



# Clicks, Tricks, And Purchases: The Dark Side Of Indian E-Commerce

<sup>1</sup> Dev Shankar, 2Sijo Joseph

M.Com Student, M.Com Student

Department of Commerce, School of Commerce,  
Finance and Accountancy, CHRIST University, Bengaluru, India

**Abstract:** Dark patterns are misleading UI/UX designs that prey on users to decide that they did not mean, thus interfering with consumer autonomy and informed choice, which may be unfair trade practices or consumer rights infringements. This research paper discusses the popularity and tactical application of the so-called dark patterns in any of the significant online retailers in India, with a focus on the most frequent dark patterns evident in the Indian market, including false urgency, drip pricing, sneaking baskets, and subscription traps, deceptive techniques used to persuade customers to make purchases. It critically assesses the ethical issues, consumer effects, and regulatory issues of these manipulatives, particularly as more and more enforcement efforts are being made. Empirical observations and scrutiny of the websites show that there are still non-compliance and recurring risks even after regulators focus on them. Besides that, the research includes opinions of customers gathered by use of surveys to evaluate their awareness and experiences of dark patterns in the Indian e-commerce. A large number of those interviewed said they had experienced hidden fees, misleading discount offers, selected terms, and confusing cancellation procedures, and they realized they had been swamped by such pitfalls only after a bad experience. The findings reflect how there is some strong emphasis on regulation mechanisms, explicit design practices, and consumer awareness programs that are more effective in protecting the digital rights of consumers in India.

**Index Terms - Component, formatting, style, styling, insert.**

## I. INTRODUCTION

E-commerce in India has grown at an unimaginable rate within the past ten years, with the market starting with a size of 14 billion dollars in 2014 and projected to reach close to 125 billion dollars by 2024, owing to the digitization rate, enhanced connectivity, reduced data charges, and the acceptance of online transactions. This move has not only changed the old ways of retail but has also brought digital commerce into the daily lives of consumers, especially since 2020, when technology use and behavioral changes accelerated, leading to increased online consumption. It is expected to expand further, becoming the world's second-largest online retail economy by 2030 and the fifth-largest by 2035, with forecasts of up to \$ 345 billion and \$ 550 billion, respectively. With these trends of platform size and internet penetration moving outside of metropolitan areas into semi-urban and rural audiences, the digital marketplace is moving into the main element of the national economic system, allowing a wider audience of consumers and businesses to engage with it.

In line with this growth, though, the industry has been seeing an escalating amount of consumer sovereignty, online disclosure, and moral interface design issues. Researchers have reported the development of so-called dark patterns, manipulative strategies in user interfaces designed to guide consumers to decisions they do not necessarily make on their own (Gray et al., 2018; Chromik et al., 2019; Ravi et al., 2025). Among these are drip pricing, confirm shaming, bait-and-switch, forced action, and hidden opt-in, which are practices witnessed on the top platforms in Amazon India, Flipkart, Myntra,

Zomato, and Swiggy (Mathur et al., 2019; Bajaj et al., 2025). These designs will leverage cognitive biases to induce unintended buying, unwanted data sharing, payment options, or diminished freedom of choice, thereby compromising digital agency (Berens et al., 2024; Kollmer and Eckhardt, 2023). Considering the size of the online retail market in India, the aggregate effect of such measures is not necessarily an individual user -level susceptibility, but in fact it may be a defenselessness to consumers on a larger scale.

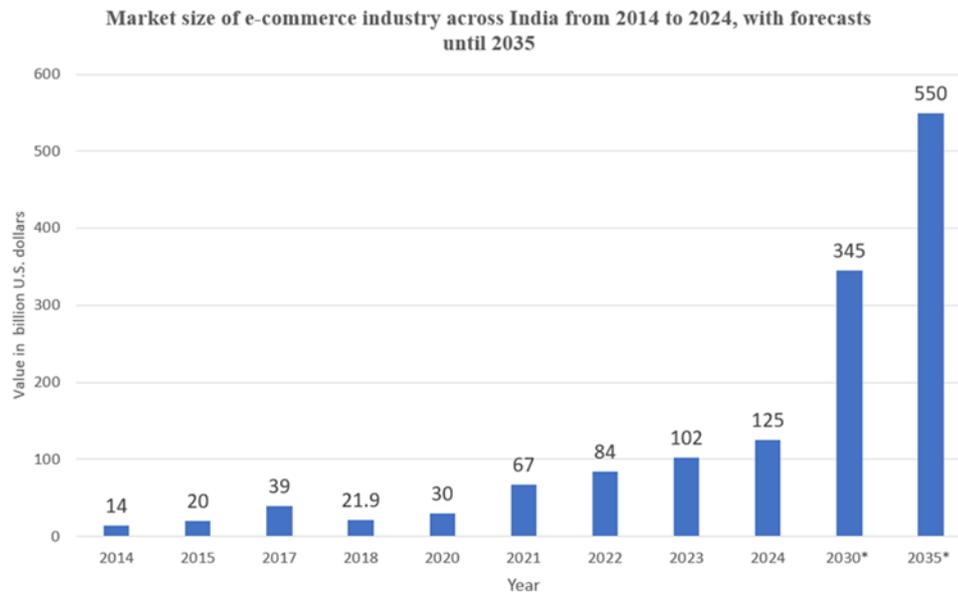
The introduction of regulatory action has developed an appreciation of these difficulties. In 2023, the Guidelines of the Central Consumer Protection Authority became a landmark in changing this situation: the thirteen categories of dark patterns were officially mentioned as prohibited or limited in digital marketplaces. The principles also stressed the need for due self-auditing systems, non-secretary disclosures, and responsibility systems across e-commerce platforms to treat consumers fairly (Sawant et al., 2025; I sola and Esposito, 2025). It is part of a broader trend towards reconciling technological innovation and ethical governance, avoiding the unrestrained commodification of user agency in high-growth digital conditions. Dark patterns have emerged as an important topic of study both academically and in policy-making contexts, and studies have focused on the typologies of dark patterns, their effects on behavior, and their regulatory consequences in the global and Indian markets (Caragay et al., 2024; Di Geronimo et al., 2020; Calaza, 2024). It is on this background that this paper will give a contextual analysis of the dark patterns in the Indian e-commerce ecosystem, both in terms of market statistics, regulatory trends, and academic contributions. This introduction is meant to put the emergence of dark patterns not just as a design problem, but as a structural problem embedded in the competitive business model of digital businesses, which requires informed research, much stricter legal protections, and proactive measures to ensure that consumer rights and well-being remain intact as the industry grows its web of active expansion.

