

# Sample Performance Audit

For Globomantics FY2024 Holiday Season

**Initiated:** Aug 8, 2024

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## Team

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# Context

We are prepping for the holiday shopping season (Oct 15-Jan 5) and will be running gift promotions. We want to make sure that the performance of our landing pages is optimized so that we can increase holiday sales. FY2023 Q4 sales were \$678MM from our digital web channel.

Holiday landing pages (LPs) are customized by marketing team in CMS, then promoted through deals & promo mailing automation. We currently see about 1.6MM visitors pushed after each email campaign.

## Why are we doing this?

**Objective:** The goal is to make sure it's a smooth experience to add products to the cart from the LPs.

**Impact:** We expect higher LP to A2C conversion with better performance which will lead to increased sales for Q4 2024.

**KPI:** A2C conversion attributed to holiday LPs

## Scope

Testing will be performed on each of the holiday landing pages provided below:

- //halloween-gift-guide
- //thanksgiving-cooking-ideas
- //holiday-gift-guide
- //cyber-monday-deals

We will focus on **mobile** and **tablet** experiences (76% of historical holiday traffic). **Desktop** is in-scope but de-prioritized unless it's a quick win.

### *Engineering notes:*

- Landing pages are served using the **LandingPageSlot** component
- Data is fetched from CMS in SSR and rendered into the page
- Heavy components on landing pages:
  - **AddToCartButton** (multiple states, Context-heavy)
  - **ProductFilmStrip** (note V3 rewrite slated for Sep release – see [PR](#))
  - **PromoDealPicker** (lazily loads, grabs geo-specific deals from Promos API)
  - **LocalRecommendations** (lazy loads, data fetched from Recs API)

### *Marketing notes:*

- Holiday LP CMS content are time-based but can be overridden for testing
- CMS freeze for holidays begins Oct 12
- **ACTION ITEM:** Needs role added for test users (Kamran + other engineers)

#### *Data analytics notes:*

- Hussein checked and we are not recording exact LP conversion rate yet
- **ACTION ITEM:** Engineering to implement tracking method/script before audit, then verify data is being received with Demand Sales team (Hussein will be point-of-contact)

## Methodology

Testing will be performed in staging preview environment (<https://www-stage.globomantics.com>).

Over FY2024, we have released numerous improvements and changes to the site. To isolate the changes made in response to the audit, we will use a feature flag (AUDIT\_FY2024\_Q4) to opt-in traffic to changes.

For any changes that are prioritized and released for this audit, we will measure the before vs. after KPI attributed via an email A/B test:

- On Oct 18, email will go out to 50% of recipients with non-optimized “Halloween Gift Guide” LP, and 50% of recipients will get the optimized version
- On Oct 22, email will go out with segments reversed, to help account for differences in open rate

## Tools

- CMS (holiday content) – <https://cms.globomantics.com>
- ConvertKit (email automation)
- LaunchDarkly (feature flags)
- Google Lighthouse (measurement tool) – v3.25.6
- React Dev Tools v4.27.7
- WebPageTest (mobile device simulation)

## Timeline

*Shelly and Farrah to refine/confirm with partners.*

- **Aug 1-Sep 5:** Prep, define strategy, identify & take care of prerequisites
- **Sep 10:** Audit with staging/production-ready CMS data

- **Sep 15-Oct 16:** Implement prioritized code changes before freeze using feature flag
- **Oct 18:** Marketing promo A test
- **Oct 22:** Marketing promo B test
- **Oct 22-28:** Look at the data, report on expected results
- **Oct 26:** GO/NO-GO decision (leave feature flag on/off)
- **Oct 28:** CODE FREEZE – P1 fixes only (with VP approval)

## Assumptions & Risks

- **Risk:** Images will have an outsized impact on UX
- **Risk:** Email A/B test will not give us 100% accurate segmentation/attribution data but based on historical open rates and CTR, product thinks it'll be "good enough" to be useful
- **Risk:** There were multiple features released in FY2024 that may negatively impact sales, but won't be visible via an audit
- **Assumption:** Marketing team reports historically that promotions drive higher anonymous user traffic, so we will prioritize unauthenticated user experience
- **Assumption:** Landing pages will be accessible in staging environment for testing before they go-live to users
- **Assumption:** Landing pages will be using production imagery and CMS data expected to go-live

# Sample Audit Report

Report Date: Sep 13, 2024

## EXECUTIVE SUMMARY

We identified a few key improvements to the FilmStrip component and photo storage hosting that could potentially improve page load by 20%. Based on historical Q3 LP to A2C KPI data (see *Appendix 1: FY2024 Q3 Baseline Dataset*), we believe that these improvements could translate to an **incremental sales lift of 3.2% for Q4**. Other suggested improvements could further add **+0.5-0.85% lift in sales** if we have time before the holiday code freeze.

