# Optimizing Website Advertising: Exploring Ad Types and Strategic Placement

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### Abstract

**Background:** Website advertising is a complex system influenced by factors such as ad units, devices, traffic sources, and seasonal timing. In the realm of information technology and marketing, comprehending web advertising is indispensable for businesses. Effective marketing strategies are essential for engaging with customers, making a thorough understanding of web advertising imperative for all enterprises.

**Objective:** This study conducted a comparative analysis of various ad types and revenue streams for a typical blogging website, emphasizing the significance of different ad units in catering to diverse user experiences.

**Methods:** This study utilized a comparative approach that compares and contrasts ad types commonly employed on websites, including content, adhesion, sticky sidebars, and universal video ads. Web log data (information automatically recorded by a web server when users interact with a website) was collected between May 2, 2023, and May 2, 2024. It was synthesized to derive insights into the effectiveness of these ad types.

**Results:** The findings reveal the subtle impacts of different ad units on user engagement and revenue accruals. By comparing various ad types, this study explains their respective roles in striking a balance between enhancing user experience and maximizing revenue generation for a typical blogging website.  More specifically, in-content ads that integrate directly into a webpage typically generate the highest revenue (33.5%). Persistent ads (adhesion and sidebar sticky) can lead to higher ad exposure and increased revenue because they remain visible even when users scroll down.  Desktop users account for the majority of revenue (72.1%), highlighting the importance of optimizing the desktop experience, while also maintaining a mobile-friendly site for smartphone users. Google is currently the primary traffic and revenue source for the observed website, though there is potential for growth from Bing and other sources. Optimal advertising timing, influenced by seasonal events and consumer behavior, is crucial for maximizing campaign effectiveness and returns, as shown by revenue patterns around Halloween and Christmas.

**Keywords:** Website advertising, ad placement strategy, ad types, revenue generation, ad performance.

## Introduction

The dynamics of website advertising involve diverse elements such as ad units, devices, and traffic sources. In the realm of information technology and marketing, comprehending web advertising is indispensable for businesses. Effective marketing strategies are essential for engaging with customers, making a thorough understanding of web advertising imperative for all enterprises. Understanding ad placement and the types of ads on a website is vital for achieving a balance between user experience and revenue generation. Ad units, such as content, adhesion, sticky sidebars, and universal video ads cater to different user experiences. This study compares the various types of ads and revenue for a typical blogging website that focuses on do it yourself (DIY) projects and has approximately 400K users per month. Whether you are in the business of purchasing ad space to market your business or generating revenue from ads, the data and conclusions in this study should be beneficial.

## Importance of Ad Placement and Ad Types

The placement of ads and the various types of ads on a website is crucial for striking a harmonious blend of user satisfaction and revenue generation.  By optimizing advertising strategies based on user behavior, relevance, and performance data, website owners can create a positive environment for both users and advertisers.  Below are several ways in which ad placement and ad types can create a positive experience for both users and advertisers.  Their strategic implementation offers numerous benefits, including enhanced user engagement and optimized revenue generation.

- o User Experience: Proper ad placement ensures a positive user experience. Ads should not disrupt the natural flow of the content or hinder navigation. Strategic placement helps to maintain a balance between content and advertisements, preventing a negative impact on user satisfaction. (Huang and Yoon, 2022)

- o Revenue Generation: Effective ad placement can significantly impact revenue generation for website owners. Placing ads in prominent, visible locations can attract more clicks and impressions, leading to higher ad revenue. Different types of ads may perform better in specific positions, and understanding these dynamics can optimize revenue streams. (Andrews, 2017)

- o Relevance and Targeting: Knowing the types of ads that resonate with the target audience allows one to display more relevant content. Tailoring ads to the interests and demographics of users can increase engagement and click-through rates, thus maximizing the effectiveness of the advertising strategy.

- o Performance Monitoring: Monitoring the performance of different ad types and placements is essential for optimizing advertising strategies. By analyzing data on click-through rates, conversion rates, and other metrics, one can refine the approach to maximize the effectiveness of ad campaigns. (Amoako et al., 2023).

