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Understanding Google Algorithms for the Marketing of University Libraries Through Google's Search Engine: A Study in Light of the Penguin Algorithm

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Abstract:

This study aimed to examine the compatibility of university libraries with the Penguin algorithm in order to better understand university library marketing through Google's search engine and to strengthen their digital presence. For this purpose, a combined analytical and comparative approach was applied to examine the websites of the Library of Algiers 3 University and the Library of Oran 1 University, relying on insights provided by the SEMrush report.

The findings indicated a relative compatibility of the sampled libraries with the algorithm, leading to recommendations that include repositioning the university library as a strategic actor within the university's digital strategy.

***Keywords**: University Libraries; Search Engine Marketing; Algorithms; Google; Penguin.*

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Introduction:

The days of spending hours in a library searching through shelves or index cards for a single piece of information are largely gone. Now, the same task can be completed instantly with a simple click. Yet this shift is not only about adopting modern tools; it represents a deeper transformation in the way individuals engage with information and how their identity as users is shaped. This shift has expanded access to knowledge, making it faster and easier to use. At the same time, it has created a new type of user: one who expects quick results and shows less patience, but also demonstrates greater awareness and selectivity in navigating the vast amount of available content.

Search engines have evolved to match modern research habits, anticipating user needs and organizing knowledge in ways that guide their search, while university libraries still rely on traditional models that provide reliable but less flexible resources. This shift wasn't about the amount of information, but how users interacted with it. Digital transformation has created new behaviors and skills, compelling libraries to adjust in response to this transformation. What matters now is not simply finding information, but how it is organized, made visible, and delivered to meet user expectations. This shift has made visibility and accessibility crucial, which is why institutions now use marketing strategies to present their resources more effectively and stay relevant in the digital space. In response to these demands, search engine marketing has emerged as a key tool for institutions to strengthen their online presence; its main concern is ensuring that a website appears at the right time and place when users search for specific information. But, behind this simple goal, however, lies a complex system that requires knowledge of how search engines classify and rank content, a process largely driven by algorithms.

Institutions that align their content with search engine algorithms can reach the audiences most ready to engage, and university libraries are no exception; for them, adopting search engine marketing is essential, not to compromise their academic mission but to ensure their collections remain visible and accessible online, serving their intended role in supporting the academic community. Resources invisible on the web are like books misplaced on shelves; and since algorithms such as Google’s decide what content appears and are constantly evolving, university libraries must adapt

to these updates to maintain the visibility of their collections and services for their audiences

Following the general role of algorithms, their impact on university libraries becomes clearer. Even with rich academic content, libraries may lose digital visibility if their practices are not compatible with engine algorithms. As most users access library services through search engines, visibility depends not only on what libraries provide but also on how this content is processed and ranked. Moreover, because these engines place strong weight on a site's digital reputation as a main factor in ranking, it becomes necessary to highlight Google's Penguin algorithm, which focuses on backlink quality and plays a decisive role in shaping how library resources are made visible online. The real challenge lies in how university libraries can adapt their websites to the logic of such algorithms. Understanding Penguin is therefore not just a technical issue, but a key step in exploring how university libraries can strengthen their digital visibility and market their services more effectively through search engines. Based on the above statements, we may draw up the research problem as follows: How does the performance of the backlink profiles of the websites of the libraries of Algiers 3 University and Oran 1 University reflect their compliance with the Penguin algorithm?

Study Importance:

The importance of this study stems from the growing need for academic institutions to enhance their online visibility and digital reputation. University libraries, as the backbone of universities, play a central role in this effort, meaning that improving a library's visibility reflects positively on the university as a whole. Understanding search engine algorithms are therefore essential for developing effective strategies to market library services online. This knowledge can increase reach to target audiences, improve access to resources, maintain a competitive position, and help libraries achieve their objectives efficiently.

Study Objectives:

This study aims to explore the successive updates to Google's search engine ranking algorithm, as a basic approach to understanding the search results ranking mechanism and, consequently, identifying effective marketing strategies for university libraries through it. The study also seeks

to shed light on the Penguin algorithm as one of the primary algorithms Google uses to assess the quality and credibility of websites, by analyzing the nature of backlinks, how keywords are used, and detecting unwanted practices that may undermine libraries' search engine marketing.

