

COMPETITOR DIGITAL ADVERTISING INTELLIGENCE ANALYSIS FOR MARKETING STRATEGY

ACSP - Senior Data Analyst - Stage Nine

RELEVANT LINKS

Dataset Spreadsheet:

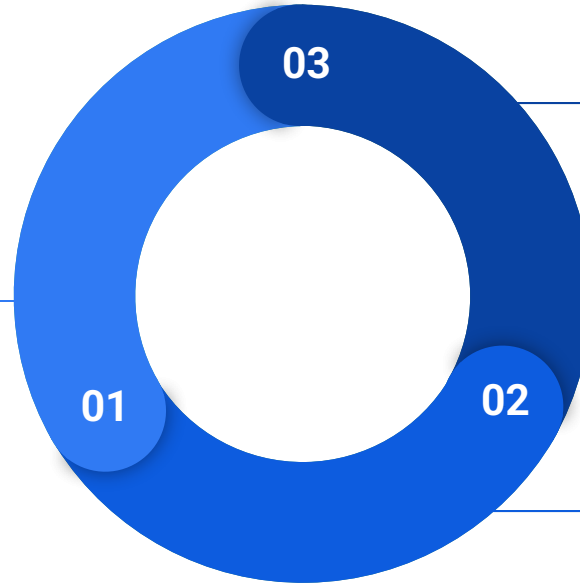
<https://docs.google.com/spreadsheets/d/1qEaZ55La8yfePWaNzWVxVieO2GZMAEjc8o9KOlwKruY/edit?usp=sharing>

jupyter notebook:

<https://drive.google.com/file/d/1hkOdHPe-zFhQjeQ1DvKXGrsgtSpBvmpG/view?usp=sharing>

INTRODUCTION

Data Extraction
Initial Data Exploration
Concatinating Datasets



Conclusion and Relevance to Shopdesk

1. Recommendation and room for further analysis

Competitor Digital Advertisement Analysis

1. Target Domain
2. Unique ads creatives
3. Total Exposure
4. Format width Height

1. DATASET EXTRACTION

- ❖ **API Source:** Utilized **SerpAPI's Google Ads Transparency Center** to extract digital ad campaign data
- ❖ **Target Query:** Focused extraction on (odoo.com, inflowinventory.com, squareup.com, lightspeedhq.com, zoho.com) to analyze their ad activity. ✓ odoo

- ❖ **Region-Specific Targeting:** Configured the API to pull data specifically for **Nigeria (Region Code: 2566)**, aligning with market relevance.
- ❖ **Pagination Handling:** Implemented loop-based logic to automatically **fetch all available ad creatives** using `next_page_token` for continuous pagination
- ❖ **Robust Request Handling:** Included status checks to catch and report failed API calls, ensuring reliability during data pulls.
- ❖ **Data Coverage:** Successfully retrieved and consolidated all available ad creatives under the target query with the custom time-frame of **May 30, 2018 - Apr 3, 2025**
- ❖ The code snippet of the right is the data extraction code used for odoo.com

```
[ ] import requests

API_KEY = 'a73e9812bb5cdd8625570da6ce7bea8f5518e98bd47e5f237ac8eas38fb699e5'
query = "odoo.com"
region = "2566"

params = {
    "engine": "google_ads_transparency_center",
    "api_key": API_KEY,
    "text": query,
    "region": region # Nigeria's code in this example
}

def fetch_all_ads(params):
    url = "https://serpapi.com/search"
    all_ads = []

    while True:
        response = requests.get(url, params=params)
        if response.status_code != 200:
            print("Error:", response.text)
            break

        data = response.json()
        if "ad_creatives" in data:
            all_ads.extend(data["ad_creatives"])

        # Check if there's a next_page_token for more results
        pagination = data.get("serpapi_pagination", {})
        next_token = pagination.get("next_page_token")
        if next_token:
            params["next_page_token"] = next_token
        else:
            break
    return all_ads

ads_data = fetch_all_ads(params)
print("Total ads fetched:", len(ads_data))

# Total ads fetched: 145

# Create a DataFrame using only the ad_creatives data
odoo_df = pd.DataFrame(ads_data)

# first 5 rows of the dataframe
odoo_df.head()
```

2. CONCATENATING DATAFRAMES

- ❖ **Unified Data Structure:** Merged multiple competitors-specific DataFrames (Odoor, Inflow, Square, Vend, and Zoho) into a single, comprehensive dataset.
- ❖ **Efficient Consolidation:** Used `pandas.concat()` with `ignore_index=True` to streamline row indexing and eliminate duplication issues.

- ❖ **Format Consistency:** Ensured all individual DataFrames shared the same structure and schema before concatenation.

- ❖ **Data Cleaning:** in each individual dataset, all numerical missing values were fill with 0 and all object missing values were filled with "Not_available"

- ❖ The same data cleaning format was taken to clean the missing values in link column.

