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Effect of App Notifications on Online Shopping Behaviour

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ABSTRACT: In the digital era, online shopping has become an important part of consumers' daily lives, mainly due to the rapid growth of mobile applications and e-commerce platforms. Many online shopping apps use push notifications as a marketing strategy to attract customers, inform them about discounts, new arrivals, flash sales, and personalized offers. These notifications play a significant role in influencing consumer purchasing behaviour and increasing engagement with shopping applications. This study aims to examine the effect of app notifications on online shopping behaviour. The research focuses on understanding how factors such as notification frequency, timing, personalization, and promotional content influence consumer purchase decisions, impulse buying behaviour, and overall shopping engagement. The study also evaluates consumers' perceptions and attitudes toward app notifications and identifies whether excessive notifications create irritation or reduce app usage. The research is based on a descriptive research design and uses both primary and secondary data. Primary data was collected through a structured questionnaire from 80 respondents who actively use online shopping applications. The collected data was analyzed using statistical tools to understand the relationship between app notifications and consumer buying behaviour. The findings of the study help businesses and marketers understand how app notifications influence consumer decisions and how effective notification strategies can be developed. The study also contributes to the understanding of digital marketing practices and provides insights that can help improve customer engagement and satisfaction in online shopping platforms.

KEYWORDS: App Notifications, Online Shopping Behaviour, Digital Marketing, Consumer Behaviour, Mobile Commerce, Push Notifications.

I. INTRODUCTION

In the digital era, smartphones have become an integral part of daily life, significantly influencing consumer behaviour and purchasing decisions. With the rapid growth of e-commerce platforms such as Amazon, Flipkart, and Myntra, online shopping has become more convenient, accessible, and personalized. One of the most powerful tools used by these platforms to engage customers is app notifications. App notifications are short messages or alerts sent directly to users' mobile devices to inform them about offers, discounts, new arrivals, reminders, and personalized recommendations. App notifications play a crucial role in influencing online shopping behaviour by creating awareness, stimulating interest, and encouraging immediate action. Through push notifications, brands can communicate directly with consumers in real time, thereby increasing customer engagement and driving impulse purchases. These notifications often use persuasive techniques such as limited-time offers, flash sales, and exclusive deals to trigger urgency and enhance purchase intention.

II. PROBLEM STATEMENT

The rapid expansion of e-commerce and mobile applications, online shopping platforms increasingly rely on app notifications as a key marketing tool to influence consumer purchasing behavior. These notifications are designed to inform users about discounts, personalized offers, flash sales, new product launches, and cart reminders. While app notifications can enhance customer engagement and stimulate purchase decisions, their growing frequency and aggressive marketing strategies have raised concerns regarding consumer irritation, privacy, and information overload.



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III. OBJECTIVES

- 1.To analyze how different types of notifications (promotional, reminder-based, personalized, etc.) influence purchase decisions.
- 2.To evaluate the effect of notification timing and frequency on user satisfaction and app usage behaviour.
- 3.To determine the role of personalized notifications in improving customer retention and conversion rates.
- 4.To identify consumer perceptions, preferences, and attitudes toward app notifications in online shopping apps.

IV. LITERATURE REVIEW

RESEARCH METHODOLOGY

- 1.Rahman, M. H. (2025) Digital marketing influences younger consumers; personalization enhances repeat purchase.
2. Stanciu, V., & Rîndaşu, S.-M. (2021) AI improves experience but raises privacy concerns.
3. Manqele, K. S., Chitamba, A., & Mbona, S. (2025) Social media & loyalty programs increase purchase frequency.
4. Adalakun, A. B., Yakubu, Y. B., & Bello, A. T. (2025) Email marketing strongest predictor of buying behaviour.
5. Blanke, J., Billieux, J., & Vögele, C. (2021) Proposed structured behavioural design model linking psychology with app development to enhance motivation and execution.

V. RESEARCH METHODOLOGY

RESEARCH DESIGN

The study adopts a descriptive research design, as it aims to describe and analyze the relationship between app notifications and online shopping behaviour. This design helps in understanding consumer perceptions, attitudes, and responses toward app notifications.

SOURCE OF DATA

PRIMARY DATA:

Collected directly from respondents through a structured questionnaire.

SECONDARY DATA:

Collected from journals, research articles, books, websites, and previous studies related to digital marketing and consumer behaviour.

