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Anti-dark marketing: comprehensive research on presence, effectiveness and harms of dark patterns in modern marketing practices and a guide on how to effectively safeguard users.

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Introduction and abstract:

Behavioural economics and marketing have increasingly become interconnected fields in recent years, as companies seek to understand how people make decisions and the factors that influence consumer behaviour. The use of behavioural economics theories in marketing has led to the development of nudging techniques that aim to influence consumer behaviour without restricting individual choice. However, there is growing concern about the use of manipulative tactics in marketing, known as dark nudges and patterns, which exploit people's cognitive biases to influence their decisions.

This thesis examines the interrelationship between behavioural economics theory, marketing, and dark nudges. The first objective of this research is to develop a comprehensive understanding of the theoretical framework of behavioural economics and its application in marketing. More specifically, I will explore the ethical considerations surrounding nudging and the potential for the misuse of these tactics. Additionally, this study aims to identify the techniques employed in real-world marketing campaigns and assess their impact on consumer behaviour, so as to demonstrate how the average consumer is often manipulated through deceptive designs to engage in predetermined actions. Furthermore, this research will provide a rationale for why such practices are not only morally questionable but also demonstrably detrimental to human psychology, specifically to neurodivergent individuals. The final goal of this thesis is to prove the dangers of dark patterns and the ineffectiveness of the existing legislative sanction-based model currently in use against companies utilizing deceptive designs. In light of these shortcomings, a new and adaptable solution will be proposed as a safeguard not only for the average consumer but also for the more vulnerable and neurodivergent users. In the first chapter, the theoretical framework of behavioural economics and the concept of nudging will be discussed. In the second chapter, I will analyse case studies that illustrate the use of dark nudges in marketing and identify the techniques used in these campaigns. In the third chapter, the study will evaluate the impact of these campaigns on consumer behaviour and explore the psychological effects of dark nudges and scams on individuals in order to emphasize the need for a legislative model as a means of protection for consumers. Lastly, in the fourth chapter, I will

summarize the current legislative efforts put in place to combat manipulative design choices, exposing their flaws and finally providing an alternative solution.

Chapter 1: Behavioural Economics Insights

Behavioural economics is a field of study that combines economics and psychology to understand how human behaviour affects economic decision-making. According to traditional economic theory, decision-making is based on several key assumptions, the first of which is that individuals are assumed to have complete and perfect information about the available choices and their potential outcomes and that they display well-defined preferences that are stable over time (Simon, 1955). Additionally, individuals are assumed to possess the computational capacity to process and evaluate all available information to make optimal decisions, which is why in traditional economic theory, decision-making is often modelled using expected utility theory (Schoemaker, P. J. 1982). This theory suggests that individuals make decisions by calculating the expected value of different options, which is the sum of the utilities (or values) of each possible outcome weighted by their respective probabilities (Schoemaker, P. J. 1982). The option with the highest expected utility is considered the rational choice (Evstigneev et al., 2013). Behavioural economics theory differs from traditional economics by challenging the traditional assumptions of rationality and self-interest as a whole and recognizes that people are often irrational and make decisions based on emotions and general and often inaccurate mental rules (Kahneman, D., & Tversky, A. 1979). These decisions cannot be explained by the classical model of economic theory, which fails to acknowledge when faced with a choice; a process which sometimes does not even involve an objective evaluation of outcomes at all, and when it does, logical reasoning ends up being only an overshadowed fraction of a convoluted mixture of emotions, oversimplifications and logical shortcuts (Blumenthal-Barby, J. S. 2016). The study of this heterogeneous decision-making process led to the coining of two important concepts: Heuristics and biases. Heuristics are mental shortcuts or rules of thumb that individuals use to simplify complex decision problems, while biases refer to the systematic errors or deviations from rationality that result from these heuristics (Blumenthal-Barby, J. S. 2016). Both behavioural phenomena stem from an evolutionary need for our brain to assess a situation and make a decision as quickly and as efficiently as possible. A relevant model, which tries to explain how the

average human brain deals with choices, comes from Nobel Prize-winning psychologist and economist Daniel Kahneman, who formulated the "system theory", according to which the human brain operates on a two-system basis when it comes to decision-making (O'Brien, D. T. 2012):

- System 1: This is the fast, intuitive, and effortless system that we use for most of our decisions. It is based on our emotions, gut feelings, and past experiences.
- System 2: This is the slow, deliberate, and effortful system that we use for complex decisions. It is based on logic, reason, and analysis.

Both systems serve a purpose; system 1 is often used for decisions that are simple, familiar, or require quick responses, whilst system 2 is often used for decisions that are complex or unfamiliar (O'Brien, D. T. 2012). System 1, although efficient, can often result in incorrect assumptions and less-than-optimal outcomes. This is the system responsible for our sometimes-irrational behaviour, as it is based upon the unconscious processing of information through the use of heuristics, mental shortcuts, and pattern recognition to make rapid judgments and decisions (O'Brien, D. T. 2012). These mental shortcuts can be beneficial as they enable quick decision-making and problem-solving in everyday life. However, heuristics can also lead to biases and errors, as they may overlook important information or rely on simplified assumptions. The interaction between System 1 and System 2 thinking is dynamic and depends on the context and task at hand. System 1 thinking often operates automatically and unconsciously, providing initial impressions and intuitions (O'Brien, D. T. 2012). System 2 thinking, when activated, can override or modify the initial responses of System 1, leading to more deliberate and thoughtful decision-making and vice-versa (Kannengiesser & Gero, 2019). Heuristics, although often associated with irrational decision-making, can on the contrary prove very useful when employed in situations where time and cognitive resources are limited, allowing individuals to make reasonably good judgments without extensive analysis or deliberation. These mental shortcuts can therefore be either beneficial or detrimental as they enable quick decision-making but also pose the risk of over-simplifying situations, resulting in sub-optimal choices and irrational behaviour (Kannengiesser & Gero, 2019).

