perception. Insights aim to deepen understanding of machine learning's crucial role in shaping donor behavior and campaign success, proposing future directions in refining algorithms and ethical guidelines for impactful visual representation in humanitarian contexts.

Keywords: *Visual Language, Humanitarian Fundraising, AWS Rekognition, Poverty Porn, Digital content Analysis.*

1. INTRODUCTION

Indonesia is widely recognized as one of the most generous nations globally (CAF, 2023; Karina, 2022), with a deep-rooted cultural inclination towards charitable activities and donations (Priyono, 2018). This generosity is vividly reflected in the extensive use of crowdfunding platforms like Kitabisa, which mobilizes support for various humanitarian causes, including the Palestinian-Israeli conflict. This research explores how Kitabisa engages donors in these complex issues through the strategic use of visual imagery to craft compelling narratives and messages.

Humanitarian fundraising campaigns play a crucial role in addressing urgent needs and alleviating suffering in conflict zones and disaster-hit areas. These campaigns often depend on visual imagery to convey their messages and elicit empathy from the public. The power of visual language in these contexts is significant, as images can transcend linguistic barriers and instantly communicate complex emotions and narratives. In Indonesia, crowdfunding often transforms participation into a form of "social commerce," reflecting the unique cultural dynamics at play.

This study aims to interpret the visual elements in humanitarian fundraising campaigns using principles of visual language. It examines how these campaigns utilize visual language to frame messages, evoke emotions, and mobilize public action. The focus is on

digital images that blend the Western Naturalistic-Perspective-Moment Capture (NPM) system with the Indonesian Space-Time-Flat (RWD) system.

To deepen our analysis, we employ machine learning tools like AWS Rekognition. These AI tools assist in categorizing and interpreting visual content, offering deeper insights into how visual language influences donor behavior. By leveraging AWS Rekognition, we explore how AI aids in interpreting visual elements and shaping both local and global perceptions of the Palestinian-Israeli conflict. Previous studies highlight the necessity of considering local cultural contexts when applying global technologies.

Our research questions are:

RQ1: How does machine learning aid in interpreting visual language concepts?

RQ2: How can the concept of visual language help interpret messages in the visuals of crowdfunding campaigns?

By examining the interplay between visual language and AI tools like AWS Rekognition, this study seeks to provide a nuanced understanding of how these elements shape humanitarian fundraising campaigns within the distinctive context of Indonesian culture.

RELATED WORK

Visual Language has been developing in Indonesia since the 1980s, studying images from prehistoric to modern times. It includes two systems: NPM (Naturalistic-Perspective-

Moment Capture) from the West, focusing on universal perspective, and RWD (Space-Time-Flat), which allows for narrative expression and deeper interpretation. This field aids in research and visual arts, enhancing our understanding of images in human culture. According to "Bahasa Rupa" (Primadi, 1980), visual language has two aspects: the object in the image (Wimba) and the method of depiction (Tata Ungkap). Wimba includes five methods, while Tata Ungkap is divided into internal (Tata Ungkap Dalam) and external depiction (Tata Ungkap Luar).

Internal depiction (TUD) applies when a single image conveys a message (e.g., reliefs, comics), whereas external depiction (TUL) sequences images to tell a story (e.g., comics, films). In this research, Visual Language interprets the visual elements in humanitarian fundraising campaigns. Digital images, especially from modern graphic designers, combine RWD and NPM systems. Internal depiction is used as objects in each image do not undergo sequencing. According to Primadi, digital images created by modern graphic designers can integrate elements of both RWD and NPM, transitioning from one to the other as the time dimension approaches zero.

