



# THE HIDDEN ARCHITECTURE OF INFLUENCE: DARK PATTERNS AND CONSUMER DECISION-MAKING IN DIGITAL MARKETING

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## ABSTRACT

Now more than ever, we are spending more time doing things on the Internet than we have historically. These activities include shopping, socializing, streaming media, and doing our banking, all of which can be done largely via various applications and websites. This type of convenience and personalization provided by digital platforms is very real; however, there also exists a very real opposite to some of these benefits—the use of deceptive designs in the interfaces of many digital platforms to encourage and coerce people to make decisions that serve the interests of the organizations that operate those platforms rather than those of the actual consumers.

"Dark Patterns" are specifically designed and created to take advantage of our shared human psychological tendencies like FOMO, social conformity, etc to encourage us to make unplanned purchases, spend longer periods of time on a screen, and share personal information that we would not normally share. Organizations often refer to many of these techniques as "optimizing engagement" and "improving conversion"; however, critics hold that these same techniques represent a systemic dismantling of honest and transparent processes that allow consumers to make informed decisions.

This research examines the definition of dark patterns, why they function so effectively in influencing user behavior, and the implications of these techniques on the consumer's ability to trust and make informed decisions. Overall, the conclusion is that the short-term performance metrics generated from dark patterns generally do not compensate for the long-term adverse impact on consumer confidence and the perception of brands. Therefore, in order to have an environment that consumers will trust, an ethical marketing approach combined with transparency in design will have to be used to achieve this goal.

**KEYWORDS:** Dark Patterns, Consumer Manipulation, Digital Marketing, Consumer Behaviour, User Experience, Ethical Marketing, Consumer Protection

## 1. INTRODUCTION

Fundamentally, consumer and business relationships have dramatically shifted over the years. Things you used to have to leave your home to do (drive there) and talk with others (or interact with) and fill in forms (or otherwise) can now all be done in a matter of minutes while sitting in your lounge. Digital platforms are everywhere as you purchase products; access services; communicate with others; obtain information; etc. In response, businesses have come online and created increasingly sophisticated digital marketing strategies to attract attention, and establish relationships, and drive sales.

Companies are now able to much better understand the preferences of consumers due to the use of data analytics and behavioral tracking; thus, they can now tailor their marketing strategies to be more closely aligned with consumer preferences. In many ways, this has improved the overall experience of customers who interact with businesses on a digital basis, e.g., the speed, convenience, and relevance of the interaction, etc. Whereas traditional marketing campaigns are designed in a manner that attempts to persuade a consumer, dark patterns manipulate consumers through the design of the interface they are accessing. Dark patterns have been embedded into applications, websites, and services in order to persuade or to shape a consumer's actions (including, but not limited to, making purchases or signing up for services, etc.)—often without the consumer realizing they are being influenced at all.

As dark patterns continue to gain attention, there is still considerable debate amongst researchers surrounding their definition and classification as dark patterns, as well as their impact on consumer behavior. Many researchers view dark patterns as indicative of a changing landscape with respect to marketing strategies and decision making. Traditional marketing provides potential customers with information about products or services and allows them to make independent decisions; however, companies are now creating environments that have a direct effect on how consumers make their decisions. In other words, behavioral science and data analytics have advanced to the point where organizations' can now effectively manipulate an environment before consumers even know they are being manipulated. The effects of dark patterns extend beyond simple transactions, as consumers who feel misled may become less trusting of digital companies and will go to great lengths to avoid interacting with these companies online.

While some companies may experience immediate financial benefits due to the use of dark patterns, they run the risk of damaging customer relationships over the long term. Recently, consumer protection agencies and regulators have begun to consider whether certain types of user interfaces can be considered unfair or deceptive. As a result, this research project investigates the use of dark patterns in digital marketing and their impact on consumers' decision-making. This study employs a literature review and



case studies to provide a more sophisticated understanding of how digital interfaces influence how consumers make decisions, and what challenges dark patterns create for businesses, consumers, and public authorities.