1.1 Prospect Theory.

Developed by Kahneman and Tversky in 1979, prospect theory provides an alternative model that better captures the way people make decisions under risk. This model allows us to understand how marketers may use certain behavioural tendencies to boost sales of their product and it introduces several key concepts that deviate from the classical expected utility theory. First, it highlights the *certainty effect,* which refers to people's tendency to overweight outcomes that are obtained with certainty compared to merely probable outcomes (Kahneman, D., & Tversky, A. 1979). This contributes to risk aversion in choices involving sure gains and risk-seeking behaviour in choices involving sure losses.

As an example, in the field of insurance choice, imagine you are given two insurance options. Option A offers a guaranteed pay-out of $500, while Option B offers a 70% chance of winning $1,000 and a 30% chance of winning nothing. Despite the expected value of Option B being higher, many individuals may prefer Option A due to the certainty of receiving $500. Individuals tend to favour certain outcomes over probabilistic outcomes, even when the expected value or potential gains are higher in the probabilistic options. This could apply to a theoretical choice between buying a brand name (A) and a sub-brand (B): the sub-brand could offer the same or even better quality for a cheaper price, but since we have never tried buying outside of Brand A, brand B is more of a wild-card and could potentially turn out to be a lesser quality product or even a faulty one.

This perceived risk is arguably what makes a lot of people gravitate more towards “safe” brands. We could define a safe brand as one which we have already tried many times before or which we perceive to be trustworthy because we have seen it in advertisements from outlets we already trust or being used by friends or family members. As shown by the case study conducted by Kahneman et al. in 1991, individuals with a risk-aversion bias tend to exhibit a pattern of behaviour known as *loss aversion*. Loss aversion refers to the tendency for individuals to feel the pain of losses more strongly than the pleasure of equivalent gains (Kahneman, Daniel Knetsch, Jack L. Thaler, Richard H, 1991). In their study, they examined the impact of the endowment effect on individuals' willingness to pay (WTP) for a product. The endowment effect refers to the phenomenon where individuals value an item more

highly when they own it compared to when they do not (Kahneman, Daniel Knetsch, Jack L. Thaler, Richard H 1991; Kahneman, D., & Tversky, A., 1992). The researchers conducted an experiment where participants were randomly assigned either a coffee mug, which was already given to them, or a pen, which they could buy, as their "endowment". They then asked participants to indicate their WTP (willingness to pay) to either keep the mug or acquire a pen. The results of the study revealed that participants who were given the mug as their endowment had a significantly higher WTP for the mug compared to those who were given the pen. This finding demonstrated that individuals placed a higher value on the item they possessed (the mug) compared to the item they did not possess (the pen). The difference in WTP between the two groups indicated the presence of loss aversion, as individuals were more reluctant to give up their endowment (the mug) than they were willing to pay to acquire it (Kahneman, Daniel Knetsch, Jack L. Thaler, Richard H 1991; Kahneman, D., & Tversky, A., 1992). It demonstrated that individuals tend to overvalue items they possess and are averse to giving them up, even when the objective value of the item is the same. These findings have important implications for understanding consumer behaviour, decision-making, and the impact of psychological factors on economic choices. Kahneman and Tversky (1992) have suggested that losses can be psychologically twice as powerful as gains. When defined in terms of the utility function shape, losses have a steeper utility than gains, thus being more "painful" than the satisfaction from a comparable gain (Kahneman, D., & Tversky, A., 1992) fig.1.

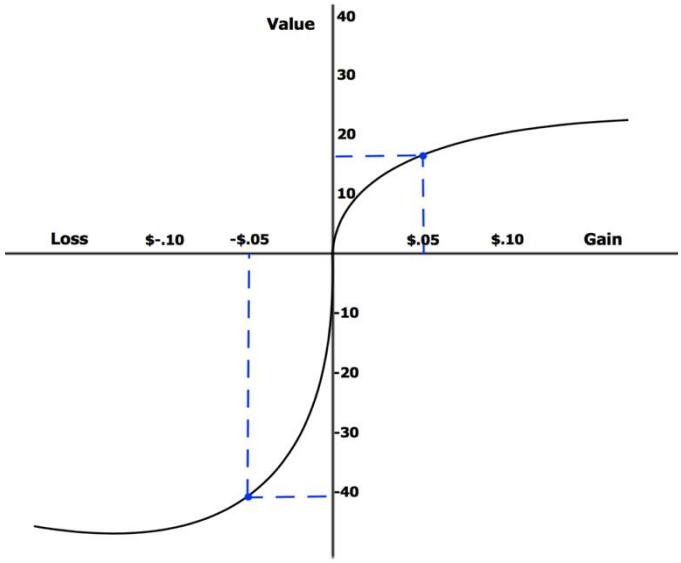

Fig 1. A graph comparing perceived value from gain and loss and strict numerical value of gain and loss: A loss of $0.05 is perceived as a much greater utility loss than the utility increase of an equal gain.

This loss-aversive behavioural pattern is often exploited by marketers, for instance, when giving free trials of paid subscription plans.