- o Mobile Responsiveness: With the increasing use of mobile devices, understanding how ads behave on different screen sizes and ensuring mobile responsiveness are crucial. Proper placement and formatting can enhance the user experience on smartphones and tablets, contributing to overall website performance.

- o Aesthetic Appeal: Ads that blend well with the overall design of a website and are placed in visually appealing locations are more likely to capture users' attention.

Striking a balance between aesthetics and ad visibility is essential for maintaining a professional and engaging website.

## Four Main Types of Ads Found on Websites

The four main types of ads found on websites include: in-content ads, universal player ads, sticky sidebar ads, and adhesion ads. Figure 1 illustrates these four ad categories.

**Figure 1:** *Advertisement Types Found on a Typical Website.*



A. "In-content" advertisements are displayed within the content of a web page. These ads are typically integrated seamlessly within the text or media of an article or blog post, making them appear as a natural part of the content.

B. "Universal Player" advertisements play short out-stream video ads as the reader scrolls.

C. "Sticky Sidebar" advertisements stay fixed or "stick" to the side of the webpage as the user scrolls down the content. Sticky sidebar ads are designed to remain visible to users as they navigate through the site.

D. "Adhesion" advertisements "adhere" to a fixed position on the user's screen, typically at the bottom of the page. These ads remain visible as the user scrolls through the content, ensuring continuous exposure to the advertisement.

## Source of Data

All data in this manuscript was collected from the access logs of the DIY website SunCatcherStudio.com. This dataset is primary, raw, and first-party, and was directly obtained from the website's own access logs without the involvement of any third-party sources. Additional data was provided by Mediavine, an advertising management company that offers a full-service ad network for online content creators, particularly bloggers and website owners. The reports and data from Mediavine are also classified as first-party data. Hence, no third-party data was used in this study. During the analysis period from May 2, 2023, to May 2, 2024, the website SunCatcherStudio.com averaged approximately 400K users, 500K sessions, and 1.5M views per month. Where *users* refer to unique visitors. *Sessions* refer to single visits (i.e., a

session starts when a user arrives at the site and ends after 30 minutes of inactivity or when the clock strikes midnight, or if the user leaves and returns to the site after the session expires). *Views* are the number of pages the user visits within the session.

## In-Content Ads

In-content ads seamlessly integrate with the surrounding editorial content, blending in with the natural flow of the webpage. These ads offer a non-intrusive way to promote products or services, enhancing user experience while maintaining the authenticity of the content.

**Advantages of In-Content Ads**

- o Engagement: In-content ads are seamlessly integrated into the blog content, making them less intrusive and more likely to be noticed by users. (Vigneron, 2024).

- o Relevance: Placing ads within the content allows for contextual targeting, ensuring that the ads are relevant to the surrounding text, which can enhance user engagement.

- o Visibility: Users are more likely to read through content, increasing the chances of them seeing in-content ads.

**Disadvantages of In-Content Ads**

- o Ad Blindness: Users may develop ad blindness and overlook in-content ads if they appear too frequently or disrupt the reading experience.

- o Limited Space: The space within the content is finite, limiting the number of ads that can be displayed without affecting user experience.

## Universal Player Ads

Universal player ads refer to video ads that display as the user scrolls through a website. Video ads on websites have become ubiquitous in the digital landscape, seamlessly integrating into the browsing experience. These dynamic advertisements leverage motion, sound, and visuals to captivate audiences and deliver marketing messages effectively. Positioned strategically within website layouts, they grab attention and engage viewers, often leading to higher click-through rates and brand recall.

**Advantages of Universal Player Ads**

- o High Engagement: Video ads have the potential to capture audience attention more effectively than static or text-based ads due to their dynamic nature. (Jan et al., 2019).

- o Increased Brand Awareness: Engaging visuals, sound, and storytelling in video ads can leave a lasting impression on viewers, helping to build brand recognition and recall.

- o Richer Content Delivery: Video ads allow for the conveyance of complex messages in a visually appealing and memorable format, enabling brands to showcase products, services, or narratives more effectively.

- o Emotional Connection: Videos have the ability to evoke emotions more powerfully than other forms of advertising, fostering a deeper connection between the audience and the brand. (North and Ficorilli, 2017).

