

Proceeding Paper

An Investigation of the Digital Presence of Agricultural Stores in Greece[†]

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Abstract: Websites are one of the most important digital marketing tools for businesses, through which they interact with users and establish their online presence. A well-designed website is effective in attracting and retaining customers and increasing sales. Automated website evaluation tools are a quick and easy solution for assessing a website, offering immediate results and suggestions for its improvement. In this study, the characteristics of the digital presence of agricultural stores in Greece during 2021–2022 were investigated, using Website Grader and Google Lighthouse tools for a sample of 282 websites. This work shows potential improvements of agricultural store websites over time and can also be used to improve evaluation tools.

Keywords: digital marketing; website performance; website assessment; agricultural stores; Greece

1. Introduction

Electronic markets for agricultural products existed long before the advent of the Internet, since as early as the mid-1970s, some US agricultural industries supported electronic trading mechanisms [1]. There are many indications that electronic commerce can reduce the cost and increase the demand of agri-food products [2].

In today's competitive digital economy, all large businesses and organizations have their own website, which is considered one of the most important components of their operation and an integral part of their business activities [3]. A well-designed website can assist in an increase in sales and business profit; however, websites that are not functional and do not offer user interaction capabilities are off-putting and work negatively for both the user and the company itself. The problem of evaluating websites becomes evident, in order to determine measures or indicators that will assess whether a website is performing its function properly, i.e., retaining existing customers and attracting new ones.

A lot of agricultural stores in Greece have websites, through which they provide information about their products and services to farmers and the general public. The purpose of this research study is to investigate the characteristics of the digital presence of agricultural stores in Greece. A more specific goal is the evaluation of the websites of agricultural stores (as a means of their digital presence) using automated evaluation tools.

2. Methods

The research was carried out for the years 2021 and 2022. For the purposes of the research, an internet search was carried out through the Google and Microsoft search engines to identify the agricultural stores that maintain a website. An agricultural store was defined as any online store that: (a) is located within the Greek territory, (b) provides agricultural/livestock/zootechnical supplies to farmers and (c) has a website through which it carries out online sales. The search was based on a number of keywords in Greek, that here are translated into English for ease of reference: "agricultural store",



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“farm department store”, “farm center”, “farm produce store”, “farm supply store”, “farm supplies”, “agricultural equipment”, “agricultural machinery”, “agricultural services”, “animal feed”, etc.

The search initially resulted in 282 electronic addresses (URLs), which were checked for their validity and the fulfillment of the three aforementioned criteria for inclusion in this research. Websites that corresponded to online agricultural stores were included, while unverified URLs, social media pages (e.g., Facebook), blogs, pet accessory stores, sites with hosting problems, and online directory listings were excluded.

The sites that were included in the sample of the present research amounted to 239 different URLs. The majority of these shops (210) were farm supply stores. For each store, the collected information included a series of metadata, such as location, year of establishment, supported languages, and social media presence. As part of the research, the digital presence of agricultural stores in Greece was evaluated using automated website evaluation tools. Website Grader was used as the primary assessment tool for both years, while Google Lighthouse was only applied for the 2022 assessment. Both tools evaluate a website with a score from 0 to 100.

Website Grader assesses four key metrics [4], namely, Performance: overall appearance of a website (rating 0 to 30); Search Engine Optimization (SEO): ranking of the website by search engine users (rating 0 to 30); Mobile Readiness: capacity to view the website on a mobile device (rating 0 to 30); and Security: existence of a security certificate (rating 0 to 10). Google Lighthouse assesses each of the following five metrics on a scale of 0–100, namely, Performance: speed of website loading; Accessibility: ease of usage by persons with disabilities; Best Practices: implementation of security aspects and standards of web development; SEO: capability of crawling by search engines; and Progressive Web Application (PWA): audits of operation. It has to be noted that from October 2022, the PWA metric is assessed using a binary system instead of a point-based system.

3. Results

A statistical analysis was undertaken for the obtained data. For the year 2021 (Figure 1), the Website Grader results for websites regarding the mean score and standard deviation are as follows: 13.96 ± 7.01 for Performance; 26.59 ± 5.16 for SEO; 19.35 ± 10.09 for Mobile Readiness; and 4.86 ± 3.73 for Security.

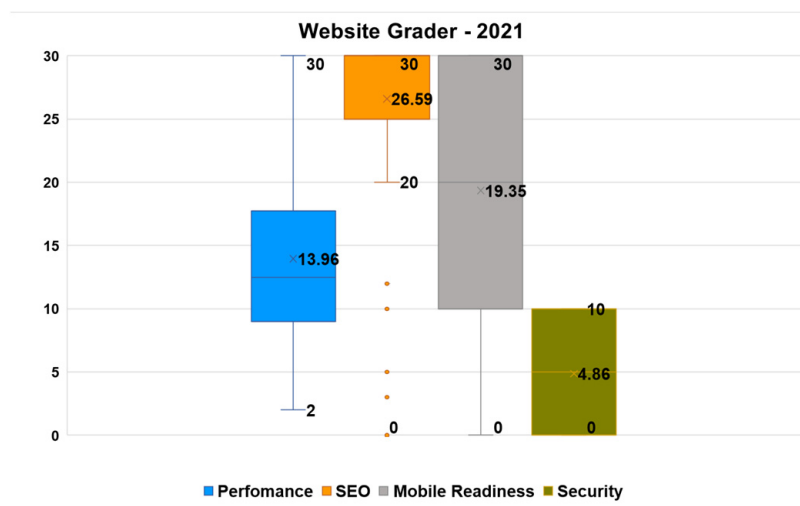


Figure 1. Boxplots of Website Grader results for Performance, SEO, Mobile Readiness and Security (Year = 2021).