Another important aspect of prospect theory relevant to our discussion is the isolation effect, which refers to people's tendency to focus on the unique features of each option and disregard shared components. (Kahneman, D., & Tversky, A. 1979). A relevant example can be made:

Imagine you are considering two smartphones, Phone A and Phone B, with the following attributes:

Phone A: - Price: $800 - Camera: 12 MP - Storage: 128 GB

Phone A pro: - Price: $1000 - Camera: 18 MP - Storage: 128 GB

In this scenario, the isolation effect may come into play when individuals focus on the distinct attributes of each phone rather than considering the overall value or trade-offs. Phone A pro shares the same storage and CPU as phone A but its camera has 6 more megapixels. This hardly justifies the $200 mark-up, but buyers looking at these options may overweight that 6 megapixels-difference and the “pro” in the name, turning that 200$ more, into a reasonable price even though phone A has a better price-to-performance ratio. The isolation effect can lead to inconsistent preferences when the same choice is presented in different forms. By emphasizing the distinct attributes of each option, individuals may overlook the overall value or trade-offs involved in their decision-making process, they prioritize these distinct attributes and give them more weight in their decision-making process (Kahneman, D., & Tversky, A. 1979). In contrast, shared attributes that are common among the options receive less attention or are overlooked. Understanding the isolation effect is important for marketers and decision-makers as it highlights the significance of presenting information in a way that directs attention to the relevant attributes and avoids those which may paint a less-than-favourable picture of the product sold. Choosing which aspects of a product need to be highlighted and which need to be overshadowed, is a crucial step to the creation of a successful marketing strategy. As I will discuss in a further chapter, however, this important marketing skill can sometimes spill into morally questionable practices such as the psychological manipulation of potential buyers through the exploitation of heuristics.

Furthermore, FOMO, or the Fear of Missing Out, is another psychological phenomenon I shall introduce as part of the theoretical framework needed as a baseline for the upcoming case studies in Chapter 2. FOMO refers to the anxiety or apprehension individuals feel when they believe others are experiencing something desirable or exciting, and they fear being left out or not participating in the same experience (Chris Hodkinson, 2019). From a behavioural economics perspective, FOMO can be seen as a powerful motivator that influences individuals' decision-making and behaviour. The fear of missing out can drive individuals to engage in certain activities, make impulsive purchases, or participate in events or trends simply because they don't want to feel left out (Chris Hodkinson, 2019). This fear can override rational decision-making processes and lead to suboptimal choices. FOMO can also have implications for financial decision-making, particularly in investment and speculative markets. The fear of missing out on potential gains can drive individuals to make impulsive investment decisions, follow market trends without proper analysis, or engage in speculative behaviour which could contribute to market volatility, bubbles, and irrational investment behaviour (Benjamin Johnson et al. 2023). Additionally, the phenomenon of FOMO can be linked to a distinct social phenomenon known as social proof. Social proof is a psychological phenomenon characterised by individuals relying on the actions and opinions of others as a guide for their behaviour (Roethke, K et al. 2020). It operates on the assumption that if many people are engaging in a particular behaviour or holding a certain belief, it must be the correct or appropriate course of action (Roethke, K et al. 2020). The interplay between FOMO and social proof can significantly influence individuals, making them more susceptible to conforming to a pattern of decision-making that may not necessarily involve logical analysis of costs, potential outcomes, or consideration of alternative options. Instead, individuals may focus on what feels like the right choice due to psychological pressure to follow the crowd. Festinger, L. (1954)'s theory of social comparison processes provides insights into the motivations behind social proof. According to this theory, individuals engage in social comparison to reduce discrepancies and establish rewarding relationships with others (Festinger, L. 1954). The theory posits that people strive for consensus, the fulfilment of expectations, and influence, which are rewarding factors associated with conformity and further argues that conformity is not intrinsically rewarding but occurs in situations that are rewarding based on other logically related factors

(Festinger, L. 1954). The concept of social proof is closely connected to the notion of herding behaviour, wherein individuals imitate the actions or decisions of a larger group across various domains, including financial markets, fashion trends, and social media (Li, Xitong and Wu, Lynn, 2018). The presence of social proof creates a self-reinforcing cycle as more individuals join the behaviour or belief due to the influence of others. Social proof serves as a powerful tool for persuasion and influence, capitalizing on the innate human desire for social acceptance and conformity (Li, Xitong and Wu, Lynn 2018). In the subsequent chapter, we will delve into how this behavioural pattern can be and has been exploited by marketers.

Finally, the sunk cost fallacy is yet another psychological phenomenon that could potentially be exploited by marketers as part of a manipulative marketing strategy. The sunk cost fallacy occurs when people continue to invest in a losing proposition because they have already invested a lot of time or money into it (Thaler, R. H. 1991). The fallacy arises from the notion that individuals tend to perceive the sunk costs (the costs that have already been incurred and cannot be recovered) as relevant factors in decision-making, despite the fact that they should be irrelevant according to rational economic principles (Thaler, R. H. 1991). This bias can lead individuals to make suboptimal decisions, as they prioritize the past investment over the potential future outcomes (Thaler, R. H. 1991). This is often seen in the ecosystem type of technologies or in live services ranging from computer programs to online video games. When an individual has already invested a copious amount of money and time into an asset, in this case, a brand, they are far more likely to feel a psychological barrier when trying to get out of said brand, which, in turn, leaves far more liberty to the brand owners when it comes to product manufacturing or service management, since their now loyal following is far more likely to pardon mishaps and below average product deliveries (Caruana, A. 2003). Once a brand has reached a level of trust and engagement on an international scale, it arguably grows itself in an almost cult-like environment, one which is also exponentially easier to sustain as time passes and customers grow in number (Acosta, P. M., & Devasagayam, R. 2010). This is the stage in which a brand becomes self-sustaining and ever-growing.

