

Dark Patterns: Social Media, Gaming, and E-Commerce

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Dark Patterns are defined as “tricks used in websites and apps that make you do things that you didn’t mean to” (Bringull, 2017). They are implemented to manipulate users with deceptive design tactics using studies on human behavior, and are coined as “anti-user”, since the marginal benefit of corporations are being prioritized over users. This proceeding specifically studies the prevalent dark patterns in the fields of Social Media, Gaming, and E-Commerce platforms. Though Grey et al. initially characterized dark patterns into 12 types of dark patterns (Gray et al., 2018), there are plenty of studies where more categorizations of dark patterns are found in different fields. Finally, this paper sheds light on what could be the next steps for the stakeholders, such as designers, engineers and the overall socio technical system, to better regulate dark patterns in order to minimize user concerns, as well as reduce unethical design practices.

INTRODUCTION

A good user experience design is meant to be an effective, satisfying and efficient design with the user’s best intention as the priority. However, deceptive and persuasive designs are being commonly used to manipulate human behavior and decision making. Bringull coined the use of these manipulative design techniques as “Dark Patterns” and defined this term as “*tricks used in websites and apps that make you do things that you didn’t mean to*” (Bringull, 2017). He characterized these techniques under 12 types of Dark Patterns: *Trick Questions, Sneak into Basket, Roach Motel, Privacy Zuckering, Price Comparison Prevention, Misdirection, Hidden Costs, Bait and Switch, Confirmshaming, Disguised Ads, Forced Continuity, and Friend Spam* (Bringull, 2017). Other researchers have come up with definitions for these dark patterns or have addressed different types. (e.g., Narayanan et al., 2020; Dahlan, 2020; Kim et al., 2020)

A study done by Di Geronimo et al. (2020) shows the significance of these dark patterns. Di Geronimo et al.’s study consisted of 589 users evaluating 240 popular mobile applications and aimed to analyze how dark patterns are perceived by users. He found that 95% of the 240 mobile applications had at least one type of dark pattern, and amongst all 240 mobile applications, the most popular ones used at least 7 types of dark patterns. The interesting finding by Di Geronimo et al. was that most users did not even recognize the presence of dark patterns within the applications they evaluated. This deceptive and anti-consumer design tactic may seem like a mistake in the system, however these manipulations are purposefully implemented into the designs, using the knowledge of human behavior against the users themselves, in order to influence human behavior and decision making. (What is

GDPR, the EU's new data protection law, 2019; Maier et al., 2020)

METHOD

This paper will focus on where dark patterns are prevalent, the concerns regarding dark patterns from a user perspective, the motifs behind using dark patterns from a designer perspective, and how these dark patterns can be addressed. The scope of this paper was chosen by searching the database SCOPUS, and an additional search of Google Scholar. Articles were limited to the past 10 years (2010-2020), and only the term “Dark Patterns” was searched. Only articles written in English were considered. The initial search provided 192 articles, however after skimming through the article titles, around 30+ titles were found to be relevant to the topic and all of their references were reviewed for additional articles to add to the review. Articles not concerning technology were not included in this review. Once the scope of the study was narrowed down to Social Media, E-Commerce and Gaming, only 17 articles were found to be relevant to these topics.

RESULTS

According to the findings of the article search, the majority of the studies done on dark patterns have been from the past 5 years, and the main areas where dark patterns are prevalent are social media, games, and e-commerce. Therefore, this paper will focus on these three areas, since most of the articles were surrounding these three platforms.

Social Media

In May of 2018, the European Union put into place a new regulation regarding data privacy and security law, and it is called the General Data Protection Regulation (GDPR) (Nouwens et al., 2020). The 7 principles within GDPR are:

1. *Lawfulness, Fairness, and Transparency*
2. *Purpose Limitation*
3. *Data minimization*
4. *Accuracy*
5. *Storage Limitation*
6. *Integrity and Confidentiality*
7. *Accountability*

Even though GDPR was created by the European Union, the regulation is relevant for all organizations, as long as they are collecting data from citizens of the European Union (What is GDPR, the EU's new data protection law, 2019)

