

The Influence of Photo Styles on Charity Website Donation: An Eye-Tracking Study

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Abstract: Prosthetics and orthotic devices play a pivotal role in pets and stray animals. Even when owners or organizations lack funds for assistance, they can use charity websites as platforms for fundraising. Through the eye-tracking technology, our study engaged 35 participants to explore how photo style influences donation behavior. Notably, consumers exhibited prolonged engagement with featuring prosthetic imagery. These offer strategic guidance for enhancing the efficacy of visual content in online charitable initiatives, thereby shaping advancements in marketing and fundraising design strategies.

Keywords: Human Behavior, Charity Websites, Design Evaluation, User Experience, Eye-Tracking

1 Introduction

In Taiwan, the plight of stray animals and pet dogs, grappling with illness, accidents, or congenital conditions that lead to limb impairments, is a pressing concern. These challenges often necessitate the use of orthotic devices and prosthetics as a solution to improve their quality of life. Most pet owners prefer orthotic devices over surgical interventions due to concerns about surgery risks, high expenses, limitations on postoperative activities, and other health considerations (Bertocci et al., 2017). The recent advent of 3D-printed orthotic devices and prosthetics has emerged as a cost-effective and customized solution devoid of postoperative side effects, offering the prospect of tailored, customized services for each animal, catering specifically to their individual needs

Despite extensive research in the United States on the affordability of such devices—where pet owners typically spend between \$1,000 and \$6,000 on orthotics and prosthetics, with an average cost of \$600 to \$1,000 (Lee et al., 2021)—the situation in Taiwan may be different. Addressing the need to restore mobility in stray and injured pets, and with a vision to make prosthetics and orthotic devices accessible to all, people increasingly rely on the role of charity websites. With the support of donors, these platforms gather funds to provide vulnerable lives with affordable, high-quality prosthetics or orthotic devices. However, unlike tangible entities, charity websites lack an experiential aspect for users (Alhoqail & Floyd, 2021), making it crucial to identify specific website designs that effectively motivates donors. A compelling visual representation on these websites is essential to evoke a strong emotional response from potential donors and enhance the efficacy of charitable donations.

In light of this, this paper investigates whether the photo style used on charity websites for canine prosthetics influences donor contributions. Through an experimental charity website and eye-tracking analysis, we will examine how users' attention to particular photo styles during browsing affects their donation behavior.

2 Literature Review

2.1. Online donations

The landscape of online donations is shaped by public internet information systems, leveraging technological advancements to enhance efficiency and achieve fundraising objectives. However, the process is not always straightforward, with an average success rate ranging from 13% to 20% (Zhu et al., 2023). To bolster success rates, meticulous attention is required in both website design and marketing strategies.

According to a comprehensive study (Hou et al., 2021), the decision-making process for online donations encompasses four crucial aspects: donor factors, beneficiary factors, organizational factors, and social factors. The diverse nature of these factors necessitates distinct marketing approaches, emphasizing the importance of informed website design tailored to the study results. Additionally, the interplay of others' participation and the scarcity of recipient resources can significantly influence online donation behavior (Mukherjee et al., 2020).

Efficient website performance involves multiple factors, including how different visual styles on product pages impact user decision-making—an aspect that can be studied using eye-tracking methods. Stimuli only capture attention when

users focus on them (Boardman & McCormick, 2022). Upon capturing the consumer's attention, a stimulus serves to enhance their impression of the product or evoke heightened emotions, consequently augmenting the success rate of charitable activities.

2.2. Design elements on charity websites

Charity websites have made online donations more convenient through technological advancements (Alhoqail & Floyd, 2020). However, designing an effective website has become a challenge for many organizations. With the increasing number of online charity websites, Bataoui and Boch (2023) observed that various elements – including environmental factors (such as color, style, layout features), design factors (website navigation, search bar), and social factors (image content, FAQs, videos) – all fall within the scope of website design, and all website features can influence the decisions of consumers or donors. Choi et al. (2020) have explored whether changing the background color of a website affects the emotions of donors, leading to changes in donation amounts. They argued that emotional appeals are often the most effective way to engage potential donors, and both positive and negative impacts can increase helping behavior. Additionally, Tantawi and Sadek (2019) analyzed whether the introduction of celebrity endorsements in charity advertisements affects the intention to donate, highlighting the importance of celebrity-related factors (attractiveness, expertise, credibility, familiarity, fit with the cause) in the willingness of the audience to donate to the company's cause. Celebrity attractiveness exerts greater influence compared to other factors. Subsequently, the alignment between a celebrity and the cause, along with the credibility of the celebrity, may also impact the willingness to donate.