Accepting that such phenomena are hardly discussed in the literature, only a single questionnaire is used in the research to obtain the necessary data. Considering the fact that the discussed phenomena have been scarcely discussed in the literature, one of the questionnaires is used in the study to gather the required data.

In addition to this rapid expansion of the business sector of the online platforms, there has been a drastic change in the psychics of the online space. The current e-commerce interfaces are not just a display system but rather deep-engineered persuasive ecologies that are optimized to achieve conversion rates, engagement as much as possible, and capture behavioral information. This change has made the competition between platforms stronger; numerous companies have been experimenting with finer manipulations of designs that were below the threshold of conscious recognition. Another critical matter that arises out of these practices about the distinction between persuasive design and deceptive design is also present. Though persuasion in marketing is not always immoral, the deliberate manipulation of the environment of choice in a manner that misinformation is perverted, cognitive heavy loaded, or consequences falsely portrayed is a paradigm shift in the marketing place ethics.

Besides, the Indian online consumer market is well differentiated and includes the first-generation online consumers, consumers who are price-sensitive and online consumers with varying levels of digital literacy. This heterogeneity increases vulnerability of the manipulative interface methods, especially in the event when the customers are not technically present-minded to identify the hidden costs or misleading proposals. This apparent information imbalance between platforms and users may be exaggerated by the transition of rural and semi-urban regions to digital commerce. Therefore, the information regarding the dark patterns of the Indian context is not an academic activity but a socio-economic need. One gets into the need to find out how these practices can affect the development of trust, how the brand will be perceived in the long run, and how relationships with customers will be maintained in the new digital economy.

Figure 1: Statista - Market size of Indian e-commerce websites from 2014 -35



## II. LITERATURE REVIEW

The Review of Literature was compiled through a narrative synthesis methodology on 30 peer-reviewed articles of the period, 2018 to 2025, in total, including articles, conference materials, and regulatory literature on dark patterns. The sources that we re used to obtain the relevant studies included Scopus, Web of Science, and Google Scholar. The articles have been rated in relation to their thematic relevance, methodology, context, and theoretical contribution, which made it possible to gain a synthesized view of how the current research accounts for how digital environments are created and developed into dark patterns.

Gray et al. (2018) introduced the earliest conceptual grounds by outlining the nature of the dark patterns as deliberate interface designs aimed at controlling users to do something that they do not want to do. Mathur et al. (2019) empirically supported this notion by their large-scale usage of web crawling to over 11,000 shopping websites, which showed the profuse use of dark patterns in commercial interfaces. Subsequent research enhanced taxonomic clarity, with Gray, Santos, and Bielova (2023) providing structured ontologies and Kollmer and Eckhardt (2023) narrowing down the conceptual scope. The combination of these works represents a move to no longer document instances of deceptive practices but articulate them with a greater amount of systematic order (that is, in a theoretical category). There is a large amount of research that explores the influence of dark patterns on consumer behavior in e-commerce. Budimcic (2023) and Calaza (2024) discovered that the use of scarcity signals, urgency notifications, and emotionally evoking prompts is a reliable way to engage in impulse purchase and post-purchase regret. Koh and Seah (2023) singled out preselected defaults, forced actions, limited time prompts, and scarcity framing as especially persuasive to nudge users into making unintended decisions. Local studies support the given global tendency: Laahanen (2021) recorded examples of deceptive nudges in the case of the Swedish platforms, whereas Ribeiro et al. (2025) found the same concerns in the digital marketplace in Brazil. Olovsson and Rieck (2025) also attributed such manipulative designs to less trust, dissatisfaction, and a negative attitude about the consumer.

