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Impact of Business Analytics Driven SEO Techniques on Website Traffic and Conversion Rate

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Abstract

Search engine optimization plays a major role in todays online business. This study examines the impact of business analytics driven Search Engine Optimization (SEO) techniques on website traffic and conversion rates, using 24 months of historical data from Dextra Technologies in Chennai. By leveraging advanced analytical tools such as SPSS and Python, the research evaluated various SEO metrics including keyword rankings, backlinks, page load speed, and mobile responsiveness. The methodology employed comprehensive statistical techniques, including Pearson Correlation, ARIMA time-series forecasting, and seasonal decomposition to identify patterns and predict future performance. Predictive modelling indicates a continued exponential growth in traffic, while logarithmic trendlines suggest that further reductions in bounce rate will yield even higher conversion gains. The study demonstrates that integrating business analytics with SEO strategies systematically transforms website visibility into high-intent user engagement, fundamentally improving conversion efficiency and ROI.

Keywords: Keyword Analysis, Predictive Modelling, SEO techniques, Website Traffic and Conversion

Introduction

In the contemporary digital landscape, companies are increasingly pivoting from traditional marketing approaches toward data-supported precision marketing, where Business Analytics driven Search Engine Optimization (SEO) serves as the critical bridge between raw big data and strategic corporate action. While digital marketing has fundamentally shifted the focus from mass messaging to two-way interactions and verifiable consumer records, SEO has origins of simple keyword stuffing into a comprehensive, analytics led strategy that prioritizes content relevance, user experience, and ethical optimization. By integrating Business Analytics into this framework, can transition from a purely technical activity to a

sophisticated Analytics Driven Search Strategy that treats SEO as a data science rather than a creative art. This integration encompasses several specialized layers including On-page SEO for content relevance, Off-page SEO for authority building, Technical SEO for crawlability, and Local SEO for geographic visibility all of which are now governed by methodical exploration through statistical analysis and predictive modelling. Rather than chasing vanity numbers like high search volume, the application of business analytics allows for precise keyword valuation focused on ROI, complex attribution modelling to understand the multi-touch user journey, and competitive gap analysis to identify market opportunities.

Literature Review

Jayashree, R & Mercitha, S (2025) Predictive Analytics using AI in Marketing: An Impact investigates how artificial intelligence transforms predictive modelling in digital advertising by enhancing marketing results, customer segmentation, and personalization. While highlighting AI's ability to significantly boost Return on Investment (ROI), the research underscores critical hurdles such as data privacy, algorithmic bias, and ethical concerns. Ultimately, the findings suggest that the sustainable success of AI in marketing depends on a strategic balance between leveraging technological efficiency and maintaining rigorous ethical standards.

Sarfandi(2025) AI-Driven SEO Models for Enhancing Digital Marketing Performance empirically validates the impact of AI-driven SEO models on digital marketing performance by analyzing data from 18 organizations using advanced statistical methods. By establishing SEO performance as a key mediator, the research provides an original framework showing how AI offers a strategic competitive advantage through improved cost efficiency and visibility, ultimately bridging a previous gap in integrated AI-SEO research.

Tasin, Md (2025) Comprehensive Guide on Technical SEO asserts that technical SEO is the indispensable foundation of search visibility, warning that high-quality content cannot compensate for structural failures. It identifies crawlability, mobile-first indexing, and Core Web Vitals specifically the Interaction to Next Paint (INP) metric as the primary drivers of ranking success. By addressing common pitfalls like duplicate content and orphan pages through canonicalization and structured data, businesses can ensure their sites remain accessible to both human users and evolving AI-powered search crawlers.

Vasenko, Yurii(2025) Marketing effectiveness of search engine optimisation: Digital solutions for business competitiveness. Innovation and Sustainability evaluates the role of strategic SEO in digital business transformation, specifically focusing on identifying the most effective tools for competitive niche analysis. By comparing platforms like Ahrefs, Serpstat, and SimilarWeb, the research highlights that while some tools excel in technical auditing or traffic assessment , their combined use is essential for a holistic SEO strategy.

Bansal, Deepak (2024) How SEO and Analytics are Connected highlights analytics as the foundation of successful SEO, providing the data necessary to navigate ever changing search algorithms. By leveraging analytics for keyword research, traffic monitoring, and user behavior tracking, businesses can move beyond guesswork to make informed strategic adjustments.

Research Gap

The existing literature extensively discusses the importance of digital marketing, Search Engine Optimization (SEO), and web analytics in improving website traffic, user engagement, and conversion performance. Several studies highlight the effectiveness of SEO strategies and analytics tools in enhancing online visibility and supporting business growth. Research has also explored the impact of AI- based SEO innovations and the role of key performance indicators in evaluating digital marketing outcomes.

Research Objectives

- To examine the impact of analytics based Search Engine Optimization(SEO) techniques on website traffic growth and conversion rate.
- To suggest effective measures for improving Search Engine Optimization (SEO) performance using business analytics.