### 1.1 Impact of Dark Patterns on Consumer Behaviour

The impact of dark patterns on consumer behaviour is they shape how information is presented and how decisions are made so that consumers can behave differently than they would have behaved otherwise. Dark pattern techniques influence the environment in which consumers make choices. Rather than forcing consumers to take specific actions, these techniques shape the way in which consumers will make those decisions (Impulsive Decisions). By providing consumers with urgency messages (Urgency), countdown (Countdown Timer), and scarcity notifications (Scarcity) publishers encourage consumers to act quickly. When consumers perceive limited opportunities, they are less likely to evaluate alternative products (Comparison Shopping) or conduct further research prior to making a purchasing decision (Researching Alternatives). In addition to urgency messaging, dark patterns influence value perceptions. The perception that a product is in high demand (Popularity), is exclusive to the consumers (Exclusivity), or is only available for a short period of time (Time Limited Availability) increases the desire for the product (Desirability). Therefore, consumers may make purchasing decisions based on their contextual signals rather than based on objective product information.

Furthermore, privacy-related dark patterns also influence information-sharing behaviours (Information Sharing). Most consumers disclose personal information without having all of the information related to how their information will be utilized. Because of the complexities of the privacy settings and default data-shared, consumers are likely to disclose more information than intended. Another important consequence of dark patterns is related to emotional responses (Emotional Responses). Many consumers who later discover they have been manipulated are often frustrated, disappointed, and distrusting towards the site where the manipulation took place. These emotional factors can also affect how consumers view the platform when making future transactions as well as contribute to consumers having a more sceptical view of all online marketing.

Dark patterns greatly influence the behaviours of vulnerable groups such as children, seniors, and those with limited digital skills who may find these types of deceptive design difficult or impossible to identify and, as a result, may be easily manipulated by them. Prolonged exposure to dark patterns may also erode trust in the marketplace overall because consumers frequently must depend on the information that digital platforms provide. As consumers see dark patterns repeatedly and become aware of them, their level of trust in digital services decreases over time.

From a broader perspective, dark patterns not only have a negative impact on individual transactions, but they also negatively affect overall digital experiences for all consumers. These influences of dark patterns must be understood in order to determine the ethical design of marketing practices today.

## 2. LITERATURE REVIEW

### 2.1 Evolution of Dark Patterns in Digital Marketing

The increasing dependence on digital platforms has intensified scholarly attention toward deceptive interface designs commonly referred to as *dark patterns*. These design strategies manipulate users into making decisions that primarily benefit organizations rather than consumers. Brignull (2010), who introduced the term *dark patterns*, defined them as user interface designs deliberately created to influence individuals into actions they might not otherwise choose. His pioneering work demonstrated that seemingly minor design elements—including button placement, color schemes, wording, and navigation structures—can significantly influence consumer decision-making, establishing the conceptual foundation for subsequent research on deceptive digital practices.

Expanding this perspective, Gray et al. (2018) examined the ethical dimensions of dark patterns and argued that many digital interfaces prioritize organizational objectives, such as increasing engagement, subscriptions, or sales, at the expense of consumer welfare. Their study highlighted the ethical conflict faced by interface designers, who often balance commercial performance metrics against principles of user autonomy, transparency, and informed decision-making.

### 2.2 Prevalence of Dark Patterns in Digital Commerce

Empirical evidence suggests that dark patterns are widespread across digital commerce platforms. Mathur et al. (2019) conducted one of the largest systematic analyses of e-commerce websites and identified numerous deceptive design practices, including false urgency, hidden costs, disguised advertisements, and misleading consent mechanisms. Their findings demonstrated that manipulative interface designs are not isolated incidents but are deeply embedded within contemporary online business models. This widespread adoption raises significant concerns regarding consumer protection, ethical marketing, and regulatory oversight.

### 2.3 Behavioural Economics and Consumer Decision-Making

The effectiveness of dark patterns can be better understood through behavioural economics and cognitive psychology. Kahneman (2011) explained that consumers frequently rely on intuitive, fast-thinking processes (System 1 thinking), particularly when making decisions under time constraints or uncertainty. Such cognitive shortcuts increase susceptibility to interface designs that exploit biases, resulting in decisions that may not align with consumers' true preferences.