Websites are intangible; they lack touch, feel, or tangible elements and can only be assessed visually. Therefore, assessing the likelihood of donations is challenging (Alhoqail & Floyd, 2021). It is necessary to utilize the limited features on the website to evoke empathy from consumers or donors to enhance effectiveness. Badenes-Rocha et al. (2022) found that the type of images increases brand advocacy based on their visual styles (product vs. cause). In posts centered around products, there was significantly higher attention to images, whereas text garnered more attention in posts centered around causes. Effective visual attention can enhance brand recall, recognition, and eventual purchase intent. Additionally, we are also considering whether the background of the donor would be a key influencing factor. For example, when browsing prosthetic websites, would owners with experience in pet care show more interest in this field compared to donors without experience, thus becoming one of the factors they consider in their decision-making process. Despite numerous studies confirming factors influencing donors on charity websites, many of these analyses lack objective data.

Eye-tracking technology offers a more objective approach, providing insights into actual user behavior by monitoring human eye movements. Some research has delved into comprehending the effectiveness of marketing and advertising utilizing this technology (Li et al., 2023). When users gaze at a webpage, it provides valuable insights into areas of interest, facilitating the analysis of factors determining user consumption patterns (Modi & Singh, 2023). Through eye-tracking systems, not only can areas of interest (AOI) for donors on charity websites be identified, but the pupil taken by donors can also be meticulously analyzed. The results of pupil diameter can then inform the optimal placement of design elements on the website, thereby maximizing the overall effectiveness of charity websites. This integration of eye-tracking technology into the study of donor behavior represents a methodological advancement, enriching the depth and precision of insights in the field of online charitable initiatives.

Based on the research question and literature review, the research hypotheses were as follows:

- H1. Donors' contribution amounts are influenced by the presentation of prosthetic applications on the prosthetic website.
- H2. The different styles of dog imagery presented on the website significantly affects donors' contribution amounts.
- H3. Participants fixate on stimuli on the website is influenced by their personal experience with pets.

In this paper, we will conduct a comparative analysis of two different photo styles used on websites dedicated to donations for dog prosthetics and orthotics. Employing eye-tracking technology, we aim to determine which photo style of website captures donors' attention more effectively, identify the areas that receive the most focus, and ultimately present data to optimize the charity websites.

3 Methodology

The objective of this study is to understand whether different photo styles of charity website design influence the donation amounts from contributors. Age and generation are not the primary factors that affect a website; the key is whether a website can attract users successfully at first glance (Espigares-Jurado et al., 2020). In other words, we aim to verify whether a website can evoke the participants' feelings at the very moment they browse it, as this is crucial for significantly increasing donation amounts.

Before the experiment, participants adjusted their chairs to a comfortable angle and sat approximately 60 centimeters in front of the eye tracker, aligning the screen center with their line of sight. Throughout the experiment, participants had a stable and comfortable chair, a fixed viewing distance, and a quiet environment to ensure the accuracy of the detected data. At the start of the experiment, we initiated the eye-tracking calibration procedure. The study employed a 9-point random calibration method. Participants had to stably observe concentric points at the top-left, top-right, bottom-right, bottom-left, center, and corners of the screen for about one second each until the 9-point calibration was completed. Participants were instructed to keep their heads as still as possible during this period.

Subsequently, participants are asked to freely browse two simulated website in their most natural way while simultaneously recording and collecting their eye movement data. The sequence of two websites were randomly presented to avoid order bias. Following this, participants were requested to allocate a donation of 100,000 NTD to two websites of their choice. Participants also had the option not to donate to any website. The donation process was all part of a simulated process. The purpose was to determine which elements of charity websites donors would choose when they have surplus funds available and gathering data through a comparison of donation amounts. After this, the experiment concluded with semi-structured interviews to understand participants' motivations for donation.

Finally, participants filled out a questionnaire to provide their background information. We combined this data with the semi-structured interview insights to analyze whether participants with pet ownership experience are inclined to donate higher amounts based on the breed of the dog.