1.2 Nudges

Now introducing the concept of nudges which, as defined by Thaler and Sunstein: "any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives" (Thaler, R. H., & Sunstein, C. R. 2009). They are designed to alter people's behaviour predictably by leveraging insights from behavioural economics, therefore taking into account and making use of the notions highlighted in the previous section of this chapter as part of prospect theory. Nudges work by shaping the choice architecture, which refers to the way choices are presented and structured to influence decision-making (Thaler, R. H., & Sunstein, C. R. 2009). One example of a nudge-based intervention is the use of commitment devices, which aim to help individuals follow through on their intentions and create prompts or reminders that solidify an individual's intention to take a specific action. By reducing procrastination and reinforcing the desired behaviour, commitment devices can nudge individuals towards making choices that align with their long-term goals. Another type of nudge is the use of loss-framed messages. Loss-framed messages emphasize the potential loss or missed opportunity associated with not taking a desired action, for instance, following a cure plan or doing a monthly health check-up with a doctor (Fukuma et al., 2019). In the context of healthcare, loss-framed messages can be used to highlight the negative consequences of not seeking medical attention, thereby nudging individuals towards seeking necessary care (Fukuma et al., 2019). Nudges can also be applied in the context of environmental economics, known as green nudges. These interventions aim to encourage pro-environmental behaviours by leveraging behavioural insight, for example, green nudges may involve providing feedback on energy consumption to promote energy conservation or using social norms to encourage recycling. By making desired behaviours more salient and aligning them with social norms, green nudges can effectively influence individuals' environmental choices (Schubert, 2017). Although born as a force of good, it is important to note that the use of nudges can raise ethical problems. Nudges can be seen as a form of paternalism, as they aim to guide individuals towards certain choices based on their cognitive biases (Schubert, 2017). Additionally, many critics argue that nudges may infringe on individual autonomy and manipulate behaviour without individuals' full awareness or consent (Schubert, 2017) .

Therefore, careful consideration of the ethical implications and transparency in the design and implementation of nudges is necessary. In order to tackle this ethical dilemma afflicting the use of nudges, Lades & Delaney (2022) have created an ethics framework which summarizes the debate on ethical nudges by listing 7 main features necessary for any nudge to be deemed ethically viable:

- **Fairness**: Nudges should be fair and not discriminate against any particular group. If following a nudge ends up being more taxing to follow or ignore for a specific group of people due to economic status, ethnicity age bracket etc. then the nudge may be deemed unethical as it could prove to be a marginalizing force against a portion of the nudgees.

- **Openness**: Nudges should be transparent and openly disclosed to individuals. An ethical nudge needs to be apparent and adequately and unequivocally explained, so as to provide a clear set of options and consequences to the targeted group.

- **Respect**: Nudges should respect individuals' autonomy and freedom of choice. They shouldn't be laws and need to be easily avoidable if the nudgee decides to do so.

- **Goals**: Nudges should aim to serve good goals and improve individuals' well-being by encouraging behaviours which are ultimately aimed at the betterment of the overall welfare.

- **Opinions**: Nudges should respect individuals' diverse opinions and values. This means that nudges should not impose a particular set of values or beliefs on individuals but should allow for a range of perspectives and respect individual autonomy.

- **Options**: Nudges should preserve individuals' freedom of choice and not limit available options. Nudges should not restrict or remove choices but

should provide individuals with additional information or guidance to help them make informed decisions.

- **Delegation**: Nudges should not unduly delegate decision-making power to external entities. This means that there is a need to strike a balance between external influences, such as algorithms or choice architects, and the autonomy and agency of individuals. Ethical nudges should avoid excessive delegation of decision-making power and prioritize the protection of human choice and autonomy.

This ethical framework is called, as the initials might suggest, FORGOOD (Lades, L., & Delaney, L. 2022). Sometimes a nudge may fail at following one or more of the 7 aforementioned ethical necessities, therefore falling into a grey ethical area which gradually becomes darker as more of the 7 rules are broken until it can no longer be considered simply a nudge but rather, a dark nudge.

1.3 Dark nudges and dark patterns.

Dark nudges refer to nudge interventions that aim to change consumer behaviour against their best interests or exploit cognitive biases to make behaviour change more difficult. These nudges can be used to encourage the consumption of harmful products or promote misinformation that may normalize or encourage certain behaviours (Hornuf, L., & Mangold, S. 2022). Examples of dark nudges include the use of social influences, such as social norming, to promote behaviour by emphasizing what most other people do or by correcting misapprehensions about what others do. Dark nudges can also involve cherry-picking positive outcomes and avoiding mentioning negative consequences or harms associated with certain behaviours, such as in the context of gambling, where the use of dark nudges may involve messages that make it harder for consumers to make good decisions, potentially leading to backfire effects, addiction and sunk cost fallacies (Newall, P. W. 2019). When it comes to the digital world, dark nudges continue to pose a threat, although in a slightly different, perhaps more dangerous iteration: dark patterns (Hornuf, L., & Mangold, S. 2022)

The term “dark patterns” refers to the deceptive or manipulative design techniques used in user interfaces to influence users' behaviours in ways that may not be in their best interest (Narayanan et al., 2020). These patterns are intentionally designed to exploit cognitive biases and steer users towards unintended or potentially harmful actions. Dark patterns can be found in various online platforms, including websites, apps, and e-commerce platforms. Examples of dark patterns include:

- **Confirmshaming**: This pattern uses guilt or shame to manipulate users into making a particular choice. For instance, a website may present a negative option for opting out of a service or subscription with a message that implies the user is making a foolish or undesirable decision. These emotionally charged designs aim to make the user guilty about cancelling a service or leaving (Mathur et al., 2019).