The European Union is not the only place where new regulations are being implemented. In April of 2019, in the United States, two senators introduced the “Deceptive Experiences to Online Users Reduction (DETOUR) Act” with the purpose of preventing large online platforms from using dark patterns and stop them from deceiving users and collecting personal data. Senator Mark R. Warner stated “*For years, social media platforms have been relying on all sorts of tricks and tools to convince users to hand over their personal data without really understanding what they are consenting to. Some of the most nefarious strategies rely on ‘dark patterns’ - ...*”. (US Senator from the Commonwealth of Virginia, 2019). With this legislation, they are hoping to implement some sort of transparency to the experience between the user and the platform and encourage conscious and informed decision making by users. Senator Deb Fischer stated “*Any privacy policy involving consent is weakened by the presence of dark patterns. These manipulative user interfaces intentionally limit understanding and undermine consumer choice. -...*”

The German Parliament, in June of 2017, introduced a law called *Netzwerkdurchsetzungsgesetz* or known as the NetzDG or the German Network Enforcement Act, that entered into full force in 2018. The aim of this act is to encourage accountability and transparency, especially in large social media platforms. A study done by Wagner et al. (2020) provides an empirical study on how both Facebook and Twitter have made changes to implement different design choices to align

with NetzDG guidelines to enable transparency. In order to perform a comparison of how differently Twitter and Facebook both handled this challenge Wagner et al. has compared the reporting mechanisms for both the platforms. The reporting mechanism is there to report

content by users. The initial reporting mechanism of Twitter took an average of 111 seconds and users were given a total of 15 options throughout the process. With new NetzDG guidelines, their updated reporting mechanism ended up on average taking 150 seconds, whereas the number of options given to the user throughout the experience has increased to 27. On the other hand, Facebook’s initial reporting mechanism took only 49 seconds, with a total of 11 given options to the user. However, after the NetzDG guidelines, their updated reporting mechanism takes around 257 seconds and the number of options given to the users has increased to 40, from the initial 11. The number of steps for both Twitter and Facebook’s reporting mechanism also increased from 5 to 6, and 2 to 15 respectively. Another finding from the study has been that “*Facebook uses a flat information structure of one long form, while Twitter uses a hierarchical information structure. This means that Facebook ends up showing users lots more information (and thus burdens users with more complexity) than is actually necessary*” (Wagner et al., 2020), and with what we know about the definitions of dark patterns we can say that this is a form of dark pattern as well. (Gray et al., 2018; Bringull, 2017) The excess information is being used to redirect the user’s attention from the reporting process and limits the user’s right to access legal actions. This obstruction of information shows how when people advocate for transparency in large social media platforms, it is not only about whether or not the information is provided to us, but also how comprehensible the information provided to us is.

Some may argue that users have the free will and can make the active choice of not using these large social media platforms. However, Westin et al. (2019) has studied the privacy behaviors of users through a fomo-centric design paradigm. He defines this paradigm as FoMO and describes it as a “*pervasive apprehension that others might be having rewarding experiences from which one is absent*”. Westin et al.’s study shows that when we offer users a decision of choosing between social benefits and privacy, we are not really giving them a fair choice. Westin et al.’s study states that this fomo-centric behavior results from 3 main psychological needs:

- Competence
- Autonomy
- Relatedness

and says that it derives from users wanting to stay connected and be involved in what others are doing (Westin et al., 2019). This need to stay connected can be used against users’ advantage by incorporating *infinite scroll* as a dark pattern into their designs. Infinite scroll is “*a dark pattern in by the way it makes the user addicted*

to the content". Some may argue that infinite scrolling makes it more convenient for the user to view content, since it allows the user to view content with less effort via navigations. However, others also argue that infinite scrolling on social media platforms can lead to addiction due to the convenience and having the ability to scroll infinitely as a default can in itself be a dark pattern (Cara, 2019).

Gaming

Similar to social media platforms, there is an implication that game designers have the best interest of the users in mind when designing games, however this may not always be the case. The term "player-centered" is used to relate the term "user-centered" to specifically games and describes how game designers prioritize the experience of the user, especially to entertain them.

In 2013, Zagal et al. examined how designers may not actually have the players' best interests in mind when designing. In their study, Zagal et al. studied the use of Dark Patterns in Games and calls them "Dark Game Design Patterns" and defines them as:

"A dark game design pattern is a pattern used intentionally by a game creator to cause negative experiences for players which are against their best interests and likely happen without their consent" (Zagal et al., 2013).