3.1. Participants

According to the previous literature mentions that age and generation are not the main influencing factors, but if the visual elements have animation may be more interesting to the Millennial (Espigares-Jurado et al., 2020). This study recruited with a sample of 35 participants who had no prior experience with experiments. The research adhered to all ethical research measures, including informed consent and the choice to refuse participation. To participate, it was confirmed that participants had normal or corrected-to-normal vision. The age range of participants was 21 to 36 years, with an average of 24 (participants included experience in pet ownership and no pet-related background). Through G-Power, we calculated that the minimum of sample size required for this hypothesis is 34. 35 participants were successfully recorded their eye tracking data; 14 males and 21 females.

3.2. Eye tracking system

The recording system for eye movements was the Tobii Pro Nano. It is the smallest, most lightweight research-grade eye tracker with the sampling rate of 60 Hz was used for the eye-tracking experiment. The eye-tracking laboratory is situated in a quiet and undisturbed environment. Each participant is scheduled for individual training sessions in eye-tracking experiments. The system is installed on a 24-inch external monitor with a resolution of 1920*1080 pixels.

Eye tracking is a non-invasive technique that measures eye movements, positions, and pupil dilation, aiding researchers in understanding how information on the screen correlates with behavioral and emotional responses (Modi & Singh, 2023). During the browsing process, two primary eye movement behaviors manifest: Fixation and Saccade. Visual fixation is the deliberate act of directing the gaze onto an object, constituting an integral aspect of eye movement. Fixation typically transpires within the temporal range of 60ms to 600ms. After calibration, participants are instructed to browse the website in their usual manner. Literature suggests that the longer the contact time, the more comprehensive the cognitive processing, imparting greater significance to the website content. Therefore, this experiment is designed to be as natural as possible to minimize interference (Tupikovskaja-Omovie & Tyler, 2021).

3.3. Design and experimental scenario

We created two experimental charity websites exclusively committed to fundraising for canine prosthetics and orthotic devices. The experimental images were sourced from real prosthetic photos found on the internet to enhance the authenticity of the website. Due to copyright concerns, AI-generated images were used to present in the manuscript. These websites were designed to evoke specific emotional responses from donors through the strategic presentation of "main" and "secondary" images. This approach aims to guide donors toward distinct emotional experiences using photo styles, thereby influencing their donation behavior. Specifically, one website prominently features prosthetic applications and positive imagery of dogs, intended to evoke positive emotions in donors. Conversely, the second website portrays dogs in cages, aiming to arouse heightened empathy. This experimental design is informed by literature suggesting that individuals in positive moods tend to exhibit greater generosity than those in a temporary sad state. Therefore, we chose dogs with prosthetics to evoke positive emotions and dogs confined in cages to evoke negative emotions, aiming to verify if these factors would become determinants of donation behavior. By exploring the impact of emotions on donation decisions, Bataoui and Boch (2023) contributes valuable insights to the understanding of donor behavior in the context of online charitable initiatives.

Regarding the “main” images, the first website prominently showcases prosthetics in its main visual area, whereas the second displays a poignant image of dogs in cages without prosthetics. Two aggregated Areas of Interest (AOIs) were designated as primary stimuli, strategically positioned at the initial image and the midpoint of the webpage, as indicated by the red lines in Figure 1. It should be noted that the images presented in Figure 1 are substitutions for the actual ones used in the experiments, due to copyright restrictions.

Our goal is to discern which visual style is more effective in inspiring donors to contribute and to investigate whether the evocative depiction of dogs in distress elicits heightened sympathy. Besides these main visuals, both websites contain typical online features such as informational content, button navigation, and pathways for donation details.



Figure 1. Websites with AOIs presented the application of prosthetics (left) and non-prosthetic (right)

For the “secondary” images, we investigate whether the different styles of dog imagery constitute a factor influencing donor behavior. The first version predominantly features a positive and vibrant depiction of dogs, while the second version portrays dogs being confined in cages, intentionally evoking heightened attention and concern, four images were designated as a singular Area of Interest (AOI), strategically positioned at the concluding location of the webpage for stimuli, as shown in Figure 2.

