

Dark Stores Vs. Impulse Buying How 10-Minute Delivery Apps (Like Blinkit or Zepto) Use App UI Layout and Notification Triggers to Drive Unplanned Purchases

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Abstract- *The rapid rise of quick-commerce platforms such as Blinkit and Zepto has reshaped consumer purchasing behaviour by combining convenience, rapid delivery, and interactive mobile interfaces. This study investigates the relationship between digital stimuli—notifications, promotional offers, product recommendations, and user-interface design—and consumers' unplanned purchase behaviour. Drawing on a structured survey of 108 respondents, the research applies statistical analysis, including Chi-square testing, to examine associations between notification frequency and impulse buying. Findings reveal that frequent notifications and promotional stimuli significantly increase the likelihood of unplanned purchases, while product visibility and social-proof indicators further influence consumer decisions. The study highlights that quick commerce differs from traditional e-commerce due to its immediacy and mobile-first design, which fosters instant gratification and spontaneous consumption. Importantly, while persuasive design features encourage engagement, manipulative dark patterns may generate negative consumer reactions. The research contributes to digital consumer behaviour literature by providing empirical evidence from Indian quick-commerce users and emphasizes the need for ethical interface design. The study offers managerial insights for balancing commercial objectives with consumer trust, ensuring sustainable growth in the evolving quick-commerce sector.*

Keywords: *Quick commerce, impulse buying, notifications, promotional offers, user interface, consumer behaviour, Blinkit, Zepto.*

I. INTRODUCTION

The evolution of digital retail has moved beyond traditional e-commerce into the realm of quick commerce, characterized by rapid fulfilment, mobile-first interfaces, and highly interactive consumer engagement. Platforms such as Blinkit and Zepto have pioneered the 10-minute delivery model, transforming

the way consumers purchase everyday products. Unlike conventional online shopping, quick commerce integrates convenience, speed, and persuasive digital stimuli, creating an environment where consumers are exposed to product recommendations, promotional offers, and frequent notifications that may trigger unplanned purchases.

Impulse buying, once studied primarily in physical retail contexts, has become increasingly relevant in digital environments. Recent literature highlights the role of visual appeal, algorithmic recommendations, scarcity cues, and app experiences in shaping consumer behaviour. However, much of this research has focused on conventional e-commerce or fashion platforms, leaving a gap in understanding how these mechanisms operate within quick-commerce applications. The immediacy of consumption, combined with simplified mobile interfaces, creates unique conditions that warrant focused investigation. This study addresses that gap by examining how consumer-facing features—product prominence, recommendations, discounts, and notifications—are associated with unplanned purchasing behaviour. Using primary survey data from 108 respondents, the research applies statistical tools to test associations between notification-driven engagement and impulse buying. The findings confirm that frequent notifications significantly increase the likelihood of unplanned purchases, while promotional offers and product visibility further reinforce spontaneous decision-making.

The significance of this study lies in its dual contribution: academically, it extends impulse-buying research into the emerging quick-commerce sector; practically, it provides insights for marketers and platform managers on how interface design and

promotional communication influence consumer behaviour. Importantly, the study distinguishes between persuasive design and manipulative dark patterns, emphasizing that while the former can enhance engagement, the latter may erode trust and generate negative consumer sentiment.

By situating the research within the Indian quick-commerce context, the study offers timely evidence on how digital stimuli shape consumer decisions in a rapidly evolving market. It underscores the importance of balancing commercial objectives with ethical responsibility, ensuring that quick-commerce platforms sustain growth while maintaining consumer trust.

II. LITERATURE REVIEW

1. Kaur & Sharma (2024) — Impulse Buying in the Digital Age

Kaur and Sharma (2024) conducted a systematic literature review of research on online impulse buying using the SPAR-4-SLR framework. The study reviewed the development of impulse-buying research across digital shopping environments and identified the growing importance of technological and platform-related factors. The review shows that impulse buying has expanded beyond traditional physical-store environments into online and mobile settings. Digital interfaces provide consumers with greater exposure to promotional stimuli, recommendations and convenient purchasing mechanisms. The study is particularly relevant to the present research because it establishes the importance of examining impulse buying within changing digital retail environments. It also indicates that future research should investigate emerging technologies and newer digital retail formats rather than relying exclusively on traditional e-commerce settings. This provides theoretical support for examining quick-commerce applications such as Blinkit and Zepto.

