

Introduction to



**BIYANI**  
GROUP OF COLLEGES

# FUNDAMENTALS OF SEARCH ENGINE OPTIMIZATION



SEO Consultant Spills His Secrets:  
Discover How to Rank Higher, Out source to The Right  
SEO Service Provider and Take Advantage of Free  
Search Engine Traffic

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## 1. Introduction to SEO :

**Search Engine Optimization (SEO)** is the technique of optimizing websites to make them rank higher in the **Search Engine Results Pages (SERPs)** for specific keywords or phrases.

It focuses on improving a site's **visibility, usability, and credibility** to attract **organic (non-paid)** traffic from search engines like Google, Bing, and Yahoo.

### Why SEO is Important

Increases **visibility** and **brand awareness**.

Drives **organic traffic** (free visitors).

Enhances **user trust and experience**.

Generates **higher ROI** than paid ads over time.

Helps businesses stay **competitive online**.

## 2. How Search Engines Work

Search engines like Google use three main functions:

### 1. Crawling

Search engines use programs called **spiders** or **bots** to **browse** the web and discover new or updated web pages.

These bots follow links from one page to another, gathering data.

### 2. Indexing

After crawling, the collected data is **stored and organized** in a huge database known as the **index**.

Pages are indexed based on their **content, relevance, and metadata**.

### 3. Ranking

When a user enters a query, the search engine sorts through its index and ranks pages according to **relevance, authority, and user satisfaction signals**.

Ranking algorithms decide which pages should appear at the top.

## 3. Components of SEO

SEO has **three main components**, each focusing on different optimization areas:

### A. On-Page SEO

Refers to optimizations **within your website**.

## Key Factors :

### 1. **Keyword Optimization :**

Using relevant keywords naturally in the title, headings, and content.

### 2. **Title Tags :**

Include primary keywords; ideal length: 50–60 characters.

### 3. **Meta Description:**

Short summary (155–160 characters) encouraging clicks.

### 4. **URL Structure:**

Should be short, descriptive, and include keywords.

**Example:** [www.example.com/seo-tips](http://www.example.com/seo-tips)

### 5. **Header Tags (H1, H2, H3):**

Help organize content hierarchically.

### 6. **Internal Linking:**

Linking to other pages within the same site improves crawl ability.

### 7. **Image Optimization:**

Use descriptive filenames and alt text.

### 8. **Mobile Optimization:**

Ensure the site is responsive and mobile-friendly.

## B. **Off-Page SEO**

Refers to activities outside the website that improve its authority and reputation.

### **Key Techniques:**

#### 1. **Backlink Building:**

Getting links from high-quality, relevant websites.

#### 2. **Social Media Marketing:**

Sharing and promoting content on social platforms.

#### 3. **Influencer Outreach:**

Collaborating with influencers for backlinks or mentions.

#### 4. **Guest Blogging:**

Writing for other reputable sites to earn links.

#### 5. **Brand Mentions:**

Even unlinked mentions help in building authority.

## C. Technical SEO

Focuses on the **backend structure** and **technical setup** of a website.

### Key Aspects:

#### 1. Site Speed:

Faster sites improve user experience and ranking.

#### 2. XML Sitemap:

Helps search engines understand website structure.

#### 3. Robots.txt File:

Tells search engines which pages to crawl or ignore.

#### 4. HTTPS Security:

Secure sites rank better than HTTP.

#### 5. Canonical Tags:

Prevent duplicate content issues.

#### 6. Schema Markup (Structured Data):

Helps search engines understand page content (e.g., reviews, ratings).

#### 7. Mobile Usability:

Pages should be responsive and mobile-optimized.

## 4. SEO Process / Workflow

A step-by-step SEO process includes:

#### 1. Keyword Research

Identify relevant keywords using tools like Google Keyword Planner, SEMrush, or Ahrefs.

Focus on keywords with good search volume and moderate competition.

#### 2. Competitor Analysis

Study top-ranking websites to understand their SEO strategies, backlinks, and content structure.

#### 3. On-Page Optimization

Apply best practices for titles, content, URLs, and images.

#### 4. Content Creation

Create **high-quality, informative**, and **engaging** content that satisfies user intent.

#### 5. Technical Optimization

Improve page load time, mobile responsiveness, and website structure.

#### 6. Link Building

Acquire backlinks from authoritative and relevant sources.

#### 7. Monitoring and Reporting

Track progress using **Google Analytics** and **Google Search Console**.

Adjust strategies based on performance data.