Research Methodology

This study intends to find the analytical factors that drive the website traffic and conversion rate. The data taken from the website of past 24 months helps to find the trends and patterns that helps to forecast future trends and necessary decision to be made. For Correlation Analysis SPSS is used and for Time series Forecast Analysis Python is used with packages like Pandas, Matplotlib, statsmodel, scipy. These help to finally find the patterns and trends and its impact in website traffic and conversion rate.

Business Analytics Driven Growth Factors

The business analytics driven growth factors of website traffic and conversion rates are the keyword ranking, Backlinks, Average session duration, SEO score and inverse relation of Website bounce rate. Keyword ranking is the best ranked number of keywords based on search volume of user and aligning with user intent drives the ranking which increases the visibility of website in search engine result pages(SERPs). Backlinks is the off page techniques like giving quality content to users in other website which in turn bring traffic to the website.

Average session duration is the time spent by the user in the website. The stay based on content relevancy, quality, user Interface(UI), User experience(UX), page load speed and other factors. Else it results in bouncing from the single page. SEO score is technical optimization where the title, meta description, page speed, interface, keywords are all upto the measures and supports smooth flow of user . These metrics when aligned with business analytics like based on past trends to find what the user actually needs and make changes accordingly will give positive impact in the website traffic and conversion rate.

Correlation Analysis for the Growth Factors

A correlation analysis test is done for the growth factors like keyword ranking, SEO score, Backlinks, Average session duration, Bounce rate, website traffic and conversion rate.

Table 1 shows the correlation between the grown factors which are checked under 0.01 threshold value. The table 1 shows that the correlation has been done to the growth factors which all indicates positive correlation with a strong .000 significance which is under the 0.01 threshold. This indicates that all the growth factors have significant relationship to each other. Bounce rate shows the correlation value in negative since it inversely benefits the website like when bounce rate reduces conversion increase.

Table 1 Correlation between Growth Factors

		Total Visitors	Conversion	Keyword Rankings	SEO Score	Backlink	Average Session duration	Bounce rate
Total Visitors	r	1						
	Sig.							
Conversions	r	.975**	1					
	Sig.	.000						
Keyword Rankings	r	.990**	.951**	1				
	Sig.	.000	.000					
SEO Score	r	.994**	.970**	.991**	1			
	Sig.	.000	.000	.000				
Backlinks	r	.933**	.982**	.903**	.935**	1		
	Sig.	.000	.000	.000	.000			
Average Session duration	r	.893**	.961**	.854**	.884**	.977**	1	
	Sig.	.000	.000	.000	.000	.000		
Bounce rate	r	-.971**	-.926**	-.962**	-.978**	-.883**	-.828**	1
		.000	.000	.000	.000	.000	.000	

Source: Google Analytics Report, Dextra Technologies

Keyword Analysis

Keyword Analysis is a SEO metric which use several user intent to identify the search pattern and trend and maintain good keywords for the website which enhances the visibility. Dextra technologies Chennai's Top 9 ranking keywords are given in the table 2 which helps the website to stand visibily in the search engine result pages(SERPs).

Table 2 Keyword Analysis

Keyword	Est. Monthly Search Volume	Competition Level	Potential Monthly Traffic	Rank
Best SEO Company in Chennai	1,200 – 1,800	Very High	350 – 500	1
SMO Services in Chennai	400 – 600	High	100 – 180	2
Best WordPress Development in Chennai	300 – 500	Medium	80 – 140	3
PHP Web Development Company in Chennai	250 – 400	Medium	70 – 110	4
Python Development Company Chennai	200 – 350	Medium	50 – 100	5
Flutter Development Company in Chennai	150 – 300	Medium	40 – 80	6
CodeIgniter Development Company in Chennai	100 – 200	Low/Medium	30 – 60	7

Best Angular Development Company in Chennai	100 – 180	Medium	25 – 50	8
Best Website Maintenance Company in Chennai	80 – 150	Low	20 – 45	9

Source: Google Analytics report, Dextra technologies

Figure A Top Ranking Keywords

Time Series Analysis

Seasonal Decomposition

Seasonal decomposition is used to find the trends and patterns from the historical data. Python is used here to find the seasonal decomposition for both website traffic and conversion. Figure B shows the seasonal decomposition of website traffic and figure C shows seasonal decomposition of conversion rate. It is done using built in packages of python like pandas, matplotlib, statsmodels, scipy etc.

The figure B shows that the trend of 24 months website traffic is upline trend, which indicates that it moves with good long-term SEO action rather than seasonal fluctuations. Figure C shows the trend of 24 months of conversion which also a upline trend even though has a dip in mid-year gradually pick-ups in the coming month, shows the technical on and off page SEO done.