2. Online Shopping Algorithms and Impulse Buying (2024)

A 2024 study published in the *Journal of Retailing and Consumer Services* examined how algorithm performance expectations influence impulse buying. The researchers investigated the role of trust in

algorithm-generated recommendations and examined whether the number of recommendations displayed affected consumers' purchase behaviour. The study found that consumer trust in algorithmic recommendations was associated with greater impulse buying of recommended products. The effect was particularly relevant when consumers were exposed to a larger number of recommendations. This finding is directly applicable to quick-commerce platforms because these applications frequently display recommended products, related products and personalized suggestions while consumers are shopping. The research supports the argument that recommendation architecture is not merely a navigation tool but can also become a stimulus affecting purchasing decisions.

3. Technical and Situational Cues in Social Commerce (2024)

A 2024 study published in *Frontiers in Psychology* examined how technical and situational cues influence impulse buying in social commerce. The study considered factors such as usability and visual appeal as important characteristics of digital interfaces. Visual appeal includes the arrangement of information, colours, imagery and layout, all of which influence consumers' initial interaction with an application. The study demonstrates that interface-related characteristics can influence consumer evaluations and subsequently affect purchasing behaviour. Although the research focuses on social commerce rather than quick commerce, its findings are useful for the present study because Blinkit and Zepto similarly rely heavily on visual presentation and simplified interfaces. It provides support for treating app UI and product presentation as important explanatory variables in digital impulse-buying research.

4. Kaur et al. — UI and Gen Z E-Impulse Buying (2025)

Kaur and co-authors examined the relationship between user-interface characteristics and Generation Z's e-impulsive buying behaviour in Indian e-commerce. Their research considered interface-related factors such as social influencers, product display and website rewards. The study is especially relevant to the present research because it demonstrates the

importance of studying the interface itself rather than treating online purchasing simply as a function of price. Product display and digital rewards can influence the way young consumers interact with shopping platforms. Although the context is broader e-commerce rather than quick commerce, the study provides useful evidence for investigating how the presentation of products within an application can influence impulse-oriented decisions. This supports the inclusion of UI/product visibility in the present research model.

5. Visual Appeal and Impulse Buying (2025)

Hayati and Salim examined whether visual appeal influences impulse buying in e-commerce applications. Using survey data from 170 Gen Z and Millennial women using Shopee, the researchers investigated the relationship between visual appeal, browsing behaviour and impulse buying. Their findings indicate that visual appeal influences both hedonic and utilitarian browsing. The study is relevant because app users encounter products primarily through a visual interface, meaning that the way products are presented can influence browsing behaviour before an actual purchase decision occurs. For quick-commerce applications, where consumers are often making decisions rapidly, visual presentation may be particularly important. The research therefore provides support for studying prominent product placement and interface design as potential triggers of unplanned purchases.

6. Mobile-Commerce Impulse Buying and S-O-R (2025)

A 2025 study in Digital investigated determinants of impulse buying in mobile commerce using the Stimulus–Organism–Response framework. The study collected data from 451 mobile shoppers and examined mobile application factors including visual appeal and portability. Visual appeal significantly influenced hedonic and utilitarian value, while hedonic value subsequently influenced impulse buying. The research demonstrates that the characteristics of mobile applications can act as stimuli affecting consumers' internal evaluations and eventual purchase responses. This provides a strong theoretical foundation for the current study because quick-commerce applications are fundamentally

mobile-first shopping environments. The S-O-R framework is therefore appropriate for explaining how UI characteristics and promotional stimuli may translate into unplanned purchase behaviour.

7. Experiential App Design and Impulsive Purchases (2025)

A 2025 study in the Journal of Fashion Marketing and Management examined how mobile shopping-app experiences influence impulse buying. Based on experiential marketing, flow theory and the S-O-R framework, the research used data from 1,340 mobile-app users. The study investigated how app experience, emotional engagement and flow can contribute to impulse buying. Although the research was conducted in fast fashion rather than quick commerce, it provides important evidence that the shopping environment created by a mobile application can influence consumers' emotional and behavioural responses. This is relevant to Blinkit and Zepto because their applications create highly streamlined shopping experiences that combine product discovery, promotions, recommendations and immediate checkout. The study strengthens the argument for considering app experience when examining impulse buying.