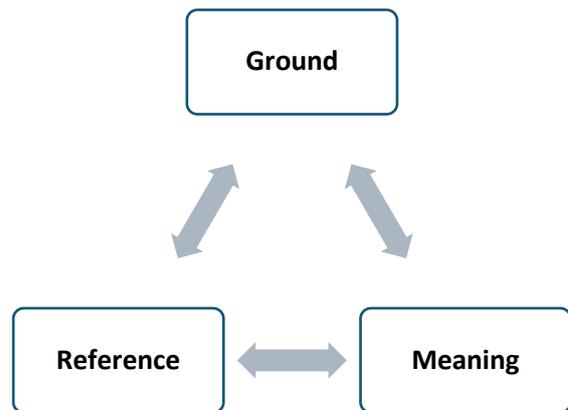
A. The Relationship Between Visual Language and Verbal Language

According to Tabrani (2012), the relationship between visual and verbal

Figure 1 triangle of Ground-Meaning-reference

Source: Tabrani, P. 2012

language involves the word-reference-meaning triangle. Words are abstract until linked with ground, reference, and meaning.



Different ethnic groups have unique words for the same object. Images, however, are concrete and often representative. In visual language, it's not just the image of a buffalo that signifies bravery but how it's drawn. Dynamic strokes suggest movement; static lines indicate stillness. Multiple lines for a tail suggest motion, not multiple tails.

B. Digital Method & AWS Rekognition

AWS Rekognition is an image and video analysis service provided by Amazon Web Services (AWS) (Amazon Rekognition, 2023), is instrumental in humanitarian campaigns on crowdfunding platforms. It empowers organizations and developers to leverage machine learning and deep learning for analyzing visual content, including identifying objects, scenes, faces, and text within images and videos. In the context of digital methods, which (Rogers, 2013) defines as using web-specific techniques for data

management and examination, Rekognition plays a pivotal role. These methods, as detailed in "Digital Methods", utilize existing digital tools to analyze various aspects of culture and society. Bishop [20] highlights the main capability of machine learning to automatically identify patterns in data for making predictions or decisions.

C. Poverty Porn

According to (Clough, 2023) and (Xiao, 2020) in, 'poverty porn' refers to photography-narrative images portraying people's hardship, emphasizing their vulnerability and powerlessness. The controversy surrounding these negative depictions has persisted since the 1980s, notably highlighted by Lisner's influential article (Lissner, 1981), 'Merchant of Misery,' which likened NGO visuals to pornography. Clough further notes that such visuals are criticized for fostering paternalism and perpetuating a perception of helplessness. Despite criticism, scholars have found that negative emotions can motivate helping behaviors (Fischer, 2005). Research on charitable donations indicates that persuasion tactics arousing guilt are positively related to the intention to donate (Hibbert, 2007). However, there is limited recent in-depth examination of visual features in poverty porn, especially in OHCC.

2. METHODOLOGY

The research methodology involves classifying the visual elements of fundraising images and interpreting them through the lens of visual language. The images are categorized into various classifications, such as superior fundraising activities, highest and lowest success rates, and different levels of poverty porn.

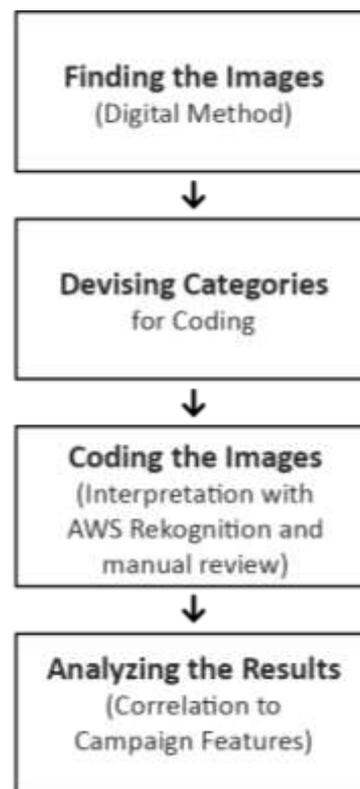


Figure 2 Digital Content Analyst
Source: Adapted from Gillian Rose Content Analyst (2016)

Machine learning, specifically AWS Rekognition, is utilized to classify the images. We employ Digital Content Analysis, an adaptation of Gillian Rose's content analysis methodology (Rose, 2016), which does not depend on pre-existing interpretative categories. This method is chosen for its effectiveness in selecting, coding, and quantifying large numbers of images, thereby

providing objective data about emerging phenomena such as the prevalence of poverty porn. The process is greatly facilitated by AWS Rekognition technology.