## 5. SEO Ranking Factors

Search engines consider **200+ ranking factors**, but key ones include :

<b>Category</b>	<b>Important Factors</b>
<b>Content</b>	Quality, relevance, freshness, keyword placement
<b>Backlinks</b>	Number, quality, and relevance of linking sites
<b>User Experience (UX)</b>	Click-through rate (CTR), bounce rate, dwell time
<b>Technical SEO</b>	Page speed, HTTPS, mobile-friendliness
<b>Domain Factors</b>	Domain age, history, authority
<b>Social Signals</b>	Shares, likes, engagement (indirect influence)

## 6. SEO Tools

<b>Tool</b>	<b>Purpose</b>
<b>Google Analytics</b>	Track traffic and user behavior
<b>Google Search Console</b>	Monitor indexing, performance, and errors
<b>Ahrefs / SEMrush</b>	Keyword research and backlink analysis
<b>Moz</b>	Domain authority and keyword tracking
<b>Yoast SEO (WordPress)</b>	On-page SEO assistance
<b>Ubersuggest</b>	Keyword ideas and competitor research

## 7. SEO Metrics to Measure Success

<b>Metric</b>	<b>Description</b>
<b>Organic Traffic</b>	Number of visitors from search engines
<b>Keyword Rankings</b>	Position of target keywords in SERPs
<b>CTR (Click Through Rate)</b>	Percentage of users clicking search results
<b>Bounce Rate</b>	Percentage of users leaving quickly
<b>Conversion Rate</b>	Number of visitors completing desired actions
<b>Metric</b>	<b>Description</b>
Domain Authority (DA)	Overall strength of a website's domain
Backlink Profile	Quality and quantity of inbound links

## 8. SEO Techniques

Type	Description	Examples
<b>White Hat SEO</b>	Ethical, search engine–approved methods	Quality content, link earning, clean code
<b>Black Hat SEO</b>	Unethical methods to cheat algorithms	Keyword stuffing, cloaking, hidden links
<b>Gray Hat SEO</b>	Borderline tactics, may risk penalties	Paid links, spun content

## 9. Common SEO Mistakes

- Keyword stuffing
- Duplicate content
- Ignoring mobile optimization
- Poor internal linking
- Not updating old content
- Slow site speed
- Not using analytics

## 10. Importance of SEO in Digital Marketing

- Enhances **online visibility**.
- Attracts **targeted traffic**.
- Builds **brand authority** and trust.
- Complements **content marketing** and **social media**.
- Provides **long-term growth** at a lower cost than ads.

## 11. Emerging SEO Trends

- Voice Search Optimization** (natural, conversational keywords)
- AI and Machine Learning in SEO** (Google RankBrain, BERT)
- Mobile-First Indexing**
- Core Web Vitals** (page speed, stability, interactivity)
- E-E-A-T (Experience, Expertise, Authoritativeness, Trustworthiness)**
- Local SEO & Google My Business Optimization**
- Video SEO (YouTube Optimization)**

## 12. Summary

SEO is not a one-time process but a **continuous improvement cycle**. It requires a mix of **technical skills, creative content**, and **strategic thinking** to maintain and improve website visibility in search engines.

### SEARCH ENGINE FUNDAMENTALS

Search engines like **Google, Bing, Yahoo**, and **DuckDuckGo** are powerful tools that help users find information on the internet.

They perform complex operations to locate, store, and display the most relevant content to user queries.

The three main functions of a search engine are:

1. **Crawling**
2. **Indexing**
3. **Ranking**

#### 1. What is a Search Engine?

A **search engine** is an online software system that helps users find web pages based on specific keywords or phrases. It scans the web, stores data about web pages, and displays the most relevant results when a user searches for something.

**Examples:** Google, Bing, Yahoo, Yandex, Baidu, DuckDuckGo.

#### 2. Search Engine Fundamentals

A search engine works in **three basic steps**:

Step	Process Name	Description
1	<b>Crawling</b>	Discovering web pages on the internet
2	<b>Indexing</b>	Storing and organizing information about those pages
3	<b>Ranking</b>	Displaying pages in order of relevance to the user's query

**Crawling:** **Crawling** is the process where search engines send out automated programs called **crawlers** or **spiders** (e.g., **Googlebot**) to explore the web and discover new or updated web pages.

#### How Crawling Works :

1. Crawlers start from a list of known web addresses (URLs).
2. They follow links on each page to find new URLs.
3. They download page content (text, images, videos, links, etc.) for analysis.
4. The data is then sent to the search engine's servers for indexing.

## Important Elements:

Robots.txt file:

A file that tells crawlers which pages they are allowed or not allowed to visit.

Example:

User-agent: \*

Disallow: /admin/

Sitemaps:

XML files that list all the important pages on a website, helping crawlers find them easily.

## Common Crawling Issues:

Broken links

Slow server response

Blocked pages via robots.txt

Duplicate URLs

4. **Indexing:** Indexing is **the process where the crawled data is** stored, analyzed, and organized in a massive database called the search index. Think of it as a **digital library catalog** of the entire web, where each page is indexed with key details.

## What Happens During Indexing?

1. The crawler sends the content to the indexing system.
2. The indexer analyzes:
  - o Keywords and phrases
  - o Meta tags (title, description)
  - o Alt text (for images)
  - o Internal and external links
  - o Content freshness and structure
3. Relevant information is stored in the index for quick retrieval.

## Purpose of Indexing:

Helps search engines understand what a page is about.

Allows fast retrieval of relevant pages when a user performs a search.

## Common Indexing Problems:

“Noindex” meta tag prevents a page from being indexed.

Duplicate or low-quality content may not be indexed.

Server errors or blocked pages.