**Disadvantages of Universal Player Ads**

- o Limited Attention Span: In today's fast-paced digital environment, viewers may have short attention spans, leading to the risk of video ads being skipped or ignored if they fail to captivate within the first few seconds.

- o Bandwidth and Loading Time: Video ads may require significant bandwidth to load, leading to slower page load times for websites and potential frustration for users on slower internet connections.

- o Intrusiveness: Video ads that auto play or disrupt the user experience on websites or mobile apps can be perceived as intrusive, potentially leading to negative associations with the advertised brand.

### Sticky Sidebar Ads

Sticky sidebar ads refer to advertisements that remain fixed in a designated position on the webpage, typically on the right side of the screen, as the user scrolls. This type of ad placement has its own set of advantages and disadvantages.

**Advantages of Sticky Sidebar Ads**

- o Increased Visibility: Sticky sidebar ads remain visible to users as they scroll down the page, ensuring prolonged exposure and potentially higher engagement compared to static or non-sticky ads.

- o Consistent Presence: These ads maintain a constant presence in the user's field of view, contributing to brand recall and recognition. The continuous visibility can enhance the effectiveness of the advertising message.

- o Optimal Placement: Placing ads in a sticky sidebar takes advantage of the peripheral vision of users, making it less intrusive than pop-up ads while still maintaining a noticeable position (Van den Broeck et al., 2018).

- o Maximized Ad Space: Sticky sidebars make efficient use of the available screen space, especially on widescreen monitors. This can be beneficial for advertisers looking to make the most of the available real estate.

- o Improved Click-Through Rates: The persistent nature of sticky sidebar ads can lead to higher click-through rates as users are more likely to interact with an ad that is consistently visible.

**Disadvantages of Sticky Sidebar Ads**

- o User Experience Concerns: Sticky sidebar ads can be perceived as intrusive and may interfere with the overall user experience, especially on smaller screens. Users might find them annoying or distracting.

- o Banner Blindness: Users may develop "banner blindness" over time, where they subconsciously ignore or become immune to the presence of sticky sidebar ads due to their constant visibility.

- o Cluttered Design: In some cases, websites may become visually cluttered if multiple elements, such as navigation menus and social media widgets, compete for space with sticky sidebar ads. This can negatively impact the aesthetics of the site.

- Mobile Responsiveness: Sticky sidebar ads might not translate well to smaller screens or mobile devices, potentially causing usability issues. Advertisers need to ensure that the ads are responsive and do not impede the mobile browsing experience.

- Technical Challenges: Implementing sticky sidebar ads can pose technical challenges, especially if a website is not designed to accommodate such ad placements. Compatibility issues may arise across different browsers and devices.

In conclusion, sticky sidebar ads offer increased visibility and prolonged exposure but come with the potential drawbacks of being perceived as intrusive and causing user experience issues. Balancing these factors and considering the specific context of the website and target audience is essential when deciding to use sticky sidebar ads.

## Adhesion Ads

Adhesion ads are a type of online advertisement that remains fixed to a specific location on the webpage, typically at the top or bottom, as the user scrolls. Here are some advantages and disadvantages associated with adhesion ads.

### Advantages of Adhesion Ads

- Increased Visibility: Adhesion ads remain visible to users as they scroll down the page, ensuring continuous exposure to the advertisement. This increased visibility can enhance brand recall and message retention. (Mediavine, 2024).

- Persistent Presence: These ads offer a constant presence without being overly intrusive. Users can engage with the content while the ad stays within their field of view, providing advertisers with a prolonged opportunity to convey their message.

- Optimal Screen Space Utilization: Adhesion ads make efficient use of screen real estate, especially on widescreen monitors. This is beneficial for advertisers looking to maximize the impact of their ads within the available space.

- Improved Click-Through Rates: The persistent nature of adhesion ads may contribute to higher click-through rates, as users are more likely to interact with an ad that remains visible throughout their browsing experience.

### Disadvantages of Adhesion Ads

- User Experience Concerns: Adhesion ads can be perceived as intrusive and may disrupt the overall user experience, especially if they cover essential content or interfere with navigation. Users may find them annoying and may be tempted to close or block such ads.

