A/B Testing (Assignment 4)

Alastair G. Clegg, Andi Irvan Widjaja, Karthikeya Udupa K M

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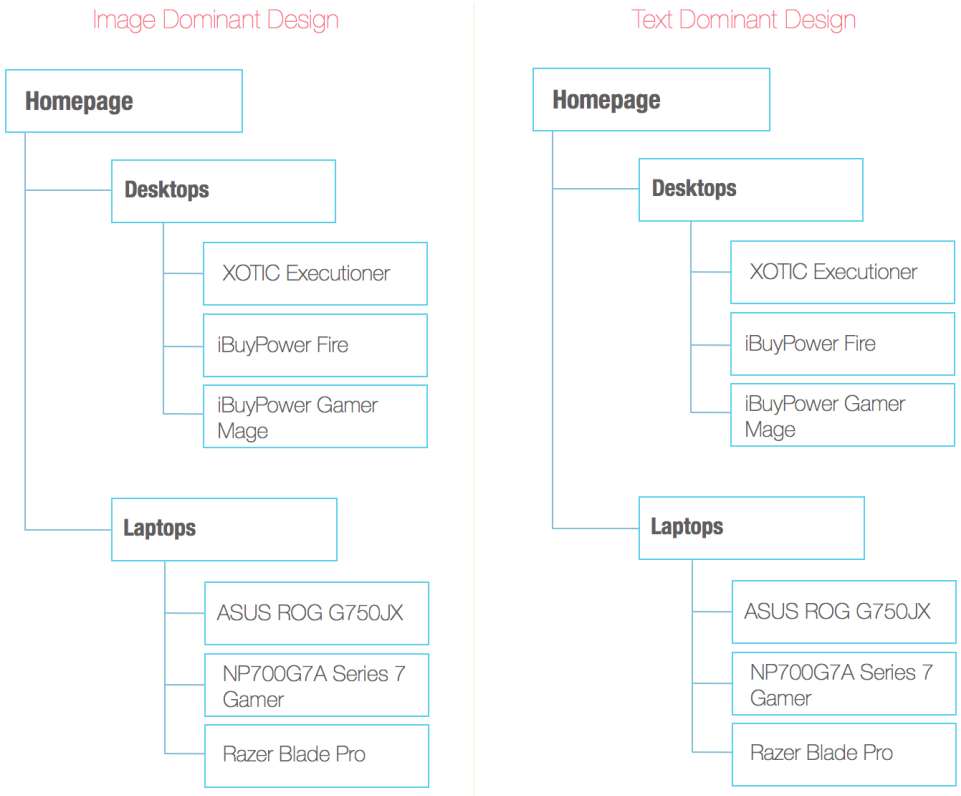
1. Introduction

The purpose of the experiment is to understand user behaviour on a given version of a website and to determine the factors which could improve it's usability. There are two versions of the website, a text dominant version (A) and an image dominant version (B). The flow for each version has been outlined in the site map below. The user is presented with one of two versions of the website (controlled by Google Analytics[1]) and their behaviour has been observed. The following are the URL's of both the versions:

- **Image Dominant (A):** http://hci2a.weebly.com/
- **Text Dominant (B):** http://hci2a.weebly.com/home2.html



[1] **Google Analytics Account credentials**
Username:uobhcigroup2@gmail.com **password:** hcihello123
Website HCI2A (UA-46109399-2) with "A/B Testing" experiment.