5. **Ranking** : Ranking **is the process of determining the** order of web pages **displayed on the** Search Engine Results Page (SERP) **based on their relevance to a user's query.** When you search for something, the search engine uses complex algorithms to decide which pages best answer your question and in what order they should appear.

### How Ranking Works:

1. When a user enters a search query, the engine scans its **index**, not the entire internet.
2. The algorithm evaluates pages based on **ranking factors**.
3. The most relevant and trustworthy pages are shown first.

### Major Ranking Factors:

Category	Examples
<b>Content Quality</b>	Relevant, original, and valuable content
<b>Keyword Optimization</b>	Proper use of keywords in titles, headings, and content
<b>Backlinks</b>	Number and quality of external links
<b>User Experience</b>	Site speed, mobile-friendliness, ease of navigation
<b>Technical SEO</b>	Secure connection (HTTPS), proper indexing, schema markup
<b>Engagement Metrics</b>	Click-through rate, bounce rate, dwell time
<b>Domain Authority</b>	Reputation and credibility of the website

### Ranking Algorithms:

Search engines use algorithms such as:

**Google PageRank** – measures the importance of web pages based on backlinks.

**Hummingbird / RankBrain / BERT / Helpful Content Update** – use AI to understand User intent and context.

### 6. Example: Putting It All Together

Let's say you create a new blog post titled

**“10 Tips for Healthy Eating.”**

#### 1. Crawling:

Googlebot finds your new blog post through your sitemap or an internal link.

#### 2. Indexing:

Google reads your content, stores information about your keywords (“healthy eating,” “nutrition tips”), and adds your page to its index.

#### 3. Ranking:

When someone searches “best tips for healthy eating,” Google compares your page to others and ranks it based on relevance, content quality, backlinks, and user experience.

## 7. Summary Table

Stage	Purpose	Main Components	Common Tools
<b>Crawling</b>	Discover new pages	Crawlers, Robots.txt, Sitemap	Googlebot, Screaming Frog
<b>Indexing</b>	Store and analyze data	Keywords, Metadata, Content	Google Search Console
<b>Ranking</b>	Display most relevant	Algorithms, Backlinks, UX	Google SERP, Moz, Ahrefs

## 8. Key Takeaways

Search engines follow a **three-step process**: Crawling → Indexing → Ranking.

Proper **technical setup**, **quality content**, and **user-friendly design** help your pages get **crawled, indexed, and ranked** effectively.

SEO professionals must ensure their websites are **accessible to crawlers**, **optimized for indexing**, and **valuable for users** to achieve top rankings.

## SEARCH ENGINE RESULTS PAGE (SERP)

### 1. What is a Search Engine Results Page (SERP)?

The **Search Engine Results Page (SERP)** is the page that appears after a user enters a query into a search engine like Google, Bing, or Yahoo.

It displays a list of **web pages**, **ads**, and **special features** that match the user's search intent.

#### In simple words:

The SERP is where search engines show the answers to your questions.

### Components of a Typical SERP:

1. **Search Query Box** – where the user types their search.
2. **Organic Results** – unpaid, SEO-driven listings.
3. **Paid Results (Ads)** – paid listings that appear at the top/bottom.
4. **SERP Features** – special sections like featured snippets, maps, videos, etc.

### 2. Types of Results on a SERP

#### A. Organic Results

These are unpaid listings that appear based on a page's relevance and SEO quality.

They are ranked by search engine algorithms (not by payment).

Example: A blog post ranking for “best laptops 2025”.

#### B. Paid Results (PPC Ads)

These appear at the top or bottom of SERPs and are marked as “Sponsored” or “Ad.”

Generated through advertising platforms like Google Ads (Pay-Per-Click).

### C. Local Results

Show **Google Maps listings** and **local businesses** based on location.

Example: “Cafes near me.”

### D. SERP Features

Special formats or “enhanced results” that make search more interactive.

(Explained in detail below )

## 3. SERP Features

**SERP Features** are **special elements** on the results page that go beyond traditional blue links.

They are designed to deliver information **directly on the results page**, improving the user experience.

### Common SERP Features:

Feature	Description	Example
<b>Featured Snippet</b>	A short highlighted answer shown at the top (Position 0).	“What is SEO?” shows a paragraph summary.
<b>Knowledge Panel</b>	Appears on the right side; shows info about a person, company, topic.	Information about “Elon Musk.”
<b>People Also Ask (PAA)</b>	A box with related questions and drop-down answers.	“What is digital marketing?”
<b>Image Pack</b>	Row of relevant images for visual searches.	“Types of flowers.”
<b>Video Carousel</b>	Displays YouTube or other video results.	“How to bake a cake.”
<b>Top Stories / News Box</b>	Latest news articles for trending topics.	“Olympics 2024.”
<b>Local Pack (Map Pack)</b>	Shows nearby businesses with ratings and map.	“Restaurants near me.”
<b>Shopping Results (Product Ads)</b>	Displays product images, prices, and links to stores.	“Buy iPhone 15.”
<b>Sitelinks</b>	Extra links under a website result.	Homepage → About Us → Contact.
<b>Reviews / Star Ratings</b>	Shows star ratings and reviews for products or businesses.	“Best hotels in Delhi.”

