



## INVESTIGATE HOW VOICE SEARCH IS CHANGING SEARCH ENGINE OPINATION SEO STRATEGIES AND CONSUMER BEHAVIOR

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### Abstract

This study is about analyzing the effect of voice look on SEO procedures and customer behavior, recognizing the progressive part of voice associates in computerized intuition. The inquiry points to investigating how businesses use voice to upgrade client encounters and streamline communication, transitioning from conventional to voice-optimized SEO techniques. They consider methodically analyzing existing writing from 2014 to 2024 utilizing particular look terms to see the impact of voice look on SEO and client behavior. The mixed-methods approach included gathering quantitative information through organized surveys from 100 members, selected through Google Shapes and proficient systems, nearby subjective bits of knowledge from center bunches, and interviews. Strict conventions on educated assent and information security were actualized. Factual examination, conducted utilizing IBM SPSS adaptation 27, included Autonomous Test T-Tests to evaluate inclinations for voice look in neighborhood questions and One-Way ANOVAs to investigate contrasts in seen exactness over age bunches. Key execution markers included look inquiry precision, client engagement, and transformation rates. The factual examination yielded non-significant results, falling flat to discover critical contrasts in inclination for voice look in nearby inquiries ( $p = 0.205$ ) or the seen exactness of voice look among diverse age bunches ( $p = 0.259$ ). They think about distinguishing a few restrictions, counting irregularities in member enlistment, deficient detail in detailing, and the nonattendance of a coordinated comparison of SEO methodologies. These restrictions ruined the capacity to draw conclusive conclusions. Particularly, the review notes a need for clarity on how introduction to voice search-driven or conventional SEO strategies was gotten or recreated,



making it troublesome to evaluate the effect on SEO techniques and buyer behavior. Besides, factual detailing was constrained, with lost degrees of opportunity and errors between p-values. As a result, the review recommends future inquiries ought to address these methodological deficiencies and detail confinements, refining information collection, and improving explanatory meticulousness to give a more comprehensive understanding of voice look adequacy in SEO and shopper engagement. Future investigations are required to address these inadequacies by utilizing a clearer examination arrangement, guaranteeing well-defined member enlistment techniques, and giving comprehensive factual detailing. Things ought to specifically compare the effect of voice look and conventional look strategies whereas bookkeeping for the impact of statistical components. This incorporates giving all significant degrees of flexibility for measurable tests, settling disparities in detailed p-values, and successfully clarifying the significance of factually critical discoveries.

**Introduction:**

This study analyzes the effect of voice look on look motor optimization techniques and shopper behavior, as the rise of voice associates has revolutionized the way individuals are associated with computerized stages. (Mishra and Dhingra 2022) The article showed consumer behavior. Since the appearance of savvy speakers, companies have progressively embraced voice look as an essential instrument, reshaping commerce improvement by improving client encounters and streamlining intelligence.(Vashist, Pandey, and Maitra 2023) The study shows artificial intelligence brand marketing. The advancement of communication strategies has changed conventional SEO into voice-optimized procedures, leveraging voice colleagues for communication. Shopper behaviors, affected by variables like exactness, speed, and comfort, play a vital part in these intelligences, concurring to examinations of client input and master bits of knowledge.(Yang et al. 2024) the paper states About voice shopping. Both conventional and voice-optimized SEO are imperative for making strides look perceivability. Voice look stands out as an exceptional advancement, empowering marketers to consistently coordinate it into their methodologies and campaigns to improve client encounters. This advancement has driven businesses to move from conventional SEO to voice-optimized procedures, progressing how they

interface with clients to meet their needs. Companies can progress client fulfillment and dependability by customizing their SEO strategies to oblige voice look.