In light of this, the study examined the websites of the library of Algiers 3 and the library of Oran 1 University, focusing on their compatibility with Google's Penguin algorithm. This involved tracing multiple indicators; such as backlinks and their types, referring domains, the anchor texts used, and the presence or absence of keyword stuffing.

Method and Materials:

The study used a comparative analytical approach, to explore the compatibility of the library of Algiers 3 University and the library of Oran 1 University websites with Google's Penguin algorithm -which will be discussed in detail in the conceptual framework-, as part of understanding how to market university libraries through Google's search engine and strengthen their digital presence. The choice of Google's Penguin algorithm was purposeful, given its focus on evaluating the quality and relevance of backlinks, which is a key factor tied to the digital reputation and credibility in search engine; analyzing how university library websites align with this algorithm offers insight into strengthening its digital reputation through authoritative backlink strategies, and this, in turn, enables understanding how the library can be marketed more effectively through Google's search engine, providing greater visibility for its services, broader reach to its user community, and achieving progress toward its desired goals and marketing efforts.

The library of Algiers 3 University and the library of Oran 1 University websites were selected based on clear criteria tied to their digital structure; each operates on a subdomain and offers content that can be technically analyzed using search engine optimization tools.

➢ The Library of Algiers 3 University:

The library of Algiers 3 University, named after Ibrahim Sultan Chebbout, serves as a key academic resource, offering a diverse documentary collection, alongside a range of digital services designed to serve the needs of its academic audience. Its mission centers on facilitating access to knowledge in various formats while employing modern tools to

organize content and streamline retrieval. The library maintains active communication with its users through a dedicated website and an official Facebook page.[1]

- **The Library of Oran 1 University:**

The library of Oran 1 University is a university service established in 1966 to serve students and faculty members, providing them with a documentary collection that supports their studies and scientific research in all disciplines available at the, by providing approximately 48,933 works available for use. The library continuously adapts to emerging technological trends with the aim of enhancing the quality of services offered to its users. As part of this effort, it operates through a dedicated website that serves as a platform for access, communication, and digital service delivery.[2]

For the analytical phase, the study relied on SEMrush, a digital marketing platform powered by artificial intelligence, designed to assist institutions of all sizes in improving their online performance and visibility. This platform provides scalable, modular solutions through search engine optimization tools, competitive keywords, and advertising, and helps implement effective performance-based marketing strategies.[3] This meet the analytical aspects of the study, as the analysis of the sampled libraries' websites will cover the examination of backlinks, their referring domains, the authority of those domains, the types of backlinks (DoFollow or NoFollow), the anchor texts used, and the presence of keyword stuffing, which will be provided by the study's tool.

Conceptual Framework:

1. The Concept and Importance of Search Engine Marketing (SEM) in Enhancing Website Visibility:

Building on the growing reliance on search engines for online visibility, search engine earketing (SEM) emerged as a branch of digital marketing that aims to increase a website's presence in search results through both organic (unpaid) and paid strategies. It includes search engine optimization (SEO), which involves adjusting website content and structure to improve rankings and enhance paid ad performance, such as pay-per-click (PPC) listings.[4] Search Engine Marketing contributes to building online credibility and enhancing an institution's digital reputation. By improving visibility in

search engine results, it plays a key role in connecting institutions with their target audiences more effectively.[5]

2. Marketing of Library and Information Services through Search Engines:

University libraries are coming to see marketing as a vital part of their role; by promoting services in line with users' changing needs, libraries can strengthen engagement and support them in achieving their academic and research objectives. Traditional methods such as newsletters or events still matter, but many of them have moved online, giving libraries new ways to reach their audiences. In essence, marketing is not separate from library service; it is central to it.[6]

Building on the importance of marketing for digital visibility, search engine optimization plays a crucial role in improving access to library content; optimizing how materials appear in search results allows libraries to make their websites and scholarly resources more easily discoverable through popular search engines, which prioritize reliable and relevant academic sources.[7] SEO helps university libraries increase the visibility of their websites and resources, making them easier for students, faculty, and researchers to find. Adjusting elements such as metadata, keywords, and site structure improves ranking in search results, which boosts engagement and creates a more efficient user experience.[8]