The studies of mobile interfaces point to increased user vulnerability. In Di Geronimo et al. (2020), mobile apps were identified as facilitators of the use of dark patterns due to their limited screen size and interaction by gestures. Gunawan et al. (2021) also provided that mobile dark patterns are more intrusive, persistent, and information-demanding than their web counterparts, which highlights the existence of modality and its effect on end-user vulnerability. The literature on niche digital ecosystems shows the scope of the application of dark patterns. The digital point-of-sale systems were found to contain manipulative tipping defaults discovered by Chen et al. (2023), who made upgrades to gratuity. Darin and Carneiro (2025) revealed the manipulation loops of gaming to exploit reward loops through the perspective of promoting compulsive spending. In the article by Chromik et al. (2019), the issue of AI-based transparency was also expressed, which proved that algorithmic systems can cover the choice architecture with fog. As generative AI expanded, Chen et al. (2025) demonstrated that generative models (also known as large language models or LLMs) can produce manipulative UX patterns when using automated interfaces to create interfaces. In addition to these issues, solutions have been developed, including a multimodal dark pattern detection model by Bajaj et al. (2025) and Sawant et al. (2025), and

an LLM -based textual detection suggested by Yekeh (2025). This is a sign of a shift to preventive computational frameworks.

Law and policy Theorists highlight significant difficulties in controlling dark patterns. As evidenced by Luguri and Strahilevitz (2021), users tend to become the victims of manipulative interface designs most often. According to Martini et al. (2021) and San Miguel (2024), the current laws on consumer protection are not effective in countering dynamic and design -based manipulations. Isola and Esposito (2025) suggested that to reinforce the enforcement, it is important to match the categories of dark patterns with the EU Unfair Commercial Practices Directive. Regarding the interface-level deception, Li et al. (2025) highlighted that the privacy-focused structure of GDPR fails to address it. The debate around ethical issues grew when Timms (2025) added the perspective of dark patterns as patterns of hostility because of their deliberate nature of decreasing the autonomy of users and their well-being.

The literature on the subject has shown a distinct geographic bias, with most of the empirical research being conducted in Europe and North America, but developing digital markets such as India have not been explored yet. This constrained the testability of performance to the environment by the behavioral theories and detection tool, which all depend so heavily on the Western UX standards. This gap is a major blind spot in the research of dark practices in the world, given the fast -paced growth of India as a digital economy. Although developing global and Indian scholarship, the major gaps still exist. This work would be very important in safeguarding the growing digital consumer society in India and adding value to international discourse on the regulatory measures to manipulative interface design.

The results of the study established that the participants of the study assumed that the school covered sufficient information about bullying in the school setting. Behavioral economics and cognitive psychology are also new academic discussions and the starting point of a better understanding of the efficacy of dark patterns. The scarcity bias, the loss aversion, the default bias, and the social conformity have been cited numerous times as examples of the influence of the manipulative interfaces on the selection of users. The researchers suppose that dark patterns are not winning since consumers are irrational, but help them to make complex decisions online using predictable mental shortcuts. This realization transforms the argument of laying responsibility on the consumers to structural design.

The other new direction of study is that of the long-term implications rather than the short-term transactional implications. Even though certain studies continue to suggest that the dark patterns may cause a temporary increase in the conversion rates, longitudinal studies indicate the potential of the damage of the brand equity, customer lifetime value, and the credibility of the platform. The perspective on the introduction of the ethical-by-design model, where the lifecycle of interface development is based on transparency, informed consent, and user autonomy, is becoming the topic of more and more scholarly discussions. Despite this development, very little research incorporates the combination of experimental tools and the tests of behavioral outcome, particularly in developing economies. This justifies the need to have contextual, methodologically sound researches that can be in a position to capture instant and downstream consequences of the manipulative design practices.

### III. RESEARCH GAPS

- i. There was no comprehensive study found that looked beyond purchase intention as a marketing outcome.
- ii. Most of the studies conducted are survey-based. Surveys have their own shortcomings and cannot capture consumer emotions adequately.
- iii. Most of the studies on dark patterns were done in the areas of Data Sciences and Computer Sciences. No study was found that captured the essence of the consumer side of the story.
- iv. Most of the studies conducted in the area of dark patterns have been conducted in other countries. Hardly any good study was found that were conducted in Indian settings.

The current study fills these gaps by assuming a holistic consumer-focused view of the dark patterns in electronic commerce. Instead of concentrating on the purchase intention, the research considers several marketing results such as consumer interest, actual purchase behavior, and word-of-mouth. With an imaginative step further than the purely survey-based methods, it attempts a more expressive portrayal of the emotional and psychological reactions aroused by the deceptive design of the interface. The investigation is placed in the Indian environment, which also helps the study to provide context-specific information that particular cultures and market realities capture. In this way, it fills the gaps in disciplines and enhances the knowledge of dark patterns regarding the consumer perspective.