Interestingly, he introduces a new term called "anti-patterns" and compares it to dark patterns. He describes anti-patterns in games as "bad design" that results from ignorance and not having the resources to design better games, unlike dark patterns, which are intentional (Zagal et al., 2013). The big difference between anti-patterns and dark patterns is that anti-patterns are not necessarily unethical. Zagal et al.'s study states that for an anti-pattern in games to be considered unethical it has to cause an unfavorable experience for the user, and it has to be the designer's intention to cause this unpleasant experience.

Compared to anti-patterns, dark patterns are intentionally implemented design choices to manipulate users, and they do not happen by mistake. Players decide to play games for many different reasons. Some play for fun, some play for a sense of accomplishment and unfortunately, some play for the intense negative emotions that the games cause. Regardless of why the player decides to play a game, it is the user's right to be aware of the motivations of the designers.

Different from Bringull's definitions of dark patterns, Zagal et al. has come up with Dark Game Design Patterns and has categorized them into three categories: Temporal Dark Patterns, Monetary Dark Patterns, and Social

Capital-Based Dark Patterns. Temporal dark patterns are concerned with the user's awareness of the time they are spending on the games, Monetary Dark Patterns are concerned with user's awareness of how much money they are willing to spend, and Social Capital-Based Dark Patterns are concerned with the user's awareness of their own motifs to play the games. Temporal Dark Patterns are '*Grinding*' and '*Playing by Appointment*'. Monetary Dark Patterns are '*Pay to Skip*', '*Pre-Delivered Content*', and '*Monetize Rivalries*'. Social Capital-Based Dark Patterns are '*Social Pyramid Schemes*' and '*Impersonation*' (Zagal et al., 2013).

In 2020, Dahlan further studied these patterns and aimed to come up with new dark patterns within mobile games, however they failed to unveil new dark patterns in game design. Nonetheless, after their heuristic evaluation on several mobile games, they concluded that the most commonly used dark patterns were:

1. *Pay to skip*
2. *Grinding*, and
3. *Playing by Appointment*. (Dahlan, 2020)

The least commonly used dark pattern was *Pre-delivered Content*, and Dahlan explained this by stating "*it's against the nature of games in the casual genre on the mobile platform*" (Dahlan, 2020). This shows how even within the scope of gaming, there is a divide between the different platforms like mobile games and console games (i.e., PlayStation, Xbox Games) and the design strategies within those platforms in order to capitalize on users' lack of free will.

All these dark patterns, even though under different categorizations, have very similar purposes, which is to cause negative experiences or design against the user's best interest. A lot of the behaviors portrayed or expected within games, such as lying, manipulating, scheming etc. (Consalvo et al., 2011) can affect players' behavior even outside of the games. This is especially concerning, considering the increase in applying psychological studies and behavioral economics into the design process of games. The more designers and developers understand user behavior, the more there is an opportunity to manipulate users. And as Zagal et al. asked in their paper "*When does using knowledge of human psychology change from 'manipulating your players' to 'good game design'?*" (Zagal et al., 2013)

E-Commerce

The retail industry has been known to manipulate users for decades now with deceptive retail practices such as *psychological pricing* and *false advertisement of store closure* (Narayanan et al., 2020). The main goal of these

practices has been the same for years, which is to encourage users to purchase items and make profit. However, now with modern-day technology, it has become much easier to manipulate users using dark patterns in websites and mobile applications. A study from 2018 found that users annually are cheated out of nearly \$6 billion just from online travel agency booking scams. According to the same study, 45% of all customers are affected by dark patterns (Kim et al., 2020).