- ❖ The code snippet to the right is the python code used to concat the five dataframes.

```
import pandas as pd

# Assuming these DataFrames already exist
dfs = [odoo_df, inflow_df, square_df, vend_df, zoho_df]

# Concatenating all DataFrames
combined_df = pd.concat(dfs, ignore_index=True)

# Save to CSV if needed
combined_df.to_csv("combined_data.csv", index=False)

# Display first few rows to confirm
combined_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 586 entries, 0 to 585
Data columns (total 14 columns):
 #   Column                Non-Null Count  Dtype  
---  -
 0   Unnamed: 0             586 non-null   int64  
 1   advertiser_id          586 non-null   object  
 2   advertiser              586 non-null   object  
 3   ad_creative_id         586 non-null   object  
 4   format                 586 non-null   object  
 5   target_domain          586 non-null   object  
 6   image                  586 non-null   object  
 7   width                  586 non-null   float64 
 8   height                 586 non-null   float64 
 9   total_days_shown       586 non-null   int64  
10   first_shown            586 non-null   int64  
11   last_shown             586 non-null   int64  
12   details_link           586 non-null   object  
13   link                   583 non-null   object  
dtypes: float64(2), int64(4), object(8)
memory usage: 64.2+ KB
```

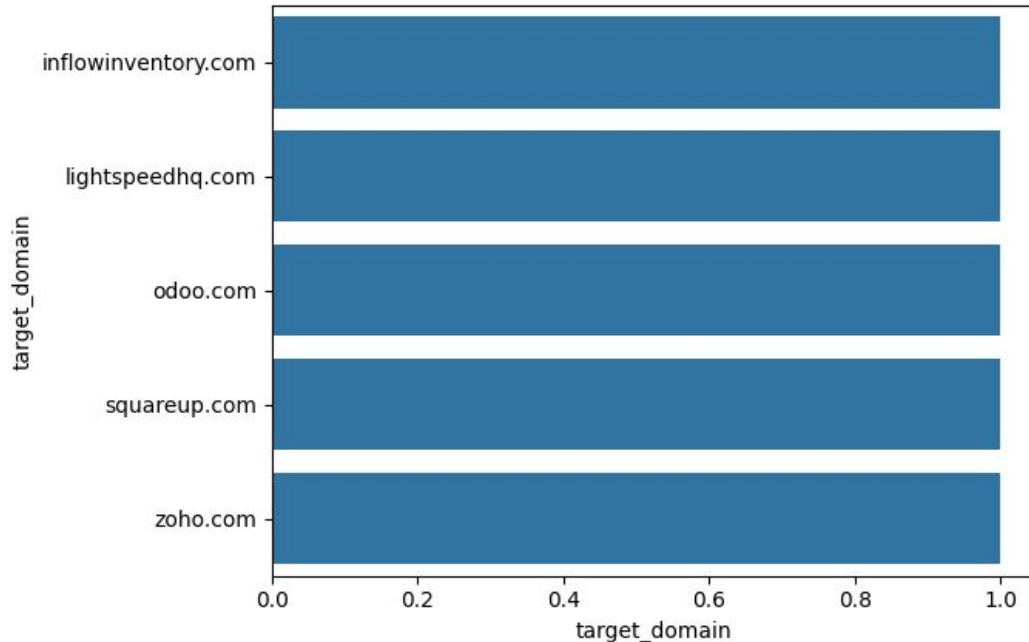
3. INITIAL EXPLORATORY DATA ANALYSIS

- ❖ **Dataset Size:** Analyzed **586 ad entries** across **13 columns**, capturing metadata like advertiser name, ad format, creative ID, dimensions, and display timelines.
- ❖ From the descriptive analysis below The earliest ad appeared on **October 25, 2021**, and the most recent on **April 3, 2025**.
- ❖ **Statistical Spread:** High standard deviation in total_days_shown and dimensions suggests **diverse ad lifespans and formats**.

	width	height	total_days_shown	first_shown	last_shown
count	586.000000	586.000000	586.000000	586	586
mean	352.216724	222.354949	411.061433	2023-10-10 17:53:40.645051136	2024-12-26 03:22:40.752559616
min	0.000000	0.000000	3.000000	2021-10-25 07:00:00	2024-04-04 20:49:31
25%	300.000000	92.500000	77.000000	2022-10-15 07:02:02.750000128	2024-10-04 00:00:00
50%	380.000000	173.000000	223.000000	2024-03-19 09:10:04.500000	2025-03-27 13:05:47
75%	380.000000	250.000000	711.750000	2024-06-03 08:57:57.750000128	2025-04-02 18:43:26.500000
max	1940.000000	1200.000000	1256.000000	2025-03-17 14:30:30	2025-04-03 09:54:45
std	280.394769	201.881374	409.830792	NaN	NaN