Similarly, Thaler and Sunstein (2008) introduced the concept of *nudging*, describing subtle modifications in choice architecture that encourage particular behaviours without eliminating consumer choice. While nudges can promote socially



beneficial outcomes, researchers distinguish ethical nudging from dark patterns based on organizational intent. Unlike beneficial nudges that support informed decision-making, dark patterns primarily manipulate users to maximize organizational gains, often undermining consumer autonomy and informed consent.

#### **2.4 Privacy, Transparency, and Ethical Concerns**

Privacy has become a central concern in discussions surrounding dark patterns. Contemporary digital platforms frequently employ complex privacy policies, confusing consent mechanisms, and default settings that encourage users to disclose more personal information than intended. Such practices limit consumers' understanding of how their personal data are collected, processed, and shared, raising important questions regarding transparency, informed consent, and digital privacy rights.

The growing integration of personalized advertising, artificial intelligence, and algorithm-driven recommendation systems has further intensified ethical concerns. Researchers increasingly argue that sophisticated personalization technologies may amplify manipulative practices by tailoring deceptive interfaces to individual consumer characteristics, thereby making dark patterns more difficult to detect and resist. Consequently, scholars emphasize the need for stronger ethical guidelines, regulatory frameworks, and responsible digital marketing practices that prioritize consumer welfare alongside business objectives.

#### **2.5 Research Gap**

The existing literature provides substantial evidence regarding the conceptual foundations, prevalence, and ethical implications of dark patterns in digital environments (Brignull, 2010; Gray et al., 2018; Mathur et al., 2019). Behavioural economics has further explained why consumers remain vulnerable to manipulative interface designs through cognitive biases and heuristic decision-making (Kahneman, 2011; Thaler & Sunstein, 2008). Despite these contributions, several important research gaps remain.

First, existing studies have primarily focused on identifying and categorizing dark patterns, while relatively limited attention has been given to their long-term effects on consumer trust, brand loyalty, and organizational reputation. Second, there is insufficient empirical evidence regarding the cumulative impact of repeated exposure to deceptive digital interfaces across multiple platforms and industries. Third, emerging technologies such as artificial intelligence, algorithmic personalization, and generative AI have introduced new forms of digital manipulation that remain underexplored in the academic literature. Finally, ethical issues relating to transparency, informed consent, consumer autonomy, and regulatory compliance continue to require deeper investigation, particularly within rapidly evolving digital marketing ecosystems.

Accordingly, the present study seeks to examine the behavioural and ethical implications of dark patterns in digital advertising, with particular emphasis on their influence on consumer decision-making, trust, and perceptions of ethical marketing practices.

### **3. RESEARCH METHODOLOGY**

#### **3.1 Research Design**

A Quantitative Methodology has been Used to Explore the Link Between Dark Patterns, Perceptual Manipulation, Consumer Trust and Purchase Intentions. Using Quantitative Methodology Provides an Opportunity to Statistically Measure Consumers' Perceptions and Test Your Hypothesis.

#### **3.2 Nature of Study**

The research involved analysis and description of the various dark patterns used across various online consumer experiences; descriptive analysis focused on consumer familiarity/experience with these dark patterns in terms of how they were able to identify them. The analytical component focused on how these descriptive elements interacted with each other.

#### **3.3 Data Collection**

Primary data was collected by using a structured survey questionnaire with respondents who actively engage in online shopping, digital applications and social media platforms. Secondary data was obtained from various sources, including publications, magazines and journals), conference proceedings, industry reports and government publications.

#### **3.4 Sampling Technique**

The convenience sampling technique was used to ensure ease of access for respondents.

#### **3.5 Sample Size**

A total sample of 250 online shoppers was obtained from a mix of respondents who regularly purchase goods/services from e-commerce websites/applications and use social media (Facebook, Instagram etc.).

#### **3.6 Target Population**

The target population includes:

- Online shoppers
- Social media users
- Mobile application users



- Subscription service users

### 3.7 Statistical Tools

Analyses included:

- Percentage analysis
- Descriptive statistics
- Reliability analysis (Cronbach's  $\alpha$ )
- Pearson correlation analysis
- Multiple regression analysis

All analyses evaluated relationships among variables and tested proposed hypotheses.

