

Identification of Dark Pricing Patterns in Marketplaces: A Promotional Content Study

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This research is motivated by the rapid growth of the digital economy in Indonesia, which is paradoxically accompanied by the rise of user interface manipulation tactics, or dark pricing patterns, in various marketplace applications. The main objective of this study is to identify unethical price manipulation patterns, such as hidden costs, sneak-into-basket, and false urgency in promotional content, and to analyze in depth their impact on consumer decision-making processes. The basic approach of this research uses exploratory descriptive qualitative methods. Data collection was conducted comprehensively through interface observations (interface audits) and in-depth literature reviews related to consumer behavior, which were then analyzed thematically based on the concepts of choice architecture and dual process theory. The analysis results show significant findings that dark pricing patterns have operated systematically to exploit impulsive cognitive processing to expedite transactions unreasonably. Crucial findings reveal that this practice triggers negative sentiment and is detrimental to consumers when non-transparent service fees appear at the final stage of payment. This study concludes that while this design manipulation tactic has proven highly effective in increasing short-term purchase conversion rates, it has a destructive impact by eroding consumer autonomy, triggering post-decision regret, and undermining the essential foundation of public trust. Consequently, specific legal regulatory reforms regarding comprehensive price transparency are needed, as well as the implementation of behavioral interventions in the form of postponement features within systems to protect digital consumers in Indonesia.

Keywords: Dark Patterns, Marketplace, Consumer Decisions, Hidden Costs, Public Trust, Digital Marketing

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1. Introduction

The growth of the digital economy in Indonesia has brought about a massive transformation in consumer shopping behavior. Increasingly widespread internet access and the high adoption of smartphones have triggered a shift from conventional transactions toward electronic commerce (e-commerce). Within this digital ecosystem, marketplaces have emerged as the primary platforms facilitating millions of transactions every day. Ease of access, unlimited product variety, and the convenience of conducting transactions from anywhere have become the main catalysts behind the growing public interest in online shopping. This ecosystem no longer functions merely as a virtual marketplace but has evolved into an arena of competition for consumer data and attention.

Amid this rapid growth, competition among marketplace platforms in Indonesia has become extremely intense. Various technology companies are competing to acquire and retain their monthly active users. To win this competition, aggressive digital marketing strategies are implemented on a massive scale. One of the main components of these marketing strategies is the use of promotional content specifically designed to attract visitors' attention from the moment they open an application. These promotions are continuously displayed to users in various attractive visual forms, ranging from digital banners on the homepage to push

notifications. For most consumers, the availability of promotions has become a key determining factor in choosing which platform to use for shopping.

In practice, promotional content does not merely function as a means of communicating discounts but also acts as a powerful psychological instrument. Such content can shape consumer perceptions of the value of an offer, obscure comparisons of actual prices, and ultimately create a sense of purchase urgency. Therefore, an in-depth examination of promotional content is essential to understand how promotional messages, price display manipulation, and interface element interactivity can influence consumer decisions within marketplaces.

To understand this phenomenon of interface influence, it is necessary to view it from the perspective of choice architecture. Conceptually, the way various options are arranged, ordered, and visualized within an interface system can significantly direct user decisions. Marketplaces possess substantial control over how promotional information is presented, including determining text size, contrasting button colors, and positioning hidden terms and conditions. When this choice architecture is used to positively guide users, it is referred to as digital nudging. However, the boundary between persuasion and manipulation becomes blurred when such designs systematically exploit consumer psychological vulnerabilities.

These psychological vulnerabilities operate based on cognitive processing mechanisms explained by dual process theory. This theory divides human thinking into two systems: System 1, which is intuitive, fast, automatic, and emotional, and System 2, which is slower, rational, and calculative. In the context of online shopping, consumers tend to make decisions using System 1 when confronted with promotional deadlines or product scarcity messages. Instead of conducting rational calculations to compare actual prices, consumers are encouraged to complete transactions immediately to avoid feelings of financial loss resulting from missing a discount opportunity.

