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Research Paper

First-Page Bias: Influence of Search Engine Rankings on Consumer Click Behaviour in E-Commerce Platforms

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ABSTRACT

The increasing reliance on search engines in online shopping has made result ranking a critical factor in influencing user behaviour. Consumers tend to interact more with information that appears prominently, often limiting their exploration to top-ranked results. This behavioural tendency creates a systematic bias that shapes decision-making patterns in e-commerce environments. This study investigates the relationship between search engine ranking positions and consumer click behaviour. Data was collected from 305 respondents using a structured questionnaire based on a 5-point Likert scale. Statistical techniques, including reliability and regression analysis, were applied to examine the strength and significance of this relationship. The results indicate a statistically significant positive association between ranking position and consumer click behaviour, confirming that higher visibility leads to increased user engagement. The findings provide valuable insights for businesses and marketers to optimize their digital strategies and improve their competitive positioning in online marketplaces.

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1. INTRODUCTION

The rapid expansion of digital commerce has fundamentally transformed the way consumers search for, evaluate, and purchase products. With the growing dependence on online platforms, search engines have become the primary gateway through which consumers access product-related information. In this digital ecosystem, the visibility of products and services is largely determined by their position on search engine results pages (SERPs). As a result, search engine rankings play a pivotal role in shaping consumer behaviour, particularly in e-commerce environments where competition is intense and attention spans are limited.

One of the most prominent behavioural patterns observed in online search activity is the tendency of users to focus primarily on results that appear on the first page. This phenomenon, commonly referred to as "first-page bias," suggests that consumers are more likely to click on and engage with top-ranked results while ignoring lower-ranked options. Such behaviour can be attributed to cognitive limitations, perceived credibility of higher-ranked links, and the desire for quick and efficient decision-making. Consequently, products or websites that appear at the top of search results gain a significant advantage in terms of visibility, traffic, and potential sales.

In the context of e-commerce platforms, first-page bias has far-reaching implications. Online marketplaces such as Amazon, Flipkart, and eBay rely heavily on search algorithms to rank products based on relevance, popularity, pricing, and user

feedback. These ranking mechanisms directly influence consumer click behaviour, as users tend to associate higher-ranked products with greater reliability and quality. This perceived trust often leads to increased click-through rates (CTR) for top positions, reinforcing the competitive advantage of already visible products.

The concept of first-page bias is also closely linked with theories of information processing and consumer decision-making. In an environment characterized by information overload, consumers tend to adopt heuristics or mental shortcuts to simplify their choices. One such heuristic is the reliance on ranking order as an indicator of product quality or relevance. This behaviour aligns with the principle of bounded rationality, where individuals make satisfactory rather than optimal decisions due to limitations in time, information, and cognitive capacity. As a result, lower-ranked products, despite potentially offering better value or features, often remain unexplored.

Furthermore, the influence of search engine rankings extends beyond individual consumer decisions to broader market dynamics. Businesses invest significantly in search engine optimization (SEO) and sponsored advertising to secure top positions in search results. This has led to increased competition for visibility, where even minor differences in ranking can result in substantial variations in website traffic and sales performance. The interplay between organic rankings and paid placements further complicates consumer behaviour, as users may not always distinguish between sponsored and non-sponsored results.

Despite the growing importance of search rankings in e-commerce, there remains a need for empirical research that quantitatively examines their impact on consumer click behaviour. Understanding this relationship is essential for both academic inquiry and practical application. It enables marketers to design more effective digital strategies, optimize product listings, and enhance user engagement. Additionally, it provides insights into consumer psychology, helping businesses align their offerings with user expectations and preferences.

Therefore, this study aims to investigate the influence of search engine ranking positions on consumer click behaviour within e-commerce platforms. By analyzing user responses and applying statistical techniques, the research seeks to establish the extent to which ranking visibility affects user interaction. The findings are expected to contribute to the existing body of knowledge while offering practical implications for improving digital marketing strategies and enhancing competitive positioning in the evolving e-commerce landscape.