For sales forecasting and analysis model, see *Appendix 2: Simulated Sales Regression Analysis*.

## Issues to Address

### ▲ HIGHLY RECOMMENDED

Insight	Comments / Recommendations	Expected Impact
▲ FilmStrip component uses 67% of page load budget.	<p>The film strip is a key component that is heavily used in holiday landing page slots.</p> <p>It is used to display a carousel that the user can page through and quickly add items to their cart.</p> <p>We noticed that there is no "lazy loading" behavior, so some carousels with 5+ items are loading on mobile even though they are not visible, affecting initial load times.</p>	Lazy loading carousel items that are off-screen should decrease Film Strip's page budget usage by at <i>least</i> 50%.
▲ Image storage logic in CMS is not resizing images for target device.	<p>We identified that images uploaded through the CMS tool are JPEG images and are not being optimized for web compression (WebP), nor are taking advantage of "srcset" (HTML5 picture) optimizations for mobile screen sizes.</p> <p>The holiday LPs display many images, and this impacts Web Vitals FCP/LCP metrics.</p>	Providing alternative WebP images when uploaded through the CMS would lead to significant bandwidth savings (87%) on supported platforms (iOS Safari, Chrome for Android), translating to decreased device render time (FCP/LCP metrics in Web Vitals).

## ◆ SUGGESTED

Insight	Comments / Recommendations	Expected Impact
◆ <b>Double fetching for local recommendations</b>	We noticed that local recommendations would "double fetch" when opened straight from email. Normally, local recommendations are fetched on homepage and most of our testing starts there so we didn't catch this.	Since the products are the same, there is no major impact to the page rendering. However, double-fetching adds to the device time and is resulting in some "wasted" renders (~50ms).
◆ <b>Promo dates are incorrect</b>	This may be a CMS bug in staging, but we noticed that the promotion dates are off by 1 when viewed within components on the landing page.  <b>Marketing Team</b> is verifying dates are set correctly in stage and we will follow-up to ensure this is fixed before go-live.	Incorrect dates could lead some users to believe they missed or cannot get deals after they open links from the email, resulting in lost sales.

## ■ MAYBE LATER

Insight	Comments / Recommendations	Expected Impact
■ <b>Excessive cookie deserialization</b>	In the data capture we saw an excessive amount of cookie loads/deserialization calls (JSON.parse). This should be reduced through memoization or in-memory caching.	JSON serialization slows down script execution speed. Total cookie parsing time exceeded 23ms (avg) when it should be around 1-2ms.
■ <b>date-js upgrade to 3.x</b>	We noticed that we are relying on an outdated dependency for "date-js" an npm package that provides date parsing functionality.	The release notes for the v3 upgrade mention a 25% performance increase across the API surface. Our calls to date-js are around 70ms cumulatively for a single page load.  We cannot upgrade date-js during code freeze so we should prioritize this post-freeze and get some free perf improvements.

# Test Results and Runs

## Flow 1: Email to landing page to carousel A2C

### Steps to Test

- ☐ PREP ENV
  - ☐ Verify staging preview is started (<https://www-stage.globomantics.com>)
  - ☐ Close all apps
    - ☐ Zoom
    - ☐ Slack
    - ☐ Spotify
    - ☐ Other Chrome instances
    - ☐ Check taskmgr for running apps using CPU
  - ☐ Launch Chrome profile "Auditing"
  - ☐ Clear all site data from browser
  - ☐ Close all tabs except one in main browser profile
  - ☐ Open email client
- ☐ Login to CMS (<https://cms.globomantics.com/login>)
  - ☐ If access denied, check AD group (DIGITAL\_WEB\_CMS\_CONTRIB)
- ☐ Open quick search and find holiday promo slots ("FY2024\_HOLIDAY\_" prefix)
- ☐ For landing page, choose the appropriate slot (e.g. "FY2024\_HOLIDAY\_HALLOWEEN")
- ☐ Click "Send test campaign" and check box "Send to me only"
- ☐ Trigger test promo email from CMS
- ☐ Open email in client
- ☐ Click into secondary Chrome browser profile (test profile)
- ☐ IF UNAUTHENTICATED FLOW: Clear all history/data
- ☐ Click gift guide promo image
- ☐ Should open in test profile browser
- ☐ Verify utm params are set
  - ☐ utm\_source=<check slot variable in CMS> (e.g. "cms\_manual\_test")
  - ☐ utm\_campaign=<check slot variable in CMS> (e.g. "ck\_campaign\_20240905\_01")
  - ☐ utm\_content=<based on image you clicked>
  - ☐ utm\_medium=email
- ☐ FOR PROFILING A2C:
  - ☐ Open browser dev tools (F12)
  - ☐ IF MOBILE: Set device view (iPhone 12 Pro)
  - ☐ IF TABLET: Set device view (iPad Pro – Landscape)