For the year 2022 (Figure 2), the Website Grader results for websites regarding the mean score and standard deviation are as follows: 13.62 ± 6.94 for Performance; 27.41 ± 2.82 for SEO; 20.46 ± 9.27 for Mobile Readiness; and 5.71 ± 3.57 for Security.

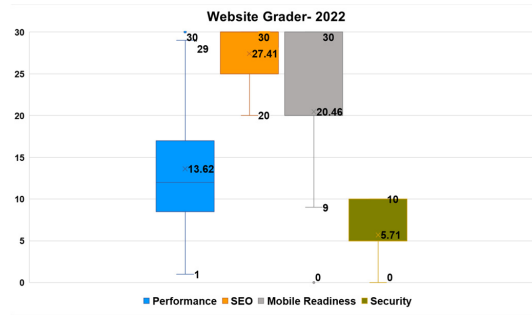


Figure 2. Boxplots of Website Grader results for Performance, SEO, Mobile Readiness and Security (Year = 2022).

For the year 2022 (Figure 3), the Google Lighthouse results for websites regarding the mean score and standard deviation are as follows: 49.71 ± 21.39 for Performance; 81.32 ± 12.11 for Accessibility; 79.02 ± 12.50 for Best Practices; 84.59 ± 10.42 for SEO; and 37.29 ± 8.72 for PWA.

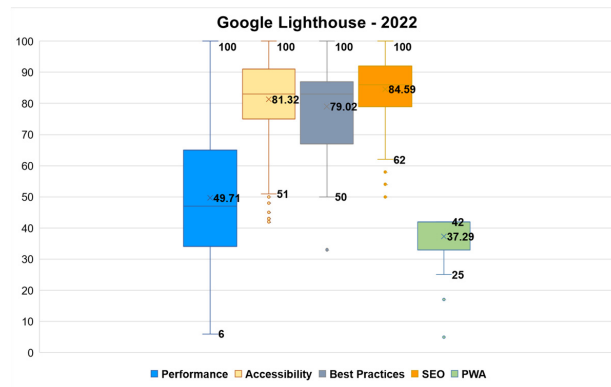


Figure 3. Boxplots of Google Lighthouse results for Performance, Accessibility, Best Practices, SEO and PWA.

Table 1 depicts the correlations between the scores of the various control elements of the two evaluation tools. A strong positive correlation (0.653) was recorded between the Performance metric in Website Grader and the Performance metric in Google Lighthouse, as well as between Security in Website Grader and Best Practices in Google Lighthouse (0.603).

Table 1. Pearson coefficients (r) between Website Grader and Google Lighthouse website evaluation tools metrics (significant correlations are shown in bold).

Tool	Checkpoint	Website Grader				Google Lighthouse				
		Performance	SEO	Mob	Security	Performance	Accessibility	Best Practices	SEO	PWA
Website Grader	Performance									
	SEO	-0.103								
	Mobile	-0.157	0.043							
Google Lighthouse	Security	0.037	-0.221	0.265						
	Performance	0.653	-0.046	-0.175	-0.053					
	Accessibility	-0.134	0.043	0.229	0.191	-0.144				
	Best Practices	0.111	-0.139	0.347	0.603	0.127	0.251			
	SEO	-0.259	0.457	0.467	0.064	-0.261	0.410	0.176		
	PWA	0.010	-0.028	0.254	0.389	-0.044	0.047	0.243	0.110	

4. Conclusions

Comparing the scores between 2021 and 2022 using Website Grader showed variations in SEO, Mobile Readiness and Security, indicating potential improvements or positive changes that were made by websites over time. In particular, it appears that the overall mean scores across the four metrics do not differ significantly between the two years; however, individual websites varied in their ranking in relation to their overall score, as some of them showed improvement and others decline in performance in terms of specific metrics.

Performance and SEO are metrics used by both tools; however, due to the different rating scale of the two tools, the results are not directly comparable. This is in agreement with other research [5], which evaluated specific websites with different tools and found that websites are evaluated and interpreted differently and receive a different score for metrics with same names by each tool. However, as shown through the correlations that were recorded between the scores of the two tools' metrics, Performance and SEO, these are strongly positively and moderately positively correlated, respectively. This seems to be an indicator of reliability of the provided evaluation results of the two tools.

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