130089872

Student Number

Key concepts of web analytics

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# Introduction

Inside this document is an overview of web analytic concepts that a business could apply to measure and improve the existing strength of the current business model thus forming a web analytics strategy. This is demonstrated in the assessment of the case study on RNN Group as well as analysing of big data from an A/B experiment.

## What is a web analytics?

Web analytics is essentially examining the user’s activity using data that is collected and applied to various tools such as (Google Analytics, 2023), by reviewing the data it is possible to discover possible faults that may need improvement. However, it is crucial to set targets and formulate a plan before the analytic can distinguish what exactly needs improving. This process is enforced and displayed by (Lakhwinder Kumar, 2012) who states “The process helps to find out the behaviour of the important customer visiting website routinely. In this one can optimize the website to improve the performance and profitability.” The web analytics process displayed inside (Figure 1) although explained by (Lakhwinder Kumar, 2012) this framework and similar designs are widely used by sources such as (Tech target, 2021), suggesting that the process is essential.

Diagram

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Figure 1 Web analytic process (Lakhwinder Kumar, 2012)

## Defining goals using SMART metrics

Smart metrics is an acronym that formulates a framework (Figure 2) which can be used as a guideline to distinguish possible targets that are not challenging to achieve. The smart method was created by (George Doran, 1981) and is still commonly used (corporate finance institute, 2022) has explained S.M.A.R.T as being a tool to focus your efforts providing the following statement, “SMART goals set you up for success by making goals specific, measurable, attainable, realistic, and timely. The SMART method helps push you further, gives you a sense of direction, and helps you organize and reach your goals.” Applying this to the web analytic process we can set a target such as increasing the conversion rate of a user on the website.

A picture containing diagram

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Figure 2 Example of a smart framework (Talkative, 2022)

# Building KPIs

Key performance indicators (KPIs) are used to simplify data throughout the cycle of a website. This can be presented in various metrics allowing analysts to discover potential underperforming aspects of a website that are collected by the metrics.

## Bounce rate

The bounce rate is calculated as a percentage of users who enter and leave the site, but do not interact with the page this does not track the time the user has spent and ‘bounced’ therefore there can be a high engagement time as well as a bounce rate.

The implications with bounce rates, in some instances, bounce rates can be positive as well as negative an example of this is if a website is designed for informational purposes such as ‘Why is the sky blue?’ the user may find this information without needing to interact with the page this is more common with one-page websites such as IMDb.

But bounce rates on websites such as Amazon or other shopping kart web applications may need improvements, with this implication, this can lead to an unreliable form of data as the bounce rate does not track the time spent on the website according (CXL, 2023) bounce rate percentages can vary depending on the purpose of the application and the device the site is viewed on for example inside (Figure3) this displays there is roughly an eight per cent discrepancy between mobile to a computer in average bounce rates. A way to change the reliability would be to compare this data with a different metric calculation such as conversion rates or retention rates comparing these methods together is known as statistical significance.

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A picture containing text, jack

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Figure 3 average bounce rate by device (Contentsquare, 2020)

## Strategies for improving the bounce rate

When attempting to discover what strategies may be relevant to improve metrics such as the bounce rate, it is suggested by others that using applications such as (Google Analytics, 2023) that provide a large various scale of features (Figure 4) that assist in the comparison of data. This is supported by the report (Vendivel, 2014) has conducted and also applied these strategies to discover that the user’s experience with a website is a crucial factor that can improve the following, Information Architecture, application of graphic design principles and media convergence although these strategies are suggested (Vendivel, 2014) has also stated that ”if an organization does not have a presence online, then the business is doomed to fail. Entities must adapt. However, it is more complex and competitive to gain an edge online”. This means that search engine optimization and various other strategies that improve the reach of a business may also be required for greater results.

A screenshot of a computer

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Figure Google analytics demo (Google Analytics, 2023)

## Conversion Rate

The conversion rate is focused on new users who have discovered a company or product by various methods that have fulfilled in buying a product or signing up. Continuing this explanation (Jason Burby, 2007) explains that “conversion can be viewed and counted as any other event. In addition, conversions provide a general framework for segmenting visits or visitors and attributing various marketing activity and visitor actions to these segments”. This metric synergises with bounce rates as well as retention rates this is because the data can measure alongside each other to pinpoint and gain enough evidence that improvements are needed.