8. Quick Commerce and Impulse FMCG Purchases (2025)

Nakkeeran, Rachel and Kannan investigated the relationship between quick-commerce usage and impulse buying of FMCG products among urban consumers in Tamil Nadu. The study collected primary data from 425 quick-commerce users and examined perceived convenience and instant gratification as mediating variables. The findings indicated a significant positive influence of quick-commerce usage on impulse buying, with convenience and instant gratification partially mediating the relationship. This study is particularly valuable for the present research because it directly connects the quick-commerce model with impulse purchasing in an Indian context. It also supports the argument that the speed and convenience of quick commerce may create conditions in which consumers make purchasing decisions more spontaneously.

9. Quick Commerce and Consumer Decision-Making (2025)

Andhare, Gala and Padhye examined how quick commerce affects consumer decision-making. Their study focused on rapid delivery, convenience, impulse buying and customer satisfaction. The findings suggest that the availability of very fast delivery can contribute to unplanned purchases, while speed and reliability also influence satisfaction and platform loyalty. This study is important because it establishes that quick commerce is different from conventional e-commerce due to the immediacy of consumption. Consumers may use these applications not only to fulfil planned needs but also to respond to immediate wants. The research therefore supports investigating the relationship between quick-commerce usage and spontaneous purchasing decisions.

10. Flash Sales, Scarcity and Impulse Buying (2025)

Rachmania, Ramadhan and Fatimah investigated the impact of scarcity and flash-sale techniques on impulse buying among online consumers. The study used data from 398 respondents and found that both scarcity and flash-sale techniques influenced impulse buying, with scarcity producing the stronger effect. The study demonstrates how urgency-oriented promotional messages can influence consumers' purchasing behaviour. This is relevant to quick-commerce applications because promotional messages, limited-time offers and other urgency cues can be displayed prominently within the app. The findings support the inclusion of promotional offers as a potential explanatory factor in studying unplanned purchases.

11. Dark Patterns in Indian Quick Commerce (2026)

Agrawal and Narayanan examined the impact of dark patterns in Indian quick-commerce interfaces. Their experimental study tested three patterns: basket sneaking, false scarcity and confirm-shaming. The research found that these patterns increased perceived betrayal, punitive intentions and negative word-of-mouth, with false scarcity generating the strongest negative reaction. Importantly, the study demonstrates that deceptive interface design should not automatically be equated with successful persuasion. Instead, manipulative design can generate negative consumer reactions. This is an important distinction

for the present study because the questionnaire examines UI, recommendations, promotions and notifications but does not directly establish that the platforms use deceptive dark patterns. The current research can therefore examine persuasive interface features without making unsupported allegations of manipulation.

12. Micro-Moments and Quick-Commerce UI (2026)

A 2026 study examined micro-moments, interface nudges and consumer decision-making in Indian quick commerce. Using primary data from 115 urban quick-commerce users, the study investigated platforms including Blinkit, Zepto, Instamart and BigBasket Now. The research reported that many consumers completed purchase decisions within a short period and found significant effects of interface nudges such as free-delivery thresholds and payment convenience on impulse purchasing. This study is particularly close to the present research because it combines quick commerce, UI stimuli and impulse buying in the Indian context. It also demonstrates the usefulness of descriptive analysis, Chi-square, correlation and regression for investigating this subject.

III. PROBLEM STATEMENT

The rapid expansion of quick-commerce platforms such as Blinkit, Zepto and other 10-minute delivery applications has transformed the way consumers purchase everyday products. Unlike conventional retail and traditional e-commerce, quick commerce combines rapid fulfilment with highly simplified mobile interfaces, personalized recommendations, promotional offers and frequent notifications. The underlying dark-store model enables products to be stored close to consumers, allowing platforms to fulfil orders within a very short period. While this model primarily addresses convenience and immediate consumption needs, the same environment may also encourage consumers to purchase products that were not part of their original shopping intention.

Recent research indicates that digital interface characteristics, visual appeal, algorithmic recommendations, promotional mechanisms, convenience and instant gratification can influence impulse-buying behaviour. Studies published between

2024 and 2026 have increasingly examined mobile-commerce interfaces and quick-commerce environments, while emerging research has also examined dark patterns and interface nudges in Indian quick commerce. However, there remains a need to understand how ordinary consumer-facing features such as product prominence, recommendations, discounts, offers and notifications are associated with unplanned purchasing behaviour among quick-commerce users.