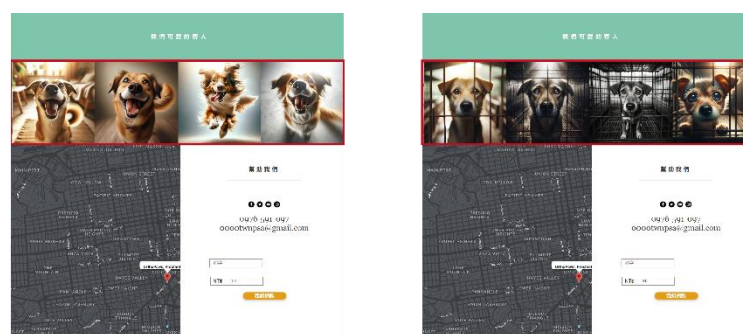


Figure 2. Websites with AOIs showing positive imagery of dogs (left) and portraying dogs confined in cages (right)

3.4. Semi-structured interview

All semi-structured interviews were conducted after participants had completed viewing the stimuli. Semi-structured interviews, also known as guided interviews, involve purposeful conversations by the researcher. This more open-ended guidance aims to create a relaxed interview environment, allowing participants to express their thoughts, feelings, and motivations regarding the images they have just viewed. Participants recall their process of browsing the website, focusing on what aspects captured their attention and whether they were inclined to donate a larger amount to a specific website or

distribute the amount evenly. Throughout the interview process, we secured participants' consent and meticulously recorded the entire session, aiming to uphold consistency between the responses acquired and the subsequent analysis. Interview questions include:

1. Where do you usually concentrate your attention when browsing websites?
2. Based on what criteria did you decide to donate a certain amount to a website or distribute the amount equally among websites?

4 Results

The data analysis included information about the participants' eye movements, such as the average fixation duration in the AOI, and the number of fixations in the AOI, as well as visitation data, such as the number of visits to the AOI, the average duration of visits, and pupil diameter. The distinction between fixation and visit lies in their definitions: fixation occurs when a participant fixates on a point of interest (AOI), while a visit occurs when the participant gazes at the AOI, shifts their gaze elsewhere, and then returns to the same AOI. Therefore, fixation time represents the total duration of all fixations within each AOI, summing the durations of all fixation points within that AOI. Conversely, visit time calculates the total duration an AOI was visited, with the duration starting and ending based on fixation points. Notably, visit time excludes the time of saccades before entering the AOI or after leaving the last fixation point of the visit. The collected data was analyzed using IBM SPSS Statistics v.22 software to conduct paired sample t-tests to determine if there was a significant difference between the application of prosthetics and non-prosthetic images, as well as two different styles of dog imagery while the participants viewed images. The following are the results of this study:

4.1 Participant donation behavior

This study successfully completed both the eye-tracking experiments and semi-structured interviews for 35 participants, including 14 male and 21 female (Table 1). Among them, 19 participants contributed more to the prosthetic website, 9 favored the cage website, and 7 allocated funds to both sites. Notably, 15 participants reported having experience in pet ownership. This participant donation analysis provides a comprehensive overview of the varied responses and preferences observed during the study.

Table 1. Characteristics of participants (n = 35).

No. of participants	Gender	Age	Preference	Experience	Pet Breed
1	F	22	Website 1	N	-
2	M	21	Website 1	N	-
3	M	27	Evenly	Y	Cat
4	F	28	Evenly	N	-
5	F	25	Website 1	N	-
6	F	23	Website 1	N	-
7	F	36	Website 1	N	-
8	M	24	Evenly	N	-
9	F	24	Website 1	N	-
10	M	24	Website 1	Y	Dog
11	F	24	Website 1	Y	Dog
12	F	23	Website 1	N	-
13	F	25	Evenly	Y	Dog
14	F	23	Evenly	Y	Dog, Cat, Others
15	M	24	Evenly	Y	Others
16	M	25	Website 2	Y	Dog
17	F	31	Website 1	N	-
18	M	27	Website 2	N	-
19	M	24	Website 1	N	-
20	F	24	Website 1	N	-
21	F	26	Website 2	Y	Dog
22	F	25	Website 2	Y	Dog
23	M	24	Website 1	N	-
24	F	21	Website 2	N	-
25	F	25	Website 2	Y	Others
26	M	23	Website 2	N	-
27	M	23	Website 1	Y	Others
28	F	24	Website 2	Y	Others
29	M	23	Website 1	N	-
30	F	24	Evenly	N	-
31	F	24	Website 1	Y	Others
32	M	24	Website 1	Y	Dog
33	F	25	Website 1	N	-
34	M	30	Website 2	N	-
35	F	25	Website 1	Y	Cat

*Note. Participants who were male or female were indicated as M or F; participants who have donated more money or less money or even the money on the website were indicated as website 1 or website 2 or evenly in preference; participants who have pet ownership experience or no pet-related background were indicated as Y or N; participants who have experience with pet ownership were mark for the pet breed.