## Strategies for improving the conversion rate

When a user visits a website one of the first things, they assess is the design and functionality. This is supported by (Zhenhui (Jack) Jiang, 2016) that had conducted a survey. In their findings, it was proven that a website's design affects the impact on a consumer's purchase as well as the perceived attitude. Therefore, a website should look professional and avoid overcomplicating features. As well as the design and functionality, the load speed is also a feature to be greatly considered. This is due to many proven research studies such as (Davide Di Fatta, 2017) that stated over all the purchasing experience is affected by load times to the extent that a 100-millisecond delay of a website provides a 7% difference on a user purchase.

## Retention rate

The retention rate is the metric that assesses returning consumers. This helps discover if a customer is satisfied with the business or product. (Jason Burby, 2007) suggests “when compared with the new visitor metric, helps determine the overall loyalty and affinity of visitors to the site being analysed.” This statement supports the previous claim that these metrics synergise and assist with the statistical significance of potential findings.

## Strategies for improving the Retention rate

Repeat buyers are essential to a stable revenue so, it is important to communicate with existing users, displaying loyalty by granting discounts and also providing a professional service, the way that this can be achieved is by reaching out for feedback from users while also providing an incentive this process is widely used inside the e-commerce world and is also suggested by (Momentive, 2023).

## Statistical significance

When testing variables for possible solutions and optimization purposes, it is crucial to assess with statistical significance. This is where the results can be explained in detail not just by chance. An example of this would be displaying two versions of the same application where the button’s shape is different. On version A to version B for example, a circle and the other square both with the same function and view the click rate on a heatmap, conducting multiple tests which lead to a similar scale of results can assist in the significance of a test. The purpose of this test is to decide which button layout as well as what colour scheme provides a more likely click rate. This was assessed by comparing data over multiple studies this can apply to the web analytic strategy.

# Web analytics strategy

After researching the KPI metrics it has been discovered that using the following techniques may provide a beneficial impact which is as follows.

## Information Architecture

Information architecture is the process of structuring data on a website in a user-friendly manner. This can be used to assist in navigating a website or the order of content on the landing page it is suggested (Morville, 1998) that a user should be able to find what they require quickly and with ease.

## Graphic design principles

The principle of graphic design on a web application is essentially various attributes to a website such as a font, colour, size, and alignment as well as the colour scheme used over this is typically inside the cascading style sheet, when using a colour scheme it is beneficial to use a colour harmony as it provides a professional design that can also assist the user reading text it is suggested by (Thoms, 2019) that using an analogous harmony is pleasing to the user’s eye.

## Media convergence

With technology advancements there have been many ways users can visit and engage with a website from computers to tablets and phones a user may prefer to interpret data in different formats such as text, visual or auditory providing these presences could provide a unique feel to the user maintaining engagement and usability.

## Load times

As stated, prior load times can be one of the factors a user does not for fill in purchases or singing up there are tools that can evaluate the load time of an application and provide suggestions that a business can implement to reduce the time it takes to load a page, a recent application created is called lighthouse which is an extension created by Google which is designed to improve the performance and quality of a website.

## Communication & feedback

This process is self-explanatory asking the user for feedback on the overall process can provide an easier understanding of what exactly may need to be altered to the web application this could be achieved by email if the user agrees to the terms of receiving an email from the business or simply at the end of the order process alongside thanking the buyer.

## Case study UCR webpage

Applying the suggested web analytic strategy above to the website page has provided insight on Nemours faults that could potentially be causing a lower conversion rate of users applying the faults discovered are the following.

## Search bar positioning

Whilst reviewing the provided website the first feature that was noticed was the search bar (Figure 5) although implementing this feature is positive the positioning hidden the title of the page which may confuse the reader as they may not notice it is the correct web page. Therefore, moving this search bar in between the page title and email address may be more beneficial this suggestion is supported by (Threapleton, 2022) who states “Aspects such as the search bar placement, hint text, and the way search results are displayed all contribute to how users engage with the search as well as the app as a whole.”