- Banner Blindness: Users may develop banner blindness over time, where they subconsciously ignore or overlook the presence of adhesion ads due to their persistent nature. This can impact the effectiveness of the ad campaign.

- Mobile Responsiveness: Adhesion ads may not translate well to smaller screens or mobile devices, potentially causing usability issues. Advertisers need to ensure that the ads are responsive and do not hinder the mobile browsing experience.

- Cluttered Design: If not implemented carefully, adhesion ads can contribute to a cluttered and busy webpage design, especially if multiple sticky elements or ads compete for attention. This may negatively impact the overall aesthetics of the site.

- Technical Challenges: Implementing adhesion ads can pose technical challenges, particularly if a website is not designed to support such ad formats. Compatibility issues may arise across different browsers and devices.

In conclusion, adhesion ads offer increased visibility and persistent presence but come with potential drawbacks related to user experience and technical challenges. Careful consideration of the target audience, website context, and balancing the advertising goals with user satisfaction is essential when employing adhesion ads.

### Revenue by Ad Unit

Revenue by ad unit refers to the earnings generated from specific types or placements of advertisements on a website or digital platform. By analyzing revenue generated by each ad unit, businesses can gain valuable insights into the performance of different ad formats and placements. This analysis allows businesses to identify high-performing ad units and optimize their advertising strategy accordingly, maximizing revenue potential. Moreover, it provides advertisers and bloggers with valuable data to evaluate the effectiveness of their ad campaigns and make adjustments to improve return on investment. Figure 2 shows revenue percentages by ad unit.

Comprehending the four primary types of website advertisements can enhance conversion rates and return on investment (ROI). Data suggests that in-content elements have the greatest impact, generating 33.5% of revenue, followed by adhesion (26.7%), sidebar sticky (21%), and finally, the universal player (18.7%). Prioritizing strategies to optimize in-content elements can significantly boost revenue.

**Figure 2:** *Revenue Percentage by Ad Unit.*
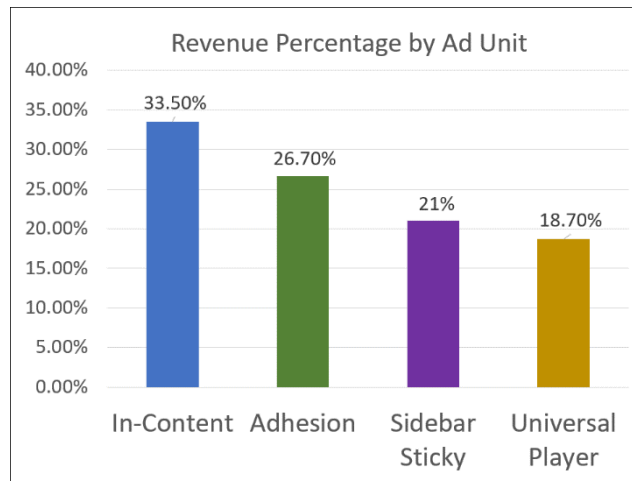
## Optimal Advertisement Timing

In addition to the strategic placement of ads, the timing of ads can significantly impact their effectiveness. As an example, the holidays of Halloween and Christmas are compared in Figure 3. Halloween celebrated on October 31st, saw a short lead-up period, a quick rise, and a sharp drop off.  On the other hand, Christmas, celebrated on December 25th, extended over several weeks, starting in mid-October and continuing several days after Christmas.  From early gift planning to last-minute purchases, each phase offers distinct opportunities for targeted advertising campaigns. Studies have found that 57% of people plan to complete their holiday shopping before December (Heitman, 2023).  By analyzing consumer behavior and adjusting ad placement accordingly, marketers can optimize their impact and maximize returns during the holiday season.