When this choice architecture is designed to exploit cognitive weaknesses solely for platform benefits—often contrary to user interests—the practice transforms into a manipulative design known as dark patterns. Dark patterns are interface designs intentionally created to direct, deceive, or force users into making certain decisions in ways that are not fully transparent. This shifts the marketing paradigm from persuasive to manipulative, where users no longer consciously revise their preferences but are instead encouraged to disregard their initial preferences.

In the context of pricing and promotions in e-commerce, this exploitation of interface design specifically gives rise to dark patterns pricing. This practice encompasses all forms of visual and systemic manipulation that make the final price of a product or service appear significantly cheaper at the beginning, only to gradually increase throughout the transaction process. This form of price manipulation is important to examine because it operates subtly beneath the awareness of most consumers.

Price manipulation practices take various forms within marketplace interfaces. One of the most commonly criticized patterns is hidden costs. In this pattern, consumers are attracted by low product prices displayed on search pages but are suddenly confronted with additional charges, such as service fees or handling fees, which only appear at the final stage of payment. Once consumers have invested time and effort into reaching the final transaction stage, they experience cognitive fatigue and tend to proceed with payment despite feeling disadvantaged. Another closely related pattern is sneak into basket or automatic addition. This practice occurs when additional products or services, such as shipping insurance, are automatically selected and included in the total bill without an active decision from the user.

Studies on promotional content also highlight design elements that trigger scarcity pressure. Elements such as countdown timers and claims of extremely limited stock function as triggers for rapid decision-making.

Frequently, the displayed time limits do not reflect reality because the system automatically resets the timer, creating false urgency. This urgency manipulation forces consumers to process information emotionally and disregard rational evaluations of products.

The cumulative impact of implementing dark patterns pricing is highly detrimental to consumers both psychologically and financially. Instead of benefiting from the promised promotional offers, consumers become vulnerable to impulsive spending. Ironically, research indicates that consumers are often aware of the existence of these manipulative designs. However, such awareness does not automatically provide them with the ability to resist interface designs that are inherently disadvantageous. After transactions are completed, this manipulation frequently triggers deep regret or post-decision regret regarding shopping decisions made hastily. In the long term, platforms that continuously exploit users will erode the foundation of public trust, ultimately threatening their own business sustainability.

In Indonesia, the issue of dark patterns on digital platforms has begun receiving widespread attention as public awareness of digital rights continues to increase. Nevertheless, these manipulative design practices present complex legal challenges. The absence of specific regulations is often exploited by platforms to continue experimenting with gray-area promotional tactics without facing strict sanctions. Existing consumer protection regulations need to be updated to address technically engineered user interface manipulations.

In response to the growing prevalence of manipulative practices and gaps in consumer protection, this study was developed to investigate deceptive practices behind e-commerce promotional content. The objective of this article is to comprehensively examine forms of price manipulation and explain their effects on consumer decision-making. Specifically, this article will investigate (1) the conceptualization of dark patterns pricing and choice architecture, (2) promotional manipulation tactics within marketplaces, and (3) the psychological and behavioral impacts on consumers. Through this study, it is expected to provide crucial insights for the development of digital platform governance that is more transparent, ethical, and oriented toward consumer protection.

2. Method

This study entirely employs a literature review approach, also known as library research. This approach was selected because the examination of dark patterns pricing requires a comprehensive conceptual and theoretical understanding derived from various previous empirical findings, allowing in-depth analysis to be conducted without the need for direct primary data collection in the field. According to Zed (2020), library research is a research method that utilizes written sources as the primary materials for obtaining data and information relevant to the topic under investigation. In line with this, Snyder (2019) explains that a literature review enables researchers to identify, evaluate, and synthesize previous research findings in order to develop a more comprehensive understanding of a particular phenomenon.

The data sources used in preparing this article are entirely based on secondary data. These secondary data were extracted from various academic papers, reputable journal articles, scientific conference proceedings, and institutional reports focusing on the digital ecosystem. The search and selection of literature were specifically directed toward studies discussing dark patterns on e-commerce platforms, the concept of choice architecture, dual process theory, and the impact of interface manipulation on impulsivity and digital consumer decision-making. According to Creswell and Creswell (2023), secondary data constitute information sources that are already available and can be utilized to support research analysis through a systematic and critical review process.