Graphical user interface, application

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Figure 5 Rotherham college distance learning search bar

## Font usage

Continuing through the website it was noticed that in some instances the font displayed was difficult to read (Figure 6) for example the font style on the image advertising free distance learning was overlapped, with also multiple occasions where symbols were displayed above text it was also noticed the font size was small it is suggested that using an alternate font style may resolve this as (Yuto Shinahara, 2019) Had conducted a study using cluster analysis on font types that discovered that Sans-serif fonts which are displayed in achromatic colours are used inside practical books with similar trends in online advertisements they also discovered that typographers distinguish the style and colour depending on the content.

Graphical user interface, text

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Figure 6 Font usage

## Data positioning

Throughout reading the material displayed on the website the information provided was displayed in an informative manner (Figure 7) this caused difficulty retaining attention to the page as well as not expressing to apply until the end of the page, on first glance of the site is displayed as an informational page instead of an advertisement it is suggested to restructure the existing data to express this, due to the findings conducted by (niksa, 2010) using eye tracking heat maps to distinguish the common patterns users read data on a website it was discovered by comparing multiple websites that the F pattern was prominent meaning the text displayed at the top of the screen is most likely to be read first. With this pattern discovered (niksa, 2010) continues to explain that “users tend to be satisfied with the first acceptable choice. As soon as they find the content that they perceive as relevant for finding the needed information, they intuitively click” as well as stating that users typically spend 56 seconds on a home page of a website.

Graphical user interface, text, application

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Figure 7 Example of informative text

## Colour scheme

Whilst analysing the website layout it was noticed that the company colours displayed on the logo as well as the telephone number are different to the overall website colour scheme used causing a conflicting design instead of this the design could be displayed in an analogous colour scheme providing an easy read for the consumer.

## Button placement

The apply now button although placed at the very bottom of the website is placed on the correct side of the page (Figure 8) this is supported by (Marrs, 2022) who states “Call-to-action buttons placed towards the bottom or to the right of content often outperforms alternative placements.“ however it is also stated that “CTA buttons should appear in appropriate places that align with a user’s experience.”, keeping in the mind the previous suggestion of data positioning placing the apply now button towards the top of the page may increase admissions as users will not need to scroll through the entire document.

Graphical user interface, text, application, email

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Figure 8 Call to action button placement

## Accessibility

It was also noticed that the lack of ease of access was present during the web page it is suggested to include ease of access features such as an audio description or a video explaining the information displayed as (Shah, 2022) States that it is essential to make a website accessible for everyone who visits it doing so will also provide multiple advantages such as user experience and the google search rank improvement which may increase traffic to the website and provide potential conversion’s.

## Applying the suggested techniques

All techniques suggested are relevant to the previous strategy explained before deployment. various tests should be conducted using the A/B method inside the next section is a comparison of the applied methods, as well as discovering what possible KPIs need further improvement.

## Case study of the A/B test

While analysing the data it was discovered that A/B duration was from July 3rd till July the 10th during these seven days it was noted a total of 8077 users had taken place in the experiment, however, only 1242 users had voted throughout the entirety of the experiment as shown in (Figure 9) this was achieved by grouping the data between the control and exposed experiment.

Text

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Figure 9 Total users

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Figure 10 total hours control vs Exposed

## The most active hour

Throughout the experiment the data was being read through a 24-hour cycle with 15:00 being the most active time frame this suggests that running an advertisement campaign would be beneficial at this time as a total of 1900 hours were spent.

## A device that was used the most

Looking more in-depth into the data set at which mobile device is being used the most the generic smartphone is the most common with 4743 users a drastic drop of 433 iPhone was the second most frequently used with the lowest of 2 nexus fives.

## A browser that was used the most

Assessing the browsers used in this study, chrome mobile most frequently with 4554 users, with the next being the web view with 1489 users, with the lowest being safari with 337 users.

# Conclusion

In conclusion, the strategies provided may improve future iterations of the web application, however with such a short time frame of the experiment and low voting interaction the data provided may be inaccurate, therefore future tests may be required, with implementing, direct comparisons, and further research of web analytic techniques. More beneficial strategies may arise that can assist future conversion rates, but all in all the retention rate works alongside the performance of the given business model and also how professionally the application and product are displayed.

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