3. What is An Algorithm ?

According to Google, algorithms are computer programs designed to identify the most relevant answers from among the vast number of web pages available. As the web has grown to include trillions of pages, users rely on these algorithms to avoid sifting through endless results. This challenge led Google's founders, Larry Page and Sergey Brin, to develop systems that streamline the search process. Today, Google's algorithms use over 200 indicators to decide which pages appear first in search results. While not all of these signals are publicly known, understanding even a portion of them is essential for marketers aiming to improve their visibility online.[9]

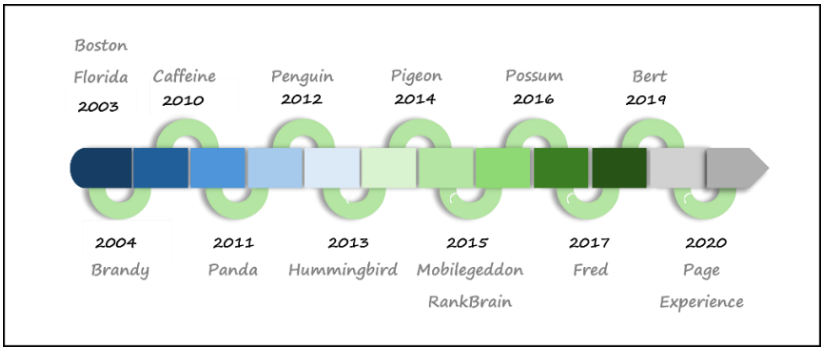
4. Algorithmic Shifts in Google Search:

One of the most significant milestones in the evolution of search engines was the introduction of Google's PageRank algorithm in the 1990s. Since then, Google's algorithm has undergone thousands of updates. In 2003, the first major named update Boston introduced regular structural changes to the algorithm and indexing process, causing noticeable fluctuations in page rankings, commonly referred to as the "Google Dance."[10] Over the years, several updates have stood out for their impact. The Florida update in 2003 targeted practices like keyword stuffing in website content, while the Brandy update in 2004 introduced latent semantic indexing, enabling better recognition of synonyms and contextual relevance. In 2010, the Caffeine update significantly improved indexing speed and made results more current.[11] A year later, the Panda update designed to reduce the visibility of low-quality content, particularly from so-called "content farms". However, the criteria used by Panda extended beyond these sites, any page with poor structure, excessive advertising, misleading links, or cluttered design risked being penalized.[12] This was followed by the Penguin update in 2012, which was developed to reduce spam in search results by evaluating the quality of a website's backlinks.[13] After a year, the Hummingbird update marked a major shift in how the search engine interprets queries; unlike earlier updates, which focused more on matching exact keywords, Hummingbird aimed to understand the full meaning behind a search, placing greater emphasis on user intent.[14] Following the year 2013, the Pigeon update refined how local search results were generated, bringing greater precision to location-based queries. By 2015, Mobilegeddon reshaped mobile search by favouring mobile-friendly websites, and the introduction of RankBrain added machine learning to the algorithm, allowing it to interpret the intent behind user queries more effectively.[15]

Although never officially confirmed by Google, the Possum and Fred updates are believed to have been introduced in 2016 and 2017, respectively; where Possum aimed to enhance the visibility of local businesses in search results by factoring in the user's geographic location, in contrast, Fred targeted websites that prioritized monetization over content quality. [16] Unlike earlier updates that relied heavily on keyword matching, in 2019 BERT brought a deeper understanding of language by analyzing the full context of each query.[17] In the year 2020, Google introduced the Page

Experience update, building on the idea that users prefer websites offering a smooth and responsive experience. Over time, factors like page loading speed and mobile usability had already been included in Google ranking system.[18]

Figure.1 Major Updates to Google's Core Ranking Algorithm



Source: created by the author

5. Google Penguin Algorithm:

The Google Penguin, launched on April 24, 2012, was designed to limit the influence of websites that manipulated rankings through duplicate or unnatural backlinks. Its main goal was to detect these practices and lower the visibility of sites that depended on poor-quality link strategies to gain higher positions in search results.[19] This algorithm focuses on two major forms of search manipulation:

A. Unnatural link building:

Unnatural link building takes advantage of how ranking systems work, often by creating artificial connections to raise a site's position. Common tactics include link farming, where websites exchange links, and cloaking, which shows different content to users and search engines. Another practice is site mirroring, where identical content is spread across multiple URLs.