This analysis investigates the effect of voice look on look motor optimization methodologies and shopper behavior, centering on how voice associates are changing the computerized promoting scene.(D'Arco et al. 2024) The article paper says about how the brand uses the social campaign. The inquiry will efficiently analyze articles related to voice look, SEO, and buyer behavior, analyzing different viewpoints on the move in the advanced scene. The reason is to determine and clarify the impacts of voice look on buyer demeanors and reactions to SEO methodologies.(Details and Vetrivel 2022) the article talked about customer satisfaction. Key measurements, such as look inquiry precision, client engagement, and change rates, will be assessed to evaluate the adequacy of voice look optimization methods. Particularly, the consideration will examine how voice impacts shopper behavior over socioeconomics like age, sex, and proficient action. This will give a comprehensive understanding of how Voice Look is changing SEO methodologies and buyer behavior, making a difference in businesses adjusting their advanced showcasing forms to successfully target clients in the advancing Voice Look environment.

The main objective of this study is to investigate and compare the effect of voice look and conventional look strategies on look motor optimization techniques and shopper behavior. Utilizing particular look terms, information was methodically extricated from scholarly databases between 2014 and 2024 to explore the impacts of voice look on SEO and client behavior.(Kim and Kim 2024) The article study explains the content strategy used. The investigation centers on key execution pointers such as look inquiry precision, client engagement, and change rates to assess the adequacy of voice look optimization methods. A comparison will be made between advanced (voice search, SEO) and conventional (written look) look strategies. Particularly, they will look at how voice impacts buyer behavior over socioeconomics like age, sex, and wage. The discoveries point to profitable experiences for businesses looking to adjust their SEO techniques to successfully target clients in the advancing voice-look environment, especially in improving client fulfillment and dependability.

**Keywords:**

Customer behavior, Artificial intelligence, voice commerce, marketing campaigns, customer satisfaction, content strategy.

**Material And Method**

This study from Saveetha University's Saveetha College of Liberal Arts and Sciences uses a mixed-methods approach to look. This study aims to explore how voice search is altering search engine optimization strategies and consumer behavior, focusing on a diverse sample of 126 individuals. A structured questionnaire using Likert scale questions will gather quantitative data to assess the impact of voice search on SEO and user behavior. Additionally, focus groups and interviews will provide qualitative insights into the experiences and perspectives of participants regarding voice search. The research design ensures a comprehensive understanding of the complex factors influencing SEO strategies and consumer behavior in the voice search environment. A combination of quantitative and qualitative findings will yield significant insights that can guide the development of effective voice search optimization techniques and enhance user experiences in the evolving digital landscape. There were 126 samples collected and it was divided into two groups and for each group, the sample size was 63.

Group 1 (SEO): I will utilize Google Forms to send out a structured questionnaire to people who fit the established eligibility standards. To guarantee clarity and efficiency, an experiment of the questionnaire containing both closed-ended and Likert scale questions will be conducted. The Google Form's introduction will include information about informed consent, highlighting the importance of voluntary involvement and guaranteeing confidentiality. Reminder messages will be sent to promote participation, and the link to the questionnaire will be shared through additional Internet channels and mobile messaging applications. There will be a defined timeframe for gathering data, and Google Forms features like mandatory fields and input validation will be used to validate the data. There will be guarantees of security and confidentiality as well as a detailed description of data protection procedures. Ultimately,

information gathered via Google Forms will be exported and subjected to a thorough statistical analysis to identify patterns and trends in consumer confidence.

Group 2 (Consumer Behaviour): Using industry forums, professional networks, and direct contact, I will first identify possible participants. Upon identifying the intended recipient base, I will craft tailored invitations using official email addresses or messaging apps. These will contain a thorough explanation of the study's objectives, the voluntary nature of participation, and a guarantee of anonymity. We will acquire informed consent before participation. One possible approach to gathering data is to use a professional-specific questionnaire or to conduct semi-structured interviews. The participants' convenience will be taken into consideration while scheduling the interviews or questionnaire responses. Data security procedures will be made transparent, and confidentiality and secrecy will be given top priority to be methodically examined.