The analytical process in this study was conducted through three systematic stages. First, literature collection and reduction, in which relevant journals were screened to identify the key concepts of pricing manipulation tactics such as hidden costs, false urgency, sneak into basket, scarcity messages, and social proof. Second, data synthesis, in which findings from various studies were cross-analyzed to understand how each interface element influences user cognition based on dual process theory (System 1 and System 2). According to Booth et al. (2021), the purpose of literature synthesis is to integrate various research findings in order to generate broader and deeper interpretations than those obtained from a single study. Third, conceptual conclusion drawing, in which the selected literature was examined to formulate a comprehensive explanation of the impact of dark patterns on consumer trust and to identify effective behavioral interventions that can be implemented as mitigation solutions.

3. Result and Discussion

The phenomenon of dark patterns pricing in marketplaces does not occur by chance but is the result of carefully calibrated system engineering. Based on analyses of the literature and empirical case studies, this discussion examines how these tactics are implemented through promotional content, how consumer psychology is exploited, and which intervention measures are most effective in mitigating their effects.

Identification and Taxonomy of Dark Patterns Pricing in Marketplaces

In the e-commerce landscape, promotional content is fundamentally designed to provide financial incentives to consumers. However, when combined with manipulative choice architecture, such promotions become instruments of dark patterns pricing. The literature identifies several major tactics that are consistently employed across retail and digital service platforms:

Hidden Costs: This tactic represents one of the most influential forms of price deception affecting consumers' final decisions. In practice, marketplaces advertise products at heavily discounted prices on their homepages. However, after users place items in their shopping carts and navigate a multi-step checkout process, additional charges are introduced. These fees are often disguised under technical labels such as "handling fees," "platform service fees," or "buyer protection fees." This practice exploits the phenomenon known as the sunk cost fallacy; consumers feel they have already invested too much time and effort in finding the product, making them more likely to tolerate price increases at the final stage rather than cancel the transaction and restart the search process.

Sneak into Basket: Unlike hidden costs, which are added by the system itself, sneak into basket operates by automatically selecting additional services in users' shopping carts. Common examples in Indonesia include shipping insurance, ticket delay insurance, or automatic donations. Interface designs are intentionally structured so that the option to opt out is hidden within dropdown menus or displayed using faded text colors. This practice effectively forces users to pay for services they never actively requested.

Roach Motel: This term refers to the principle that it is "easy to get in but difficult to get out." Consumers can easily subscribe to promotional offers or save their credit card details with only one or two clicks. However, once they realize that subscription prices increase significantly after the promotional period ends (forced continuity), the cancellation process becomes deliberately complicated, requiring navigation through multiple confirmation pages or even direct communication with customer service representatives. This is a clear example of digital sludging, where platforms intentionally create friction to discourage consumers from canceling services.

Psychological Manipulation Through Promotional Content: False Urgency and Social Proof

In addition to direct price manipulation, marketplaces aggressively manipulate consumers' emotional perceptions through scarcity messages and social proof mechanisms. Campaigns such as "Flash Sales," "Double Date Discounts," and "Payday Promotions" rely heavily on visual elements that create time pressure and competition.

The use of countdown timers and warning labels such as "Promotion ends in 00:15:00" or "Only 2 items left" triggers scarcity bias. These tactics directly hijack consumers' cognitive processes. According to dual process theory, this artificial time pressure (false urgency) forces consumers' brains to deactivate the analytical System 2—which would normally be used to compare prices across platforms—and instead activate the reactive and intuitive System 1. As a result, consumers are encouraged to immediately click the "Buy" button due to fear of missing out (FOMO). Investigations have frequently revealed that such countdown timers are deceptive; when pages are refreshed or applications are reopened the following day, the timers simply restart from the beginning.

Furthermore, platforms frequently display labels such as "1,500 people viewed this product in the last hour" or showcase customer testimonials. This manipulation of social proof exploits the human heuristic bias that assumes if many people are doing something, it must be correct or beneficial (the bandwagon effect). Such practices become dark patterns when the popularity metrics or testimonials displayed are generated through algorithmic manipulation and do not accurately represent actual conditions, serving solely to accelerate transaction completion.