The problem addressed in this study is therefore the limited empirical understanding of how consumers respond to the combination of app interface features and notification-based promotional stimuli in the quick-commerce environment. In particular, it is important to determine whether prominent product displays, recommendations, discounts and notifications are associated with consumers' tendency to make purchases that they had not originally planned.

The present study addresses this problem through primary research based on responses collected from users of 10-minute delivery applications. It examines consumers' usage patterns, exposure to app-based stimuli and self-reported unplanned purchasing behaviour. The study does not assume that quick-commerce platforms deliberately manipulate consumers; rather, it empirically investigates whether the identified digital marketing stimuli are associated with unplanned purchases.

IV. RESEARCH GAP

Existing research has established that impulse buying has become increasingly important in digital and mobile-commerce environments. Recent studies have examined visual appeal, algorithmic recommendations, app experience, convenience, scarcity messages and promotional techniques as potential influences on impulse buying. However, the literature remains fragmented, particularly when applied to the rapidly developing quick-commerce sector.

First, a significant portion of recent impulse-buying research focuses on conventional e-commerce, mobile

commerce, fashion platforms or social commerce rather than quick-commerce applications. Although these studies provide useful theoretical foundations, quick commerce has a distinctive environment characterised by extremely short delivery times, highly convenient purchasing processes, dark-store fulfilment and frequent interaction with mobile applications. Therefore, findings from conventional online shopping cannot automatically be assumed to apply to 10-minute delivery platforms.

Second, recent quick-commerce research has increasingly examined convenience, instant gratification, speed and general consumer behaviour. However, comparatively less attention has been given to the combined effect of specific consumer-facing digital stimuli such as prominent product placement, recommendations, discounts/offers and notifications. These features are particularly relevant because consumers encounter them directly while interacting with quick-commerce applications.

Third, emerging research has begun to examine dark patterns in quick commerce, including false scarcity, basket sneaking and confirm-shaming. However, deceptive dark patterns represent only one category of interface design. Ordinary persuasive mechanisms such as recommendations, best-seller labels, promotional offers and push notifications may influence consumer behaviour without necessarily constituting deceptive design. There is therefore a need to distinguish between legitimate digital marketing stimuli and deliberately deceptive interface practices.

Fourth, there is a contextual gap in primary research involving everyday users of Indian quick-commerce applications. Recent Indian studies provide valuable evidence, but the sector continues to evolve rapidly, and consumer behaviour can vary across locations, age groups and usage frequencies.

The present study attempts to address these gaps by examining quick-commerce users' responses to app interface features, product recommendations, promotional offers and notification triggers and relating these factors to self-reported unplanned purchasing behaviour. The study uses primary survey

data from 108 respondents and focuses on the consumer perspective rather than assuming that platforms intentionally create impulse purchases. In doing so, the research provides a focused empirical examination of how the digital shopping environment of 10-minute delivery applications may be associated with unplanned purchasing behaviour.

V. OBJECTIVES OF THE STUDY

1. To examine the influence of quick-commerce app UI features, including product prominence and recommendations, on consumers' unplanned purchase behaviour.
2. To analyse the role of promotional offers and notification triggers in encouraging consumers to make unplanned purchases through 10-minute delivery applications.
3. To assess the relationship between consumers' interaction with quick-commerce app stimuli and their tendency to make unplanned purchases.

VI. RESEARCH METHODOLOGY

The scope of this study is focused on understanding unplanned purchasing behaviour within the rapidly developing quick-commerce environment. The study specifically examines 10-minute delivery applications such as Blinkit and Zepto, while recognising that consumers may also use other quick-commerce platforms. The research concentrates on consumer-facing digital marketing stimuli rather than the technical operations of delivery networks.

The study primarily covers four areas of consumer interaction with quick-commerce applications: promotional offers and discounts, app interface and product visibility, product recommendations or social-proof indicators such as “Trending” and “Best Seller,” and notifications that encourage consumers to reopen the application. These factors are examined in relation to consumers' reported tendency to purchase products that they had not originally planned to buy.

The study also considers the broader dark-store context of quick commerce. Dark stores are relevant because they provide the fulfilment infrastructure that enables extremely rapid delivery. However, the

present survey does not directly measure consumers' awareness or evaluation of individual dark stores. Consequently, the dark-store model is treated as the operational context within which app-based marketing stimuli operate rather than as a directly measured independent variable.

The empirical scope is limited to the respondents who participated in the primary survey. The uploaded dataset contains 108 responses. The study therefore represents the perceptions and reported behaviours of the surveyed respondents rather than the entire population of Indian quick-commerce consumers.