#### IV. RESEARCH OBJECTIVES

- i. To identify prevalent dark pattern practices in Indian e-commerce websites and apps.
- ii. To compare consumer interest, purchase intention, and actual purchase across the four research groups.
- iii. To compare customer satisfaction, repeat purchase across, and willingness to pay across the four research groups.
- iv. To identify the critical factors influencing word-of-mouth behavior of consumers.

The research objectives stated above will help to carry out the research in a systematic manner by attempting to investigate the effect of dark patterns on consumer behavior in the environment of Indian e-commerce. The paper does not just list the most popular types of deceptive practices but also determines the impact of these deceptive practices on various consumer decision points, among which include interest, purchase intention, actual purchase, satisfaction, repeat purchase, willingness to pay, and word-of-mouth. The study seeks to develop causal differences and behavior variations by comparing the results of four research groups. Such systematic thinking allows one to gain a better idea of the role of dark patterns in making immediate decisions and building long-term consumer relationships.

#### V. RESEARCH METHODOLOGY

##### 5.1 Periodicity of Study

The study was conducted between September and December 2025, with the experiment conducted in the first week of December. The selected period ensured that the consumer awareness on how sales and promotion activities in the festivals would occur was adequately achieved, as it is the season that will record a higher Internet activity in India. The experiment carried out during this time allowed the study to estimate real marketplace scenarios wherein the urgency cues and promotional messages are common in the marketplace. This fitting time increased the ecological authenticity in the sense that it bequeathed actual consumer decision-making circumstances, unlike the lab conditions. Besides, the web was also limited to a certain time to restrict any extraneous market influence that could confuse the consumer response.

##### 5.2 Research Design

Having set the research objectives, the immediate next step is to decide on the type of research design to be followed for the study. The study adopted a between-subjects experimental framework wherein different interventions were introduced to four different groups. The control group was shown an image of a website layout with zero dark patterns, whereas the other three groups were shown different iterations of dark patterns. The experimental design enabled causal inferences due to the isolation of the specific effect of the different strategies of dark patterns on consumer reactions. The research has avoided selection bias through randomization of the participants into the independent conditions, and the comparison between the conditions of the experiment was made possible. Visual stimulus Standardization was made in terms of layout and color scheme, and product category, to eliminate confounding variables in the results. Such manipulation control enhanced the internal validity and gave an easier interpretation of the effects of some elements on the interface regarding behavioral intentions. The between-subjects design also reduced the learning effects that might have taken place if the participants had been treated to a mixture of treatments simultaneously.

##### 5.3 Theoretical framework

The sampling unit and sampling element for the study are the same: an individual consumer. Since the study involves an experiment, a lower sample size can be used as opposed to when surveys are conducted. The study adopted a purposive sampling design wherein participants were selected based on the following inclusion criteria:

- i. The participant must be an adult and capable of giving consent.
- ii. The participant must be a regular internet user.
- iii. The participant must have experienced at least one online purchase or subscription in the past 6–12 months.
- iv. The participant must have reported at least one experience of
  - a. Being misled online while buying,
  - b. Accidentally subscribing or paying,
  - c. Difficulty cancelling a service and
  - d. Feeling pressured by hidden fees or confusing choices.

To make sure that the respondents used in digital shopping had prior experience and the response would be made on the basis of real exposure rather than imaginary fantasy, a purposive sampling method was adopted. Even though the probability sampling would enhance the generalizability, the chosen method was suitable in terms of the experimental rigor and relevance. There were some efforts to engage respondents of various age groups, occupations, and income levels to have a variety of consumer opinions. This is because this diversity enriched the data by incorporating different levels of digital literacy and risk perception. The screening criterion ensured that respondents could evaluate aspects of a manipulative interface meaningfully and in relation to real-life experiences.

#### 5.4 Analysis tools

Descriptive Statistics, Independent Sample t-test, one-way ANOVA, and Linear Regression were used in analyzing the data. The inferential and descriptive statistics were used in order to improve the level of analysis. The descriptive statistics were employed to provide general information on the central tendencies and variability that provided background information concerning group differences. The inductive statistics, such as ANOVA and regression, provided an opportunity to test hypotheses and identify statistically significant correlations. Assumptions regarding the homogeneity of the variance and normal distribution were pre-tested to ensure that the test would be statistically reliable. The tools employed in triangulating the results are diverse, besides being multiple, thus rendering the research robust. The framework of the analysis has been selected so that it is applicable to the aims of the experiment and the variables of behavioral outcomes to be investigated.

#### 5.4 Analysis tools

In this study, ethicality is maintained by ensuring that no information is collected from the participants without their prior consent. The principle of confidentiality was also maintained as the information collected in the study was not shared further with anyone. Besides the application of confidentiality and informed consent, they debriefed the subjects who had been exposed to the experimental exposure to clarify the aim of the manipulated interface elements. This step introduced transparency and could help to erase all the remaining misapprehensions regarding actual business platforms. False financial transactions were not made, and situations simulated were to be utilized in conducting research. It had the privilege of dropping out at any given time. The data storage was in the form of safe numerical rules to prevent unlawful access. The subject of the analysis was of particular concern to ethical rigor, particularly to the analysis of the manipulative design practice and consumer vulnerability.