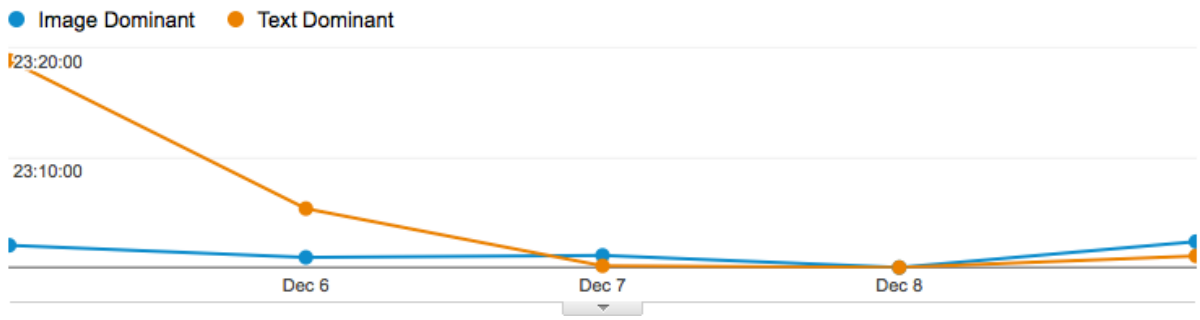
2. Google Analytics Conclusions

The following report is based on the analytics report generated by Google analytics over a 5 day observation period. There were 55 experimentally valid visits to the website which were redirected to each version randomly. Version A contains primarily images and in version B, text is more predominant. From the information provided by the experiment the following metrics were analysed:

- *Averaged Visit Duration*
- *% New Visits*
- *Bounce Rate*
- *Page/Visit*
- *% Exits at maximum depth*

2.1 Average Visit Duration (The average time duration of a session.)

Based on the information collected from the analytics report, the users redirected to version B had an average session length of *~339 seconds (5 minutes 39 seconds).* Whereas, the visitors on version A spent *~104 seconds (1 minute 34 seconds)* per session on average.

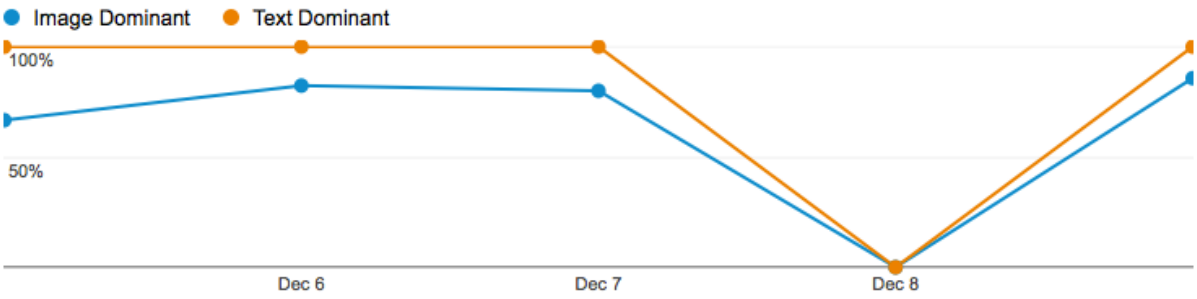


Conclusion: From the data available, we can conclude that the users spend considerably more time on the text based version of the website when compared to the image based version. We can attribute this to the website's content, since version A's text density tends to take longer to read and process by the user. On the other hand images do not take as long to understand and therefore the user's click through rate is faster (which also explains version B's data).

2.2 % New Visits (An estimate of the percentage of first time visits.)

The percentage of new visits can be used to calculate the number of users that revisit the website. This is possible as the user who visits the page from the same browser and on the same device will repeatedly view the same version. As a consequence, analysis can be conducted which indicates the number of returning users based on the version they visit.

Version A of the website, over the duration of the experiment, had *81.25%* new visitors of its total visits when compared with Version B which had an estimated percentage of almost *100%* new visitors. As a result, version A had 18.75% revisiting users whereas version B almost had no users returning back to the website.

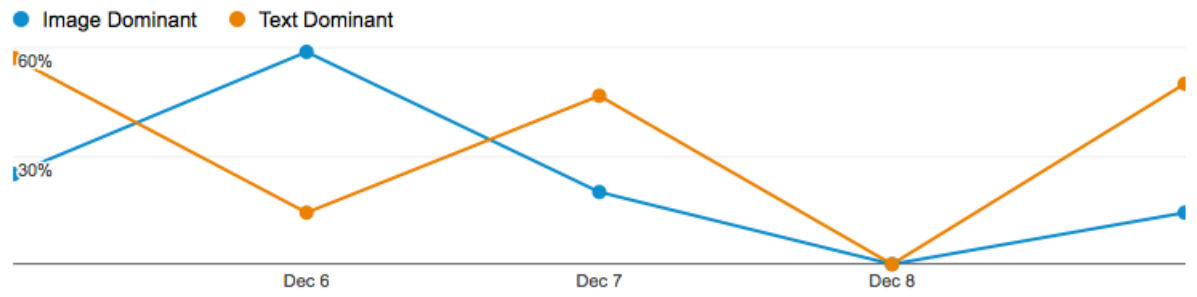


Conclusion: Based on the new visit %, we calculated the revisiting users and it is evident that the users of the image based version were more likely to revisit the website. This indicates the image version is more successful in keeping the users interested and creating a need for further visits.