**Figure 3:** *Halloween vs Christmas views.*
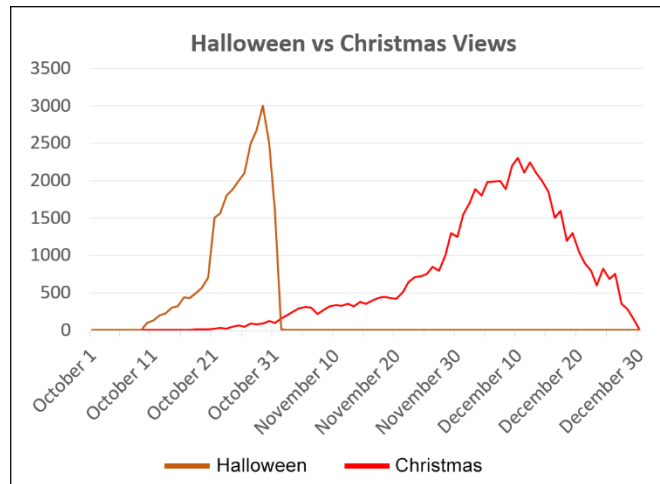


In addition to seasonal relevance, it is also important the ads are contextually relevant to the content they're appearing alongside. This increases the likelihood of capturing the audience's attention and driving engagement.  According to a study by Nielsen, ads that are aired during relevant programming can be up to 22% more effective in driving purchase intent compared to ads aired during unrelated programming (Nielsen, 2024). This underscores the significance of timing and context in maximizing the impact of advertising campaigns.  By incorporating this information into your advertising strategy, you can optimize your campaigns for better results and maximize the return on your advertising investment.
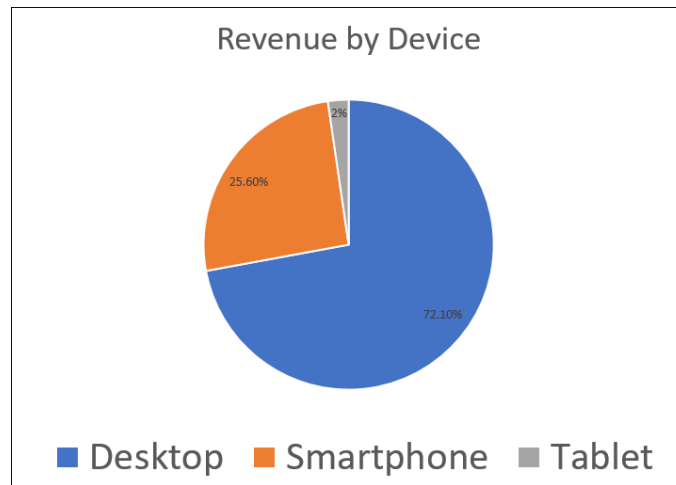
## Revenue by Device

In addition to understanding revenue by ad unit and advertising timing, it is also important to understand revenue by device.  This refers to the analysis of earnings generated from various types of devices accessing a website or digital platform. By scrutinizing revenue performance across different devices such as desktop computers, smartphones, and tablets, businesses gain crucial insights into user behavior and engagement patterns. (Cantrell et al., 2022). This analysis allows businesses to tailor their advertising and content strategies to optimize revenue generation for each device type.

For instance, if a substantial portion of revenue is generated from mobile devices, focusing on faster load times and mobile-friendly navigation can enhance SEO rankings and, subsequently, revenue for bloggers. Likewise, a company may increase investment in mobile ads if a significant number of visitors access their site via mobile devices. Conversely, if the majority of users are on desktop devices, a blogger might prioritize a user interface designed for larger, higher-resolution screens, offering more detailed views and complex interactions.

Understanding revenue by device enables businesses to adapt their website design, ad formats, and user experience to effectively target audiences across multiple platforms, ultimately maximizing monetization opportunities. Additionally, it provides advertisers with valuable data to refine their ad campaigns and allocate resources effectively based on the preferences and behaviors of users on different devices.  Figure 4 shows revenue by device for the observed DIY website.

**Figure 4:** *Revenue by device*



Revenue by device serves as a strategic compass for businesses navigating the digital landscape, offering multifaceted benefits that directly impact their bottom line and overall growth trajectory:

1. **Targeted Resource Allocation**: Understanding revenue by device enables businesses to allocate resources more effectively. By identifying which devices drive the highest revenue streams, businesses can prioritize investments in optimizing user experiences, advertising campaigns, and platform functionalities tailored to these devices. This targeted approach ensures that resources are directed where they have the greatest potential for ROI, maximizing efficiency and profitability.