A. Research Site and Dataset

Datasets were collected from the Kitabisa platform, Indonesia's largest and most trusted OHCP, using data crawling. Keywords such as "Palestine" and "Gaza" were used to search the platform, yielding relevant campaign URLs. Campaign covers, creation dates, amounts raised, and number of donors were recorded. After manually removing irrelevant campaigns, 243 campaigns containing "poverty porn" remained. Annotated images from these visual campaigns formed the dataset. Initially, we grouped the images by theme, an important step for independent clustering.



Figure 3 Datamining and scraping process

B. Devising the category to code

Based on emerging theories in related research, simulatable and duplicable categories were designed to apply to each image in the dataset. The codes were divided based on Campaign and Content Scopes. These scopes were separated because they were derived from literature and previous research. The Content Scope includes visual features that can be obtained directly from the visual

campaign itself, such as those related to people, locations, and themes. Therefore, these features were included in the labeling of the coding process.

Table 1 distribution of theme from data set

Theme	Count	Percentage
Visual with text	134	54.9%
Individual in medication	3	1.2%
Many people in medication	30	12.4%
Individual in conflict zone	3	1.2%
Many people in conflict zone	66	27%
Non-human	8	3.3%

C. Coding

AWS Rekognition was utilized to analyze visuals in humanitarian crowdfunding campaigns, enhancing efficiency and effectiveness. This tool provided insights into demographics, inappropriate content, and recurring themes. A study (Guo, 2022) showcased Rekognition's ability to extract visual features from medical crowdfunding campaigns, focusing on human figures, locations, and emotions. AWS



Figure 4 AWS Rekognition interface
Source: Author Document

Rekognition was integrated to analyze visuals in humanitarian crowdfunding campaigns, enhancing campaign efficiency and effectiveness. Researchers utilized Rekognition to gain insights into campaign visuals, including demographic analysis, detecting inappropriate

content, and identifying recurring themes. Recent studies have showcased Rekognition's practical application in extracting visual features from medical crowdfunding campaigns, focusing on human figures, locations, and emotions depicted in images. This digital approach, employing machine learning techniques, enabled the interpretation of image variables. Rekognition's output in JSON format facilitated data extraction using Python, subsequently imported into SPSS for statistical analysis, as outlined in table and figures below.