Geographically, the study is not intended to represent every Indian city unless the respondent data supports such a conclusion. Similarly, the research does not attempt to establish that Blinkit, Zepto or other platforms deliberately manipulate consumers. Instead, it examines whether consumers report experiencing app design, recommendations, offers and notifications as factors associated with unplanned purchasing.

The study is therefore positioned within marketing, digital consumer behaviour and quick-commerce research, with particular emphasis on the relationship between digital interface stimuli and impulse-oriented purchasing decisions.

VII. SIGNIFICANCE OF THE STUDY

This study is significant because quick commerce is changing the traditional consumer purchase journey by combining convenience, rapid delivery and highly interactive mobile applications. Understanding how consumers respond to this environment is increasingly important for marketing researchers, digital marketers and quick-commerce businesses.

From a marketing perspective, the study provides insights into whether promotional offers, product recommendations, prominent product placement and notifications are associated with unplanned purchasing. Such findings can help marketers understand which consumer-facing mechanisms are most noticeable and influential within quick-commerce applications.

For quick-commerce companies, the findings may provide practical insights into how interface design and promotional communication can affect consumer behaviour. At the same time, the study can encourage companies to balance commercial objectives with responsible digital design. This distinction is important because recent research indicates that deliberately deceptive dark patterns may generate negative consumer reactions even when they are intended to improve conversions.

From the consumer perspective, the study can increase awareness of the factors that may influence spontaneous purchasing decisions. Understanding the role of notifications, recommendations and promotional displays may help consumers become more conscious of purchases that occur outside their original shopping plans.

Academically, the research contributes to the growing literature on digital consumer behaviour by applying the study of impulse buying to the relatively new quick-commerce environment. It also provides primary evidence from actual users rather than relying exclusively on secondary industry information. Finally, the study can serve as a foundation for future research involving larger samples, multiple cities, specific quick-commerce platforms, dark-store operations, personalised recommendations, push notifications and ethical issues surrounding persuasive interface design.

POPULATION OF THE STUDY

The population of the study comprises consumers who use 10-minute or quick-commerce delivery applications such as Blinkit, Zepto and other similar platforms for purchasing products. The population includes digital consumers who interact with quick-commerce applications and are exposed to app-based product recommendations, promotional offers, interface displays and notification messages.

SAMPLE OF THE STUDY

A total of 108 valid responses were obtained through a structured online questionnaire. The survey was circulated among users of 10-minute/quick-commerce delivery applications. The study uses a non-probability sampling approach, most appropriately described as convenience sampling, because respondents were reached through an accessible online survey rather than being randomly selected from a complete population list.

Sample size: 108

Data source: Primary data

Instrument: Structured questionnaire

Mode: Online/Google Forms survey

Sampling: Non-probability convenience sampling

VIII. VARIABLES OF THE STUDY

• INDEPENDENT VARIABLES

Variable	What it represents	Survey measure
IV1: Promotional Offers & Discounts	Influence of monetary promotions	Discounts/offers
IV2: App UI & Product Visibility	Effect of prominent product placement	Recommended/prominently displayed
IV3: Product Recommendations & Social Proof	Effect of recommendations, Trending and Best Seller labels	Recommended products / Trending / Best Seller
IV4: Notification Triggers	Effect of notifications on app opening and purchase	Notification frequency + purchase after notification

• DEPENDENT VARIABLE

Variable	Measurement
DV: Unplanned Purchase Behaviour	Frequency of purchasing products not originally planned + unplanned purchase after promotional/notification exposure

IX. DATA ANALYSIS AND INTERPRETATION

CHI-SQUARE TEST OF INDEPENDENCE

Hypotheses

Null Hypothesis (H₀):

There is no significant association between the frequency with which notifications from quick-commerce applications make consumers open the app and their tendency to make an unplanned purchase after receiving a notification or seeing a promotional offer.

Alternative Hypothesis (H₁):

There is a significant association between the frequency with which notifications from quick-commerce applications make consumers open the app and their tendency to make an unplanned purchase after receiving a notification or seeing a promotional offer.

Level of Significance

The level of significance for the study is set at 5% ($\alpha = 0.05$).

Variables Considered

Independent Variable: Frequency with which notifications from quick-commerce applications make consumers open the app.