#### 4. Significance of SERP

The **SERP** plays a crucial role in how users interact with online content and brands.

##### Key Importance:

##### 1. Visibility and Traffic

- Websites that appear on the **first page of Google** capture over **90% of total traffic**.
- Higher SERP ranking = higher **click-through rate (CTR)**.

##### 2. Brand Trust and Credibility

- Users trust top-ranking pages more than paid ads or lower-ranked sites.

##### 3. Business Growth

- Ranking on the first page leads to more visitors, leads, and conversions.

##### 4. Competitive Advantage

- Being visible ahead of competitors increases brand awareness and authority.

##### 5. User Experience Insight

- SERPs reflect how well your content matches **search intent**.

#### 5. Why Online Presence Matters

An **online presence** means how easily people can find your business, brand, or content on the internet — especially through search engines.

##### Importance of Online Presence:

##### 1. Discoverability:

- Being visible on search engines helps potential customers find you.

##### 2. Trust & Reputation:

- A strong presence builds credibility among audiences.

##### 3. 24/7 Availability:

- Your website works round the clock — even when you're not.

##### 4. Marketing & Growth:

- Online presence supports SEO, content marketing, and social media efforts.

##### 5. Customer Engagement:

- Provides a platform to interact, get feedback, and build community.

##### Example:

If a user searches “best digital marketing institute near me,”

– A business **without** an online presence won't appear at all. – A business **with** strong SEO and Google My Business profile **will appear first** — gaining more leads.

## 6. Topping the Chart with SERP Ranking

To “top the chart” means to rank at the top of the search engine results — ideally Position 1 or Featured Snippet.

### **Steps to Improve SERP Ranking:**

#### ***Perform Keyword Research***

Identify high-search, low-competition keywords related to your niche. Use tools like Google Keyword Planner, SEMrush, or Ahrefs.

#### **Optimize On-Page SEO**

Use target keywords in titles, headings, URLs, and meta descriptions. Maintain keyword density naturally.

#### **Create Quality Content**

Focus on E-E-A-T: Experience, Expertise, Authoritativeness, Trustworthiness. Write user-focused, informative, and updated content.

#### **Improve Technical SEO**

Ensure fast loading speed, mobile-friendliness, and secure HTTPS. Fix broken links, duplicate content, and crawl errors.

#### **Build Quality Backlinks**

Gain links from relevant, authoritative websites. Avoid spammy or low-quality backlinks.

#### **Use Schema Markup**

Helps search engines understand your page better (for rich snippets).

#### **Optimize for SERP Features**

Write content that directly answers questions (for featured snippets). Use bullet points, tables, and headings.

#### **Track and Improve**

Monitor keyword performance using Google Search Console and Analytics. Continuously update content and optimize weak areas.

## 7. Summary Table

Topic	Key Points
<b>SERP</b>	Page displaying search results for a query
<b>SERP Features</b>	Enhanced results: snippets, maps, videos, reviews, etc.
<b>Significance</b>	Determines visibility, traffic, and brand authority
<b>Online Presence</b>	Increases discoverability, credibility, and engagement
<b>Top Ranking Factors</b>	Quality content, backlinks, UX, mobile-friendliness

## 8. Key Takeaways

SERP is the **gateway between users and websites**.

Ranking higher on SERP leads to **more visibility, traffic, and credibility**.

A strong **online presence** and **optimized SEO strategy** are essential to reach and maintain **top SERP positions**.

Appearing in **featured snippets or top 3 organic results** greatly enhances trust and click-through rates.

## ALGORITHM AND QUALITY RATERS

### 1. What is a Search Engine Algorithm?

A **Search Engine Algorithm** is a complex set of **rules, formulas, and ranking signals** used by search engines (like Google) to determine which web pages should appear in the **Search Engine Results Page (SERP)** and in what order.

**In simple words:**

An algorithm decides **which websites rank higher or lower** for a given search query. Search engines like **Google** constantly update their algorithms to ensure users receive **the most relevant, high-quality, and trustworthy** information.

### 2. Algorithm History (Major Google Updates)

Algorithm Update	Year	Purpose / Focus	Impact
<b>Google Florida</b>	2003	Targeted keyword stuffing and spammy SEO practices	Penalized over-optimized sites
<b>Panda Update</b>	2011	Focused on content quality	Penalized low-quality duplicate, or thin content
<b>Penguin Update</b>	2012	Targeted unnatural backlinks	Penalized spammy link-building practices

<b>Hummingbird</b>	2013	Improved understanding of search intent and semantics	Focused on meaning of queries, not just keywords
<b>Pigeon</b>	2014	Improved local search results	Enhanced location-based ranking
<b>Mobile-Friendly Update (“Mobilegeddon”)</b>	2015	Prioritized mobile-optimized websites	Boosted responsive/mobile sites
<b>RankBrain</b>	2015	AI-based machine learning algorithm	Helped Google interpret queries and intent
<b>Medic Update</b>	2018	Focused on E-A-T (Expertise, Authoritativeness, Trustworthiness)	Affected health and finance sites
<b>BERT Update</b>	2019	Improved natural language understanding	Better comprehension of context in searches
<b>Core Web Vitals / Page Experience</b>	2021	Focused on site loading, interactivity, and stability	Rewarded better user experience
<b>Helpful Content Update</b>	2022	Prioritized human-first, helpful content	Penalized AI-generated and keyword-stuffed content

### How They Work:

Quality raters are given search queries and the pages that appear in the results.