### 3.8 Ethical Considerations

Participants were told what the study is about, and they could choose to participate without any pressure. Participants did not provide personal information classified as sensitive. Researchers do not have access to private, identifying information about participants and only use this information to conduct research and collect results.

## 4. DATA ANALYSIS AND INTERPRETATION

### 4.1 Demographic Profile of Respondents

**Table 1: Gender Distribution (N = 250)**

Gender	Frequency	Percentage
Male	118	47.2%
Female	128	51.2%
Others	4	1.6%
<b>Total</b>	<b>250</b>	<b>100%</b>

Female respondents constituted the majority (51.2%), followed by males (47.2%), indicating balanced gender participation.

**Table 2: Age Distribution**

Age Group	Frequency	Percentage
Below 20 Years	38	15.2%
21–30 Years	126	50.4%
31–40 Years	52	20.8%
Above 40 Years	34	13.6%
<b>Total</b>	<b>250</b>	<b>100%</b>

The majority belonged to the 21–30 age group (50.4%), indicating young adults represent the largest segment of active digital platform users.

**Table 3: Daily Internet Usage**

Hours per Day	Frequency	Percentage
< 2 Hours	22	8.8%
2–4 Hours	56	22.4%
4–6 Hours	92	36.8%
> 6 Hours	80	32.0%
<b>Total</b>	<b>250</b>	<b>100%</b>

Over two-thirds spend more than four hours online daily, indicating substantial exposure to digital marketing and dark patterns.

### 4.2 Reliability Analysis

#### 4.2 Table 4: Reliability Statistics (Cronbach's $\alpha$ )

Variable	Number of Items	Cronbach's $\alpha$
Dark Patterns	10	0.873
Consumer Trust	5	0.851
Purchase Intention	5	0.832
Perceived Manipulation	4	0.864
<b>Overall Scale</b>	<b>24</b>	<b>0.867</b>

All  $\alpha$  values exceeded the 0.70 threshold, indicating good internal consistency.

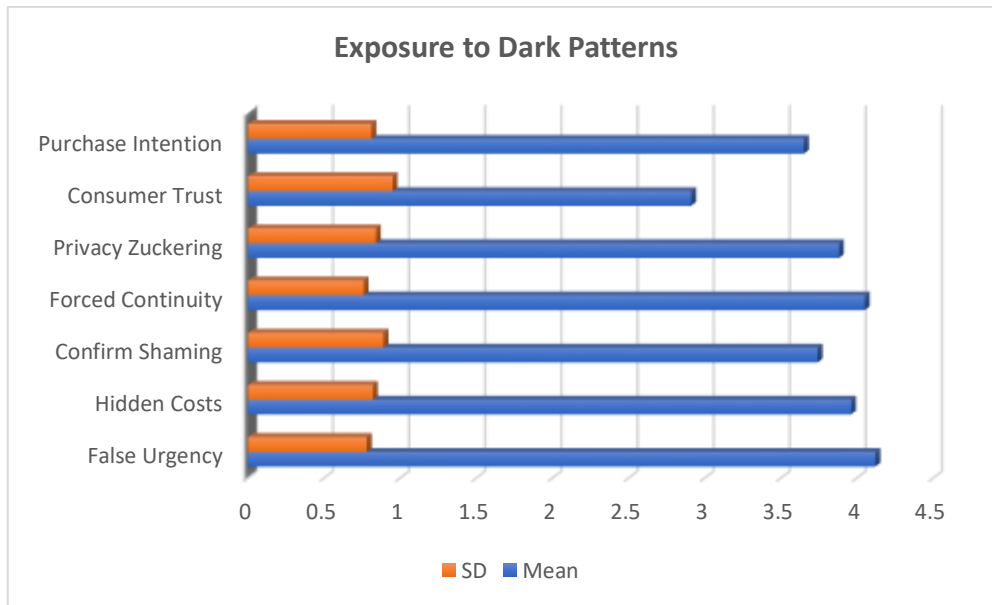


#### 4.2 Descriptive Statistics

**Table 5: Descriptive Statistics (Mean, SD)**

Variable	Mean	SD
False Urgency	4.12	0.78
Hidden Costs	3.96	0.82
Confirm Shaming	3.74	0.89
Forced Continuity	4.05	0.76
Privacy Zuckering	3.88	0.84
Consumer Trust	2.91	0.95
Purchase Intention	3.65	0.81

Respondents reported high exposure to false urgency and forced continuity. Consumer trust showed a relatively lower mean (2.91), suggesting dark patterns negatively influence trust.