B. Keyword Stuffing:

Keyword stuffing refers to the excessive use of keywords to manipulate rankings. It often appears in meta tags packed with irrelevant terms.[20]

6. Chronology of Significant Updates to the Penguin Algorithm:

Since its launch in 2012, the Google Penguin algorithm has seen several updates and data refreshes, along with some changes that were never officially confirmed.[21]

Table.1 Major Penguin Algorithm Updates and Their Impact

Version	Date	Type	Key Features / Impact
Penguin 1.1	March 26, 2012	Data Refresh	First refresh of existing data; no algorithmic change.
Penguin 1.2	October 5, 2012	Data Refresh	Expanded impact to both English and international queries.
Penguin 2.0	May 22, 2013	Algorithm Update	More advanced; targeted deeper pages for link spam; affected ~2.3% of English queries.
Penguin 2.1	October 4, 2013	Data Refresh	Follow-up to 2.0; impacted about 1% of search queries.
Penguin 3.0	October 17, 2014	Data Refresh	Allowed recovery for previously penalized sites; affected <1% of English queries.
Penguin 4.0	September23, 2016	Core Algorithm Integration	Became part of Google's core algorithm; started evaluating sites in real time.

Source: created by the author

Data Analysis:

I. Backlinks Profile:

1. Referring Domains:

A referring domain refers to a website that points to another website, whether it has a single link or multiple links.[22] As the (Table 2) shows, the library of Oran 1 University links to eleven referring domains, while the library of Algiers 3 University only has four referring domains. This disparity reflects a difference in the degree of network openness of each library; the library of Oran 1 University relies on a more diverse network of links, which increases its chances of improving its online presence, in contrast, the library of Algiers 3 University appears to be limited to a limited number of referring domains, which could negatively impact its presence. According to the Google's Penguin, the diversity of referring domains is a weighted factor in assessing trustworthiness and

reliability. Google sources indicate that sites that receive a large number of links from a small number of domains are rated lower on trustworthiness than sites that receive fewer links from more diverse domains.[23] Therefore, the library of Oran 1 can be considered more compliant with the Penguin algorithm's regarding the structural diversity of referring domains.

Table. 2 Number of Referring Domains in the Sampled Libraries

University Library	The library of Algiers 3 University	The library of Oran 1 University
Referring Domains	4	11

Source: created by the author based on the backlink audit report

2. Backlinks:

Backlinks are an indicator of digital engagement with a particular website, referring to external links a website receives from other websites, which we previously referred to as the referring domain.[24] Although the library of Algiers 3 University has 311 backlinks, as shown in (Table 3), this density is not accompanied by a large number of referring domains (Table 2).

Table. 3 Number of Analyzed Backlinks in the Sampled Libraries

University Library	The library of Algiers 3 University	The library of Oran 1 University
Analyzed Backlinks	311	46

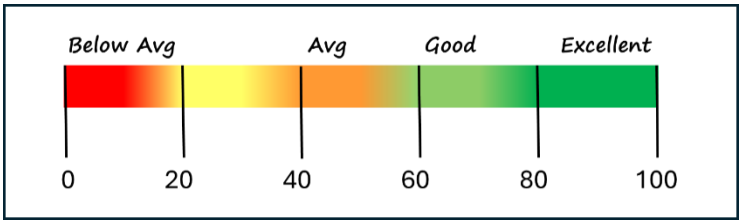
Source: created by the author based on the backlink audit report

Conversely, the library of Oran 1 University has significantly fewer links (only 46 backlinks), but it's worth noting that these links are distributed across 11 referring domains. According to Google's Penguin, diversity in backlink sources is more reliable than the quantitative density of duplicate sources, and that duplicate links from the same domain may weaken a site's rating rather than enhance it.[25] Therefore, despite its limited number of backlinks, the library of Oran 1 University may appear more compliant with Penguin algorithm's.