2. LITERATURE REVIEW

The increasing dominance of digital platforms has significantly transformed consumer search and purchase behaviour, particularly in the context of e-commerce. Search engines serve as the primary interface between consumers and online marketplaces, making the positioning of results a crucial determinant of user engagement. Several studies have examined how ranking positions influence consumer click behaviour, giving rise to the concept of first-page bias.

One of the foundational studies in this domain by Joachims et al. (2005) demonstrated that users exhibit a strong tendency to click on higher-ranked search results, even when those results are not necessarily the most relevant. Their research highlighted the presence of "trust bias," where users perceive top-ranked links as more credible and authoritative. This behaviour reinforces the importance of ranking algorithms in shaping online decision-making processes.

Similarly, Pan et al. (2007) found that consumers rarely explore beyond the first page of search results, with a significant majority of clicks concentrated on the top five results. Their findings emphasized that visibility on the first page is critical for attracting user attention and driving website traffic. This behaviour is consistent with the concept of limited attention span, where users prefer quick and efficient information retrieval.

Further supporting this notion, Chitika Insights (2013) conducted an empirical analysis showing that approximately 91% of total clicks occur on the first page of search results, with the first position alone receiving the highest click-through rate (CTR). This study provided quantitative evidence of first-page bias and underscored the competitive advantage associated with top-ranking positions.

In the context of e-commerce, Ghose and Yang (2009) explored how ranking mechanisms influence product visibility and sales performance. Their research indicated that higher-ranked products are more likely to be viewed and purchased, regardless of their intrinsic quality. This phenomenon is partly driven by the "position effect," where consumers equate ranking with product superiority, thereby affecting their purchase decisions.

Moreover, Jansen and Spink (2006) examined user interaction patterns with search engines and found that most users exhibit a scanning behaviour, focusing primarily on the top few results. Their study suggested that users rely on heuristics, such as ranking position, to reduce cognitive effort and simplify decision-making. This aligns with the theory of bounded rationality, where individuals make satisfactory decisions under constraints of limited information and time.

The role of search engine optimization (SEO) and sponsored results has also been widely discussed in the literature. According to Rutz and Bucklin (2011), paid search advertising can significantly influence click behaviour, particularly when ads are placed prominently alongside organic results. However, users often struggle to distinguish between sponsored and organic listings, which further amplifies the impact of ranking positions on consumer choices.

Additionally, Agarwal et al. (2011) investigated position bias in search results and found that even when relevance is controlled, users disproportionately favour higher-ranked links. Their findings confirmed that ranking position itself acts as a powerful signal influencing user behaviour, independent of content quality.

Recent studies have also explored the psychological aspects of search behaviour. Sundar (2008) introduced the concept of "machine heuristic," suggesting that users tend to trust algorithmically generated rankings, assuming them to be

objective and unbiased. This perceived objectivity enhances the credibility of top-ranked results, further reinforcing first-page bias.

Overall, the existing literature consistently highlights the significant influence of search engine rankings on consumer click behaviour. The concentration of clicks on top-ranked results, combined with cognitive biases and heuristic decision-making, creates a systematic advantage for highly visible products and websites. While previous studies have provided valuable insights, there remains a need for context-specific research, particularly in emerging e-commerce markets, to better understand how ranking positions affect consumer behaviour across different demographic and cultural settings.

3. OBJECTIVES AND RESEARCH METHODOLOGY

The present study is analytical in nature and focuses on examining how Ranking Influence affects Consumer Click Behaviour in the context of e-commerce platforms. In today's digital environment, users are continuously exposed to ranked search results, and their decisions are often influenced by the position in which these results appear. This study attempts to understand this behaviour in a structured and measurable manner.

The main objective of the study is to analyse the impact of Ranking Influence (RI) on Consumer Click Behaviour (CB). In addition, the study also aims to understand how search engine rankings influence user attention and decision-making while interacting with online platforms. To examine this relationship, the following hypothesis has been developed:

H_0: *Ranking Influence has no significant impact on Consumer Click Behaviour.*

H_1: *Ranking Influence has a significant impact on Consumer Click Behaviour.*

The data for the study has been collected through primary sources using a structured questionnaire. A total of 305 responses were collected using a convenience sampling method, based on easy accessibility of respondents. The questionnaire consists of multiple statements related to Ranking Influence and Consumer Click Behaviour. These responses were measured using a 5-point Likert scale. Before conducting further analysis, the reliability of the measurement scale was tested using Cronbach's Alpha. A value of $\alpha \geq 0.70$ is considered acceptable for internal consistency. The obtained Cronbach's Alpha value indicates that the data is reliable and suitable for further statistical analysis. For the purpose of data analysis, statistical techniques such as reliability analysis and regression analysis have been used. Regression analysis helps in examining the relationship between Ranking Influence and Consumer Click Behaviour and in testing the proposed hypothesis. The analysis has been carried out using SPSS software. However, the study has certain limitations. The data is collected from a limited number of respondents, which may not fully represent the entire population. The study focuses only on selected aspects of ranking influence and does not include all possible variables that may affect consumer behaviour. In addition, the responses are based on individual perceptions, which may vary from person to person and may influence the results.

4. DATA ANALYSIS & INTERPRETATION

To analyse the relationship between Ranking Influence and Consumer Click Behaviour, a set of statements related to both variables was used to capture respondents' perceptions. These statements were measured using a 5-point Likert scale ranging from strongly disagree to strongly agree. The details of the statements are presented in the table below.

Table 1.1: Statements measuring Consumer Click Behaviour (CB) & Ranking Influence (RI)

Factor	Statements
Consumer Click Behaviour (CB)	1. When searching for products online, I usually click on the results that appear at the top of the search results page. 2. I usually review multiple search results before selecting a website. 3. I usually do not go beyond the first page of search results when looking for products online. 4. I sometimes scroll down search results before deciding which website to click. 5. I often open more than one search result to compare different websites. 6. The position of a result on the search page affects which website I click first.
Ranking Influence (RI)	1. Websites that appear at the top of search results seem more trustworthy to me. 2. The ranking position of a website influences my decision to click on it. 3. I believe search engines place the most relevant websites at the top of the results page. 4. I feel more confident visiting websites that appear higher in search results. 5. Higher-ranked search results are more likely to attract my attention. 6. The order of search results affects which website I choose to visit.

The analysis begins by ensuring the quality of the collected data, where all 304 responses were found to be valid and complete, indicating suitability for further analysis. The reliability of the measurement scale, consisting of 12 items (RI1–RI6 and CB1–CB6), was then assessed.

Table 1.2: Reliability Statistics

Cronbach's Alpha	N of Items
0.819	12
Note: CB1–CB6 and RI1–RI6 items included (N of Items = 12)	

The results show a Cronbach's Alpha value of 0.819, which exceeds the acceptable threshold of 0.70, confirming good internal consistency among the items. Thus, the scale is reliable and the data is appropriate for further statistical analysis.

Table 1.3: Beta Coefficients

Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	5.916	1.224	—	4.833	<0.001	—	—
	RI	0.726	0.052	0.630	14.066	<0.001	1.000	1.000
a. Dependent Variable: CB Tolerance = 1.000; VIF = 1.000 — no multicollinearity.								

To examine the impact of Ranking Influence (RI) on Consumer Click Behaviour (CB), a simple linear regression analysis was conducted. The independent variable RI was entered into the model using the enter method, with no variables removed, ensuring a direct assessment of the relationship between the two variables. The significance of the model was confirmed through ANOVA results, which indicate that the regression model is statistically significant ($F = 197.859$, $p < 0.001$). Since the p-value is less than 0.05, the null hypothesis is rejected and the alternative hypothesis is accepted, confirming that Ranking Influence has a significant effect on Consumer Click Behaviour.

The coefficient analysis further reveals that Ranking Influence has a strong positive impact on Consumer Click Behaviour. The unstandardized coefficient ($B = 0.726$, $SE = 0.052$) indicates that for every one-unit increase in Ranking Influence, Consumer Click Behaviour increases by 0.726 units. The standardized beta value ($\beta = 0.630$) and high t-value ($t = 14.066$, $p < 0.001$) further confirm the strength and significance of this relationship.