Figure 2: Zero -Pattern Control Group

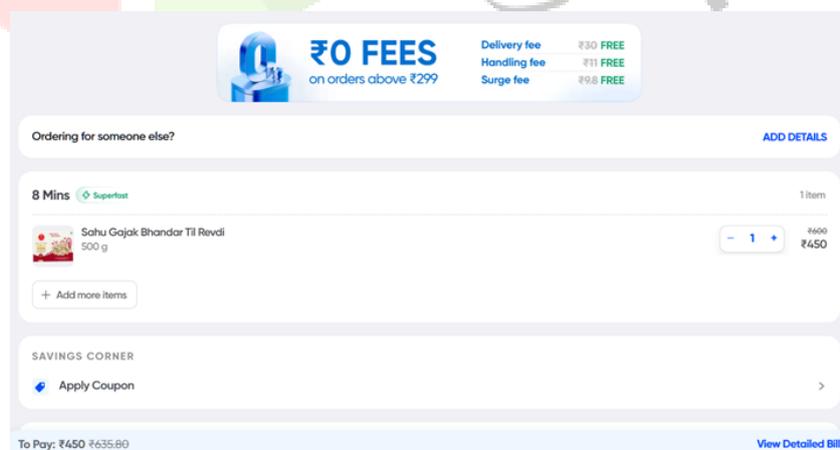


Figure 3: Treatment 1- Scarcity dark pattern

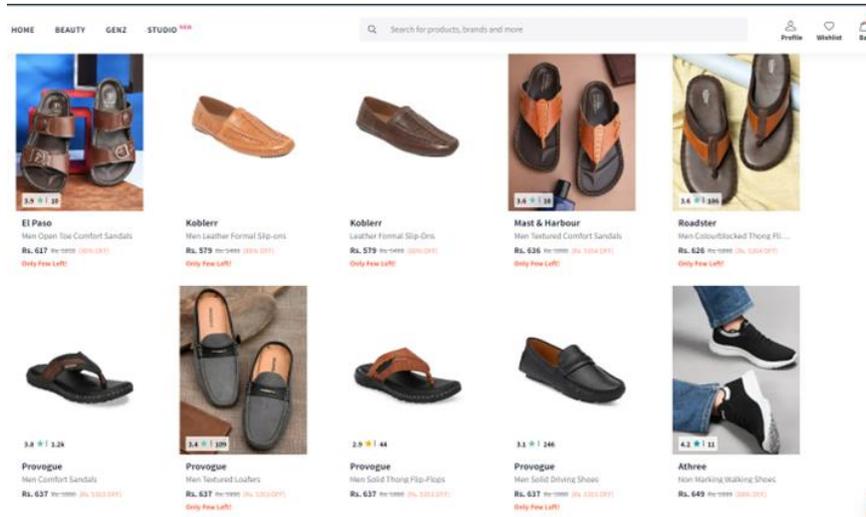


Figure 4: Treatment 2- Urgency dark pattern

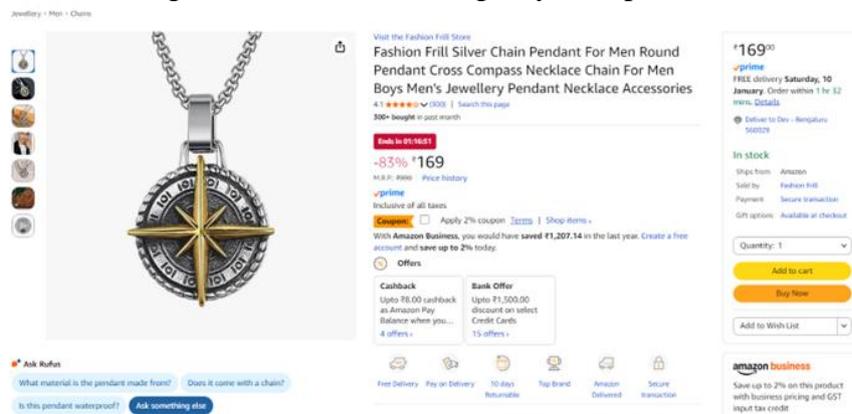


Figure 5: Treatment 3- Social proof manipulation

GST & Other Charges		Bill Summary	
Restaurant Packaging	₹3.00	Item total	₹239 ₹119.50
Platform Fee	₹14.99	Restaurant packaging charges	₹10
Restaurant GST	₹3.65	This is decided & charged by the restaurant	
GST on Delivery fee	₹8.64	Delivery partner fee	₹36 ₹0
		Platform fee	₹12.50
		GST (govt. taxes)	₹8.73
		<b>To pay</b>	<b>₹150.73</b>

## VI. RESULTS AND FINDINGS

### 6.1 Noticeable Dark Patterns

A review of 25 Indian websites and apps revealed that the following dark patterns were commonly present.