3. Authority Score of Referring Domains:

Authority Score serves as an indicator for assessing the trustworthiness and quality of referring domains. The higher the score, the more weight the referral carries according to search engine.[26]

Figure.2 SEMRush's Authority Score (AS)



Source: created by the author

The SEMrush report reveals a clear disparity between the two libraries in terms of authority score (AS) distribution (Table 4). The library of Algiers 3 University is overwhelmingly concentrated in the lower score ranges, 75% of its backlinks originate from domains with an AS below 20, with no links coming from high-authority domains (AS above 40). In contrast, the library of Oran 1 University shows a more varied backlink profile, while 45.5% of its backlinks also fall within the 0–20 AS range, the remaining distribution reflects a more balanced presence: 18.2% in the 21–40 bracket, 9.1% between 41–60, and notably, 27.3% from domains rated between 81–100, this indicates connections with highly reliable sources. This qualitative difference has direct implications for Google's Penguin; the lack of support from authoritative domains leaves the library of Algiers 3 more exposed to a negative ranking signals. Accordingly, the library of Oran 1 University benefits from a more strong and diversified backlink structure, with clear references from trusted domains, strengthening its compatibility with the Penguin algorithm compared to the library of Algiers 3 University.

Table. 4 Average Authority Score of Referring Domains in the Sampled Libraries

University Library	The library of Algiers 3 University	The library of Oran 1 University

Avg. Authority Score of Referring Domains	75% (AS 0–20)	45.5% (AS 0–20)
		18.2% (AS 21–40)
	25% (AS 21–40)	9.1% (AS 41–60)
		27.3% (AS 81–100)

Source: created by the author based on the backlink audit report

4. Types of Backlinks:

In the web, not all backlinks are treated equally, some links carry a specific attribute rel="nofollow" which instructs search engines not to pass any ranking value to the linked page. This tag is commonly used to avoid transferring trust in potentially questionable or commercial contexts. In contrast, dofollow links represent the default behavior; they contain no restrictive tags and therefore pass full link equity to the target page. This distinction between link types plays a critical role in assessing the credibility and trustworthiness of any site's backlink.[27] According to the SEMrush report, the backlink structure of the library of Algiers 3 University appears highly uniform,100% of its backlinks are DoFollow, with no NoFollow links recorded. In comparison, the library of Oran 1 University shows diversity of its backlinks; the majority of its links (82.6%) are tagged as NoFollow, while only 17.4% are DoFollow. (Table 5)

Although the library of Oran 1's DoFollow links are fewer in terms of passing ranking authority, the distribution of its links reflects a more organic and natural profile. From the perspective of Google's Penguin, this variety is considered safer and more trustworthy, as healthy link typically feature a balanced mix of both types.[28] Conversely, the complete uniformity seen in the library of Algiers 3's backlinks might initially refer to strength, but Penguin tends to view such consistency with suspicion. In addition, the lack of technical variation in the library of Algiers 3 University link attributes may weaken the perceived authenticity of its backlinks structure, raising the possibility that it has been artificially created.

Table. 5 Distribution of DoFollow and NoFollow Backlinks in the Sampled Libraries

University Library	The library of Algiers 3 University	The library of Oran 1 University
DoFollow (%)	100%	17.4%
NoFollow (%)	00%	82.6%

Source: created by the author based on the backlink analytics report

5. TLD of Referring Domains:

In every link that points to a website, the domain ending (Top-Level Domain, which refers to TLD) indicates a specific identity; either functional (.org, .edu), geographical (.dz, .fr), or commercial (.com).[29] These extensions are not just technical details, but are actually reference values that provide implicit signals to search engines about the nature of the websites to which the website links.