They evaluate how well the results meet the user's search intent.

Their ratings are guided by Google's Search Quality Evaluator Guidelines (SQEG) — a public document that explains what makes a page “high quality” or “low quality.”

The results are used by Google engineers to test and improve algorithms.

### Evaluation Focus Areas:

#### 1. E-E-A-T:

- **Experience:** The author's personal experience with the topic.
- **Expertise:** The author's knowledge or qualification.
- **Authoritativeness:** The website's reputation and credibility.
- **Trustworthiness:** Accuracy, transparency, and safety of content.

## 2. Page Purpose:

- What is the main goal of the page — to inform, sell, entertain, etc.?
- Does it achieve that purpose effectively?

## 3. User Intent Satisfaction:

- Does the page meet the needs of the searcher (informational, navigational, or transactional intent)?

## 4. Elements of High-Quality Pages

A high-quality page provides useful, trustworthy, and well-presented information that fully satisfies the user's search intent.

### Key Elements of High-Quality Pages:

Category	High-Quality Indicators
<b>Main Content</b>	Original, comprehensive, and valuable information written by experts
<b>E-E-A-</b>	High levels of experience, expertise, authority, and trust
<b>Website Reputation</b>	Positive reputation, backed by credible sources or reviews
<b>Transparency</b>	Clear information about the author, company, and contact details
<b>User Experience</b>	Fast loading, easy navigation, mobile-friendly layout
<b>Supporting Content</b>	Helpful extra content like FAQs, videos, images, or links
<b>Ad Placement</b>	Ads do not interfere with main content
<b>Security</b>	HTTPS encryption, privacy policies, and safe browsing
<b>Accuracy</b>	Information is factual, updated, and supported by sources

### Example of a High-Quality Page:

A medical article written by a **certified doctor**, hosted on a reputable health site, with citations, clear formatting, and up-to-date information.

## 5. Elements of Low-Quality Pages

A **low-quality page** provides **little value, misleading information, or a poor user experience**.

## Key Elements of Low-Quality Pages:

Category	Low-Quality Indicators
<b>Content Quality</b>	Thin, duplicate, or auto-generated content
<b>E-E-A-T</b>	Lack of author expertise or unclear authorship
<b>Misleading Information</b>	Inaccurate or false claims
<b>Deceptive Purpose</b>	Clickbait titles, spammy intent, or malware
<b>User Experience</b>	Excessive pop-ups, broken links, or slow loading
<b>Ads &amp; Distractions</b>	Too many ads above the fold or interfering with reading
<b>Reputation</b>	Negative reviews, low trust scores
<b>No Transparency</b>	Missing contact or author details
<b>Manipulative SEO</b>	Keyword stuffing, hidden text, link schemes

## Example of a Low-Quality Page:

A “miracle weight loss” blog with fake claims, excessive ads, and no author credentials.

## 6. Relationship Between Algorithms and Quality Raters

Algorithms use **automated signals** to evaluate pages.

Quality raters provide **human evaluation** to ensure those signals work correctly.

Together, they help Google continuously refine how it measures **quality, relevance, and trust**.

### Process:

1. Google updates algorithm →
2. Raters test and evaluate search results →
3. Google engineers review feedback →
4. Algorithm is refined to improve results accuracy.

## 7. How to Create Algorithm-Friendly & Quality Pages

To align with Google's algorithm and Quality Rater Guidelines:

### Do's (for High Ranking & Quality):

Write for users first, not just search engines.

Use **clear structure** (headings, bullet points).

Showcase **E-E-A-T** — mention credentials, experience, sources.

## Don'ts (that cause penalties or demotion):

- Keyword stuffing or hidden text.
- Buying or exchanging backlinks.
- Plagiarized or spun content.
- Misleading titles or false information.
- Pages designed only for ads or clicks.

## 8. Summary Table

<b>Topic</b>	Key Points
<b>Algorithm</b>	Set of rules determining ranking in search results
<b>Algorithm Updates</b>	Panda, Penguin, Hummingbird, RankBrain, BERT, Helpful Content
<b>Quality Raters</b>	Human evaluators testing search result quality
<b>High-Quality Pages</b>	Original, expert content, transparent authorship, secure, user- focused
<b>Low-Quality Pages</b>	Thin, spammy, misleading, or ad-heavy pages

## 9. Key Takeaways

Google algorithms ensure **relevant and quality** content ranks higher.  
 Quality raters validate algorithm performance using **E-E-A-T** principles.  
 To succeed in SEO:

- o Focus on **helpful, accurate, and user-centered** content.
- o Avoid manipulative SEO tactics.
- o Maintain website **trust and authority** through genuine expertise and transparency.

## FUNDAMENTALS AND KEYWORDS

Keywords form the foundation of SEO and online marketing.