4.2 Hypothesis testing for influenced the donation due to photo styles

A paired-sample t-test was conducted to compare average Fixation Duration (FD), Fixation Count (FC), Visit Count (VC), average Visit Duration (VD), and average pupil diameter for each AOI in the application of prosthetics and non-prosthetic images and two different styles of dog imagery. A p-value exceeding 0.05 indicates a lack of statistical significance in the differences observed among the Areas of Interest (AOIs) concerning interface design. During the data collection process, outliers may arise due to variations in measurement methods, human errors, or experimental inaccuracies, leading to values that deviate significantly from the rest of the data. Hence, for a more precise analysis of our results, we excluded data from 2 outliers and analyzed the eye-tracking data of the remaining 33 participants. The ensuing results, derived from rigorous statistical analysis, are presented below.

It was observed in Table 1 that there was not a significant difference in the scores for the application of prosthetics and non-prosthetic images ($M=0.28$, $SD=0.07$) and two different styles of dog imagery ($M=0.28$, $SD=0.05$) conditions; $t(32) = 0.93$, $p = 0.35$; $t(32) = -0.15$, $p = 0.87$. These results suggest that images do not have an effect on participants' average fixation duration. Specifically, our results suggest that consumers appear to allocate their attention evenly between images and text while navigating websites. Despite images usually being the primary focus, the average fixation duration of AOIs remains unaffected when website elements are identical.

Table 1. A comparative statistical analysis of the two different styles of websites with average fixation duration FD (ms) on AOIs.

Measure1		Measure2	T value	df	P value
Web1_M_AFD	-	Web2_M_AFD	0.935	32	0.357
Web1_S_AFD	-	Web2_S_AFD	-0.155	32	0.878

It can be observed in Table 2 that there was a significant difference in the scores for the application of prosthetics and non-prosthetic images ($M=9.00$, $SD=5.47$) conditions; $t(32) = 1.98$, $p = 0.05$, but not a significant difference in the scores for two different styles of dog imagery ($M=18.37$, $SD=13.48$) conditions; $t(32) = 0.66$, $p = 0.50$. These results suggest that the application of prosthetics really does have an effect on participants' fixation count. Specifically, our results suggest that when participants browse the website, compared to the non-prosthetic images, the number of fixations they gaze increases.

Table 2. A comparative statistical analysis of the two different styles of websites with fixation count FC (ms) on AOIs.

Measure1		Measure2	T value	df	P value
Web1_M_FC	-	Web2_M_FC	1.984	32	0.056
Web1_S_FC	-	Web2_S_FC	0.668	32	0.509

It was observed in Table 3 that there was a significant difference in the scores for the application of prosthetics and non-prosthetic images ($M=0.94$, $SD=0.69$) conditions; $t(32) = 2.66$, $p = 0.01$, but not a significant difference in the scores for two different styles of dog imagery ($M=1.98$, $SD=2.47$) conditions; $t(32) = -1.81$, $p = 0.08$. These results suggest that the application of prosthetics really does have an effect on participants' visit duration. Specifically, our results suggest that when participants browse the website, compared to the non-prosthetic images, the number of durations they visit increases.

Table 3. A comparative statistical analysis of the two different styles of websites with average visit duration VD (ms) on AOIs.

Measure1		Measure2	T value	df	P value
Web1_M_AVD	-	Web2_M_AVD	2.661	32	0.012
Web1_S_AVD	-	Web2_S_AVD	-1.810	32	0.080

It was observed in Table 4 that there was not a significant difference in the scores for the application of prosthetics and non-prosthetic images ($M=3.94$, $SD=2.29$) and two different styles of dog imagery ($M=4.43$, $SD=3.13$) conditions; $t(32) = -0.26$, $p = 0.79$; $t(32) = 0.27$, $p = 0.78$. These results suggest that the application of prosthetics really does have an effect on participants' fixation count. Specifically, our results suggest that when participants browse the website, although they tend to have more fixations on the application of prosthetics images, this does not result in revisiting the icon after exploring elsewhere.

Table 4. A comparative statistical analysis of the two different styles of websites with visit count VC (ms) on AOIs.