- **Hidden Costs**: This pattern involves intentionally obscuring or downplaying additional costs associated with a product or service until the user is further along in the purchasing process. This can lead to users unknowingly agreeing to pay more than they initially intended (Mathur et al., 2019).

- **Misdirection:** This pattern uses visual or textual cues to distract or mislead users, leading them to make unintended choices. For example, a website may use confusing or ambiguous language to trick users into subscribing to additional services, hiding things the designers might not want you to see and highlighting the things that might seem more appealing regarding a service or subscription, steering the users into behaving in a way they benefit from. (Narayanan et al., 2020).

- **Roach Motel**: This pattern makes it easy for users to enter into a commitment or subscription but intentionally difficult for them to cancel or unsubscribe. Users may encounter obstacles such as hidden cancellation links or complex processes, discouraging them from ending their subscriptions (Narayanan et al., 2020).

- **Colour exploitation**: For instance, the colour red has been proven to raise heart rate and convey a sense of urgency to an average user. Red is usually the colour of urgency. It is often used in marketing to grab attention and create a sense of excitement. In general, colours can prove to be powerful psychological tools in the hands of designers (Page, T., Thorsteinsson, G., & Ha, J. G. 2012).

The use of dark patterns has received increasing attention from researchers, journalists, and regulators. In conclusion, dark patterns are deceptive design techniques used in user interfaces to manipulate users into making unintended or potentially harmful decisions. These patterns exploit cognitive biases and can be found in various online platforms.

To summarize, behavioural economics theory emerged as a challenge to the traditional rational choice theory, which assumes that people make decisions based solely on their self-interest and that they are capable of always correctly assessing and comparing the costs and benefits of different options from an objective standpoint. Behavioural economics theory, on the other hand, recognizes that human decision-making is often flawed and that it is influenced by a range of cognitive biases, emotions, social norms, and other factors that can lead to irrational or suboptimal choices. We have analysed some of the most relevant heuristics and biased behaviours that marketers could exploit to gather a large pool of users whilst also making it harder for them to leave.

Chapter 2: Empirical Examples of the Exploitative Nature of Modern Marketing

Having established a theoretical framework, we now turn our attention to investigating some of the most notable examples of dark marketing.
These subjects of study will serve as proof of how customers are actively manipulated into performing determined actions, starting off with some examples of dark marketing adopted by a very well-known company: Amazon. These practices fall under the realm of dark patterns but do not quite reach the much more despicable status of "scam". Therefore, although morally questionable, Amazon's choices never fall under the notion of unequivocally fraudulent activities such as those I will be discussing in a subsequent section of this chapter regarding the cryptocurrency market. Amazon's design decisions strategically leverage various behavioural tendencies and biases discussed in the previous chapter, ultimately benefiting the company by guiding users towards more profitable behavioural paths. These design choices incorporate dark patterns that aim to deceive consumers into subscribing to Amazon Prime membership. It is important to note that while these practices may be ethically questionable, they arguably do not violate any explicit legal regulations and, therefore, tend to be marginally harder to deal with on a legislative basis.

2.1 The e-commerce giant infested by dark patterns.

Amazon was founded by Jeff Bezos in 1994 as an online marketplace for books. The company quickly expanded its product offerings to include a wide range of consumer goods. In the early years, Amazon focused on building a customer-centric platform, offering competitive prices, and providing a convenient shopping experience. Over time, Amazon diversified its business by introducing new services and products. In 2005, the company launched Amazon Prime, a subscription-based service that offers free shipping and access to various digital content. This move helped Amazon attract and retain loyal customers. Today, Amazon is one of the world's largest companies, offering a vast selection of products, digital services, and technological innovations. It has transformed the retail industry and disrupted traditional brick-and-mortar stores. Amazon's success can be attributed to its customer-centric approach, one that is, although, not always benign in nature.

First of all, like many other service-providing platforms, amazon is guilty of offering a free trial period to its potential customers. As I have argued previously, this is potentially an exploitation of people’s loss aversion tendencies. According to the theoretical framework of the endowment effect, individuals tend to attach greater value to items they already own compared to the value they assign to obtaining new items (Kahneman, Daniel Knetsch, Jack L. Thaler, Richard H, 1991). This tendency results in a higher willingness to invest resources, such as money or time, in retaining their current belongings rather than acquiring new ones. This can apply also to services such as those offered in a free trial. Furthermore, Amazon automatically charges you monthly or yearly billing by the end of the free trial.

As shown by Fig. 2, There are a plethora of statements with an attractive colourful design trying to convince you to activate your free trial and only phrase, written in a smaller font, giving you the option to refuse the offer.

This is a clear instance of misdirection, a dark pattern designed to steer users into taking specific actions (Andrea Guzman, 2023).

Figure 2, Amazon's landing page when trying to buy an item with a prime shipment option.