VI. SAMPLING SIZE AND SAMPLING TECHNIQUE

The sample size of the study consists of 71 respondents who actively use online shopping mobile applications and receive app notifications. The respondents are selected using the convenience sampling method from a specific geographical area.

TOOLS FOR ANALYSIS

The data was analyzed using the following tools:

- Percentage Analysis: This tool was used to understand the demographic profile and preferences of the customers.
- Ranking Analysis: This tool was used to find the preferred sales promotion techniques.
- One – way ANOVA: This test compares three or more groups. This test is used for non-normal distributed data.

VII. DATA ANALYSIS AND INTERPRETATION

Percentage analysis

S. No	Variable / Indicator	Responses	Percentage (%)
1	Age Group	18–25	88
		26-35	11



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		36-45	0
		45- above	1
2	Gender	Male	60
		Female	11
3	Occupation	Employed	5
		Self - employed	1
		Student	61
		Others	4
4	Education qualification	Higher secondary	1
		Others	11
		Postgraduate	6
		Undergraduate	53
5	Primary Device Used for Online Shopping	Smartphone	28
		Laptop/Desktop	11
		Tablet	1
		Multiple Devices	31
6	Frequency of Online Shopping	Daily	2
		Weekly	18
		Monthly	40
		Occasionally	8
		Rarely	3
7	Preferred Online Shopping Apps	Amazon	47
		Flipkart	14
		Meesho	3
		Others	7
8	App notifications are useful to me	Strongly Agree	13
		Agree	37
		Neutral	12
		Disagree	2
		Strongly Disagree	7
9	I often check notifications immediately	Strongly Agree	15
		Agree	21
		Neutral	13
		Disagree	19
		Strongly Disagree	3
10	Promotional notifications influence my purchase decisions	Strongly Agree	18
		Agree	18
		Neutral	19
		Disagree	7
		Strongly Disagree	9
11	Notifications increase my online shopping frequency	Strongly Agree	25
		Agree	32
		Neutral	9
		Disagree	2
		Strongly Disagree	3
12	Discount notifications encourage me to make purchases	Strongly Agree	16
		Agree	23
		Neutral	17



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		Disagree	13
		Strongly Disagree	2
13	Flash sale alerts make me visit shopping apps immediately	Strongly Agree	17
		Agree	19
		Neutral	19
		Disagree	13
		Strongly Disagree	3

Interpretation: The demographic data shows that the majority of respondents belong to the 18–25 age group (88%), indicating that young consumers form the largest group of online shoppers in this study. Only 11% fall in the 26–35 age group, while very few respondents belong to older age categories. In terms of gender distribution, male respondents (60%) slightly outnumber female respondents (11%) in the sample. Regarding occupation, the results reveal that students constitute the largest portion of respondents (61%), followed by a small number of employed individuals and others. In the case of educational qualification, most respondents are undergraduates (53%), followed by postgraduates and others, showing that the sample mainly consists of individuals pursuing higher education. The data also indicates that smartphones and multiple devices are the most commonly used tools for online shopping, highlighting the importance of mobile accessibility in e-commerce. A smaller number of respondents use laptops/desktops or tablets. When analyzing the frequency of online shopping, most respondents shop monthly (40%), followed by weekly shoppers, while only a few shop daily or rarely. This suggests that online shopping is a regular but not necessarily daily activity for most users. Further analysis of consumer perceptions toward app notifications shows that many respondents agree or strongly agree that notifications are useful and that they often check them immediately. Promotional notifications and discount alerts appear to influence purchase decisions and increase shopping frequency for a significant number of respondents. Additionally, flash sale alerts encourage users to visit shopping apps quickly, indicating that time-limited offers and promotional messages play an important role in attracting consumer attention. Overall, the findings suggest that app notifications are an effective marketing tool that positively influences online shopping behavior and engagement among young consumers.

Ranking analysis

Particulars	Mean	Rank
Notification timing affects my overall app satisfaction.	2.35	1
Receiving notifications at the right time	2.93	2
The frequency of notifications influences how often I open the app.	2.57	3
Frequent reminders increase my interaction with the app.	2.76	4
Proper balance between timing & frequency improves my app engagement.	2.74	5

Particulars	Mean	Rank
Personalized product recommendations improve retention.	2.18	1
Personalized offers & discounts increase conversions	2.62	2
Notification content purchase decisions. relevance affects	3.14	4
Special occasion-based notifications improve engagement.	2.92	3
Location-based notifications shopping behaviour. influence	3.12	5