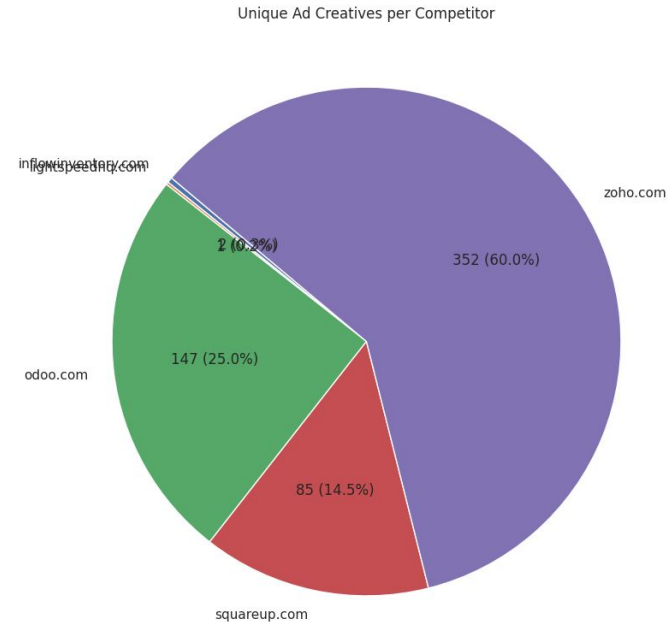
1. COMPETITORS TARGET DOMAIN

- ❖ **Competitor Focus:** The data highlights a set of key competitors—inflowinventory.com, lightspeedhq.com, odoo.com, squareup.com, and zoho.com—that are actively featured in ad campaigns.
- ❖ **Distinct Domain Targeting:** Each competitor appears as a unique target domain, suggesting that these companies are individually and strategically targeted within digital advertising efforts.
- ❖ **Unified Brand Identity:** All competitors reinforces their brand by channeling all traffic through a single, recognizable domain. This helps build customer trust and ensures a consistent brand experience.
- ❖ The bar plot to the right shows the unique count for each target domain in the dataset. The result is 5 for the corresponding 5 competitors.
- ❖ **Marketing Ads Insights for ShopDesk:**
Adopt a Unified Approach: Consider channeling all digital campaigns through a single, strong target domain to reinforce brand identity and simplify tracking.