2. **Informed Decision-Making**: Revenue data by device provides businesses with actionable insights that inform key decision-making processes. By analyzing revenue performance across different devices, businesses gain a deeper understanding of user behavior, preferences, and engagement patterns. This knowledge empowers them to make informed decisions regarding product development, marketing strategies, and overall business direction, thereby enhancing competitiveness and market positioning.

3. **Enhanced User Experience**: Leveraging revenue data by device enables businesses to optimize user experiences across various platforms and devices. By identifying which devices drive the most revenue, businesses can tailor their website design, content presentation, and functionality to better cater to users' preferences and behaviors on these devices. This personalized approach fosters enhanced user satisfaction, engagement, and retention, ultimately driving revenue growth and long-term customer loyalty.

4. **Improved Advertising Effectiveness**: Revenue by device provides valuable insights for advertisers looking to optimize their ad campaigns. By understanding which devices yield the highest ad revenue, advertisers can tailor their targeting strategies, ad formats, and messaging to better resonate with users on these devices. This targeted approach enhances the effectiveness of advertising campaigns, increasing click-through rates, conversion rates, and overall return on ad spend (ROAS).

5. **Monetization Opportunities**: Revenue data by device uncovers untapped monetization opportunities for businesses. By identifying emerging trends, niche markets, or underserved segments on specific devices, businesses can develop tailored products, services, or advertising solutions to capitalize on these opportunities. This proactive approach enables businesses to diversify revenue streams, expand market reach, and stay ahead of competitors in an increasingly competitive digital landscape.

By delving into revenue streams across various devices, including desktop computers, smartphones, and tablets, businesses gain invaluable insights into the various dynamics of user interaction within different digital environments. This in-depth understanding allows them to discern trends in user behavior, preferences, and engagement patterns across devices, thus empowering them to fine-tune their strategies for maximum impact. In essence, understanding revenue by device transcends mere statistical analysis—it serves as a cornerstone for informed decision-making and strategic optimization in the ever-evolving landscape of digital advertising and content monetization. By leveraging these insights, businesses and advertisers can navigate the complexities of the digital ecosystem with confidence, driving sustained growth and unlocking new opportunities for innovation and success.

At the heart of this analytical endeavor lies the quest to decipher the intricate interplay between user behavior and device preferences. By dissecting revenue performance across desktops, smartphones, and tablets, businesses unearth a treasure trove of insights that illuminate the varying ways in which audiences engage with content and interact with advertising. However, the true power of revenue analysis by device lies not merely in its ability to inform individual strategies, but in its capacity to catalyze synergies between businesses and advertisers. Through collaborative efforts fueled by shared insights and aligned objectives, businesses and advertisers converge to create holistic experiences that seamlessly integrate content and advertising, delivering value to audiences while driving sustainable monetization opportunities. In summary, revenue by device serves as a strategic asset for businesses, offering actionable insights that drive targeted resource allocation, informed decision-making, enhanced user experiences, improved advertising effectiveness, and new monetization opportunities. By leveraging this data-driven approach, businesses can optimize performance, maximize revenue growth, and maintain a competitive edge in today's digital economy.

**Revenue by Traffic Source**

Revenue by traffic source refers to the assessment of earnings generated from various channels or sources that drive traffic to a website or digital platform. By examining revenue performance across sources such as search engines, social media, direct visits, referrals, and paid advertising campaigns, businesses gain valuable insights into the effectiveness of their marketing efforts and audience acquisition strategies. (Hojjat et al., 2017). This analysis allows businesses to allocate resources and prioritize channels that yield the highest return on investment, optimizing revenue generation. Understanding revenue by traffic source enables businesses to refine their marketing strategies, enhance audience targeting, and tailor content to better resonate with users from different sources. Additionally, it provides advertisers with valuable data to evaluate the performance of their campaigns and make informed decisions about allocating advertising budgets across different traffic channels for maximum impact and profitability. Figure 5 shows revenue by traffic source for the observed DIY website.