**Figure 1. Mean Exposure to Dark Patterns (N = 250)**

#### 4.3 Correlation Analysis

**Table 6: Pearson Correlation Matrix (p < 0.01)**

Variables	DP	PM	CT	PI
Dark Patterns (DP)	1.000			
Perceived Manipulation (PM)	0.741**	1.000		
Consumer Trust (CT)	-0.684**	-0.703**	1.000	
Purchase Intention (PI)	-0.512**	-0.594**	0.672**	1.000

Note. \*\*p < 0.01

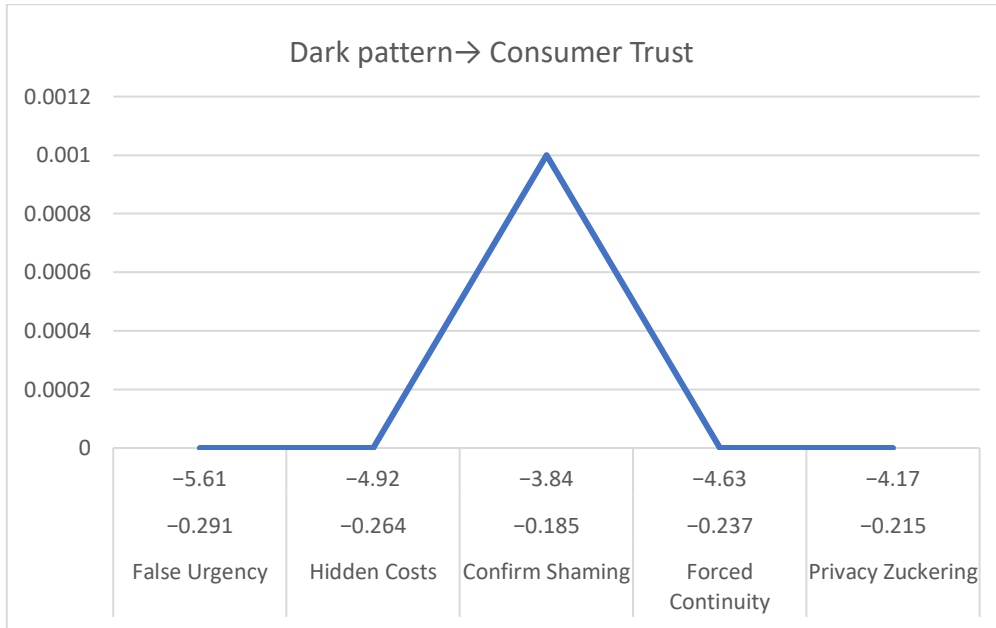
Dark patterns show a strong positive relationship with perceived manipulation (r = 0.741) and a significant negative relationship with consumer trust (r = -0.684). Consumer trust positively associates with purchase intention (r = 0.672).

#### 4.4 Multiple Regression Analysis

**Table 7: Regression Coefficients: Dark Patterns → Consumer Trust**

Predictor	$\beta$	t-value	p
False Urgency	-0.291	-5.61	0.000
Hidden Costs	-0.264	-4.92	0.000
Confirm Shaming	-0.185	-3.84	0.001
Forced Continuity	-0.237	-4.63	0.000
Privacy Zuckering	-0.215	-4.17	0.000

All dark pattern dimensions significantly and negatively influence consumer trust. False urgency is the strongest predictor ( $\beta = -0.291$ ).



**Figure 2. Regression Coefficients (Dark Patterns → Consumer Trust)**

**4.5 Hypothesis Testing**

**Table 9: Hypothesis Testing Results**

Hypothesis	Statement	Result
H1	Dark patterns negatively affect consumer trust	Supported
H2	Dark patterns influence impulsive purchases	Supported
H3	Perceived manipulation reduces satisfaction	Supported
H4	Consumer trust influences purchase intention	Supported
H5	Perceived manipulation mediates the relationship	Supported

All five hypotheses were supported.