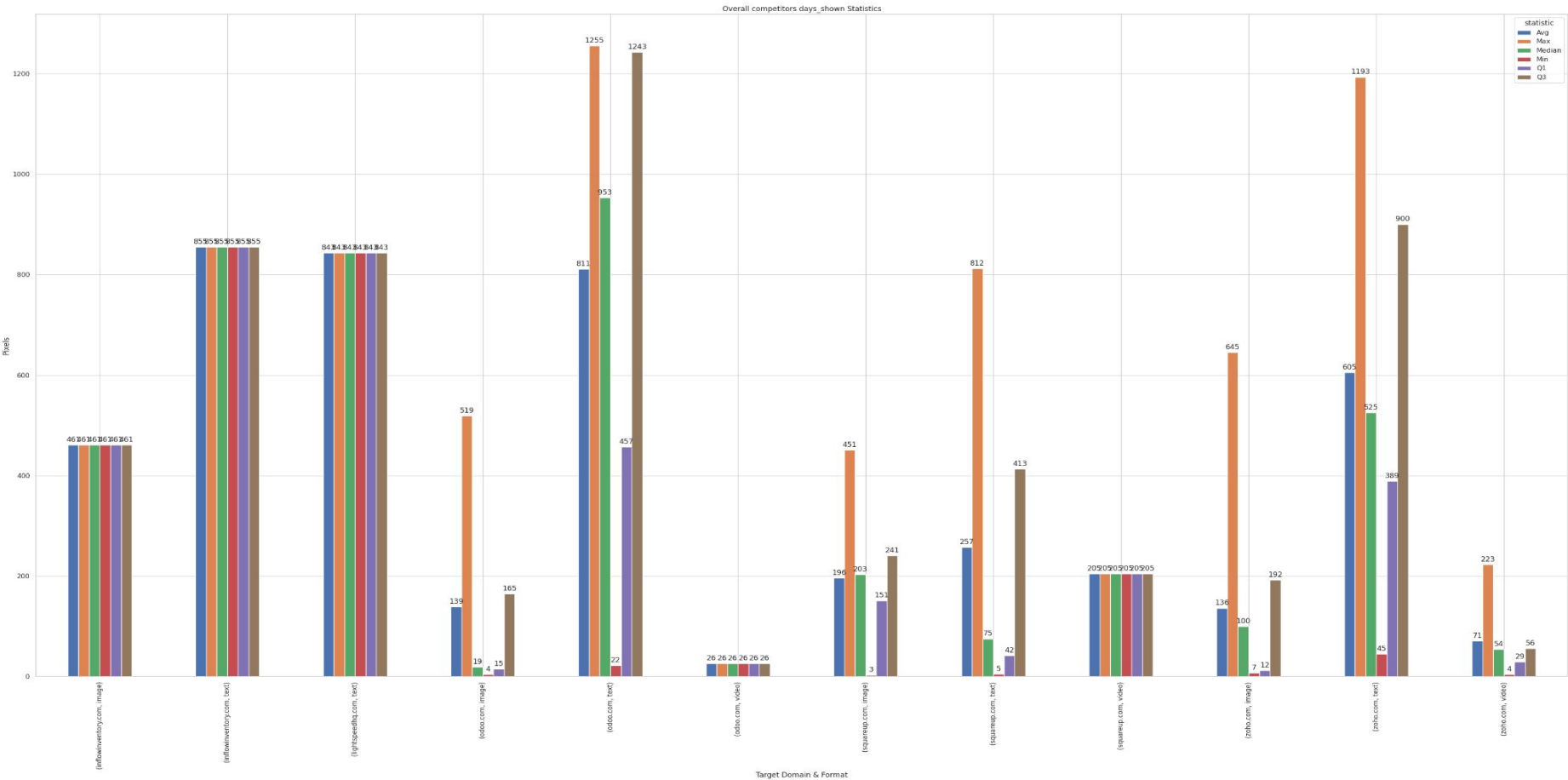


2. COMPETITORS ADS CREATIVES

- ❖ **Total Unique Ad Creatives:** 586
- ❖ **Distribution by Competitor:**
 - **Zoho.com: 352 creatives** (≈60.1% of total)
 - Insight: Dominates the creative landscape, signaling a high investment in diverse ad strategies.
 - ❖ **Odoo.com: 145 creatives** (≈24.8% of total)
 - Insight: Strong creative presence indicates robust campaign diversity and active market engagement.
 - ❖ **Squareup.com: 86 creatives** (≈14.7% of total)
 - Insight: Moderate creative output suggests targeted campaign efforts.
 - ❖ **Inflowinventory.com: 2 creatives** (≈0.3% of total)
 - Insight: Minimal creative investment, possibly focusing on niche or specialized campaigns.
 - ❖ **Lightspeedhq.com: 1 creative** (≈0.2% of total)
 - Insight: Very limited creative usage, which may indicate a highly targeted or experimental approach.
 - ❖ **Marketing Ads Insights for ShopDesk**
 - Capitalize on High-Creative Markets: With Zoho and Odoo leading the creative efforts, ShopDesk can benchmark by analyzing their strategies and identifying what drives engagement.



3. COMPETITORS TOTAL EXPOSURE (BAR CHART)



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❖ Segmentation by Ad Format & Competitor:

➤ Odoo.com:

■ Text Ads:

- 137 creatives with a total exposure of 111,118 days.
- Indicates a strong reliance on text-based messaging.

■ Image Ads:

- 9 creatives with 1,250 total days exposure.

■ Video Ads:

- 1 creative with 26 days exposure.

➤ Inflowinventory.com:

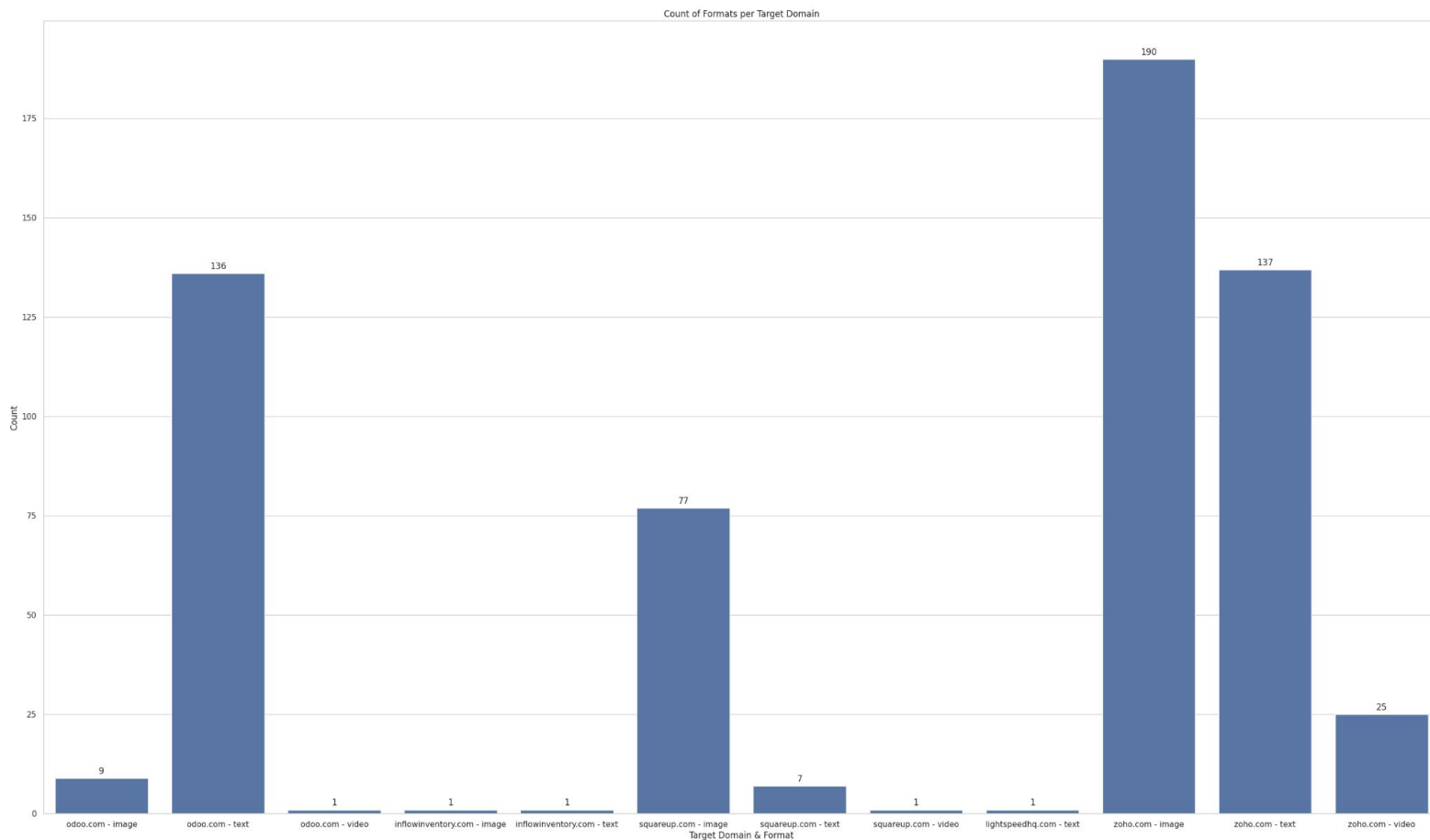
■ Image Ads:

- 1 creative with 461 days exposure.

■ Text Ads:

- 1 creative with 855 days exposure.

3. COMPETITORS TOTAL EXPOSURE



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- Squareup.com:
 - Image Ads:
 - 77 creatives driving 15,091 total days exposure.
 - Text Ads:
 - 9 creatives with 1,250 total days exposure.
 - Video Ads:
 - 1 creative with 205 days exposure.
- Lightspeedhq.com:
 - Text Ads:
 - 1 creative with 843 days exposure.
- Zoho.com:
 - Image Ads:
 - 190 creatives with 25,878 total days exposure.

3. COMPETITORS TOTAL EXPOSURE (CODE SNIPPET)

▼ TOTAL EXPOSURE

```
[ ] # Create an empty list to collect distribution results for each competitor (target_domain)
distribution_results = []

# Get list of unique competitors based on target_domain
competitors = combined_df['target_domain'].unique()

# Loop through each competitor for individual analysis and store aggregated distribution metrics
for comp in competitors:
    df_comp = combined_df[combined_df['target_domain'] == comp]

    # Aggregate distribution metrics for both width and height by ad format
    dist_data = df_comp.groupby('format').agg(
        count=('total_days_shown', 'count'),
        days_shown_avg=('total_days_shown', lambda x: x[x != 0].mean() if not x[x != 0].empty else np.nan),
        days_shown_min=('total_days_shown', lambda x: x[x != 0].min() if not x[x != 0].empty else np.nan),
        days_shown_q1=('total_days_shown', lambda x: x[x != 0].quantile(0.25) if not x[x != 0].empty else np.nan),
        days_shown_median=('total_days_shown', lambda x: x[x != 0].median() if not x[x != 0].empty else np.nan),
        days_shown_q3=('total_days_shown', lambda x: x[x != 0].quantile(0.75) if not x[x != 0].empty else np.nan),
        days_shown_max=('total_days_shown', lambda x: x[x != 0].max() if not x[x != 0].empty else np.nan),
        days_shown_total=('total_days_shown', lambda x: x[x != 0].sum() if not x[x != 0].empty else np.nan)
    ).reset_index()

    # Add the target_domain column to the aggregated data
    dist_data['target_domain'] = comp

    # Append the results for this competitor to the list
    distribution_results.append(dist_data)

# Concatenate all competitors' distribution data into a single DataFrame
distribution_days_df = pd.concat(distribution_results, ignore_index=True)

# Reorder columns (if needed)
distribution_days_df = distribution_days_df[['target_domain', 'format', 'count', 'days_shown_avg', 'days_shown_total',
                                             'days_shown_min', 'days_shown_q1', 'days_shown_median', 'days_shown_q3', 'days_shown_max']]

# Display the resulting DataFrame
distribution_days_df.head()

# (Optional) Save the aggregated distribution metrics to CSV
distribution_days_df.to_csv("ad_creatives_distribution_by_format.csv", index=False)
```

• distribution_days_df



	target_domain	format	count	days_shown_avg	days_shown_total	days_shown_min	days_shown_q1	days_shown_median	days_shown_q3	days_shown_max
0	odoo.com	image	9	138.888889	1250	4	15.0	19.0	165.0	519
1	odoo.com	text	137	811.080292	111118	22	457.0	953.0	1243.0	1255