2.3 Bounce Rate (The percentage of single-page visits.)

The Bounce Rate indicates the percentage of users who do not navigate or interact after visiting the landing page. This can be attributed to various factors such as lack of interest, inability to find navigational information and unclear landing page.

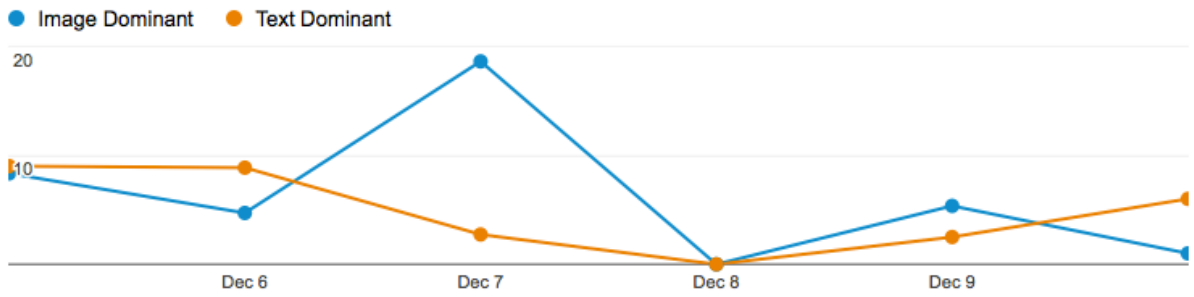
Version A of the website had a 39.39% bounce rate whereas version B had a slightly higher bounce rate of 42. 42%.



Conclusion: The higher bounce rate for the text version can be attributed to the users visiting the text page not being interested in the content at first glance. Therefore, the users did not wish to proceed further. Comparatively, in Version B, users held a greater curiosity toward the content. Their curiosity can likely be attributed to the images which resulted in further exploration of the website.

2.4 Page/Visit (Also known as Average Page Depth is the average number of pages viewed during a visit to your site.)

Based on the data collected by Google Analytics, an average users visited *~7.84 pages per session* for version whereas only *~5.44 pages per session* for version B.



Conclusion: The metric indicates that the image dominant version of the website is more likely to have a better user engagement then a text dominant version. This suggests images tend to increase the exploratory tendency compared to mostly textual content.

2.5 % Exit at maximum depth

The exit percentage is a ratio of exit to the number of page visits. This allows us to identify how far the user navigated into the website hierarchy before exiting. We are taking the last level of the website to identify the users who navigated the complete hierarchy depth before exiting. The data is derived by identifying the final level of the website and calculating the average of exit %. This was calculated for both versions of the website. It was observed that the exit % for the final level of version A is 11.57% and 13.99% for version B.

Conclusion: The difference is not conclusive, but it indicates that people tend to navigate until the last level of hierarchy before exiting the website when presented with version B. However, when combined with the page/visit metric, we can

	Image Version (A)	Text Version (B)
Exit at Level III	11.57%	13.99%

conclude that people visiting the version A tend to navigate back in the hierarchy and visit further pages. Consequently, they are more likely to end up exiting on different level of hierarchy rather then the last level.

3. Alternate Evaluation Method (Heuristic & Peer Evaluation)

A heuristic evaluation was conducted by consulting 4 Human Computer Interaction peers to discover usability issues and receive general feedback in regards to the design. 4 subjects were chosen due to this being an optimum number of subjects[2] considering diminishing returns, time and resource constraints.