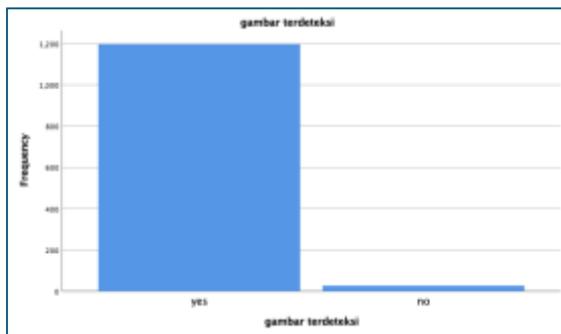


Figure 5 image detected by AWS Rekognition

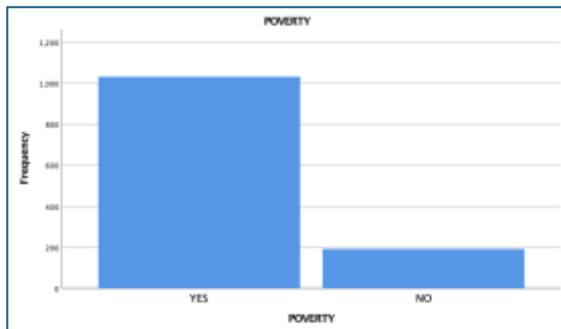


Figure 6 Distribution of Povertyporn in metaimage

Table 2 Research Variable

Entity Variable	Source
Fundraising Activity Based	
Number of donors	Directly from the data set
Donation Amount	Directly from the data set
Target Donation	Directly from the data set
Content Based	
Poverty porn	Manual review data
Human Number	Digital Method, AWS Rekognition from data set
Age	Digital Method, AWS Rekognition from data set
Gender	Digital Method, AWS Rekognition from data set
Facial related:	
smile	
Emotion:	
• Sad	
• Fear	Digital Method, AWS
• Surprise	Rekognition from data set
• Calm	
• Angry	
• Disgusted	
• Surprised	
Location	
• Indoor	Manual review data
• Outdoor	
Themed related	Manual review data

Table 3 Descriptive variable Campaign Based

Variable	N	Min	Max	Mean	Std. Dev
Number of donors	1223	1.00	167701.00	2235.21	11490.22
Donation Amount	1223	\$0.00	\$1,336,799.52	\$8,603.65	\$78,078.36
Target Donation	1223	\$71.43	\$10,032,360.70	\$25,902.82	\$298,149.08
Success Rate	1223	0.00	1326.4412	24.11	72.28

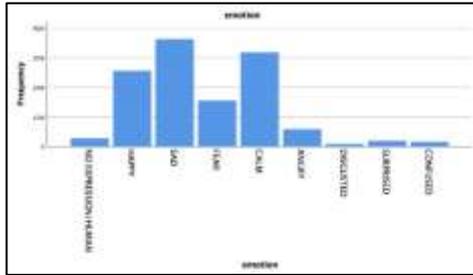


Figure 7 frequency of emotion in dataset

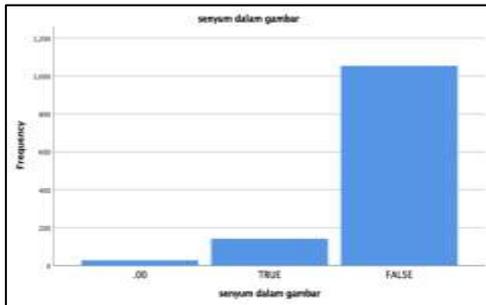


Figure 8 Frequency of Smile in dataset

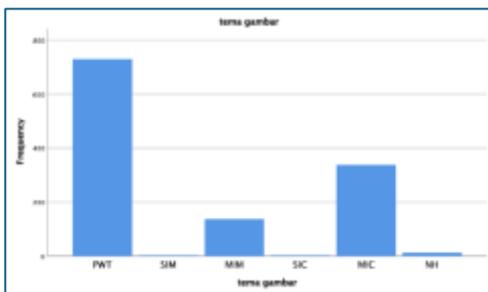


Figure 9 Frequency of theme in Dataset

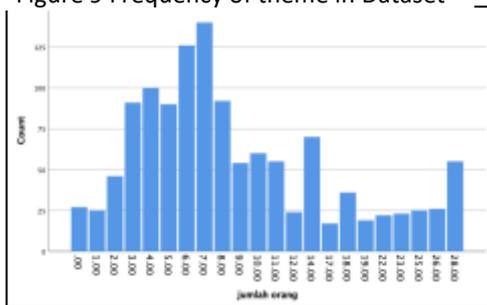
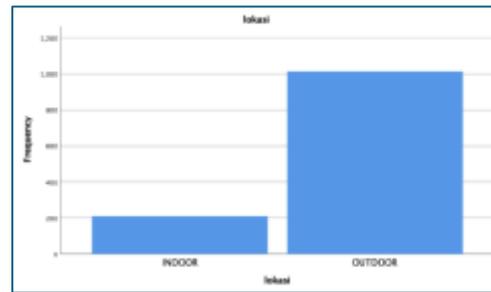