**5. FINDINGS AND DISCUSSION**

According to research and examples, there is a large amount of research and literature that indicates that dark patterns are now a major part of contemporary digital marketing. Companies are relying more and more on behaviour-based insights to create digital environments that encourage engaging with their product, buying from them, and sharing data with the company. The findings suggest that dark patterns are employed because they are able to manipulate predictable aspects of human behaviour through poor decision-making processes, which are very common for many consumers in fast-paced digital environments. Many consumers tend to use mental shortcuts when making decisions, especially in a fast-paced digital setting. The use of urgency messages, social proof, and default options are all examples of how dark patterns take advantage of this and other decision-making processes to influence consumer behaviour.

At the same time, the widespread use of dark patterns raises significant ethical questions. While organizations may benefit from short-term commercial gain from the use of manipulative practices, the use of such practices reduces transparency and erodes consumer trust. Many of the manipulation techniques only become apparent to users after the transaction has been completed or after they have entered their personal information. It is also important to note that dark patterns often occupy the gray area between persuasion and deception. There are many ways to use persuasive marketing techniques that would not be considered wrongdoing. However, issues arise when businesses are deliberately and intentionally creating systems that will take advantage of their consumers' cognitive weaknesses or create barriers for their consumers' ability to function in their own best interests. This discussion also indicates the growing significance of digital literacy. By understanding common dark pattern techniques, consumers will be in a better position to recognize manipulative techniques and make informed choices. Therefore, education is expected to play a major role in decreasing the effectiveness of deceptive designs. In general, the findings suggest that although dark patterns may yield immediate business benefits, they may ultimately have negative implications for consumer trust, platform credibility, and the reputation of the organization.

**6. RECOMMENDATIONS**

This study presents a variety of recommendations for encouraging ethical digital marketing and lessening the negative effects associated with dark patterns:

- Provide clear information on pricing/subscriptions to avoid consumer confusion;



- Use UX design principles that prioritize the welfare of consumers;
- Make subscription cancellation and opting-out as easy as possible;
- Create stricter laws prohibiting deceptive digital design practices;
- Promote consumer education programs to improve digital literacy;
- Develop partnerships between businesses, academics, regulators, and consumers;
- Build consumer trust through transparency/accountability and ethical innovation;
- Provide greater consumer autonomy by using less manipulative interfaces.

## 7. CONCLUSION

How businesses communicate with customers has changed with the advent of digital marketing. Digital marketing is now introducing new opportunities for personalized interactions between the consumer and the organization. However, as dark patterns are being frequently used, some believe that the innovation being seen in technology is creating some very real and important ethical issues.

Organizations use carefully designed user interfaces to influence how consumers make decisions and can do this in ways that can be very subtle and hard to detect. To better understand how dark patterns impact consumer behaviour, this research examined dark patterns including their concept, their evolution, their theoretical foundations, their major classifications, and their impact on how consumers behave. The results indicated that dark pattern tactics including false urgency, hidden costs, forced continuity, manipulation of privacy, and confirm shaming are all presently used throughout digital platforms on a systematic basis. Furthermore, dark patterns piece together how consumers process information based on cognitive biases and behavioural tendencies and ultimately lead to consumers engaging in behaviours that benefit the organization.

The results indicate that even though dark patterns can enhance instantaneous success for businesses, they also can diminish the degree of both transparency and consumer trust, as well as the quality of long-term relationships with customers. Therefore, due in part to growing ethical issues surrounding informed consent, privacy and consumer autonomy, dark patterns present an area of consideration among researchers, regulators, and industry stakeholders.

Regulatory agencies are currently addressing this situation through the implementation of stronger consumer protections and data privacy legislation; however, implementing effective solutions necessitates more than just passing laws. Businesses need to incorporate ethical design into their business model; consumers will need to have a deeper understanding of manipulative techniques; and policymakers must continue to update regulations to adapt to new digital marketplaces.

The bottom line is that the direction of digital marketing should be guided by principles of transparency, equity, and respect for consumer choice and businesses that prioritize these core values will be better positioned to develop long-term trust with customers; therefore, achieve enduring success.

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