**Figure 5:** *Revenue by traffic source.*
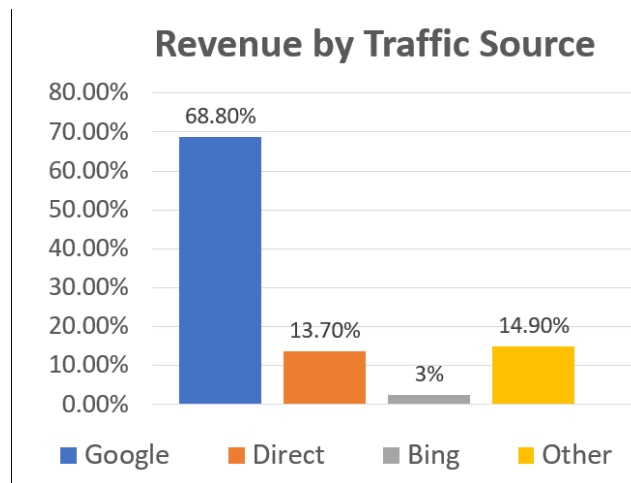


Analyzing revenue by traffic source offers several benefits to businesses:

1. **Optimized Resource Allocation**: By understanding which traffic sources contribute most to revenue generation, businesses can allocate their resources more effectively. They can invest more in channels that yield higher returns on investment and divest from less profitable ones, thereby maximizing their marketing budgets and overall profitability.

2. **Refined Marketing Strategies**: Insights into revenue by traffic source enable businesses to tailor their marketing strategies to better target and engage specific audiences from different sources. By crafting personalized messaging and offers for each channel, businesses can increase conversion rates and drive more revenue.

3. **Improved Audience Targeting**: By understanding where their most valuable customers come from, businesses can refine their audience targeting efforts. They can use this information to create more accurate buyer personas and tailor their marketing campaigns to reach the right people with the right message at the right time.

4. **Enhanced Content Optimization**: Knowing which traffic sources drive the most revenue allows businesses to optimize their content accordingly. They can create content that resonates with users from different channels, increasing engagement and driving more conversions.

5. **Better Decision Making**: Revenue by traffic source analysis provides businesses with actionable insights that they can use to make data-driven decisions. Whether it's deciding where to allocate advertising budgets or which marketing strategies to prioritize, businesses can rely on this data to guide their decision-making process and achieve better results.

Revenue by traffic source is a crucial metric for businesses. This assessment involves scrutinizing revenue performance across various channels like search engines, social media, direct visits, referrals, and paid advertising campaigns. By delving into these sources, businesses gain actionable insights into the effectiveness of their marketing endeavors and audience acquisition tactics. Such insights are invaluable for optimizing resource allocation, allowing businesses to prioritize channels that offer the highest return on investment and maximize revenue generation.

An understanding of revenue by traffic source empowers businesses to refine their marketing strategies. By pinpointing which channels drive the most revenue, businesses can tailor their efforts to better target and engage audiences from different sources. This tailored approach not only enhances audience satisfaction but also boosts conversion rates and overall revenue. Moreover, by analyzing revenue by traffic source, businesses can identify trends and patterns, enabling them to anticipate shifts in user behavior and adapt their strategies accordingly, staying ahead of the curve in an ever-evolving digital landscape.

Revenue by traffic source serves as a critical benchmark for assessing the effectiveness of digital marketing strategies and audience engagement tactics. By diving deep into the performance of different traffic channels, businesses and advertisers alike can unlock valuable insights to drive growth and maximize profitability. Whether it's refining marketing strategies, enhancing audience targeting, or optimizing content, the analysis of revenue by traffic source enables stakeholders to make data-driven decisions that propel their businesses forward in the competitive digital landscape.

Furthermore, revenue by traffic source analysis facilitates ongoing optimization and refinement of marketing campaigns. By continuously monitoring and analyzing revenue performance across different channels, businesses can identify areas for improvement and experiment with new strategies to enhance revenue generation. This iterative approach allows businesses to stay agile and responsive to changes in market dynamics, consumer behavior, and technological advancements. Additionally, by leveraging data-driven insights, businesses can test hypotheses, implement A/B testing, and measure the impact of changes in real-time, ensuring that their strategies remain effective and adaptive in a rapidly evolving digital environment.