Measure1		Measure2	T value	df	P value
Web1_M_VC	-	Web2_M_VC	-0.265	32	0.793
Web1_S_VC	-	Web2_S_VC	0.274	32	0.786

Pupil diameter assesses changes in pupil size, which can be an indicator of arousal, cognitive load, or emotional response. It was observed in Table 5 that there was not a significant difference in the scores for the application of prosthetics and non-prosthetic images ($M=2.99$, $SD=0.46$) conditions; $t(32) = -0.99$, $p = 0.32$, but a significant difference in the scores for two different styles of dog imagery ($M=3.06$, $SD=0.42$) conditions; $t(32) = -2.21$, $p = 0.03$. These results suggest that showing positive imagery of dogs really does have an effect on participants' pupil diameter. Specifically, our results suggest that when participants browse the website, compared to the portraying dogs confined in cages imagery, the size of their pupil increases.

Table 5. A comparative statistical analysis of the two different styles of websites with pupil diameter (mm) on AOIs.

Measure1		Measure2	T value	df	P value
Web1_M_Pupil	-	Web2_M_Pupil	-0.998	32	0.326
Web1_S_Pupil	-	Web2_S_Pupil	-2.217	32	0.034

It was observed in Table 6 that there was a significant difference in the scores for donors' contribution amounts ($M=45384.84$, $SD=17122.20$) conditions; $t(32) = 2.65$, $p = 0.01$. These results suggest that showing positive imagery of dogs really does have an effect on donors' contribution amounts. Specifically, our results suggest that donors exhibit a greater willingness to contribute higher amounts on the website that present the application of prosthetics images compared to the website present non-prosthetic images.

Table 6. A comparative statistical analysis of the two different styles of websites with donors' contribution amounts.

Measure1		Measure2	T value	df	P value
Web1 amount	-	Web2 amount	2.652	32	0.012

Last, analysis of the eye-tracking data, including average Fixation Duration (FD), Fixation Count (FC), average Visit Duration (VD), Visit Count (VC), and average pupil diameter indicates a predominant allocation of attention by participants toward images featuring prosthetic applications on the website. Subsequent statistical analyses of donation amounts further affirm the website's efficacy in attracting consumers to contribute larger sums. While some current statistical data may lack significant differences, the overall results substantiate the confirmation of Hypothesis H1 (whether donors are influenced in their donation amount due to the presentation of prosthetic applications on the prosthetic website), highlighting the influence of website style on donor behavior. In contrast, Hypothesis H2 (whether donors are influenced in their donation amount due to the dog breed and context presented on the website) does not hold.

4.3 Semi-structured interview result

In the course of our semi-structured interviews with 35 participants, notable insights were gleaned. In response to the first question (where do you usually concentrate your attention when browsing websites), 62% of participants emphasized the pivotal role of photos and the website's title as their primary focus when browsing. Participants revealed a tendency to adjust their donation behavior based on the alignment of images with the intended message of the website. Regarding the second question (based on what criteria did you decide to donate a certain amount to a website or distribute the amount equally among websites), 19 participants, contributing higher amounts to the websites 1 (presented the application of prosthetics and positive dogs), highlighted the positive emotional response elicited by images featuring prosthetic applications, influencing their generous contributions. Particularly for prosthetic charity websites, the portrayal of the impact of prosthetic applications was deemed more congruent with the website's purpose. Notably, some participants expressed skepticism towards images of dogs in cages, perceiving them as potentially deceptive and resembling fraudulent websites manipulating consumer empathy. Conversely, 9 participants empathized with images of dogs in cages, prompting donations. Interestingly, 7 participants evenly split their donations, explaining in follow-up interviews that images featuring prosthetic applications indeed heightened consumer donation behavior. Their preference for an even split stemmed from both websites being involved in dog rescue, lacking a strong preference between the two. These nuanced participant responses provide valuable insights into the diverse factors influencing donation behavior in the context of online charitable initiatives.

In alignment with hypothesis H3 (whether participants' exposure to stimuli on the website is influenced by their experience with pets), the eye-tracking data analysis for 15 participants with a pet background did not yield statistical significance. Contrarily, in-depth findings from semi-structured interviews, where 8 participants donated more to the website featuring prosthetic applications, failed to establish a clear correlation with pet ownership experience. Consequently, hypothesis H3, positing a relationship between pet ownership background and donation behavior, is not supported by the comprehensive analysis of both quantitative and qualitative data.