Consumer Behavior Analysis: The Paradox of Awareness and Cognitive Resignation

One of the most intriguing findings from the dark patterns literature is the existence of a consumer awareness paradox. Modern digital consumers are not necessarily unaware of marketing tactics. Most consumers can identify intrusive or coercive interface elements. However, the ability to recognize these threats (dark pattern detection) has been shown not to correlate significantly with the ability to avoid them.

An empirical study investigating user interactions cited a consumer statement that perfectly illustrates this phenomenon: "I am definitely manipulated, even when I am aware of it. It's ridiculous!" This phenomenon of cognitive resignation occurs because platforms maintain complete control over the choice architecture. Users who recognize that insurance fees have been inserted into their bills through sneak into basket practices may feel mentally exhausted when attempting to locate visually hidden opt-out buttons.

Moreover, the effectiveness of manipulation depends greatly on its intensity and design. Experimental evidence suggests that mild dark patterns, such as making purchase approval the default option and labeling it as "Recommended," can increase purchase conversion rates by more than 200% without generating negative user sentiment. This makes them particularly dangerous because consumers are deceived voluntarily. Conversely, highly aggressive dark patterns—such as repeated pop-up pages forcing users to read manipulative information—can increase conversions by nearly 400%, but such tactics provoke strong backlash, leaving consumers feeling angry and disrespectful toward the brand.

Furthermore, the literature emphasizes that educational attainment correlates with consumer vulnerability. Consumers with lower educational backgrounds are significantly more susceptible to dark patterns disguised as promotional offers than consumers with higher levels of education. This raises serious ethical concerns, as digital platforms profit by exploiting groups that are more vulnerable from cognitive and literacy perspectives. Considering Indonesia's extensive internet user base, which includes many first-generation users with limited digital literacy, the use of dark patterns clearly constitutes a large-scale consumer protection threat.

Impact on Public Trust and Post-Decision Regret

The implications of successful platform manipulation do not end once transactions are completed. Psychologically, consumers who make decisions under false urgency pressure or feel deceived by hidden costs are highly likely to experience post-decision regret. This regret emerges when consumers return to a rational thinking state (System 2) and reevaluate impulsively purchased products, realizing that they either did not need the products or paid significantly more than their actual value.

At the broader ecosystem level, the accumulation of these negative experiences acts as a toxin to the integrity of digital markets. Trust is the most fundamental variable in maintaining user retention on e-commerce platforms. When consumers continually feel betrayed by interfaces that are supposed to assist them, public trust in the digital economy as a whole gradually erodes. Ultimately, this loss of trust may discourage consumers from engaging in transactions, creating a long-term threat to the profitability of technology companies themselves.

Behavioral Interventions (Nudging the Nudge) as Mitigation Measures

Given that dark patterns are fundamentally problems of choice architecture engineering, solutions cannot rely solely on consumer education or literacy initiatives. While education remains important, the literature demonstrates that awareness alone is insufficient to counter coercive design. Therefore, behavioral interventions must be implemented directly within platform interfaces to counteract such manipulation—a strategy commonly referred to as “nudging the nudge.”

Experimental studies have tested several intervention methods aimed at mitigating impulsive purchasing behavior triggered by dark-pattern promotions. Three major interventions have demonstrated significant effectiveness:

- a. **Postponement:** Adapted from the concept of cooling-off periods, this intervention requires the system to impose a waiting period (for example, several minutes) between the moment a consumer clicks the “Buy” button and the final execution of the transaction. This pause functions as a circuit breaker that reduces the emotional activation of System 1 and provides System 2 with sufficient time to perform critical evaluation. Research demonstrates that postponement is the most effective intervention, producing significant effects in reducing impulsive purchases, particularly those triggered by scarcity manipulation.
- b. **Reflection:** This intervention positively increases consumers’ cognitive engagement before payment confirmation, for example by displaying a pop-up asking consumers to provide a rational explanation of why they need the product. This approach forces consumers to confront their own biases.
- c. **Distraction:** This intervention involves engaging users in a light cognitive task unrelated to purchasing (for example, an advanced security CAPTCHA verification) before checkout. Such tactics divert attention away from the artificial urgency created by dark patterns, thereby reducing purchase pressure.