In this particular instance, an additional dark pattern that can be identified is confirm shaming, which is prominently observed in Amazon's design. Instead of a straightforward rejection, the design accentuates the act of refusal as a missed opportunity or a loss, rather than merely presenting it as an alternative choice (Andrea Guzman, 2023). This design tactic effectively exploits the behavioural tendencies of loss aversion and the endowment effect, further influencing users' decision-making processes (Narayanan et al., 2020).

Similar dark patterns are also present in the cancellation process for Prime members, which is characterized by the prominence of diversionary options that deter consumers from proceeding with cancellation Fig.3. For instance, a conspicuous bright yellow button highlighting Prime benefits is strategically placed near the drop-down menu intended for membership termination (Andrea Guzman, 2023). Additionally, warning icons are employed close to the cancellation option, eliciting feelings of anxiety and instilling a fear of loss among members.

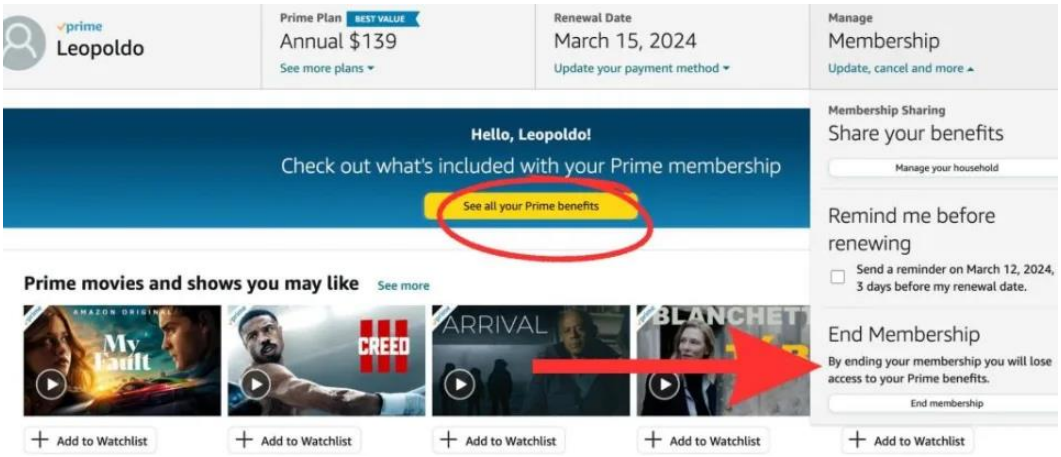

Figure 3, Amazon's landing page when trying to cancel your prime subscription.

Although the current screenshot Fig.3 does not display such anxiety-inducing icons, the accompanying text adjacent to the membership termination option directly addresses members, explicitly stating that they will forfeit access to their Prime benefits.

This trend of morally questionable designs does not stop at the membership landing pages, it is also present when trying to buy almost anything from Amazon. This popular marketing technique is called "decoy" and it involves presenting users with a third option designed to make one of the other options more appealing.

For example, Amazon may introduce an additional product as a decoy option, which is significantly more expensive and offers advanced features compared to the other two options (D. Stankovic, 2023). Fig.4

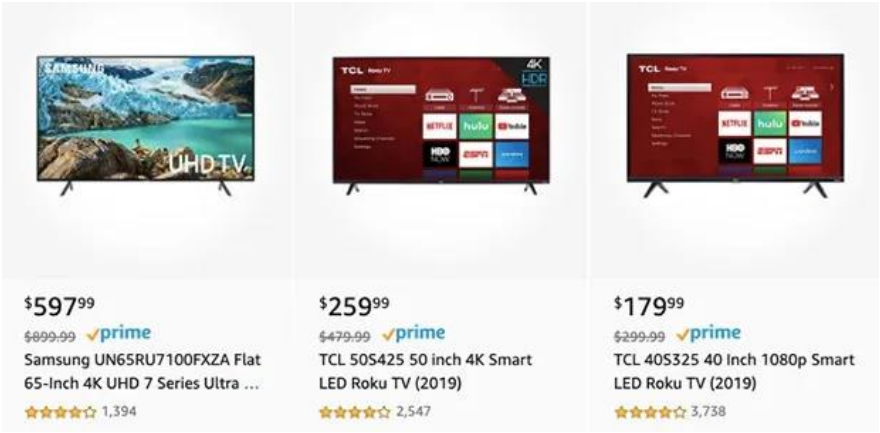

Figure 4, Amazon's use of the decoy tactic.

One final and common dark pattern characterizing Amazon's design choices is the *roach motel* related to the process required for cancelling your Prime subscription (Andrea Guzman, 2023). The path to the cancellation page is far more convoluted than it should be, or at very least, outstandingly more complicated than its subscription counterpart, which is constantly plastered all over the user's screen no matter the action that is being performed, even when trying to cancel a free trial or a paid subscription (Andrea Guzman, 2023).

With that said Amazon's practices are annoying at best and manipulative at worst, walking on a thin grey line between what is legal and what is not. Whilst never crossing that line, this morally questionable model of marketing has indeed attracted the attention of the Federal Trade Commission (FTC). On June 21st, 2023, the FTC filed a complaint to the US district court, but no decision has been taken yet.