5 Discussion

The primary objective of charity websites is to efficiently secure substantial funding to aid those in need. Maximizing consumer donation amounts is pivotal, with the webpage's layout and design playing a crucial role in achieving this objective. Hence, incorporating visually appealing aesthetic features in web design is paramount, allowing potential donors to comprehend the website's purpose at first glance. This study employs eye-tracking technology to meticulously trace participants' attention and donation behavior on charity websites with diverse styles. The insights derived from eye-tracking data, coupled with perspectives gathered through semi-structured interviews, contribute to optimizing the effectiveness of charity websites, aligning with the overarching goal of enhancing fundraising success.

Based on the analysis of experimental results and insights from semi-structured interviews, participants exhibited heightened donation behavior for website 1 (presented the application of prosthetics and positive dogs). Metrics such as FD, average VD, and VC that among charity websites with similar functions, icons showcasing the actual application of products hold greater significance than those relying solely on emotional guidance to engage consumers. This aligns with the finding that consumers are more supportive when experiencing positive emotions. Despite a more prominent portrayal of dogs being kept in cages compared to images featuring prosthetic applications, it did not result in an increase in donation behavior; instead, it triggered a counterproductive confusion effect. Prior research indicates that various website factors, including color, style, and elements, stimulate consumers, underscoring the critical importance of capturing attention in the initial moments of website interaction (Espigares-Jurado et al., 2020). Given the intangible nature of websites, where consumers cannot directly touch and feel value (Alhoqail & Floyd, 2021), influencing donor behavior involves appealing to consumers' senses and emotions to convey messages and derive benefits.

However, donors are also susceptible to current emotions and environmental influences. Research suggests that while empathy plays a crucial mediating role in inducing helping behavior, positive emotions directly impact explanatory intentions. Positive emotions easily translate into action (Bae, 2021). The results of semi-structured interviews further highlight that both individuals with and without pet experience are more emotionally moved by the presentation of prosthetic applications than by seeing dogs kept in cages, significantly influencing their donation behavior.

In the subsequent refinement of website style, marketers are advised to craft content capable of eliciting positive emotions from donors while aligning with the fundamental principles the charity website seeks to communicate. Given that charitable advertisements commonly employ fundraising goals and donation areas to articulate reasons for supporting a cause, marketers can enhance success by prominently featuring mission-centric images even before the target is achieved (Chen, 2020). The findings from semi-structured interviews underscore the effectiveness of visual representations that reflect real-world applications in attracting donors to contribute to charitable causes. This strategic approach, grounded in emotional resonance and mission-centric visuals, contributes to the optimization of online platforms for fundraising purposes.

6 Conclusion

6.1. Main contributions

Our study significantly contributes to elucidating the impact of design elements on donor behavior within charity websites. The clear presentation of a website's purpose emerges as a critical factor in augmenting donation amounts. Initial donor attention is notably drawn towards the actual application display and positive dog imagery. The key contributions, distilled through meticulous statistical analysis of eye-tracking indicators, can be summarized as follows:

1. Significant differences in both attention frequency and duration are observed when donors browse a charity website featuring the actual application of prosthetics as compared to imagery of dogs in cages. Attention frequency and visit duration are notably longer when prosthetic applications are presented.
2. Similar significant differences in both visit frequency and duration are noted when donors explore a charity website featuring positive dog imagery in comparison to imagery of dogs in cages. Visit frequency and duration are prolonged when positive dog imagery is showcased.
3. According to interview results, a majority of participants express that witnessing the actual application of prosthetics is more effective in motivating their donation behavior. While a minority mentioned feeling sympathy upon seeing dogs in cages, even participants who evenly split their donation amounts emphasized the importance of website design closely aligning with the underlying principles to stimulate donation behavior.

The comprehensive analysis presented in this study aims to furnish valuable insights for future charity websites or businesses, facilitating an enhanced understanding of donor perspectives in the context of donation amounts and, consequently, maximizing benefits. These findings serve as a valuable resource for informing strategic decisions in the design and optimization of online platforms for charitable initiatives.

6.2. Limitations and future work

The study has limitations, such as the necessity for participants to browse the webpage within a predetermined time frame. Future research could mitigate this by enforcing controlled browsing times for each participant to ensure uniformity in the speed and scope of gaze across participants. Additionally, in website design, the integration of multi-page navigation features could prove advantageous. While this study simulated a single-page website, future research could develop simulations with multi-page navigation, enabling participants to explore additional variables or webpage elements, thereby augmenting emotional fluctuations. Furthermore, the current study confronts limitations related to the sample size concerning participants' pet ownership experience. Future studies can increase the sample size and diversity in pet ownership, particularly differentiating between dog and cat owners. A comparative analysis between participants with and without pet ownership experience would offer valuable insights, providing nuanced perspectives on the target audience for future prosthetic charity websites and aiding in the formulation of pertinent marketing strategies. Finally, as we conducted the experiment through virtual donations, no real money was involved. In future research, consideration could be given to using real money for the experiment to assess whether donors might have additional considerations.