### **Statistics Analysis**

In this study statistical analysis was used in SPSS (IBM version 27) utilizing the Independent Sample T-Test and One-Way ANOVA has produced important findings regarding evaluating the impact of voice search on SEO strategies and consumer behavior. The Independent Sample T-Test enabled a comparison of the degree of preference among various groups, offering a more nuanced view of potential differences. The One-Way ANOVA captured dynamic variations in consumer views and provided valuable data about preference differences within the same group across various scenarios. Furthermore, the statistical results and corresponding p-values illuminated these analyses' importance. These findings advance our knowledge of consumer behavior in the context of voice search, providing useful information to strengthen and improve SEO strategies and create more reliable and effective consumer interactions.

### **Results**



Figure 1 presents these differences graphically as a bar graph with a 95% confidence interval and the simple mean of age along with a  $\pm 2$  standard error.

Figure 2 Shows these differences graphically as a bar graph with a simple mean income and  $\pm 2$  Standard Error.

Table 1 Clarifies the results of the Independent sample T-Test on a significant value of  $p = 0.676$  which is greater than  $<0.05$  to reject the null hypothesis.

Table 2 validates these conclusions using statistical analysis and a One-way ANOVA,, the significant value  $p = 0.259$  which is greater then ( $<0.05$ ) to reject null hypothesis.

## Discussion:

### Test 1: Independent sample T-Test

An independent sample t-test was conducted to assess if there was a significant difference in the preference for using voice search for local queries between the two groups. The test included Levene's test for equality of variances, which showed that the assumption of equal variances can be assumed ( $F = 0.177$ ,  $p = 0.676$ ). The t-test for equality of means revealed a non-significant result ( $t(46) = -1.286$ ,  $p = 0.205$ ), indicating no significant difference in preference between the two groups. The mean difference was  $-0.506$  with a standard error of  $0.394$ , and the 95% confidence interval ranged from  $-1.299$  to  $0.286$ . When equal variances were not assumed, the results were similar ( $t = -1.312$ ,  $df = 41.193$ ,  $p = 0.197$ ), further supporting the conclusion that there is no significant difference in preference for using voice search for local queries between the groups. However, to fully interpret these results, it is crucial to specify the characteristics of the two groups being compared.

### Test 2: One-Way ANOVA

A one-way ANOVA was conducted to assess whether there were significant differences in the perception that voice search results are more accurate than traditional search results across different age groups. The analysis revealed a non-significant result ( $F = 1.341$ ,  $p = .259$ ),



indicating no significant differences among the age groups in their perceptions. The between-groups sum of squares was 10.684, and the F-statistic is the ratio of between-groups mean square (2.671) and within-groups mean square (1.991). However, the degrees of freedom associated with the F-statistic are crucial for correct interpretation; they are 4 for between groups and 119 for within groups. Post-hoc tests should be conducted to further explore any potential differences, although the initial results suggest no significant variation across age groups.

### **Limitation of my study**

This study aims to explore the role of voice search in transforming search engine optimization strategies and consumer behavior, but it is currently hindered by notable inconsistencies and methodological shortcomings. The results report findings from one-sample t-tests to assess voice search awareness across generations, one-way ANOVAs to evaluate the effectiveness of voice search-driven techniques by income groups, and independent t-tests to survey attitudes toward voice search adoption by age. While these analyses have some merit, they fail to directly address the core question of comparing voice search's impact on SEO strategies and consumer behavior. Furthermore, the detailed values are inconsistent with the test objectives and ultimate goals of this study. The methodology chapter provides insufficient detail on participant recruitment and lacks clarity on how exposure to voice search-driven or traditional SEO methods was obtained or simulated. Without understanding participants' prior experience or familiarity with voice search technologies, it is difficult to draw conclusions about their relative impact on SEO strategies and consumer behavior. Statistical reporting is also limited, with lost degrees of freedom and discrepancies between p-values stated in the text and those in tables. Although statistically significant results are mentioned in the Conclusion, they are not fully explained in relation to the central research question. As it stands, the study cannot provide a definitive comparison of voice search's effectiveness in enhancing SEO strategies and consumer behavior in this specific context.