In addition, the coefficient correlation analysis shows a perfect correlation ($r = 1.000$) with minimal covariance (0.003), indicating high precision in the estimation of the regression coefficient. Since the model includes only one independent variable, the issue of multicollinearity does not arise. This is also supported by collinearity statistics (Tolerance = 1.000, VIF = 1.000), confirming that the model is free from multicollinearity issues. Overall, the results clearly establish that Ranking Influence is a significant and strong predictor of Consumer Click Behaviour, highlighting the importance of search engine ranking in influencing users' online behavior.

Table 1.4: Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	14.63	27.69	22.99	2.262	302
Std. Predicted Value	-3.695	2.080	0.000	1.000	302
Std. Error of Predicted Value	0.162	0.616	0.214	0.075	302
Adjusted Predicted Value	14.81	27.72	22.99	2.251	302
Residual	-7.805	7.018	0.000	2.786	302
Std. Residual	-2.797	2.515	0.000	0.998	302
Stud. Residual	-2.837	2.533	-0.001	1.003	302
Deleted Residual	-8.031	7.115	-0.003	2.813	302
Stud. Deleted Residual	-2.871	2.556	-0.001	1.008	302
Mahal. Distance	0.024	13.656	0.997	1.912	302
Cook's Distance	0.000	0.116	0.005	0.015	302
Centered Leverage Value	0.000	0.045	0.003	0.006	302
a. Dependent Variable: CB					

Following the regression analysis, residual statistics were examined to evaluate the adequacy and stability of the model. The predicted values range from 14.63 to 27.69, with a mean of 22.99, indicating that the estimated values are well aligned with the observed outcomes of Consumer Click Behavior.

The residual values are centered around zero, and the standardised residuals lie within the acceptable range of ±3, suggesting the absence of significant outliers in the dataset. This indicates that the model does not suffer from abnormal deviations in prediction.

Further, the value of Cook's Distance (maximum = 0.116) remains well below the critical limit of 1, confirming that no single observation exerts undue influence on the regression results. Similarly, the Mahalanobis Distance and leverage values are within acceptable limits, indicating that there are no influential or high-leverage data points affecting the model. Taken together, these results demonstrate that the residuals are normally distributed and free from major anomalies, thereby confirming that the regression model is stable, reliable, and provides a good fit to the data.

Table 1.5: Model Summary

Model	R	R Square	Adjusted R-Square	Std. Error of Estimate	F Change	df1	df2	Sig F Change	Durbin-Watson
1	0.630[a]	0.397	0.395	2.790	197.859	1	300	<0.001	1.706
a. Predictors: (Constant), RI b. Dependent Variable: CB									

The model summary indicates a moderate positive relationship between Ranking Influence (RI) and Consumer Click Behaviour (CB), with a correlation coefficient of $R = 0.630$. The coefficient of determination ($R^2 = 0.397$) shows that 39.7% of the Variation in Consumer Click Behaviour is explained by Ranking Influence, indicating a reasonable explanatory power of the model. The Adjusted R^2 (0.395) further confirms the stability of the model, while the Durbin–Watson value (1.706) suggests that

there is no issue of autocorrelation in the data. Overall, the model demonstrates a good fit and supports the relationship between the variables. To verify the assumptions of normality and homoscedasticity, the Normal P–P Plot of standardised residuals and the scatterplot of standardised residuals were examined.

Fig. 1.1, validates the assumptions of the regression model, the Normal P–P Plot and scatterplot of standardised residuals were examined. The Normal P–P Plot shows that the plotted points closely follow the diagonal reference line, indicating that the residuals are approximately normally distributed and the assumption of normality is satisfied.