Table 1: Classified List of Dark Patterns

Strategy (high level)	Sub strategies(examples)	Goal	Websites that use
Nagging: (Repeatedly pressuring or annoying a user to take an action).	a) Repetitive blocking of pop-ups. b) Constant prompts. c) Repeated permission prompts. d) Second chance confirmation. e) Persistent reminder messages.	Wear users down so they finally consent.	Swiggy Instamart PharmEasy Blinkit Zomato
Obstruction: (Making tasks difficult by blocking or slowing user actions).	a) Roach motel (easy registration and hard cancellation) b) Deeply buried delete/opt-out menus. c) Narrow cancellation window.	Discourage exit, cancellation, or opt out.	MakeMyTrip Zoomcar Pepperfry BookMyShow
Sneaking: (Tricking users into actions without their clear awareness).	a) Basket sneaking (pre-ticked add-ons) b) Hidden subscriptions. c) Default expensive plan. d) Auto-renewing free trial.	Increase spending without clear awareness.	Flipkart Zepto Big Basket Myntra
Interface interference: (Manipulating the interface to mislead user choices).	a) Visual misdirection b) Bright "Accept all" vs dull "Decline." c) Trick questions with double negatives. d) Hidden critical information.	Steer users to business-favoured choices.	Ajio Lenskart Mama Earth Reliance Retail
Forced action: (Requiring an unwanted action to proceed further).	a) Forced registration b) Coerced consent to non-essential data c) Tying extra services to core access.	Extract more data or lock in.	Amazon India Paytm Ola Zoomcar

These dark patterns were then classified into strategies for a better and updated understanding of why companies use dark patterns to lure consumers. These patterns are common, which suggests that manipulative design is not limited to single platforms but seems to be embedded in structures in sectors. Intensity was mixed, but the repeated occurrence of obstruction and sneaking strategies may be an indication of a concerted effort to achieve maximum rates of transaction completion. It was interesting to note that the cues of scarcity and urgency were more apparent in the case of promotional banners, but the obstruction techniques were integrated into account settings and cancellation routes. Such layers of implementation show a strategic positioning of dark patterns in important decision-making. The results uphold the concerns that the practice is normalized in competitive digital markets.

## 6.2 Consumer Interest, Intention, and Purchase

In order to check whether consumer interest, purchase intention, and actual purchase decision differ for the control and treatment groups, one way ANOVA test was used. The findings are discussed as follows:

Table 2: One-way ANOVA for Consumer Interest  
SUMMARY

Groups	Count	Sum	Average	Variance
Control Group (Zero-pattern)	36	194.5	5.402778	2.040278
Treatment Group 1 (Scarcity)	47	221.5	4.712766	3.214616
Treatment Group 2 (Urgency)	44	232	5.272727	1.807611
Treatment Group 3 (Social proof)	53	231.5	4.367925	3.222605

### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	31.83047	3	10.61016	4.019476	0.0085	2.655939
Within Groups	464.5848	176	2.639686			
Total	496.4153	179				

A one-way ANOVA test showed that there was a statistically significant difference in consumer interest between consumers from different groups,  $F = 4.01$ ,  $p = .008$ , with the highest mean score of 5.40 for the control group, and the lowest mean score of 4.36 for the experimental group that was exposed to dark patterns. This implies that consumer interest goes down in the case of multiple dark patterns.

Table 3: One-way ANOVA for Purchase Intent  
SUMMARY

Groups	Count	Sum	Average	Variance
Control Group (Zero-pattern)	36	186.5	5.180556	1.787897
Treatment Group 1 (Scarcity)	47	211	4.489362	2.48358
Treatment Group 2 (Urgency)	44	220	5	2.22093
Treatment Group 3 (Social proof)	53	223.5	4.216981	3.264514

### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	26.58532	3	8.861775	3.528066	0.016128	2.655939
Within Groups	442.0758	176	2.511794			
Total	468.6611	179				

A one-way ANOVA test showed that there was a statistically significant difference in purchase intent between consumers from different groups,  $F = 3.52$ ,  $p = .016$ , with the highest mean score of 5.18

for the control group, and the lowest mean score of 4.21 for the experimental group that was exposed to dark patterns. This again shows that purchase intent is highest when the website/ app has fewer or no dark patterns.

Table 4: One-way ANOVA for Actual Purchase  
SUMMARY

Groups	Count	Sum	Average	Variance
Control Group (Zero-pattern)	36	153.5	4.263889	3.006944
Treatment Group 1 (Scarcity)	47	172	3.659574	2.740287
Treatment Group 2 (Urgency)	44	198	4.5	2.930233
Treatment Group 3 (Social proof)	53	191.5	3.613208	3.217707

#### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	26.74411	3	8.914703	2.99073	0.032427	2.655939
Within Groups	524.617	176	2.980778			
Total	551.3611	179				

A one-way ANOVA test showed that there was a statistically significant difference in actual purchase between consumers from different groups,  $F = 2.99$ ,  $p = .032$ , with the highest mean score of 4.26 for the control group that experienced no dark patterns, and the lowest mean score of 3.61 for the experimental group that was exposed to multiple dark patterns. This means that actual purchase behavior is higher in the absence of dark patterns.