### **Future Study:**

Future research should address the critical methodological flaws and inconsistencies in this study. A clearer investigation plan is needed, one that directly compares the impact of voice search and traditional search methods on search engine optimization strategies and consumer behavior. This requires a well-defined approach for participant recruitment, ensuring representation from both voice search and traditional search user groups. Crucially, the study must detail how exposure to voice search and traditional search methods was measured or controlled. Future work should focus on optimizing the depth and completeness of statistical reporting. This includes providing all relevant degrees of freedom for statistical tests, resolving discrepancies in reported p-values, and effectively explaining the relevance of statistically significant findings.

### Conclusion:

This study investigated voice search's impact on SEO and consumer behavior using t-tests and ANOVA. Results showed no significant differences in preference for voice search in local queries or perceived accuracy across age groups. Methodological shortcomings, including unclear recruitment and limited statistical reporting, hindered definitive conclusions. Future research should address these flaws with clearer designs, better data, and complete reporting to accurately compare voice search effectiveness for SEO and consumer engagement.

### Tests And Figures

TEST 1:

INDEPENDENT SAMPLE T_ TEST							
Q. PREFER USING VOICE SEARCH FOR LOCAL	F	SIG.	T	DF	SIG.(2-TAIL)	MEAN DIFF.	STD. ERROR DIFF.

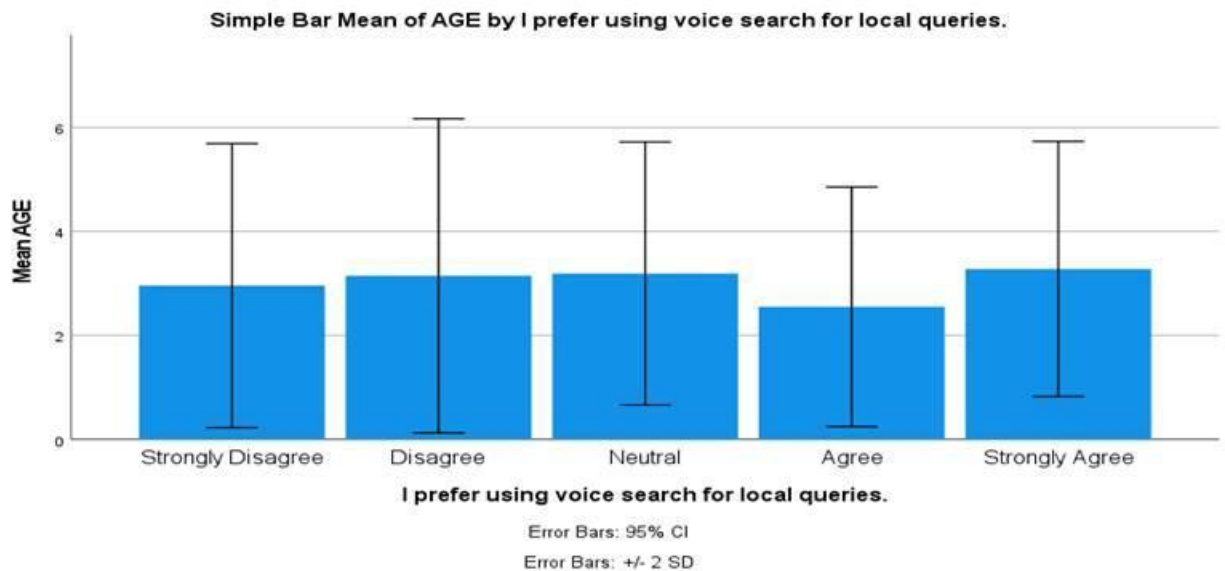




QUERIES							
EQUAL VARIANCES ASSUMED	.177	.676	-1.286	46	.205	-.506	-.394
EQUAL VARIANCES NOT ASSUMED			-1.312	41.193	.197	-.506	.386

FIG 1:

This simple bar graph represents the First heard about Tata Motor through digital marketing by mean age,  $\pm 2$  standard deviation, and a 95% confidence interval.