Moreover, revenue by traffic source analysis enables businesses to identify untapped opportunities for growth. By identifying underperforming channels or emerging trends, businesses can capitalize on new avenues for audience acquisition and revenue generation. This proactive approach not only helps businesses stay ahead of the competition but also allows them to diversify their revenue streams and mitigate risks associated with over-reliance on any single traffic source. By expanding their presence across multiple channels and adapting to shifting

consumer preferences, businesses can future-proof their businesses and sustain long-term growth in an increasingly competitive marketplace.  Overall, revenue by traffic source analysis helps businesses streamline their marketing efforts, improve their targeting, and ultimately drive more revenue and profitability. It enables them to adapt to changing market conditions, optimize their resources, and stay ahead of the competition in today's digital landscape.

### Conclusions

Understanding ad types, ad placement, and advertising timing is crucial for both effective advertising and blogging strategies. Here are some key conclusions on their importance for both advertisers and bloggers wishing to maximize revenue:

- o Types of Ads. Understanding the four main types of ads found on websites can lead to better conversion rates and return on investment (ROI).  The data indicates that in-content elements are the most impactful (generating 33.5% of the revenue), followed by adhesion (26.7%), sidebar sticky (21%), and finally, the universal player (18.7%). Strategies to optimize the in-content elements should be considered first to help boost revenue.

- o Revenue distribution by device. For the DIY website observed, the analysis reveals that desktop users generate the majority of revenue (72.10%), followed by smartphone users (25.60%), with tablets contributing the least (2%).  Since desktop users generate the most revenue for this website, focusing on optimizing the desktop experience, such as improving load times and enhancing the user interface for larger screens, could be a priority. However, it's also important not to neglect the significant portion of revenue coming from smartphone users. Ensuring a mobile-friendly experience, fast load times, and easy navigation for smartphones can further enhance revenue generation.

- o Revenue by traffic source. Overall, the DIY website observed benefits significantly from Google as the primary source of both web traffic and revenue. However, there is potential for further optimization in Bing and other traffic sources to enhance revenue generation. It's essential for businesses to continue monitoring and analyzing these metrics to refine marketing strategies and maximize profitability.

- o Optimal Advertising Timing - Optimal advertisement timing refers to the strategic placement of ads during periods when consumer engagement and purchase intent are at their highest. This timing is often influenced by various factors, including seasonal events, consumer behavior patterns, and the nature of the product or service being advertised. For example, the revenue data observed indicates distinct consumer behavior patterns around Halloween and Christmas. While Halloween saw a short lead-up period, a rapid rise, and a sharp drop-off in revenue, Christmas exhibited an extended period of increased revenue, starting in mid-October and continuing beyond December 25th. These findings emphasize the importance of aligning advertising strategies with seasonal trends and consumer behavior to optimize campaign effectiveness and maximize returns.

- o Ensure that ads are contextually relevant to the content they're appearing alongside. This can increase the likelihood (by up to 22%) of capturing the audience's attention and driving engagement.

### Managerial implications

Advertisers can utilize the insights gained from comparative examinations to strategically allocate their advertising budgets across different ad types and platforms. This involves

identifying the most effective ad types in terms of generating revenue and optimizing placement strategies to reach the target audience efficiently. For bloggers, strategically placing ads in less intrusive areas or integrating them seamlessly into the website's design can enhance the user experience while still capturing the attention of visitors and generating revenue.

## Limitations and Future Work

The data used in this study was collected from a do-it-yourself (DIY) website. It is likely that divergent findings could arise from alternative sources, such as news and media websites, educational websites, entertainment websites, nonprofit and charity websites, food and recipe websites, health and wellness websites, travel and tourism websites, etc. Do these alternative websites generate similar revenue from ads and ad placements? Is purchasing ads on these websites comparable to the DIY website observed? Will artificial intelligence (AI) capable of generating graphics, patterns, and text impact the number of visitors, ad revenue, or the cost of purchasing ads in the future?

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## Disclosure Statement

## Funding Statement

## Ethics Statement

The research conducted in this study adheres to the highest ethical standards and principles. All aspects of this research, including data collection, analysis, and reporting, have been conducted with integrity, honesty, and transparency.

## List of Figures