The steady drop of the mean scores in each of the treatment groups illustrates a contradiction: the dark patterns can be supposed to increase the short-term conversions, but instead, they can decrease the intrinsic interest in consumers. The viewing of manipulative cues might have triggered skepticism and diminished emotional interest in the platform. The respondents also said that they felt pressured and not persuaded, which could be one reason why their intention and level of purchase were low. This implies that urgent demand that is forced may not always mean sustainable demand. The findings suggest that a clear design might develop a more stable consumer drive than pushy interface control.

### 6.3 Customer satisfaction, repeat purchase, and willingness to pay

To check whether marketing outcomes like customer satisfaction, repeat purchase, and willingness to pay differ for the treatment and control groups, based on exposure or non-exposure of dark patterns, one way ANOVA test is applied.

Table 5: One-way ANOVA for Customer Satisfaction  
SUMMARY

Groups	Count	Sum	Average	Variance
Control Group (Zero-pattern)	36	175	4.861111	1.227778
Treatment Group 1 (Scarcity)	47	199.6667	4.248227	1.973276
Treatment Group 2 (Urgency)	44	220	5	1.674419

Treatment Group 3 (Social proof)	53	208.3333	3.930818	2.539994
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## ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	35.57187	3	11.85729	6.177453	0.000515	2.655939
Within Groups	337.8226	176	1.919446			
Total	373.3944	179				

A one-way ANOVA test showed that there was a statistically significant difference in actual purchase between consumers from different groups,  $F = 6.177$ ,  $p = .000$ , with the highest mean score of 4.86 for the control group that experienced no dark patterns, and the lowest mean score of 3.93 for the experimental group that was exposed to multiple dark patterns. This means that customer satisfaction is higher in the absence of dark patterns.

Table 6: One-way ANOVA for Repeat Purchase  
SUMMARY

Groups	Count	Sum	Average	Variance
Control Group (Zero-pattern)	36	177	4.916667	1.692857
Treatment Group 1 (Scarcity)	47	200	4.255319	2.06383
Treatment Group 2 (Urgency)	44	214.5	4.875	2.001453
Treatment Group 3 (Social proof)	53	200.5	3.783019	2.677975

## ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	40.69661	3	13.56554	6.291208	0.000444	2.655939
Within Groups	379.5034	176	2.156269			
Total	420.2	179				

Test results reveal that there was a statistically significant difference in actual purchase between consumers from different groups,  $F = 6.291$ ,  $p = .000$ , with the highest mean score of 4.91 for the control group that experienced no dark patterns, and the lowest mean score of 3.78 for the experimental group that was exposed to multiple dark patterns. This means that the likelihood of repeat purchases is higher in platforms that don't have dark patterns.

Table 7: One-way ANOVA for Willingness to pay  
SUMMARY

Groups	Count	Sum	Average	Variance
Control Group (Zero-pattern)	36	132	3.666667	2.514286
Treatment Group 1 (Scarcity)	47	149.5	3.180851	2.363321
Treatment Group 2 (Urgency)	44	132	3	2.930233
Treatment Group 3 (Social proof)	53	146	2.754717	2.755987

#### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	18.61341	3	6.204471	2.343198	0.074746	2.655939
Within Groups	466.0241	176	2.647864			
Total	484.6375	179				

Since the p-value (0.07) is higher than the  $\alpha$  value (0.05) and the F value (2.34) is lower than the F critical value (2.65), it can be said that despite there being differences between mean scores, these differences are statistically insignificant. We cannot generalize that willingness to pay differs for the different groups or cohorts.

The statistically significant decrease in satisfaction and repeat purchase intention highlights the risk that is long-term when the manipulative design strategies are employed. A negative emotional residue may occur even after a transaction has been completed, and it will influence future interactions. Interestingly, there was no dramatic difference in willingness to pay, which can be attributed to the fact that price perception can be affected by factors other than interface design. Nevertheless, the prolonged dissatisfaction may have a long-term effect on the perceived value. This evidence suggests that relational equity can be undermined by dark patterns between consumers and brands, even though they do not have an immediate impact on pricing tolerance.

#### 6.4 Critical Factors Influencing Word of Mouth

To find out which factors propel consumers to share reviews about the products and services they have used, linear regression is performed. Before performing regression, the assumptions regarding linearity, normality, and the presence of outliers are checked.

Table 8: R-Square Values

Regression Statistics	Count
Multiple R	0.844
R-Square	0.713
Adjusted R-Square	0.703
Standard Error	0.787
Observations	180

Table 9: Regression Coefficients

Variable	Coefficients	t Stat	P-value
Intercept	0.486	2.41	0.02
Consumer Interest Average	0.087	1.44	0.15
Purchase Intent Average	0.062	0.87	0.38
Actual Purchase Average	-0.051	-1.01	0.32
Customer Satisfaction Average	0.274	3.05	0.00
Repeat Purchase Average	0.370	4.33	0.00
Willingness to Pay Average	0.157	3.64	0.00

It is found that the total combined impact of the independent variables taken together on the dependent variable is 70.3 percent. This means that any change in the consumer's decision to go online and spread word about the particular products is 70 percent because of the independent variables chosen in the model. While studying the coefficient table, it is found that only three variables are relevant: Customer Satisfaction (0.27), repurchase intention (0.37), and willingness to pay (0.15). Accordingly, this shows an individual impact of 27%, 37%, and 15% on the consumer's decision to indulge in word-of-mouth behavior within his/ her social circle. The regression equation comes to:

Predicted (Word of Mouth Behavior) = 0.486 + 0.274 (Customer Satisfaction) + 0.370 (Repurchase Intention) + 0.157 (Willingness to pay).