Interpretation: The ranking analysis highlights the factors that influence users' engagement and satisfaction with app notifications. In the first table, "Notification timing affects my overall app satisfaction" received the first rank with a mean score of 2.35, indicating that the timing of notifications plays the most important role in determining user satisfaction. This is followed by "Receiving notifications at the right time" which secured the second rank (mean 2.93),



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suggesting that users prefer notifications that are delivered at appropriate and convenient moments. The statement “The frequency of notifications influences how often I open the app” obtained the third rank (mean 2.57), showing that the number of notifications can affect how frequently users engage with the app. “Frequent reminders increase my interaction with the app” was ranked fourth (mean 2.76), indicating that reminders encourage users to revisit the application. Finally, “Proper balance between timing and frequency improves my app engagement” received the fifth rank (mean 2.74), implying that while balance is important, users perceive timing and frequency individually as more influential. In the second ranking analysis, “Personalized product recommendations improve retention” obtained the first rank with the lowest mean score of 2.18, indicating that personalized recommendations are the most effective factor in retaining users on shopping apps. The factor “Personalized offers and discounts increase conversions” secured the second rank (mean 2.62), showing that customized deals can motivate users to make purchases. “Special occasion-based notifications improve engagement” was placed in the third rank (mean 2.92), suggesting that festival or event-based notifications attract user attention. The statement “Notification content relevance affects purchase decisions” received the fourth rank (mean 3.14), highlighting that relevant content also influences consumer behavior. Lastly, “Location-based notifications influence shopping behaviour” was ranked fifth (mean 3.12), indicating that although location-based alerts have some impact, they are considered less influential compared to personalized recommendations and offers. Overall, the analysis shows that timely notifications and personalized content play a crucial role in enhancing user engagement, satisfaction, and purchase behaviour in online shopping apps.

One-way ANOVA

TABLE SHOWING FACTORS CAUSING LOSS OF TRUST IN INFLUENCERS ON INFLUENCER MARKETING PERCEPTIONS

TABLE SHOWS ANOVA TEST: 1

Source of Variation	SS	df	MS	F	F Critical (5%)
Between Groups	1173.50	3	391.17	3.00	3.01
Within Groups	5227.00	40	130.68		
Total	6400.50	43			

Interpretation: From the table, the calculated F value is 3.00, while the F critical value at 5% level is 3.01. Since the calculated F value (3.00) is slightly less than the F critical value (3.01), the result is not statistically significant at the 5% level.

Therefore, the null hypothesis (H_0) is accepted, which means that there is no significant difference between the group means. This indicates that the variations observed among the groups may be due to random chance rather than a real effect.

In conclusion, the ANOVA test suggests that the factors being compared do not have a significant impact on the outcome in this study.

VIII. FINDINGS

- App notifications increase customer awareness about online shopping offers and products.
- Promotional alerts encourage users to visit shopping apps more frequently.
- Personalized notifications improve purchase intention among consumers.
- Flash sale notifications lead to impulse buying behaviour.
- Young consumers respond more positively to app notifications.
- Price discount alerts are the most attractive type of notification.

IX. SUGGESTION

App notifications play an important role in influencing online shopping behaviour; therefore, businesses must use them carefully and strategically to achieve positive results. Companies should focus on sending relevant and personalized



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notifications based on customers' browsing history, preferences, and past purchases. Personalized communication helps customers feel valued and increases their interest in products and offers. At the same time, organizations should avoid sending excessive notifications, as frequent alerts may irritate users and lead them to disable notifications or uninstall the application. Maintaining an optimal notification frequency is essential to ensure customer engagement without causing disturbance.

X. CONCLUSION

In conclusion, app notifications have become an important digital marketing tool that significantly influences online shopping behaviour. They help businesses communicate directly with consumers by providing information about offers, product updates, and personalized recommendations. Effective notifications increase customer awareness, engagement, and purchase intention, often encouraging impulse buying and improving overall app usage. Personalized and timely notifications enhance customer satisfaction and strengthen brand loyalty by delivering relevant and useful content.

However, the study also highlights that excessive or irrelevant notifications may lead to customer irritation, reduced interest, and even app uninstallation. Therefore, businesses must maintain a balance between promotional communication and user convenience. Proper timing, limited frequency, meaningful content, and respect for customer privacy are essential factors for successful notification strategies. When used responsibly and strategically, app notifications can improve customer experience, increase sales performance, and support long-term relationships between consumers and online shopping platforms. Overall, well-managed app notifications positively contribute to shaping modern online shopping behaviour.

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