TEST 2:

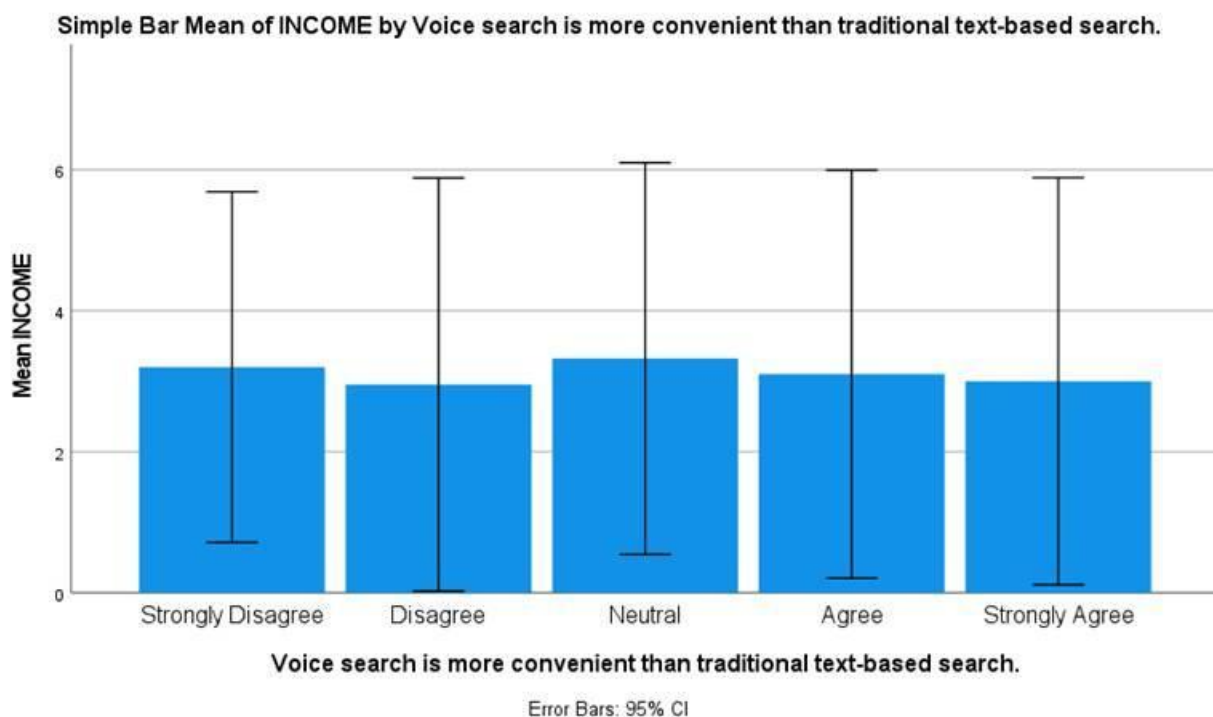
ONE WAY ANOVA TEST

Voice search results are more accurate than traditional search results.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.684	4	2.671	1.341	.259
Within Groups	236.953	119	1.991		
Total	247.637	123			

FIG 2:

This simple bar graph represents the Need to improve its Marketing Strategy by mean Income,  $\pm 2$  Standard Error, and a 95% confidence interval.



## Declaration

Conflict of interests

No conflict of interest in this manuscript

Authors Contributions

Author Gokul Raj RB was associated with the data collection, data analysis, and manuscript writing.

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Author Dr. N. Kalaivani, Associate Professor was involved in the manuscript's conceptualization, data validation, and critical review.

### Acknowledgments

The authors would like to express their gratitude towards Saveetha College of Liberal Arts and Sciences, SIMATS for providing the necessary infrastructure to carry out this work successfully.

### Funding:

We thank the following organizations for providing financial support that enables us to complete the study.

1. Saveetha University
2. Saveetha Institute of Medical and Technical Sciences.
3. Saveetha College of Liberal Arts And Sciences

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