The outcome of the regressions shows that the effect of the experiential factors is more significant than that of the transactional outputs on the word-of-mouth behavior. Repurchase intention and satisfaction are cumulative trust and emotional validation, which inherently drive social sharing. The fact that the actual purchase is negatively correlated indicates that purchase alone does not ensure advocacy; instead, post-purchase evaluation is a key factor. Consumers tend to refer to platforms that increase their expectations and give them frictionless experiences. The strategic significance of ethical design is highlighted by this insight in the context of developing organic brand ambassadors in the context of digital ecosystems.

## VII. THEORETICAL CONTRIBUTIONS AND MANAGERIAL IMPLICATIONS

The outcome of the regressions shows that the effect of the experiential factors is more significant than that of the transactional outputs on the word-of-mouth behavior. Repurchase intention and satisfaction are cumulative trust and emotional validation, which inherently drive social sharing. The fact that the actual purchase is negatively correlated indicates that purchase alone does not ensure advocacy; instead, post-purchase evaluation is a key factor. Consumers tend to refer to platforms that increase their expectations and give them frictionless experiences. The strategic significance of ethical design is highlighted by this insight in the context of developing organic brand ambassadors in the context of digital ecosystems.

The study also offers a wide range of insights to marketers, helping them make better and more effective decisions. Firstly, the primary contribution of this study is that it lends a greater understanding of the actual effect of dark patterns on consumers' purchase Behavior. The study shows how all marketing outcomes, be it consumer interest, purchase intent, or actual purchase to repurchase, are lower for brands that use dark patterns in their interface. Acting on this finding, businesses must try to eliminate dark patterns from their websites and interfaces. Otherwise, it will lead to erosion of trust between the brand and the consumer. Secondly, the study reveals that consumer satisfaction, repurchase intention, and willingness to pay are the biggest predictors of word-of-mouth indulgence behavior. Acting on this finding, marketers can now focus on satisfying and delighting their customers with unique offerings to motivate them to stay with them for longer.

In addition to the contribution to the extension of the marketing outcome variables, this research makes a theoretical contribution as it offers a combination of interface design ethics and consumer behavior theory. It shows that digital choice architecture is a mediating process between marketing stimuli and behavioral response. The study will contribute to the research on the effect of structural

manipulation on cognitive evaluation and emotional processing as it empirically tests various types of dark patterns in the experimental context. These findings are useful in supporting the argument that ethical design is not a normative ambition but one that is determinant of measurable marketing performance indicators.

Managerially, the findings indicate the trade-off between short-term conversion optimization and the long-term relationship-building strategy. Companies that depend so much on manipulative interface strategies can get short-term metrics, but lose potential customer retention and promotion. Managers are then encouraged to go transparent with their UX audits, integrate feedback loops with consumers, and educate design teams on ethical interfaces. The aspect of compliance monitoring mechanisms that are integrated with the regulatory guidelines can also decrease the reputational risk. Finally, the issue of sustainable competitive advantage in digital markets might require a reduced focus on persuasive intensity and a greater focus on value creation based on trust.

## VIII. SCOPE FOR FURTHER RESEARCH

Like all research, this study has a fair share of limitations of its own and requires improvements. These limitations, in a way, highlight the directions that future researchers can take. Firstly, this study has only covered the B2C segment. Further studies can look into how dark patterns work in the B2B context. Secondly, while chasing the first objective, the study was kept open and not restricted to one industry. Intensive studies covering a single industry can be carried out in the future. Thirdly, the study adopts an experimental design, to be precise, a between-subjects research design. Experiments have their own shortcomings and cannot fully capture how consumers actually feel about a certain product or brand. Future researchers can conduct interviews and focus groups to collect data, methods that guarantee the richness of data.

Demographic moderators (age, education level, and digital literacy) can also be studied in the future to gain insight into the discriminatory susceptibility to dark patterns. Comparative analysis of the urban and rural consumers can show the differences in awareness and resistance capability. Also, the cross-cultural studies may examine the effects of socio-cultural norms on the acceptance of persuasive methods of design.

The other good avenue is longitudinal research designs, which follow consumer perceptions. In such studies, the effects of repeated exposure to manipulative interfaces on brand trust, churn rates, and customer lifetime value over time could be measured. Experimental studies involving biometric or neurophysiological data could give a better understanding of the emotional reactions that are aroused by dark patterns. Lastly, the interdisciplinary approach of marketing researchers, behavioral economists, technologists, and people in legal fields may contribute to creating standard ethical design principles that would strike a balance between innovation and consumer protection in the fast-changing digital ecosystem.

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