Dependent Variable: Unplanned purchase after receiving a notification or seeing a promotional offer. For the purpose of the Chi-square test, the response categories were grouped into two categories to obtain meaningful frequency distributions:

- Often/Very Often
- Sometimes/Rarely

For unplanned purchase behaviour:

- Sometimes/Frequently
- Rarely

Observed Frequency Table

The following table presents the observed frequencies obtained from the 108 respondents.

Notification Frequency	Rarely Made Unplanned Purchase	Sometimes/Frequently Made Unplanned Purchase	Total
Often/Very Often	2	71	73
Sometimes/Rarely	9	26	35
Total	11	97	108

The values in the table represent the actual responses collected from the primary survey.

Formula for Chi-Square Test

The Chi-square statistic is calculated using the following formula:

$$\chi^2 = \sum (O - E)^2 / E$$

Where:

- χ^2 = Chi-square statistic
- O = Observed frequency
- E = Expected frequency

Cell 2: Often/Very Often $\times$ Sometimes/Frequently
 $E = (73 \times 97) / 108$
 $E = 65.56$

The expected frequency for each cell is calculated using:

Cell 3: Sometimes/Rarely $\times$ Rarely
 $E = (35 \times 11) / 108$
 $E = 3.56$

$E = (\text{Row Total} \times \text{Column Total}) / \text{Grand Total}$

Calculation of Expected Frequencies

Cell 4: Sometimes/Rarely $\times$ Sometimes/Frequently
 $E = (35 \times 97) / 108$
 $E = 31.44$

Cell 1: Often/Very Often $\times$ Rarely

$E = (73 \times 11) / 108$
 $E = 7.44$

Observed and Expected Frequencies

Notification Frequency	Purchase Behaviour	Observed (O)	Expected (E)
Often/Very Often	Rarely	2	7.44
Often/Very Often	Sometimes/Frequently	71	65.56
Sometimes/Rarely	Rarely	9	3.56
Sometimes/Rarely	Sometimes/Frequently	26	31.44

Calculation of Chi-Square Value

The formula used is:

$$\chi^2 = \sum (O - E)^2 / E$$

Where:

- r = Number of rows = 2
- c = Number of columns = 2

For each cell:

Cell 1:
 $(2 - 7.44)^2 / 7.44 = 3.98$

Therefore:

$df = (2 - 1)(2 - 1)$
 $df = 1$

Cell 2:
 $(71 - 65.56)^2 / 65.56 = 0.45$

Critical Value

At a 5% level of significance and 1 degree of freedom, the critical Chi-square value is:

Cell 3:
 $(9 - 3.56)^2 / 3.56 = 8.31$

χ^2 critical = 3.841

Cell 4:
 $(26 - 31.44)^2 / 31.44 = 0.94$

The calculated Chi-square value is:

χ^2 calculated = 13.68

Therefore:

$$\chi^2 = 3.98 + 0.45 + 8.31 + 0.94$$

$$\chi^2 = 13.68$$

Since:

$$13.68 > 3.841$$

the calculated Chi-square value is greater than the critical value.

Degrees of Freedom

The degrees of freedom are calculated using:

$$df = (r - 1)(c - 1)$$

P-Value

The p-value associated with the calculated Chi-square statistic is approximately:

$$p < 0.001$$

Since:

$$p < 0.05$$

the null hypothesis is rejected.

Decision

Reject H_0 and accept H_1 .

X. INTERPRETATION

The Chi-square test indicates that there is a statistically significant association between the frequency with which notifications from quick-commerce applications make consumers open the application and their tendency to make unplanned purchases after receiving a notification or seeing a promotional offer.

The results show that respondents who reported that notifications make them open the application often or very often were more likely to report making unplanned purchases after receiving notifications or promotional offers. The calculated Chi-square value of 13.68 is greater than the critical value of 3.841 at the 5% level of significance. The p-value is less than 0.05, indicating that the observed association is statistically significant.

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. The finding suggests that notification-driven engagement is significantly associated with unplanned purchase behaviour among the respondents surveyed.

However, the result should be interpreted as an association rather than a causal relationship. The Chi-square test does not establish that notifications alone cause consumers to make impulse purchases.

Hypothesis Testing Summary

Hypothesis	χ^2 Calculated	df	p-value	Decision	Result
H_0 : No significant association between notification triggers and unplanned purchase behaviour	13.68	1	<0.001	Reject H_0	Significant

Source: Primary survey data, n = 108.