2.2 The crypto market: an emotional trading ground

The next examples of behavioural tendencies exploitation come from the crypto market. it is important to note that the concept of cryptocurrencies and their development can be traced back to the creation of Bitcoin in 2009 (Baldan & Zen, 2020). However, the widespread attention and interest in cryptocurrencies, as indicated by the term "cryptocurrency craze", gained significant momentum in early 2013 (Baldan & Zen, 2020). The idea of a decentralized currency system brought a wave of excitement with it and gradually more and more people jumped on the bandwagon. My goal is not to explain how cryptocurrencies work, nor to decide whether or not they could be a worthwhile investment, but rather to analyse how they managed to influence millions of people to the point of turning some of them into blind followers of a cult-like ideology.

What started as a dream of an independent currency by the people for the people, turned into nothing more than a speculative mess of stocks, riddled with scams, Ponzi schemes and deceptive marketing. This is the history of cryptocurrency from a behavioural economics perspective.

Using data collected on the value of bitcoin throughout the years by the engineer and data expert Ian Webster, I shall analyse the growth of the crypto phenomenon by dividing it into 4 major phases:

Phase 1, *the Emergence and Initial Enthusiasm (2009-2013*): During this phase, cryptocurrencies, particularly Bitcoin, were introduced into the market and gained attention, although only among a niche community of enthusiasts and early adopters. The focus was primarily on the technology and the potential for decentralized digital currencies. The behavioural factors driving this phase may include novelty-seeking, technological optimism, and early adopter mentality. Overall, this is the least significant phase from a behavioural economics perspective and only serves as a starting point for the timeline of events regarding the crypto market.

Phase 2, *Speculative Boom and Increased Attention (2013-2015)*: This phase witnessed a significant increase in public awareness and participation in cryptocurrencies. The prices of various cryptocurrencies experienced substantial growth, attracting a broader range of investors and speculators. This phase is a more interesting subject of study, as it is characterized by many of the behavioural factors I have discussed in Chapter 1. As the crypto community grew, so did the media coverage of it and vice-versa, therefore creating a cycle of exponential growth fuelled by a herd mentality. Many economists have debated over how and why a currency retains its value, often providing a set of rules. For shortness' sake, I will mention 4 essential qualities which I believe to be particularly absent in all currently available cryptocurrencies today: widely accepted, stable, scarce and legitimate. More specifically, in order to effectively serve its function as a medium of exchange, a currency must be widely accepted by commercial establishments, it needs to be stable so that businesses and individuals can be confident that the value of their money won't change drastically overnight; it has to be scarce so as to maintain value and to avoid inflation and lastly, it needs to be legitimate for it to be accepted as a medium of internal and foreign exchange at all. Cryptocurrencies arguably fail to meet any of these standards, and yet, during the later stages of their lifespan, they managed to achieve unprecedented monetary valuations, reaching up to $ 50,000 per coin in the case of bitcoins. This phenomenon cannot be explained by classical economic theory and, once again, behavioural economics may provide a more nuanced and realistic explanation. The lack of wide acceptance for crypto was most likely attributed to it being such a new and revolutionary currency and, although not more than a speculative justification, this proved to be enough to convince investors to pour in money. Furthermore, its instability was deemed a mere temporary and necessary stage before one of relative stability, both of these justifications, were therefore the result of a confirmation bias on a large community scale. Scarcity, although technically artificially forced, was indeed there, and after some changes to the original Bitcoin of 2009, the newer coins became virtually impossible to obtain in a reasonable amount of time and without egregiously powerful hardware or a costly first investment; This, although technically succeeding in creating virtual scarcity, also created a very strong barrier of entry for new investors, who were forced to either spend up to thousands of dollars to own a single coin or to buy an almost equally as expensive set of hardware capable of mining enough data to generate

revenue. This brings the discussion to the concept of legitimacy. The most controversial aspect of cryptocurrencies is their decentralized nature, contrary to the traditional notion of currency legitimacy, which is typically based upon the currency being issued by one or more governments or a central bank, their crypto counterparts work through a blockchain, substituting banks with a network of computers (nodes) that collectively maintain and validate the blockchain (Meunier, S. 2018). Therefore, a new, independent and expanding market was created, and with it, a plethora of new investors poured in to fill in the gap between the extremely difficult-to-mine coins and the average crypto enthusiasts, giving birth to several multi-million dollar trading platforms. This lack of government backing was not just seen as a non-issue for crypto, on the contrary, it grew out to be one of the most "attractive" qualities of this new kind of currency and ended up being one of the biggest reasons behind the ever-growing interest behind cryptocurrencies (Meunier, S. 2018). Furthermore, focusing now only on Bitcoin for convenience's sake, the extreme instability of its value ended up being a key driver to its growth in popularity. In 2011, bitcoin was worth only $0.30, but by the end of 2013, its value had increased exponentially to almost $1,000 (Ian Webster, 2023). While this may not seem like much compared to its current price, which fluctuates in the tens of thousands, for someone who had invested $300 in Bitcoin in 2011, this price increase would have made them a millionaire, with a profit of approximately 340,000% in less than two years. It is not hard to imagine how this level of profit started to attract more and more people. Fear of missing out (FOMO) was widespread among investors around the world during this time, as anyone with sufficient savings sought to participate in the newest golden bubble. However, as is the case with all bubbles, regardless of how brilliant they may appear, they eventually burst. Many hopeful investors spent exorbitant sums of money on bitcoins at around $750 at the start of 2014 (Ian Webster, 2023). This seemed like a bargain, and indeed, it was by today's standards. However, by the end of March 2014, the price of bitcoin had fallen by a staggering 30%. This caused many of the initial investors to panic sell, driving the price down by a further 20% by the end of May. This trend of panic selling continued until October 2015, when the price of Bitcoin plummeted to just over $230 (Ian Webster, 2023), a fraction of its starting price in January 2014. This would normally prove fatal for most stocks but the media coverage and the perception of cryptocurrencies as a potentially lucrative

investment didn't stop, on the contrary, this new low in prices was only the start for a new wave of investments.