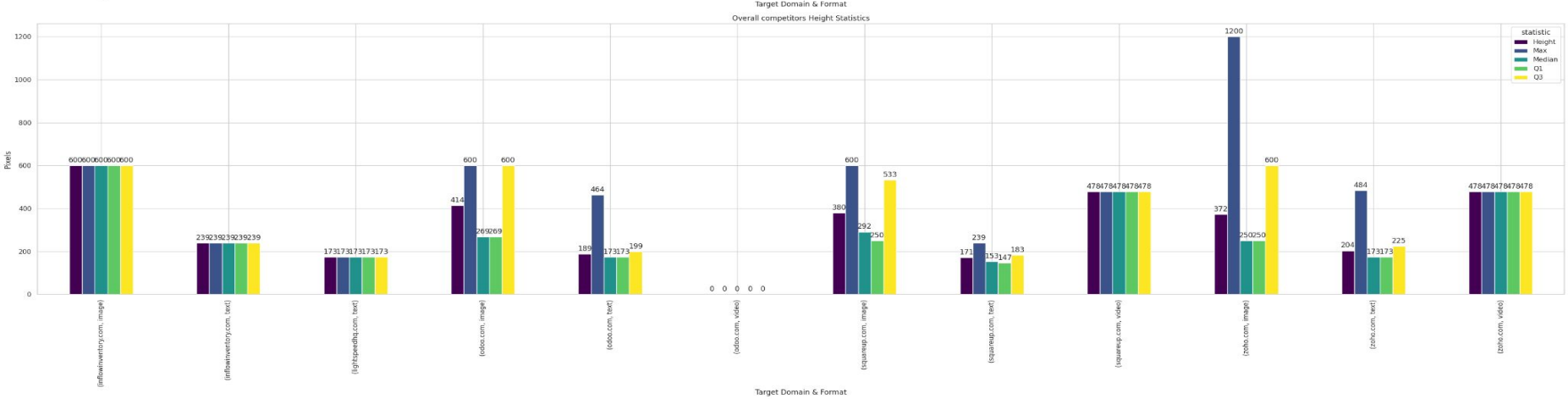
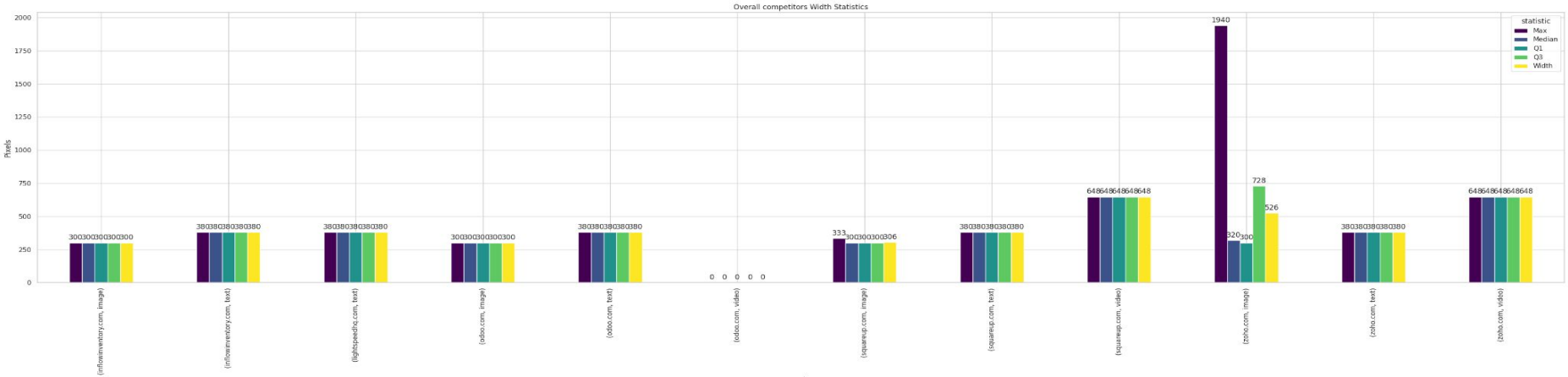
3. COMPETITORS TOTAL EXPOSURE

- Zoho.com:
 - Text Ads:
 - 137 creatives with 82,931 days exposure.
 - Video Ads:
 - 25 creatives with 1,776 days exposure.

❖ **Marketing Ads Insights for ShopDesk**

- Optimize Creative Mix:
 - Text Ads Dominate:
 - Competitors like Odoo and Zoho achieve significantly higher exposure with text ads. ShopDesk can benefit by refining its messaging and leveraging concise, impactful text ads.
 - Visual Impact:
 - While image and video creatives show lower total exposure, they remain vital for brand engagement and recall. Consider a balanced approach that uses visual content to complement text-based campaigns.
- Tailored Messaging Strategy:
 - Analyze the messaging behind high-exposure creatives (especially text) to identify effective themes and language. Adapt these learnings to craft compelling ads that differentiate ShopDesk in the market.

4. COMPETITORS Ad Dimensions:



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- ❖ Standardization in Dimensions:
 - Most competitors (e.g., odoo.com, squareup.com, lightspeedhq.com) maintain fixed dimensions for text formats – predominantly 380px width – which implies use of consistent templates for clarity and branding.
- ❖ Image Format Variation:
 - zoho.com shows extreme variability in image ad dimensions with widths ranging from 160px to 1940px and heights up to 1200px, suggesting aggressive multi-placement strategies across different screen types.
 - In contrast, squareup.com and inflowinventory.com tend to stick to mid-range, consistent formats (e.g., 300px × 600px), targeting a specific display type or standard.
- ❖ Video Format Patterns:
 - Most video formats (e.g., zoho.com, squareup.com) use 648px × 478px, likely aligned with embedded YouTube or in-feed social specs.
 - Missing dimensions (NaNs replaced with 0s) were handled cautiously to avoid distortion – ensuring summary stats reflect actual ad characteristics, not missing data.
- ❖ Text Format Insights:
 - Zoho.com, odoo.com, and others mostly use fixed height-to-width ratios, likely for performance-tested display units.
 - Height variability in text ads (e.g., zoho.com: 131–484px) hints at dynamic content (such as expandable or contextual ad units).