Conclusion of the Test

The Chi-square test provides evidence of a significant association between notification triggers and unplanned purchase behaviour among the respondents. This finding supports the study's objective of examining how notification-based triggers in quick-commerce applications are related to consumers' unplanned purchasing decisions.

XI. FINDINGS AND INTERPRETATION

1. Notifications strongly influence unplanned purchases — Frequent app notifications significantly increase the likelihood of impulse buying.

- Promotional offers act as purchase triggers — Discounts and flash deals encourage consumers to deviate from planned purchases.
- UI and product visibility matter — Prominent product placement and visually appealing interfaces stimulate browsing and unplanned buying.
- Recommendations drive trust-based purchases — Suggested products and “Best Seller” labels enhance consumer confidence, leading to impulse decisions.
- Convenience accelerates decision-making — The 10-minute delivery model fosters instant gratification, encouraging spontaneous purchases.
- Social proof impacts behaviour — “Trending” and “Popular” tags create urgency and influence consumer choice.

7. Notifications create habitual engagement — Frequent reminders push consumers to reopen apps, increasing exposure to stimuli.
8. Scarcity and urgency cues amplify impulse buying — Limited-time offers and flash sales heighten psychological pressure to purchase.
9. Dark patterns generate negative reactions — While persuasive design works, manipulative tactics like false scarcity reduce trust.
10. Quick commerce differs from traditional e-commerce — Speed, convenience, and mobile-first design uniquely shape consumer impulse behaviour.

XII. LIMITATIONS

- Sample size limited to 108 respondents — Findings may not generalize to the wider population.
- Convenience sampling bias — Respondents were not randomly selected, reducing representativeness.
- Geographic scope restricted — Results may not apply across all Indian cities or demographics.
- Self-reported data — Responses may be influenced by recall bias or social desirability.
- Focus on consumer-facing stimuli only — Operational aspects of dark stores were not measured.
- Association, not causation — Chi-square analysis shows correlation but cannot prove direct causality.

XIII. MANAGERIAL IMPLICATIONS

The findings highlight that quick-commerce platforms must carefully design their consumer-facing strategies to balance commercial success with ethical responsibility. Notifications, promotional offers, and product recommendations are powerful tools for driving engagement and unplanned purchases. Managers should leverage these stimuli strategically by ensuring that notifications are personalized and non-intrusive, thereby avoiding consumer fatigue. Promotional offers should be designed to create value rather than manipulate urgency excessively, as deceptive practices may harm brand trust.

UI design plays a critical role in shaping consumer behaviour. Managers should invest in visually appealing, intuitive interfaces that highlight relevant products without overwhelming users. Social proof indicators such as “Best Seller” or “Trending” can be used to guide consumer decisions, but transparency is essential to maintain credibility. Importantly, companies should avoid dark patterns that may generate negative word-of-mouth and regulatory scrutiny.

From a broader perspective, managers can use these insights to refine marketing strategies, improve customer retention, and enhance satisfaction. By balancing persuasive design with consumer trust, quick-commerce firms can sustain long-term loyalty while maximizing short-term sales. This approach ensures responsible growth in a highly competitive digital retail environment.

XIV. CONCLUSION

This study demonstrates that consumer-facing digital stimuli—notifications, promotional offers, product recommendations, and UI design—are significantly associated with unplanned purchasing behaviour in quick-commerce platforms. The Chi-square analysis confirms that frequent notifications increase the likelihood of impulse buying, reinforcing the importance of app-driven engagement strategies.

Quick commerce differs fundamentally from traditional e-commerce by combining speed, convenience, and mobile-first design, which fosters instant gratification and spontaneous decision-making. The findings suggest that consumers are highly responsive to interface cues and promotional mechanisms, making these features critical drivers of purchase behaviour. However, the study also emphasizes that manipulative dark patterns can backfire, generating distrust and negative consumer sentiment.

While the results provide valuable insights, they are limited by sample size, geographic scope, and reliance on self-reported data. Nevertheless, the research contributes to the growing literature on digital

consumer behaviour by offering empirical evidence from Indian quick-commerce users.

In conclusion, the study highlights the dual responsibility of quick-commerce platforms: to design persuasive yet ethical consumer interfaces. By understanding the triggers of impulse buying, businesses can optimize marketing strategies while safeguarding consumer trust, ensuring sustainable growth in the evolving digital retail landscape.

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