They connect what users are searching for with the content you provide on your website. In simple terms:

**Keywords** are the words or phrases people type into search engines to find information, products, or services.

### 1. Types of Search Queries

A search query is the term or phrase a user enters into a search engine.

Understanding the intent behind the query helps optimize content accordingly.

There are three main types of search queries:

Type	User Intent	Example
1. Informational Queries	The user wants to learn or find information (not to buy).	"How to bake a chocolate cake"
2. Navigational Queries	The user wants to go to a specific website or page.	"Facebook login" or "Wikipedia SEO page"
3. Transactional Queries	The user wants to take an action buy, sign up, download.	"Buy iPhone 15 online" or "Netflix subscription"

### Bonus Type (sometimes added):

**4. Commercial Investigation Queries** | The user is comparing options before purchase. |  
 "Best laptop under ₹50,000" or "Top digital marketing courses" |

## 2. Types of Keywords

Keywords can be categorized based on their **length**, **intent**, and **specificity**.

### A. Based on Length

Type	Description	Example
Short-tail Keywords	1-2 words; high search volume but high competition	"Shoes", "Laptops"
Medium-tail Keywords	2-3 words; balanced between volume and specificity"	Running shoes men"
Long-tail Keywords	3+ words; low competition, highly specific"	Best running shoes for flat feet"

### B. Based on Search Intent

Type	Purpose	Example
Informational	To educate or inform	"What is SEO?"
Navigational	To reach a specific site	"YouTube SEO tutorial"
Transactional	To make a purchase	"Buy SEO course online"
Commercial Investigation	To compare before buying	"Best SEO tools 2025"

### 3. Pay Per Click (PPC) Keywords Match Types

In **Google Ads (PPC)**, keyword **match types** determine how closely a user's search must match your keyword for your ad to appear.

Match Type	Symbol	Description	Example
<b>Broad Match</b>	shoes	Shows ads for related searches	Keyword: <i>shoes</i> → Shows for synonyms, or similar meanings.
<b>Broad Match</b>	+shoes	Used to ensure certain words	
<b>Modifier</b> (Discontinued in 2021)	+men	appear in searches (no longer used)	—
<b>Phrase Match</b>	running shoes	Shows ads when the phrase or close variation appears.	Keyword: <i>"running shoes"</i> "best running shoes for men".
<b>Exact Match</b>	running shoes	Shows ads only for searches with the same meaning or intent.	Keyword: <i>[running shoes]</i> "running shoes".
<b>Negative Match</b>	free	Prevents your ad from showing for unwanted terms.	Keyword: <i>-free</i> → Avoids "free running shoes".

#### Example:

If your ad keyword is **"buy laptop"**,

Broad Match: may show for "cheap computers".

Phrase Match: shows for "best place to buy laptop".

Exact Match: only for "buy laptop".

Broad Match: may show for "cheap computers".

Phrase Match: shows for "best place to buy laptop".

Exact Match: only for "buy laptop".

### 4. Focus Keywords

Definition: A Focus Keyword is the primary keyword or phrase that best describes the content of a web page or blog post.

#### Why LSI Keywords Matter:

Prevent keyword stuffing.

Improve semantic relevance.

Help search engines understand topic depth.

Enhance visibility for multiple related searches.

#### How to Find LSI Keywords:

Use Google's **"Related Searches"** at the bottom of SERP.

Check **"People Also Ask"** sections.

Use tools like **LSIGraph**, **Semrush**, **Ubersuggest**, or **Google Keyword Planner**.

**6. Keyword Research Process and Tools :** Keyword Research **is the process of finding and analyzing search terms that people enter into search engines with the goal of using that data for SEO or PPC marketing.**

**Keyword Research Process (Step-by-Step) :**

Step	Activity	Goal/Output
<b>Identify Topics</b>	List main topics related to your niche or business.	Example: "SEO", "Digital Marketing", "Social Media".
<b>Brainstorm Keywords</b>	Think of words people might use to search for those topics	Example: "best SEO tools", "digital marketing courses".
<b>Use Keyword Research Tools</b>	Find search volume, competition & related terms.	Use Google Keyword Planner, Semrush, Ahrefs terms.
<b>Analyze Search Intent</b>	Check if keyword is informational, transactional, etc.	Helps match content type.
<b>Analyze Competition</b>	Check top-ranking sites for keyword difficulty.	Choose realistic targets.
<b>Select Best Keywords</b>	Focus on balance: volume, relevance, competition.	Choose both short and long-tail keywords.
<b>Apply Keywords in Content</b>	Use naturally in titles, meta, headings, and body.	Optimize content for SEO.
<b>Track and Update</b>	Monitor performance using tools.	Refine strategy regularly.