Figure 10 Frequency of people in meta image

Figure 11 Frequency of location in Dataset

The next step involved correlating content-



based variables with the success rates of the campaigns (see **Table 2**). We discovered that variables such as age, emotion, and theme of the images were significantly correlated with the success of the campaigns. This led to the classification of images based on visual elements, success levels, and poverty representation. We identified five classifications: Superior Campaign (SC), Highest Success Rate Campaign (HSC), Lowest Success Rate Campaign (LSC), Most Poverty Campaign (MPC), and Fewest Poverty Campaign (FPC). Detailed visual mappings and success rates for each classification are provided in tables below.

$$\text{COMPUTE Pencapaian_Target} = (\text{Total_Donasi} / \text{Target_Donasi}) * 100.$$

Figure 12 conduct succesrate of the campaign

Table 4 Correlation of visual element and successrate

Variable	Pearson Correlation	Sig. (2-tailed)
Successrate 1		
THEME	-0.085**	0.003
LOCATION	0.004	0.887
GENDER	-0.029	0.304
EMOTION	0.065**	0.022
SMILE	0.033	0.253

Variable	Pearson Correlation	Sig. (2-tailed)
AGE	0.093**	0.001
POVERTY	0.007	0.797
PEOPLE	-0.017	0.558

** denotes significance at the 0.05 level (2-tailed).

Table 4 Visual Mapping of image representation Superior Campaign (SC)

Criteria Variable	Value
Gender	Male
Emotion	SAD
Poverty Porn	Yes
Picture Theme (PWT)	Yes
Location	Outdoor
Age on the Subject	22 years old
Images ID	213
Success Rate	2.51%

Table 5 Visual Mapping of image representation Highest-Successrate Campaign (HSC)

Criteria Variable	Value
Gender	Male
Emotion	SAD, ANGRY, CALM
Poverty Porn	Yes
Picture with Text (PWT)	Yes
Location	Outdoor
Age on the Subject	22 < N < 60 years old
Images ID	138
Success Rate	1326.44%

Table 6 Visual Mapping of image representation Lowest-Successrate Campaign (LSC)

Criteria Variable	Value
Gender	No-gender
Emotion	No-Emotion
Poverty Porn	Yes
Picture Theme (PWT)	Yes
Location	Outdoor
Age on the Subject	0 years old
Images ID	210

Criteria Variable	Value
Success Rate	0.0018%

Table 7 Visual Mapping of image representation Most-Poverty Campaign (MPC)

Criteria Variable	Value
Gender	Male
Emotion	DISGUSTED, ANGRY, SURPRISED
Poverty Porn	Yes
Picture Theme	SIC, NH, PWT
Location	Outdoor
Age on the Subject	0 < N < 8, 19 < N < 23 years old
Images ID	110
Success Rate	4.47%

Table 8 Visual Mapping of image representation Fewest-Poverty Campaign (FPC)

Criteria Variable	Value
Gender	Female
Emotion	ANGRY, CALM, HAPPY
Poverty Porn	No
Picture Theme	NH, MIM, PWT
Location	Indoor
Age on the Subject	0 < N < 8, 19 < N < 23 years old
Images ID	240
Success Rate	67.91%

3. Interpretate visual language

After classifying the visuals in humanitarian crowdfunding activities, the next step is to interpret the messages they convey. This research focuses on the images themselves, using visual language to decode their messages. In the context of humanitarian crowdfunding, images not only offer aesthetic value but also carry

strong symbolic and narrative dimensions. Thus, visual language is an appropriate method to uncover the messages conveyed through these images.