4. COMPETITORS Ad Dimensions (Code Snippet)

✓ Competitor Ads Dimension

```
# @title Competitor Ads Dimension
# Create an empty list to collect distribution results for each competitor (target_domain)
distribution_results = []

# Get list of unique competitors based on target_domain
competitors = combined_df['target_domain'].unique()

# Loop through each competitor for individual analysis and store aggregated distribution metrics
for comp in competitors:
    df_comp = combined_df[combined_df['target_domain'] == comp]

    # Aggregate distribution metrics for both width and height by ad format
    dist_data = df_comp.groupby('format').agg(
        count=('width', 'count'),
        avg_width=('width', lambda x: x[x != 0].mean() if not x[x != 0].empty else np.nan),
        width_min=('width', lambda x: x[x != 0].min() if not x[x != 0].empty else np.nan),
        width_q1=('width', lambda x: x[x != 0].quantile(0.25) if not x[x != 0].empty else np.nan),
        width_median=('width', lambda x: x[x != 0].median() if not x[x != 0].empty else np.nan),
        width_q3=('width', lambda x: x[x != 0].quantile(0.75) if not x[x != 0].empty else np.nan),
        width_max=('width', lambda x: x[x != 0].max() if not x[x != 0].empty else np.nan),
        avg_height=('height', lambda x: x[x != 0].mean() if not x[x != 0].empty else np.nan),
        height_min=('height', lambda x: x[x != 0].min() if not x[x != 0].empty else np.nan),
        height_q1=('height', lambda x: x[x != 0].quantile(0.25) if not x[x != 0].empty else np.nan),
        height_median=('height', lambda x: x[x != 0].median() if not x[x != 0].empty else np.nan),
        height_q3=('height', lambda x: x[x != 0].quantile(0.75) if not x[x != 0].empty else np.nan),
        height_max=('height', lambda x: x[x != 0].max() if not x[x != 0].empty else np.nan)
    ).reset_index()

    # Add the target_domain column to the aggregated data
    dist_data['target_domain'] = comp

    # Append the results for this competitor to the list
    distribution_results.append(dist_data)

# Concatenate all competitors' distribution data into a single DataFrame
distribution_df = pd.concat(distribution_results, ignore_index=True)

# Reorder columns (if needed)
distribution_df = distribution_df[['target_domain', 'format', 'count', 'avg_width', 'avg_height',
                                   'width_min', 'width_q1', 'width_median', 'width_q3', 'width_max',
                                   'height_min', 'height_q1', 'height_median', 'height_q3', 'height_max']]

# Display the resulting DataFrame
print(distribution_df.head())
```

4. COMPETITORS Ad Dimensions:



Volume vs. Format Size:

- High-volume advertisers like zoho.com and odoo.com tend to diversify more in ad dimension strategy – especially for image and video formats – aligning broader ad size variation with broader campaign objectives.