As shown in (Table 6), the referring domain structures of the libraries of Algiers 3 and Oran 1 University differ notably in terms of top-level domain (TLD) distribution, a detail that reflects broader contrasts in their respective backlink networks. The library of Algiers 3 University relies on only three TLDs, which are relatively evenly distributed; half of its backlinks originate from commercial domains (.com – 50%), while the remaining half is evenly split between Algerian country-code domains (.dz – 25%) and organizational ones (.org – 25%). This narrow range indicates a consistent mix of commercial, local, and non-profit sources. However, it also indicates a disconnect between the source domains and the library's core academic function, evidenced by the complete absence of links from the (.edu) and (.gov) domains. The library of Oran 1 University shows a similarly high reliance on (.com 53%) domains, links from (.dz) domains represent 12%, (.org) represent only 6%, and a notable 29% come from other TLDs. Although this diversity, it lacks the academic and institutional connectivity that typically accompanies trusted backlinks.

It's worth mentioning that Google indicates that the TLD of a domain does not influence how the search engine crawls, indexes, or ranks its URLs.[30] However, some TLD (specifically .edu and .gov) are often associated with highly authoritative authority domains, which increases the weight of backlinks, something that both libraries lacked.

Table 6. Proportional TLD Distribution of Referring Domains in the Sampled Libraries

TLD of Referring Domains / University Library	.com	.dz	.org	.gov	.edu	Other TLDs
The library of Algiers 3 University	50%	25%	25%	0%	0%	0%
The library of Oran 1 University	53%	12%	6%	0%	0%	29%

Source: created by the author based on the backlink analytics report

6. Anchor Text:

When a link is included on a web page, the visual element that the user clicks on is known as anchor text, this text not only serves a navigational function but also sends a linguistic signal to a search engine about the content of the referenced page.[31]

As (Table 7) shows, the most frequent anchor texts associated with the library of Algiers 3 University include; first, "مكتبة الجزائر", appears to be used by a single referring domain, yet this domain alone is responsible for generating 151 backlinks. Second, "Download," is found across three different domains, and represents nine links.

An examination of the referring sources, as revealed by the SEMrush report, shows that one of the most prominent backlinks comes from the library page of the University of Oum El Bouaghi. There, the anchor text "مكتبة الجزائر" links directly to the Algiers 3 Library site, while such a reference serves an informative function (positively reflecting the library's identity) the fact that it is repeated excessively by a single domain, which may weaken the perceived authority of the library's website on the search engine.

On the other hand, the "Download" anchor text stems from an internal link within the University of Algiers 3's own website; it appears on a page dedicated to student exam correction templates. Although it does not constitute an external backlink in the conventional sense, it exemplifies a functional and contextually relevant link, one that directly supports user navigation and aligns with the page's content.

Table. 7 Most Frequent Anchor Texts of the library of Algiers 3 University and Their Characteristics

The library of Algiers 3 University			
Most Frequent Anchor Text	**Referring Domains**	**Backlinks**	**Type**
مكتبة الجزائر	1	151	Text
Download	3	9	

Source: created by the author based on the backlink audit report

Turning to the library of Oran 1 University, (Table 8) presents the most frequent anchor texts linked to the library; which include functional phrases such as "ابحث عن كتاب" (Search for a book) and "SNDL طلب حساب" (SNDL account request), which highlight library services, as well as more descriptive expressions like "مكتبة الجامعة" (University Library) and "Université d'Oran1/ Bibliothèque Centrale," which clearly identify the library of Oran 1. However, a deeper look at the report reveals a pattern worth noting: three of the most frequently used anchor text (ابحث عن كتاب, SNDL طلب حساب, and مكتبة الجامعة) Although the anchor text formulation varies, they all arise from the same referring domain, which is a search engine optimization service, each of these anchors generates 11 backlinks. This heavy reliance on a single referring domain may consequently weaken the perceived authority of the library website to search engine. In contrast, the anchor text "Université d'Oran1 - Ahmed Ben Bella / Bibliothèque Centrale" appears to be natural and contextually relevant, originating from the Algerian union catalog website, which is a national platform that brings together the catalogs of Algerian university libraries. This reference reflects real relevance and objective consistency with the library's domain. Although the diversity of anchor texts may seem like an advantage for the library of Oran 1 University at first glance, the presence of duplicate links from one referring domain weakens this advantage.