Table 9 Interpretation of Visual Language in Superior Fundraising Activities (SC)

Visual Technique	Expression	Meaning
Shot Size: Various views	Various perspectives, single visual	Highlights multiple events in one visual
Scale: Larger than life	Focus on children/babies	Emphasizes conflict impact on the vulnerable
Depiction: Naturalistic	Real events	Reflects the harsh reality of the conflict
Expression: Expressive	Human depiction	Conveys emotions, focuses on facial expressions
Position: Split/grid, mirrored	Different times/places	Depicts different events in a single frame
Significance: Combined scale, accent	Enlarged/reduced elements	Highlights relative importance, uses color and typography for emphasis

Table 10 Interpretation of Visual Language in Highest Success Rate Fundraising (HSC)

Visual Technique	Expression	Meaning
Shot Size: Medium close-up	Detail of face/body	Captures subject expressions and context
Scale: Life-size	Realistic	Represents reality and the

Visual Technique	Expression	Meaning
Depiction: Expressive	Emotions	importance of events Displays adult emotions: anger, fear, suffering
Significance: Top-left position, accent	Highlighted text	Draws attention with emergency messages and red color

Table 11 Interpretation of Visual Language in Lowest Success Rate Fundraising (LSC)

Visual Technique	Expression	Meaning
Shot Size: Extra long shot	Small objects, background	Emphasizes wide impact of the conflict
Scale: Life-size	Realistic	Reflects real events and objects
Depiction: Naturalistic	Real events	Displays actual conflict scenes
Significance: Center position, composition	Main focus	Highlights key elements with central positioning and red color

Table 12 Interpretation of Visual Language in Highest Poverty Porn Fundraising (MPC)

Visual Technique	Expression	Meaning
Shot Size: Mid shot	Subject's body	Shows broader context
Scale: Life-size	Realistic	Depicts real events
Depiction: Naturalistic, expressive	Realism and emotions	Highlights the harsh reality and emotional distress
Significance: Center position, accent	Main focus	Emphasizes children's suffering with prominent text and colors

Table 13 Interpretation of Visual Language in Lowest Poverty Porn Fundraising (LPC)

Visual Technique	Expression	Meaning
Shot Size: Long shot	Overview	Shows many victims
Scale: Life-size	Realistic	Emphasizes reality
Depiction: Naturalistic, expressive	Real events	Shows positive impact of aid
Significance: Central, accent	Main focus	Highlights key points with prominent typography

in the study of visual language above, it explains that the five different conditions represent each message of each visual fundraising activity. Messages framed within an image greatly influence the audience in understanding the conveyed information. The closeness of visual language and verbal language refers to the storytelling aspect in a representative image. This applies to humanitarian fundraising activities as well. Here are the messages or meanings depicted in these visual classifications:

a. Superior Fundraising Activity Classification (SC)

The visuals emphasize the suffering and impact of conflict on babies and children, showcasing them as the most vulnerable victims. Various perspectives, scales, and emotional depictions highlight the harsh realities and pain experienced by children in conflict zones. The aim is to evoke empathy and draw public attention to the urgency of humanitarian action and conflict resolution to protect and care for these vulnerable individuals.

b. Highest Success Level Classification (HSC)

This classification focuses on the emotional expressions of adults living in the Palestine-Israel conflict, including anger, anxiety, and fear. Detailed portrayals of faces and body parts within realistic environmental contexts create a deep understanding of their suffering. Text placed in the

top left, highlighted in red, underscores the urgency of the situation, aiming to trigger humanitarian attention and action from the global community to bring positive change.

c. Lowest Success Level Classification (LSC)

Realistic photography and POV perspectives present the stark reality of human suffering in the conflict zone. By focusing on small objects within a wide background, these visuals emphasize the widespread impact on the environment and human life. Central positioning of the main object and the use of red to draw attention highlight the urgency of the situation. The accompanying text, "Together Help Gaza," serves as a call to unite and provide much-needed humanitarian assistance.

d. Highest Poverty Porn Classification (MPC)

These visuals depict the urgent suffering of children in the conflict, focusing on the subject's body in a medium range within a broader context. Naturalistic portrayals emphasizing realism and expressions of sadness and fear aim to evoke empathy and awareness. The text "humanitarian emergency" and striking colors attract immediate attention, emphasizing the significance and urgency of the situation. Children are placed at the center to highlight the importance of responding promptly to the humanitarian crisis.

e. Lowest Poverty Porn Classification (LPC)

The visuals highlight the positive impact of humanitarian aid amidst the conflict. Long shots show the number of victims, while normal perspectives and realistic scales affirm real events. Children receiving aid with happy expressions indicate positive change. The placement of objects and repeated depictions emphasize the transition

from suffering to receiving aid. Striking typography serves as a Call to Action (CTA), urging audiences to donate and conveying that aid can bring real change without exploiting suffering.