Therefore, governments and consumer protection agencies cannot rely solely on issuing recommendations. Ideal regulations should require e-commerce platforms to integrate protective intervention designs—such as postponement mechanisms or transparent explicit opt-in systems—during the checkout process to rebalance the power asymmetry between digital platforms and consumers.

4. Conclusion

Based on the synthesis and analysis of various previous literature, it can be concluded that dark pricing patterns have been systematically and massively implemented by various marketplaces as a strategy to increase conversion rates and financial profits. This price manipulation practice, which manifests itself in the form of hidden costs, sneak-into-cart additions, and promotional content manipulation through false urgency and confirmation-shaming, operates by exploiting the choice architecture of a digital platform.

Based on dual process theory, this manipulative interface design is deliberately designed to bypass consumers' System 1 cognitive processing, which operates quickly, intuitively, and is driven by emotion. As a result, consumers lose the opportunity for rational evaluation, triggering unplanned, impulsive shopping behavior. The literature also reveals a paradox: although consumers (especially those with digital literacy) are aware of the manipulation attempts on their screens, the system design, filled with digital sludging, makes them resigned and complete the transaction anyway.

5. References

- Bongard-Blanchy, K., Rossi, A., Rivas, S., Doublet, S., Koenig, V., & Lenzini, G. (2021). "I am Definitely Manipulated, Even When I am Aware of it. It's Ridiculous!" - Dark Patterns from the End-User Perspective. *DIS '21: Proceedings of the 2021 ACM Designing Interactive Systems Conference*, 763–776.
- Chugh, B., & Jain, P. (2021). Unpacking Dark Patterns: Understanding Dark Patterns and Their Implications for Consumer Protection in the Digital Economy. *RGNUL Student Research Review*, 7(1), 1–23.
- Di Geronimo, L., Larreina-Morales, J., Chatzigeorgiou, G., Torres, R., & Cudré-Mauroux, P. (2020). UI Dark Patterns and Where to Find Them: A Study on Mobile Applications and User Perception. *CHI Conference on Human Factors in Computing Systems*.
- Gray, C. M., Kou, Y., Battles, W., Hoggatt, J., & Toombs, A. L. (2018). The Dark (Patterns) Side of UX Design. *CHI Conference on Human Factors in Computing Systems*.
- Gray, C. M., Santos, C., Bielova, N., Toth, M., & Clifford, D. (2021). The Dark (Patterns) Side of UX Design: An Emerging Field of Research and Practice. *ACM Computing Surveys*, 54(8), 1–41.
- Gunawan, J., Choffnes, D., & Wilson, C. (2021). A Comparative Study of Dark Patterns Across Mobile and Web Modalities. *Association for Computing Machinery*.
- Kollmer, T., & Eckhardt, A. (2023). Dark Patterns: Conceptualization and Future Research Directions. *Business & Information Systems Engineering*, 65(2), 201–208.
- Luguri, J., & Strahilevitz, L. J. (2021). Shining a Light on Dark Patterns. *Journal of Legal Analysis*, 13(1), 43–109.
- Maier, M., & Harr, R. (2020). Dark Design Patterns: An End-User Perspective. *Human Technology*, 16(2), 170–199.
- Mathur, A., Acar, G., Friedman, M. J., Lucherini, E., Mayer, J., Marshini, C., & Narayanan, A. (2019). Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites. *Proceedings of the ACM on Human-Computer Interaction*.
- Moser, C., Schoenebeck, S. Y., & Resnick, P. (2019). Impulse Buying: Design Practices and Consumer Needs. *CHI Conference on Human Factors in Computing Systems*.
- Narayanan, A., Mathur, A., Chetty, M., & Kshirsagar, M. (2020). Dark Patterns: Past, Present, and Future. *Queue*, 18(2), 67–92.
- Sin, R., Harris, T., Nilsson, S., & Beck, T. (2022). Dark patterns in online shopping: do they work and can nudges help mitigate impulse buying? *Behavioural Public Policy*, 9, 61–87.