Similarly, in a study done by Mathur et al. in 2019, they analyzed 11,000 shopping websites and found dark patterns in 1254 of those websites with a total of 1818 instances. They have defined 15 different e-commerce related dark patterns and categorized these dark patterns into 7 categories. Some of these categories are inspired by or coined by Gray et al. (2018) and some by Bringull (2017). These 7 categories, and the assigned dark patterns are (Mathur et al., 2019):

- Sneaking (Gray et al., 2018)
 - Sneak into Basket
 - Hidden costs
 - Hidden Subscription
- Urgency
 - Countdown Timers
 - Limited-time Messages
- Misdirection (Di Geronimo et al., 2020)
 - Confirmshaming
 - Visual Interference
 - Trick Questions
 - Pressured Selling
- Social Proof
 - (Deceptive) Activity Notifications
 - Testimonials of Uncertain Origin
- Scarcity
 - Low-stock Messages
 - High-Demand Messages
- Obstruction (Gray et al., 2018)
 - Hard to Cancel
- Forced Action (Gray et al., 2018)
 - Forced Enrollment

Most of these dark patterns are implemented to urge shoppers to buy as many items as possible and as urgent as possible. Privacy concerns with e-commerce sites are especially high, since bank information is highly sensitive data. Therefore, e-commerce sites should be more transparent with their design choices and motifs.

Additionally, Moser et al. (2019) studies the dark patterns that specifically encourage impulse buying. Their analysis consists of two studies, which is a study of 200 e-commerce sites and a survey study with 151 impulse buyers. Interestingly, they found that there are many features which encourage impulse buying, such as

rewards, member discounts, product reviews, and interactive products. These features were the most common and were found in 75% of the studied e-commerce websites. (Consalvo et al., 2011). However, their second study found that shoppers would rather be encouraged to make deliberate decisions rather than impulsive purchases, and wish for e-commerce sites to implement friction to their design in order to prevent them from spending an excessive amount of money (Moser et al., 2019)

DISCUSSION

In conclusion, whether dark patterns are being used in social media platforms, games, or e-commerce platforms, they all have the same purpose, and it is to manipulate users. There are many different definitions of what dark patterns are (Gray et al., 2018; Zagal et al., 2013; Bringull, 2017), yet they all point to the same outcome, which is that it is an unethical design practice to be using knowledge of human behavior to anti-user benefits.

The sociotechnical system that designers and engineers work in, unfortunately, prioritizes corporate profit making more than user satisfaction and they do this best by implementing dark patterns into the user experiences. Although some intrusive persuasion patterns may be used for the overall good (i.e., donations, petitions, push to voter registration etc.), the bottom line is that there lacks a level of transparency. Due to this oblivious state of users, it is still considered unethical, since the decisions made are not deliberate but forced.

Limitations

As mentioned above, the use of dark patterns is an unethical design practice, not an illegal design practice, which, along with their profitability, likely contributes to why eliminating their use is not as high of a priority to many stakeholders. Though the scope of this article has focused on Social Media, Gaming, and E-Commerce, the use of dark patterns is not limited to these platforms. Additionally, the users, who are the most impacted stakeholder, are mostly unaware of the dark patterns and the unethical design practices used, hence why transparency is very important to increase user awareness.

Future Work

It is clear that dark patterns, though unethical, have become part of our technological experiences. The real question we need to face is what can be done to minimize the negative experiences and the negative impacts dark patterns have on users. Even in the field, there are different opinions on how dark patterns can be regulated.

Brigull (2017) believes that there needs to be user awareness, whereas Gray et al. (2018) believes that there needs to be more ethical standards in the design process. Many things can be done to make a change, but the question is who will be willing to do it. For example, raising awareness of dark patterns in different platforms is one way to prevent designers from manipulating users, however, this may put pressure on users to look for these dark patterns while using technology. And there are studies that show that even though users have awareness of these issues, they are very dependent on these technologies and platforms, therefore they do not change their behaviors (Maier et al., 2020; Westin et al., 2019).

Another avenue for future work is better understanding how human respond to dark patterns. Measuring human activity in response to dark patterns could help identify vulnerable moments where people need support. Eye tracking patterns can now be measured with webcams. Emotional facial expressions can be assessed with webcams or measured with self-report, though self-report can carry biases (Lottridge et al., 2012).

Embedding ethics into education for designers and developers could also be a great way to improve this problem from the developer's end. Additionally, an obvious suggestion would be to have regulations like General Data Protection Regulation in Europe, the NetzDG in Germany, or the DETOUR act in the United States. The complex part of dark patterns is that most of the time unethical does not mean illegal, however these legislations allow governments to regulate ethical design practices and allow unethical acts also to be illegal. This would not only encourage designers to make better design choices without manipulating users, but also force them under law. It is clear that more work needs to be done in this field to find the most effective way to maximize the user's experiences and minimize the deceptive practices.

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