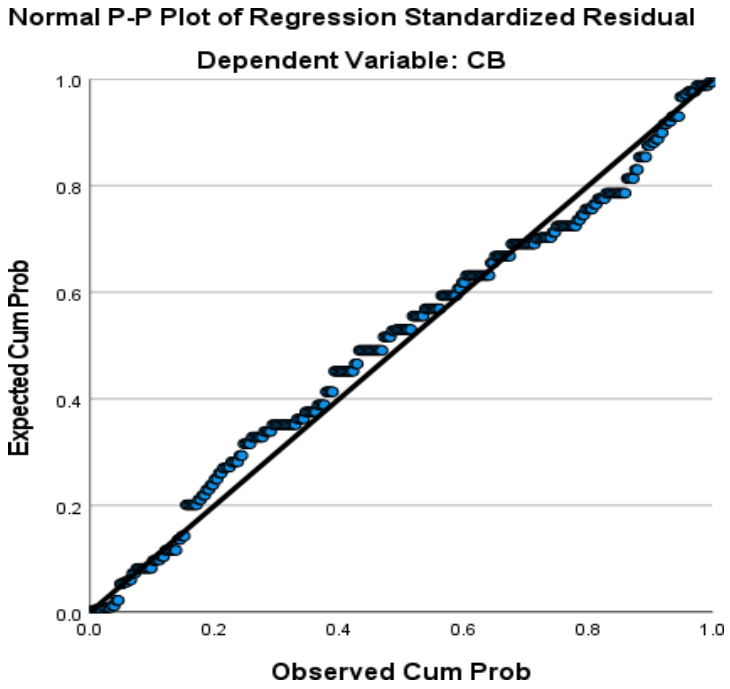

Fig. 1.1: Normal P–P Plot

Further, Fig. 1.2 illustrates the scatterplot of standardised residuals, which shows a random and symmetrical distribution around the horizontal axis, with no visible pattern or funnel shape. This indicates constant variance of residuals across all levels of predicted values, confirming the assumption of homoscedasticity. Overall, the diagnostic plots support the validity and adequacy of the regression model.

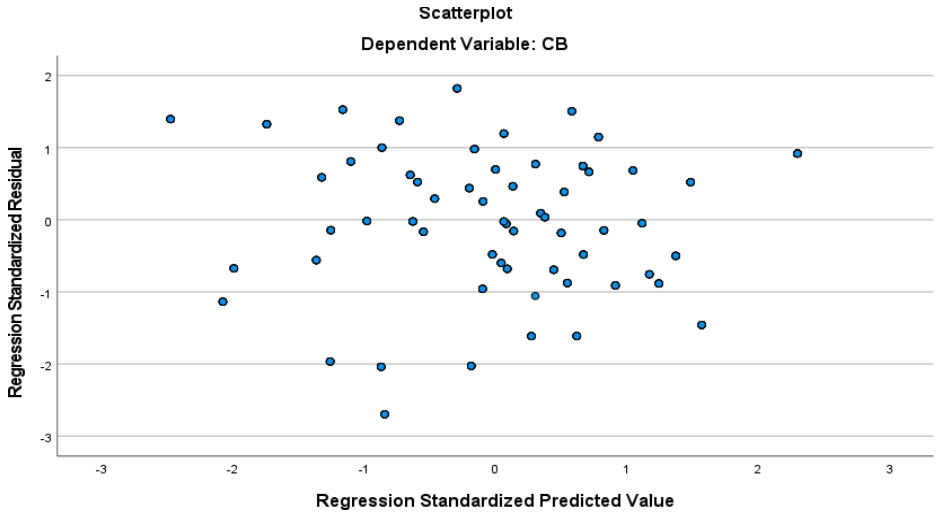

Fig. 1.2: Scatterplot of Standardised Residuals vs. Standardised Predicted Values (Dependent Variable: CB)

5. CONCLUSION

From the above analysis, it can be concluded that Ranking Influence has a significant impact on Consumer Click Behaviour in e-commerce platforms. The findings indicate that consumers do not randomly explore search results, but are naturally drawn towards links that appear at higher positions.

This behaviour can be explained by the way users perceive search rankings. Higher-ranked results are often considered more relevant and trustworthy, which increases their chances of being selected. As a result, users tend to focus more on the top results and are less likely to explore lower-ranked options. This creates a clear pattern where ranking position directly influences user attention and clicking decisions.

In the context of e-commerce, this behaviour becomes highly important, as increased visibility leads to higher chances of user engagement. Businesses that appear at the top of search results are more likely to attract customers, which ultimately impacts their performance and competitiveness in the market.

However, the study is limited to specific variables and a defined sample size. Future research can further explore additional factors such as website design, content relevance, and user experience to gain a deeper understanding of consumer behaviour. Studies can also be extended to different platforms and larger populations to improve the applicability of the findings. Overall, the study highlights that ranking position is not just a technical aspect, but a key factor influencing consumer decision-making in digital environments.

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