**Popular Keyword Research Tools**

Tool	Purpose / Key Feature
<b>Google Keyword Planner</b>	Free tool for search volume, CPC, and competition data
<b>Ubersuggest</b>	Shows keyword ideas, volume, and SEO difficulty
<b>Ahrefs Keywords Explorer</b>	Detailed keyword data, difficulty, and SERP overview
<b>SEMrush</b>	Competitor keyword analysis and tracking
<b>Moz Keyword Explorer</b>	Suggests related keywords and keyword potential
<b>AnswerThePublic</b>	Generates question-based keyword ideas
<b>Google Trends</b>	Shows keyword popularity over time
<b>LSIGraph</b>	Finds LSI (related) keywords

## 7. Summary Table

Topic	Key Points
Search Queries	Informational, Navigational, Transactional, Commercial
Keywords	Short-tail, Long-tail, Branded, Geo-targeted
PPC Match Types	Broad, Phrase, Exact, Negative
Focus Keyword	Main keyword for page optimization
LSI Keywords	Related terms adding context
Research Tools	Google Keyword Planner, Semrush, Ahrefs, Ubersuggest

## 8. Key Takeaways

Keywords are the foundation of SEO and PPC campaigns.

Understanding user intent helps you target the right audience.

Use a mix of short-tail and long-tail keywords for reach and relevance.

Focus keywords define your page topic; LSI keywords enhance context.

Regular keyword research ensures your content stays relevant and competitive.

## ON-PAGE SEO

### 1. What is On-Page SEO?

On-Page SEO (also called On-Site SEO) refers to the optimization techniques applied directly on a website's pages to improve its visibility and ranking in search engine results (SERPs). It involves optimizing content, HTML source code, and site structure so that search engines can easily understand, index, and rank your pages.

Definition: On-Page SEO is the process of optimizing individual web pages to improve search engine ranking and earn more relevant traffic.

### Goal of On-Page SEO:

Help search engines understand what the page is about.

Help users find value and engage with the page.

Improve overall ranking, traffic, and user experience (UX).

Key Components of On-Page SEO:

1. Content Optimization
2. Keyword Placement
3. HTML Tag Optimization (Title, Meta, Headers)
4. URL Structure
5. Image Optimization
6. Internal Linking
7. Page Speed & Mobile Friendliness
8. Schema Markup (Structured Data)

## 2. Importance of On-Page SEO

Benefit	Explanation
<b>Better Visibility</b>	Optimized pages rank higher on Google.
<b>User Experience</b>	Fast, mobile-friendly, and well-structured pages engage visitors.
<b>Increased CTR</b>	Attractive titles and meta descriptions improve click-through rate.
<b>Higher Conversion Rate</b>	Relevant and well-optimized content leads to better sales or leads.
<b>Foundation for Off-Page SEO</b>	On-page optimization strengthens your website's authority and trustworthiness.

## 3. On-Page SEO Optimization Ranking Factors

There are **two main categories** of On-Page SEO factors:

### Content-based factors

### Technical & HTML-based factors

#### A. Content-Based Ranking Factors

Content is the **core** of On-Page SEO. Search engines rank pages that provide **valuable, relevant, and well-structured** information.

Factor	Description	Best Practice!
<b>High-Quality Content</b>	Unique, original & informative content helps users.	Avoid duplicate or copied content
<b>Keyword Optimization</b>	Use focus and related (LSI) keywords naturally.	Include in title, headings, URL meta, and intro.
<b>Content-Length &amp; Depth</b>	Long-form, detailed content often ranks better.	Cover the topic comprehensively.
<b>User Intent Match</b>	Content should match the purpose of the search query.	Identify whether it's International transactional, or navigational
<b>Readability</b>	Easy-to-read content improves engagement.	Use short sentences, bullet points, and subheadings.
<b>Content Freshness</b>	Updated and current content performs better.	Regularly revise and refresh old pages.
<b>E-E-A-T (Experience, Expertise, Authoritativeness, Trustworthiness)</b>	Proves credibility of the content and author.	Include author bios, sources, and transparent details.

### Example :

A blog post titled “10 Best Budget Smartphones in 2025” should :

- Include focus keyword: “budget smartphones 2025”

- Be updated with latest models

- Contain expert reviews and internal links to related pages

### B. HTML & Technical Ranking Factors

These factors help search engines crawl and understand your web page structure.

HTML Factor	Description	Best Practice
<b>Title Tag</b>	Main clickable headline	50–60 characters include focus key at start.
<b>Meta</b>	Short summary shown	150–160 characters; use keywords naturally.
<b>Description</b>	below title in SERPs.	
<b>URL Structure</b>	SEO-friendly, readable, & seo key word-rich URLs rank better	Example: <a href="http://www.example.com/on-page-seo-tips">www.example.com/on-page-seo-tips</a>
<b>Header Tags (H1–H6)</b>	Organize content hierarchy; improve readability.	Use one H1 per page (main title).
<b>Image Optimization</b>	Helps page load speed and improves accessibility.	Use descriptive file names and alt text.
<b>internal Linking</b>	Links to other relevant pages on your site.	Use descriptive anchor text; avoid overlinking.
<b>Outbound Links</b>	Links to authoritative external sites.	Link to credible and relevant sources.
<b>Schema Markup (Structured Data)</b>	Code that helps search engines understand your content type.	Use schema for articles, products, FAQs, etc.
<b>Canonical Tags</b>	Prevents duplicate content issues.	Use <code>&lt;link rel="canonical"&gt;</code> correctly.