Task order C (C) requested half of the subjects to retrieve a certain piece of information on the site and then to evaluate their journey and give feedback to the evaluator. The other half of the subjects (task order D) were asked to explore the site and to give general feedback and then to complete a task. The counterbalancing of the different order of tasks provides a greater understanding as it attempts to simulate returning users of the site (rather than just first time users).Two tasks were set, task A1 was to find the details of the most powerful processor for Desktop computers. Task B1 was to find the most powerful processor for the Laptop computers. Both tasks were set for both types of pages so that issue which arose from individual tasks would arise on both pages to provide a more complete evaluation.

Following this, subjects were asked to explore the site and to give feedback based on their expert knowledge of HCI along with possible suggestions on how to improve the users experience. 2 subjects were asked to evaluate the text orientated

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Nielsen, Jakob. "*Usability inspection methods*"
Conference companion on Human factors in computing systems. ACM, 1994.

(version B) page and the other 2 subjects evaluated the image orientated page (version A).

Subject ID	Site Version	Task Set	Order of Tasks
1	A	A1	C
2	A	B1	D
3	B	A1	D
4	B	B1	C

3.1 Evaluator's Feedback

3.1.1 Level I (Home Page)

All subjects noted a dislike to the position of the video orientated at the centre of the homepage. They found that to move from the home page to either the Laptop or Desktop pages, it was necessary for them to scroll down and only until then was it clear that further navigation was possible. Subject 1 found the video did not load and therefore the homepage had a large black box in the middle which caused her to lose trust in the websites validity and would likely return to a search engine to find a better web page to answer the task.

Both subjects 1 and 2 noted that they would have preferred the links at the bottom of the home page to be images so that it was easier for them to recognise where they were navigating to. On the other hand, subjects 3 and 4 both noted that it wasn't obvious to them that the image links were clickable. Notably, subject 3 asked the evaluator how to get onto the following pages to complete the task.

Subject 4 noted they found it difficult to return to the home page after clicking on the Laptop page as the home page navigation link was placed in an unusual place. As a result, subject 4 mentioned the lack of a navigation bar which would allow him to navigate to any primary page from whichever page he was viewing. He found it "annoying" that it was necessary for him to return to the home page just to change his view from Laptops to Computers.

3.1.2 Level II (Desktop & Laptop Pages)

Subject 3 did not find the reviews of the individual products helpful and would have preferred an overview of the performance of the most important components of each Desktop computer. Indeed, it would have caused the tasks to be completed

with fewer clicks. In addition, less reading time would be necessary for the user as it would have not required them to sift through the information on the Product Page to complete the task.

3.1.3 Level III (Individual Product Pages)

Subject 1 and 2 found the external links which took the user to the manufacturers pages on the computers increased their trust of the website. However, subject 3 found it frustrating as they were unable to navigate back to the original site without having to use the back button in the browser. In particular, subject 3 viewed the entirety of the website in full screen mode on their browser, which removed the navigation buttons and therefore required 3 clicks to go back to the Product Page.

3.1.4 General UserFeedback

3 out of the 4 subjects found the design of the website pleasurable due to its minimalistic design which was uncluttered and drew attention to the information presented. Although the style was enjoyed, Subject 3 made it clear that the layout was inconsistent and this posed an issue for them to execute certain tasks.

Subject 3 and 4 claimed they would return to this website if they required the information which the website provided and that their overall experience was positive. Subjects 1 and 2 claimed they would not return to the website as they found it lacking in content using the words “empty”, “plain” and “boring”.

4. Conclusion

Using the information from the Google Analytics and the usability evaluation feedback from the evaluators we can conclude the users visiting the image version of the website were more interested in the content and were able to navigate and visit more pages per session. They were less likely to exit the pages at the first glance, indicated increased interest and recognition of the content and were more likely to revisit the website compared to users using version B. However the users viewing the text version viewed less pages but spent more time on the website. `this could be due to the dense textual content, which had to be read in detail and the greater interest in the content was also reflected by the evaluators . Furthermore,

the navigation of the website was confusing for the users as they were not able to reach the home page or the previous pages easily, which showed to be the cause of frustration and may have resulted in early termination of the session. An improved version consisting of a combination of both textual information, images, an easily accessible navigation system would be required to enhanced the usability of the website.