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References

- Alhoqail, S. A., & Floyd, K. (2020). Content is king but context is queen: how involvement facilitates the impact of website. *International Review on Public and Nonprofit Marketing*, 17, 375-389.
- Alhoqail, S. A., & Floyd, K. (2021). How website information decreases intangibility and influences donation. *Journal of Philanthropy and Marketing*, 26(4), e1702.
- Badenes-Rocha, A., Bigne, E., & Ruiz-Mafé, C. (2022). Visual attention paid to negative comments in cause-related posts: visual style and emotionality matter. *International Journal of Advertising*, 41(8), 1454-1476.
- Bae, M. (2021). The effect of sequential structure in charity advertising on message elaboration and donation intention: The mediating role of empathy. *Journal of Promotion Management*, 27(1), 177-209.
- Bataoui, S., & Boch, E. (2023). The role of socially rich photos in generating favorable donation behavior on charity websites. *Journal of Retailing and Consumer Services*, 74, 103429.
- Bertocci, G. E., Brown, N. P., & Mich, P. M. (2017). Why owners choose an orthosis over stifle surgery for canine cranial cruciate ligament deficiency. *Topics in companion animal medicine*, 32(4), 130-138.
- Boardman, R., & McCormick, H. (2022). Attention and behaviour on fashion retail websites: an eye-tracking study. *Information Technology & People*, 35(7), 2219-2240.
- Chen, M.-Y. (2020). Portraying product or cause in charity advertising: how execution style and appeal type affects prosocial attitudes by enhancing perceived personal roles. *International Journal of Advertising*, 39(3), 342-364.
- Choi, J., Li, Y. J., Rangan, P., Yin, B., & Singh, S. N. (2020). Opposites attract: Impact of background color on effectiveness of emotional charity appeals. *International Journal of Research in Marketing*, 37(3), 644-660.
- Espigares-Jurado, F., Munoz-Leiva, F., Correia, M. B., Sousa, C. M., Ramos, C. M., & Faísca, L. (2020). Visual attention to the main image of a hotel website based on its position, type of navigation and belonging to Millennial generation: An eye tracking study. *Journal of Retailing and Consumer Services*, 52, 101906.
- Hou, T., Hou, K., Wang, X., & Luo, X. R. (2021). Why I give money to unknown people? An investigation of online donation and forwarding intention. *Electronic Commerce Research and Applications*, 47, 101055.
- Lee, S., Wendland, T. M., Rao, S., & Magee, C. (2021). Orthotic Device Use in Canine Patients: Owner Perception of Quality of Life for Owners and Patients. *Frontiers in Veterinary Science*, 8, 709364.
- Li, X., Francois, J., & Kwon, J. (2023). Investigating consumers' online restaurant selection behaviors using eye-tracking technology and retrospective think-aloud interviews. *International Journal of Hospitality & Tourism Administration*, 24(5), 720-752.
- Modi, N., & Singh, J. (2023). Understanding online consumer behavior at e-commerce portals using eye-gaze tracking. *International Journal of Human-Computer Interaction*, 39(4), 721-742.
- Mukherjee, A., Lee, S. Y., & Burnham, T. (2020). The effect of others' participation on charitable behavior: Moderating role of recipient resource scarcity. *Journal of Business Research*, 120, 213-228.
- Tantawi, P., & Sadek, H. (2019). The impact of celebrity endorsement in cause related marketing campaigns on audiences' behavioral intentions: Egypt case. *International Review on Public and Nonprofit Marketing*, 16(2-4), 293-311.
- Tupikovskaja-Omovie, Z., & Tyler, D. (2021). Eye tracking technology to audit google analytics: Analysing digital consumer shopping journey in fashion m-retail. *International Journal of Information Management*, 59, 102294.
- Zhu, G., Lu, J., Zhou, L., & Luo, Y. (2023). The more the better? The negative effect of disseminators' donations in online donation. *Psychology & Marketing*, 40(6), 1179-1195.

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