### C. User Experience & Technical SEO Factors

Factor	Description	Best Practice1.
<b>Mobile Friendliness</b>	Mobile-first indexing by Google means your site must be mobile-optimized.	Use responsive design.
<b>Page Loading Speed</b>	Slow pages lower rankings and user satisfaction.	Use tools like PageSpeed Insights to optimize.
<b>Secure Website (HTTPS)</b>	Security boosts trust and SEO ranking.	Install SSL certificate.
<b>Core Web Vitals</b>	Metrics measuring load time, interactivity, and stability.	LCP < 2.5s, FID < 100ms, CLS < 0.15.
<b>Image and Video Optimization</b>	Reduces page size and improves performance.	Compress media files; use lazy loading.
<b>Crawlability and Indexability</b>	Search engines must access and index your pages easily.	Use robots.txt and XML sitemaps properly.

### 4. On-Page SEO Checklist

Here's a quick practical checklist for optimizing a page:

Use one focus keyword per page

Include keyword in title, URL, meta description, H1, and intro paragraph

Use LSI keywords throughout content

Add internal links and external links

Optimize images (name, size, alt text)

Ensure mobile-friendly design

Use HTTPS

Add schema markup for rich results

Keep load speed < 3 seconds

Update content regularly

### 5. Tools for On-Page SEO Analysis

Tool	Purpose
<b>Yoast SEO (WordPress)</b>	Checks keyword placement, readability, and meta tags
<b>Rank Math</b>	Advanced WordPress SEO plugin
<b>Google Search Console</b>	Tracks indexing, errors, and search performance
<b>Google PageSpeed Insights</b>	Measures page load speed and performance
<b>Screaming Frog SEO Spider</b>	Analyzes technical and on-page SEO factors
<b>Ahrefs / SEMrush / Moz</b>	On-page and off-page SEO analysis tools
<b>Surfer SEO</b>	Content optimization using NLP and competitors' data

## 6. Summary Table

Category	Key Factors
<b>Content Factors</b>	Quality, Keywords, Freshness, E-E-A-T
<b>HTML Factors</b>	Title, Meta, URL, Header Tags, Image Alt
<b>UX &amp; Technical Factors</b>	Speed, Mobile, Security, Core Web Vitals
<b>Additional Tools</b>	Yoast, Rank Math, SEMrush, Google Console

## 7. Key Takeaways

On-Page SEO ensures search engines and users both understand your content.

Optimize content, HTML elements, and technical aspects together.

Focus on relevance, readability, and user intent.

Regularly audit your pages to maintain high SEO performance.

## FUNDAMENTALS OF TECHNICAL SEO

### 1. What is Technical SEO?

**Technical SEO** refers to the process of optimizing the **technical aspects of a website** so that **search engines can easily crawl, index, and render** the site effectively.

It ensures your website meets the **technical requirements of modern search engines, improving organic visibility** and **user experience**.

**Definition:** Technical SEO is the practice of optimizing a website's backend structure and code to help search engines find, crawl, and index your content efficiently.

### Goals of Technical SEO:

Ensure crawlability (search bots can access your site)

Ensure indexability (pages are stored in search databases)

Improve website performance (speed, structure, and security)

Enhance user experience (UX) and search engine understanding

## 2. Importance of Technical SEO

Reason	Explanation
<b>Crawlability</b>	Helps search bots access and understand your site's structure.
<b>Indexability</b>	Ensures your content appears in search results.
<b>Speed Optimization</b>	Faster websites rank higher and retain users.
<b>Security &amp; Trust</b>	HTTPS improves user trust and ranking.
<b>Mobile Friendliness</b>	Mobile-first indexing makes responsive design crucial.
<b>Error Reduction</b>	Fixing broken links, redirects, and duplicate content improves SEO health.

## 3. Technical SEO Ranking Factors

Search engines use **hundreds of signals** to rank pages, but the key **technical ranking factors** include:

Category	Ranking Factor	Description / Importance
<b>Website Performance</b>	<b>Page Speed</b>	Fast-loading sites rank higher; affects bounce rate.
	<b>Core Web Vitals</b>	Google's performance metrics — LCP, FID, CLS.
<b>Mobile Optimization</b>	<b>Mobile Friendliness</b>	Mobile-first indexing prioritizes mobile usability.
<b>Crawlability</b>	<b>Robots.txt</b>	Controls which pages bots can crawl.
	<b>XML Sitemap</b>	Guides search engines to important pages.
<b>Indexability</b>	<b>Canonical Tags</b>	Prevents duplicate content issues.
	<b>Noindex Tags</b>	Blocks low-value pages from being indexed.
<b>Security</b>	<b>HTTPS</b>	Secures communication; boosts trust and ranking.
<b>Site Architecture</b>	<b>URL Structure</b>	SEO-friendly URLs improve crawlability.
	<b>Internal Linking</b>	Helps search engines discover related pages.
<b>Structured Data</b>	<b>Schema Markup</b>	Helps search engines understand content type.
<b>Technical Errors</b>	404 Errors /Redirects	Must fix broken links and improper redirects.

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