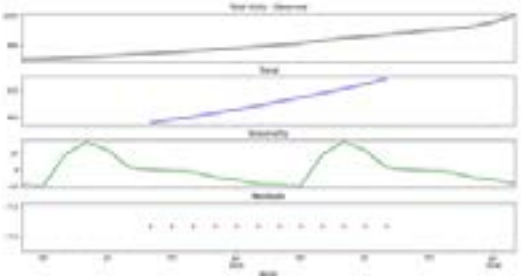

Figure B Seasonal decomposition of Total visitors

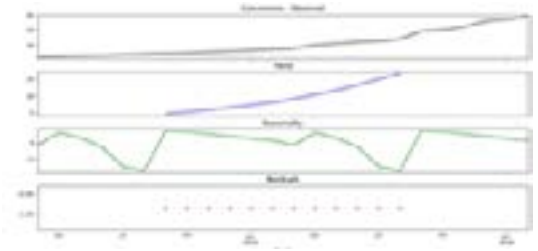

Figure C Seasonal decomposition of Conversion rate

Auto Regressive Integrated Moving Average (ARIMA)

Auto Regressive Integrated moving average (ARIMA) is a time series technique which is used to forecast with the help of past data. Here it is used to forecast the next 6 months of website traffic. It is done using python with the packages like pandas, matplotlib, scipy,etc. It will help to know the boundaries and to take necessary decisions to increase visibility. The table 3 shows the predicted website traffic from the month of march to July. The upper and lower boundaries are given as the trend can be changed to low or high through certain factors that fluctuates yet the traffic would be higher and goes in the straight line upward. Figure D shows the formulated graph of the forecast that shows the forecast and upper, lower boundaries in a shaded area.

Table 3 Forecast of Total Visitors

Month	Predicted total visit	Lower boundary	Upper boundary
2026-03-01	1104	1077	1131
2026-04-01	1208	1145	1271
2026-05-01	1308	1202	1415
2026-06-01	1406	1250	1563
2026-07-01	1501	1289	1712
2026-08-01	1593	1322	1863

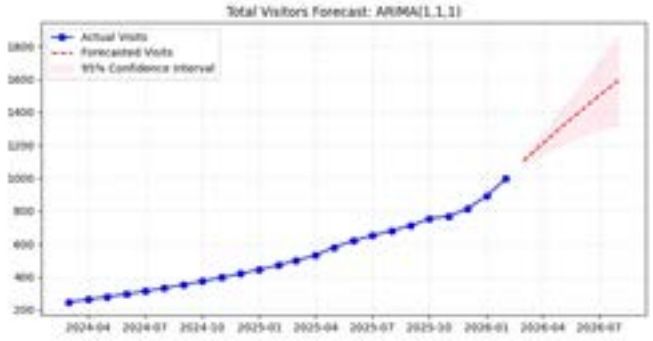

Figure D Total visitors forecast using ARIMA

Predictive Modelling of Bounce Rate and Conversion

Predictive modelling is used to predict a pattern or trend and also forecast expected future trend. Here it is done for Bounce rate and conversion. Both has inverse relationship as bounce rate decreases conversion increases. When the quality of content and website is high the bounce rate decreases, when the bounce rate decreases the average session duration increase. When the time increase the chance of conversion also increases.

The figure E shows the actual and predicted trendline which has an inverse relation with each bounce rate and conversion rate. The green line shows the expected forecast conversion which is a target of 15.11 percent. Best SEO techniques must be used to clearly understand what the user actually needs and improve the content quality and website interface to achieve the conversion.

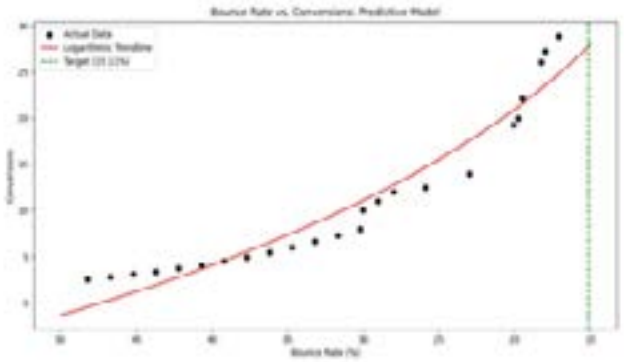

Figure E Predictive model of bounce rate and conversion rate

Findings

- All the growth factors has significant relationship to each other shows each factors drives the growth of website traffic and conversion. When one of the factor perform low then it affect the growth.
- The seasonal decomposition of conversion rate shows a minor dip during the middle of July and October.
- The next 6 months website traffic is forecasted the lower boundary even the lower boundary is higher than the actual total visitors.
- The predictive model shows the target of 15.11 percent which is expected to be achieved using better SEO performances.

Recommendations

The business analytics driven SEO techniques are more important rather than the traditional techniques where not understanding what the user actually wants and act based on intuition. Good user research is recommended to be done to align the keyword with user research. Since the trend is upward and has high ranked keywords still continuous improvement is recommended not to lose position in the competitive environment. Search intent analysis can also be done to understand the user intent. Since the forecast is positive work more on the technical on page and off page SEO to reach the upper boundary rather than lower boundary. Strategically implement the landing page using A/B testing to reduce the bounce rate and increase the conversion. Use business analytics technique in effective way like find patterns using historical data forecast the upcoming trend and choose the most optimal way to improve the SEO techniques. Implement Artificial Intelligence (AI) to implement chatbots to communicate and understand what the user actually wants.Use predictive analytics to find what will the user needs in the future. This helps the website to stay competitive and improve visibility increase website traffic and conversion rate.

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