Table. 8 Most Frequent Anchor Texts of the library of Oran 1 University and Their Characteristics

The library of Oran 1 University			
Most Frequent Anchor Text	**Referring Domains**	**Backlinks**	**Type**

ابحث عن كتاب	1	11	Text
طلب حساب SNDL	1	11	
مكتبة الجامعة	1	11	
Université d'Oran1 - Ahmed Ben Bella / Bibliothèque Centrale	1	1	

Source: created by the author based on the backlink audit report

II. Keyword Stuffing (per tag):

The on-page SEO audit of the library of Algiers 3 and Oran 1 University revealed a complete absence of keyword stuffing across all core structural elements in their websites, such as <title> tags, <meta> descriptions, <h1> headings, and body content. This finding shows a balanced and appropriate use of keywords, with no signs of excessive or manipulative repetition. From the perspective of Google's Penguin algorithm, this is a positive signal, as Penguin specifically targets keyword stuffing as a form of search engine manipulation, particularly when it is automated or lacks contextual justification. The absence of these practices on the examined library websites indicates a content approach that prioritizes clarity and credibility over artificial optimization.

Table. 9 Keyword Stuffing per HTML Tag in the Sampled Libraries

University Library	Stuffing in <h1> (Y/N)	Stuffing in <meta> (Y/N)	Stuffing in <body> (Y/N)	Stuffing in <title> (Y/N)
The library of Algiers 3 University	N	N	N	N
The library of Oran 1 University	N	N	N	N

Source: created by the author based on the On Page SEO report

Study Findings:

- The backlink profiles of the examined university libraries show a lack of contextual and functional diversity, an element favored by Google's Penguin algorithm, which prioritizes organic links that closely align with the site's content.
- A high number of backlinks alone does not translate into authority weight, especially when the majority of referring domains are of low

authority .(as seen in the library of Algiers 3 and Oran 1 University) where the dominance of these domains negatively impacted the actual value of their backlinks.

- Although DoFollow links play a crucial role in conveying ranking value, having a balanced mix (as seen in the library of Oran 1 University) contributes to an improved backlink profile. This balance enhances compatibility with Penguin algorithm.
- The limited diversity of referring domains in anchor texts (as seen in the library of Algiers 3 and Oran 1 University) may limit the ability of these links to support the authority of the library's site and the visibility of its services on the search engine.
- The websites of the library of Algiers 3 and Oran 1 University showed a complete absence of keyword stuffing in their structural elements, a clear positive signal for search engines regarding content credibility and compliance with Penguin requirements.
- The shortcomings experienced by the Sampled Libraries undermine their overall compliance with the Penguin algorithm requirements.

Conclusion:

In conclusion, the comparative analysis, which included backlink elements, contextual diversity of referring domains, anchor text, and the keyword stuffing practices, revealed a significant gap between the digital presence of the library of Algiers 3 and the library of Oran 1 University, and the compatibility requirements of Google's Penguin algorithm to enhance university libraries' online visibility and search engine marketing performance. The findings highlighted a fundamental insight: quantity alone is not enough to compensate for the lack of quality or relevance. Effective search engine marketing for university libraries cannot be reduced to the sheer number of backlinks or a visible online presence. Rather, it depends on the extent to which these links are integrated into an academic network that reflects the library's identity and effectively supports its mission.

Furthermore, the study demonstrates that successful search engine marketing for university libraries is not limited to the use of technical tools or platforms alone, it begins with a thorough understanding of how search engine algorithms work, only then can libraries design thoughtful marketing strategies that leverage backlinks as effective approach to increase their

digital presence, ensuring that their services remain accessible, competitive, and relevant to researchers and the academic community.

Recommendations:

- Prioritize backlinks from relevant academic or scholarly sources, such as university websites, academic journals, or institutional repositories... rather than from general or non-specialized domains.
- Strategically focus on the quality and relevance of referring domains, ensuring that domains related with the library have strong authority scores to enhance the library's credibility with search engines and boosting its overall search engine marketing approach.
- Reposition the university library as a functional actor in the university digital strategy; in light of the current transformation of academic institutions, the university library should not be viewed merely as a space for storing books, but rather as a knowledge platform that effectively enhances the university's digital presence.

Endnotes:

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