DISCUSSION

This study underscores the significance of visual language in humanitarian crowdfunding campaigns, particularly within the context of the Palestine-Israel conflict. First, AWS Rekognition, a machine learning tool, efficiently maps and interprets visual elements in these campaigns. Through Digital Content Analysis, it categorizes images into themes like fundraising success and poverty porn, extracting demographics and identifying recurring visual elements. This approach enhances the interpretative power of machine learning in analyzing campaign visuals, offering insights into their visual language and impact.

Each classification—Superior Fundraising Activity Classification (SC), Highest Success Level Classification (HSC), Lowest Success Level Classification (LSC), Highest Poverty Porn Classification (MPC), and Lowest Poverty Porn Classification (LPC)—provides insights into the messages conveyed and their impact on the audience. For instance, images of superior fundraising activities often highlight the suffering and vulnerability of children in conflict zones, aiming to elicit empathy and prompt immediate humanitarian action.

Second, in examining the visual language of fundraising campaigns related to the Palestine-Israel conflict on platforms like Kitabisa, several key elements emerge. The strategic use of shot sizes, from mid shots to long shots, plays a pivotal role in shaping viewer perceptions: long shots can emphasize the conflict's widespread impact, while mid shots zoom in on individual expressions and contexts. Scale also proves crucial, with depictions in life-size or larger-than-life scales highlighting the urgency and realism of the situation, particularly when portraying vulnerable groups like children.

Naturalistic and expressive depictions effectively convey the harsh reality and emotional toll of the conflict, leveraging facial expressions and body language to foster empathy and drive donor engagement. Strategic positioning within the visual frame—whether central, top-left for emphasis, or using accentuated text and colors—guides viewer attention and underscores critical messages. Ethical considerations, such as avoiding poverty porn and maintaining dignity in depictions, are essential. Understanding how these visual strategies can ethically prompt viewer action and support on crowdfunding platforms is crucial.

Overall, the research highlights the critical role of visual storytelling in framing messages and influencing donor behavior. Effective use of visual language can enhance the resonance and success of humanitarian campaigns,

fostering a deeper connection between the audience and the cause amidst complex geopolitical issues.

CONCLUSION

In conclusion, this study advances the understanding of visual language in humanitarian fundraising campaigns by leveraging AWS Rekognition for image detection and coding in digital content analysis. The research categorizes images into classifications such as superior fundraising activities, varying success levels, and degrees of poverty porn, correlating factors like age, emotion, and thematic content with campaign effectiveness. Analyzing these visuals through frameworks like Wimba and Tata Ungkap reveals nuanced messaging and its effectiveness in mobilizing public support.

The study highlights the strategic deployment of visual elements—such as shot composition, scale, and naturalistic portrayals—that influence viewer perception and empathy, particularly in campaigns addressing conflicts like Palestine-Israel. By enhancing our comprehension of these visual strategies, this research not only contributes to visual communication studies but also offers actionable insights to bolster the impact of humanitarian fundraising efforts.

Moving forward, recommendations include refining machine learning algorithms for improved image classification accuracy and depth, establishing robust ethical guidelines to ensure respectful image representation,

fostering collaboration among researchers, practitioners, and technologists to innovate effective visual strategies, and advancing educational initiatives to empower campaign creators with ethical and impactful visual storytelling techniques. Additionally, longitudinal studies are proposed to monitor the evolving efficacy of these strategies across diverse humanitarian contexts, aiming to sustainably engage donors and amplify support for vital causes.

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