- ☐ Start React dev tools
- ☐ Go into Profiler tab and click "Reload and profile" for hard reload profiling
- ☐ Scroll down to "Treats That Say I Love You, Boo!"
- ☐ Click arrow to scroll right
- ☐ On black cat sticking tongue out t-shirt
  - ☐ Click size Medium in dropdown
  - ☐ Click orange color
  - ☐ Click "Add to cart"
- ☐ Stop profiler when message confirmation toast appears
- ☐ FOR INITIAL PAGE LOAD:
  - ☐ Open Lighthouse tools in Chrome
  - ☐ Only check Performance
  - ☐ Start report
  - ☐ Save captured HTML report to SHARED  
DRIVE\Audits\2024\<QUARTER>\<filename>
  - ☐ Paste link to report in test results below

## Test Results

**Code Commit:** [672cf7e](#)

**Route:** //halloween-gift-guide?<utm\_params>

Test Date	Test Variables	Run	Results / Summary	Notes	Lighthouse Reports	React Profile Sessions
2024-09-06	Unauthenticated Mobile (iPhone 12 Pro)	1	<b>LH Score</b> 79 <b>LCP:</b> 765ms <b>FilmStrip:</b> 512ms render 25 commits		<a href="#">Link</a>	<a href="#">Link</a>
		2	<b>LH Score</b> 78 <b>LCP:</b> 748ms <b>FilmStrip:</b> 565ms render 25 commits		<a href="#">Link</a>	<a href="#">Link</a>
		3	<b>LH Score</b> 67 <b>LCP:</b> 816ms <b>FilmStrip:</b> 530ms render 25 commits	Outlier; system update was started.	<a href="#">Link</a>	<a href="#">Link</a>
		4	<b>LH Score</b> 79 <b>LCP:</b> 744ms <b>FilmStrip:</b> 522ms render 25 commits		<a href="#">Link</a>	<a href="#">Link</a>
2024-09-06	Authenticated Mobile (iPhone 12)	1			<a href="#">Link</a>	<a href="#">Link</a>





















	Pro)					
		2			<a href="#">Link</a>	<a href="#">Link</a>
		3			<a href="#">Link</a>	<a href="#">Link</a>

Test Notes

FilmStrip render time

In all the tests, noticed high render time for FilmStrip (67% of LCP). When investigated, browser script profiling showed high execution time on **reducers/products.ts** (*getFormattedImagesForCarousel*) ([code link](#)). Called for every image loaded (~50 on page). Noticed all children cards render on mobile even when off-screen. Network tab shows all images loading.

Example Network tab:

Name	Status	Type
 k2-_ae7edc01-610c-4ac9-8125-f01bd2e6c4e8.v...	200	webp
 k2-_b0a43d74-4e37-4bb7-ac9f-a2d2e7ebe7e8....	200	webp
 k2-_5e9fe303-ba70-478d-81bd-ac9ae4751d69....	200	webp
 k2-_6f63dd82-8bf9-41f8-a161-7dd07075817c.v...	200	webp
 k2-_f2df4fb0-084a-45eb-87e6-1b41d0cd8bc3.v...	200	webp
 k2-_f0f6d4ac-7ae3-4129-b660-37155449addc.v...	200	webp
 k2-_a5d5f3a8-3d78-4500-90dc-9b8339ba15ae....	200	webp
 k2-_e7fa94eb-c04a-4efe-bd75-9a97c3219cc0.v1...	200	webp
 k2-_c3576d1d-9c01-42d9-b081-77e9d7c40ba9....	200	webp
 k2-_dd0a3a98-05a6-46e5-afdb-11bb7a2c9adf.v...	200	webp
 k2-_520ff8c5-99e7-4af1-9e6f-80d0163753fc.v1.j...	200	webp
 705d8199-421f-46da-9d23-fc0875bac42c.9ce19...	200	webp
 9f8c06f5-7953-426d-9b68-ab914839cef4.5f15b...	200	webp
 068a30a1-b341-45e6-8fc9-d50790ff221a.de470...	200	webp
 Portland-Boot-Company-Women-s-Puff-Winter...	200	webp
 e9d3217f-cb9e-4b2e-b6ed-9257746d0db1.9cb...	200	webp
 Big-Chill-Women-s-Down-Blend-Long-Tech-Str...	200	webp
 Jason-Maxwell-Women-s-and-Women-s-Plus-L...	200	webp
104 / 277 requests   1.1 MB / 3.3 MB transferred   1.0 MB / 8.4 MB resources   Finish: 4.69 s		

- [Browser profiler session](#) (2024-09-06 11:16am)