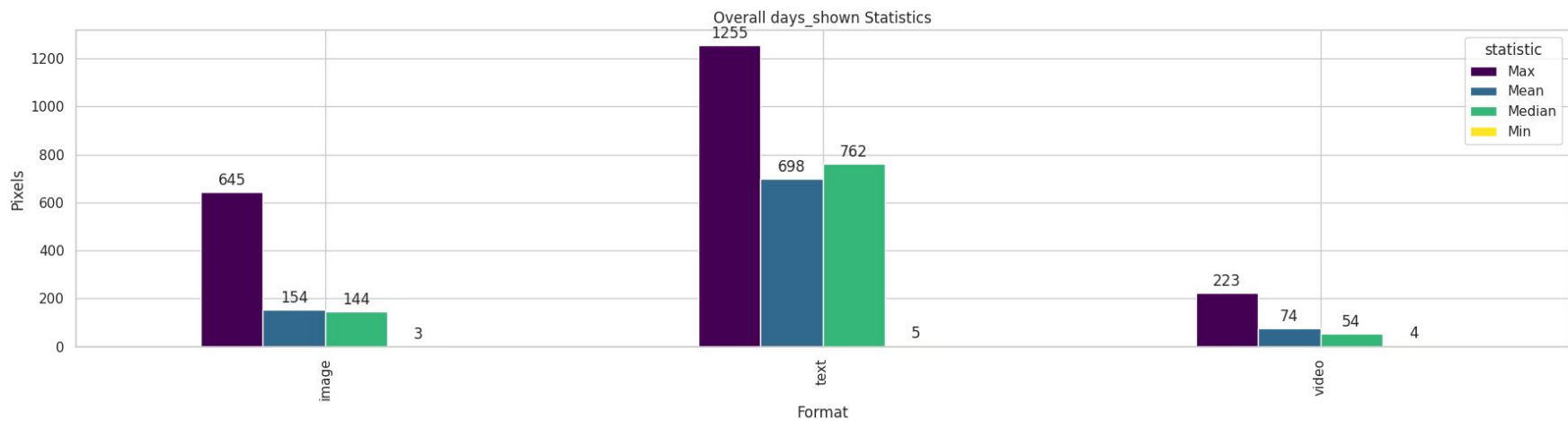
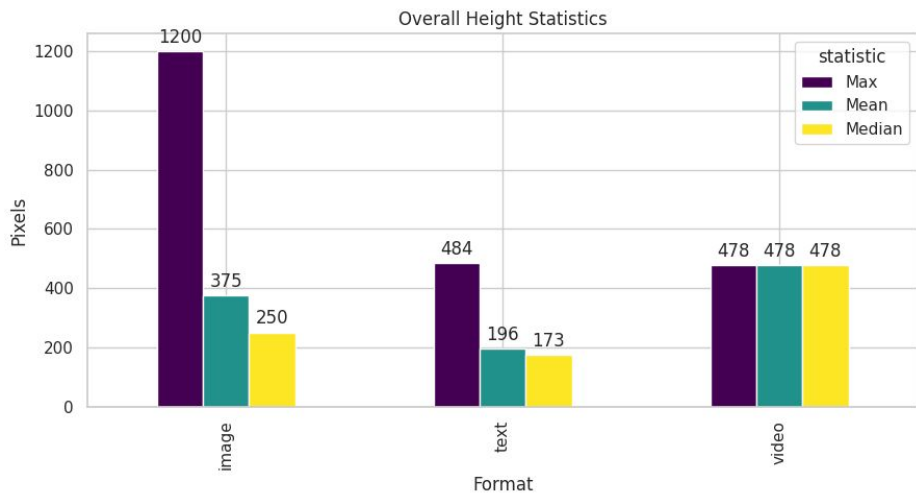
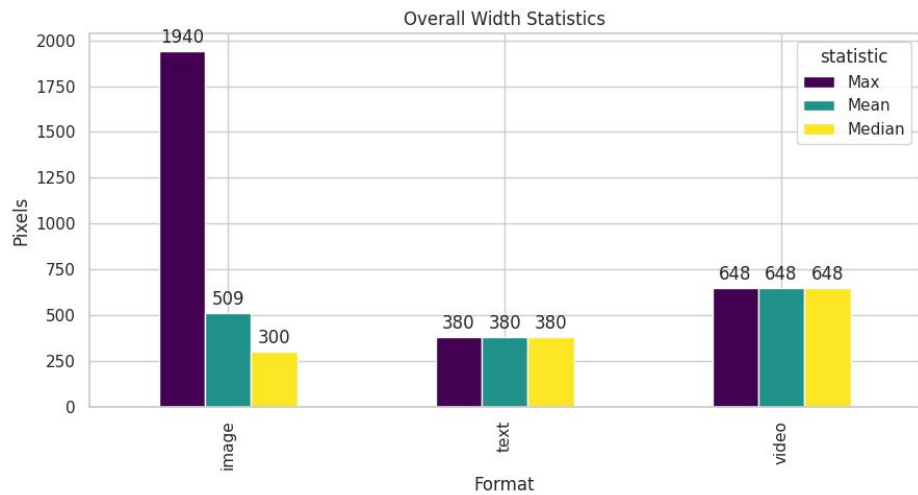


Marketing Insights for Shop Desk

- Start with Consistency, Then Expand:
 - Odoo and SquareUp show that maintaining standard, reusable ad sizes is operationally efficient – especially early on. Shop Desk can start with a few high-performing formats and iterate based on performance data.
- Don't Overlook Text Ads:
 - Text ad formats have smaller pixel footprints but were used extensively by competitors like odoo.com and zoho.com. Shop Desk should test native or responsive text units to capture long-tail search/display traffic.
- Adopt a Multi-Dimensional Creative Strategy:
 - Competitors like Zoho are leveraging multiple image sizes and video ad formats – this approach helps them appear across a wider variety of placements (desktop, mobile banners, sidebars, etc.). Shop Desk should consider testing varied image dimensions – not just standard 300×250 or 728×90 – to maximize visibility.
- Invest in Mid-Size Video Creatives:
 - Since 648×478px is the dominant video dimension, Shop Desk should standardize their initial video assets around this spec to ensure compatibility and avoid resizing issues across ad networks.

4. Conclusion

- ❖ **Track Engagement by Ad Size:** With some formats showing extreme outliers (e.g., 1940px widths), Shop Desk should benchmark ad size vs. click-through rate (CTR) over time to identify sweet spots for future creative design.
- ❖ **Agile Campaign Testing:** Continuously monitor and adjust the creative mix. Run A/B tests on different formats to determine which combination maximizes reach and conversion for ShopDesk.
- ❖ **Data-Driven Campaign Optimization:** Use competitor creative performance as a benchmark to optimize Shop Desks ad strategies, focusing on content that drives higher engagement and conversion.
- ❖ **Leverage Competitor Insights:** A more details analysis could be performed on the links to Identify areas where ShopDesk can differentiate—such as personalized landing experiences or specialized content—without sacrificing brand cohesion.





END OF REPORT