Phase 3, *steady growth and the start of scams (2016-2019*): How did Bitcoin recover from the massive failure of 2015? The answer lies in the previously mentioned exchange platforms. An analysis of the marketing strategies of these platforms reveals that dark patterns were commonly used, especially on cryptocurrency-focused platforms. The advent of these intermediaries made it possible for ordinary people to participate in the crypto craze, as it was now much simpler to invest in the market by purchasing only fractions of a bitcoin, similar to how one would purchase any regular stock. The rise of exchange platforms not only exponentially increased the market share of cryptocurrencies, but also created opportunities for another type of "investor" to enter the market: scammers. More specifically, Ponzi scheme scammers. One of the most notable examples is Bitconnect, a company founded in 2016 that claimed to be a "revolutionary exchange platform" based on its own new and shiny cryptocurrency, the Bitconnect coin. Investors would deposit bitcoins into Bitconnect in exchange for Bitconnect coins. The fraudulent company would then lend these Bitconnect coins to other investors at high-interest rates. The interest payments from these loans would be used to pay off earlier investors and the owners of the exchange platform. As more and more investors deposited bitcoins into Bitconnect, the scheme grew larger and larger until it collapsed in 2018 after a series of lawsuits destroyed the façade, dramatically decreasing the influx of new investors to pay off earlier investors (Chohan, Usman W. 2018). Bitconnect was a Ponzi scheme that used numerous dark patterns to exploit the mental biases of investors. First, it made outlandish claims of a 40% monthly profit for investors, which attracted many investors who fell into the FOMO trap (Chohan, Usman W. 2018). Second, the site was riddled with fake reviews and interviews of people who allegedly made a fortune by simply being a certified member of the company, exploiting the availability bias by presenting visitors with fabricated instances of extreme profits made through Bitconnect (Chohan, Usman W. 2018). Third, it was difficult and costly to get out of the subscription, as refunds were not an option. Investors who tried to withdraw their bitcoins would be charged up to 20% of their

value in fees and would be psychologically bombarded with guilt for "abandoning the Bitconnect family." Tragically, the ones who had invested the most and had convinced friends and family members to join in as well were also the most loyal victims who stuck with the company to the very end, haunted by their sunk costs. Having invested way too much to give up, they sought any piece of positive reassurance that could confirm their hopes of eventually making a profit or at least getting their money back. This tragic tale is just one of many similarly structured crypto scams that fed on the dreams of people who unfortunately fell prey to the exploitation of their mental biases.

By the end of this phase, the emergence of Non-fungible tokens (NFTs) became notable within the crypto world. NFTs are digital tokens associated with unique and non-replicable digital items, creating scarcity (Huang, J. et al. 2023) Controversy arises from the association of purchasable virtual items with these unique tokens. The most common items attached to these tokens are images, often randomly generated characters from larger collections like "Bored Apes" and "CryptoPunks." Some unique pieces from these collections have been sold for millions of dollars each, with their value being speculative (Ardianti & Widharta, 2022). The rarity of certain character features or limited iterations within sub-collections contributed to their perceived value. However, it is important to point out that ownership of an NFT is recognized solely on the blockchain, without any physical ownership of the underlying digital item. Additionally, anyone can freely download the associated image from the website, raising the question of why individuals would spend millions to own a string of code. From a behavioural economic perspective, the motivation behind this behaviour can be understood. With the birth of a new digital market and billions of dollars flowing into it, many sought to profit from buying and reselling NFTs. The fear of missing out (FOMO) resurfaced, with claims of individuals making millions through NFTs circulating on the internet, triggering an availability bias among new investors. Similar to cryptocurrencies, NFTs appeared as potential get-rich-quick schemes, with some platforms resembling Ponzi schemes. Individuals had the opportunity to buy an NFT for a few thousand dollars that could potentially be sold for hundreds of thousands or even millions. However, like any Ponzi scheme, profits were made at the expense of others, and once the influx of people stopped, there were no buyers left, rendering the NFTs worthless. Many individuals fell into this trap, and while some NFTs served positive purposes, such as

enabling artists worldwide to sell their art pieces, most were instruments for Ponzi scams, exploiting people's tendencies towards social proofing.

Phase 4, *from the third boom to the current state of cryptocurrencies (2020-2023)*: During the year 2020, the value of Bitcoin experienced a resurgence, culminating in a new peak (roughly $18’000) by the end of December (Ian Webster, 2023). This upward trend persisted throughout 2021, with the price exhibiting significant fluctuations in the tens of thousands and reaching once again a new high of $61,000 once in November (Ian Webster, 2023). The price of Bitcoin demonstrated a notable level of volatility and instability, ultimately leading to an inflated price that was bound to decline in subsequent years. The COVID-19 pandemic and its associated external events played a pivotal role in the value growth of Bitcoin. The pandemic, along with subsequent national restrictions and lockdown measures, introduced uncertainties into traditional financial markets. As a result, investors sought alternative assets, including Bitcoin, as a means of hedging against potential financial losses and the perception of Bitcoin as a safe haven asset during periods of economic uncertainty, further contributed to the surge in its value. Additionally, the increased involvement of institutional investors and major companies in the cryptocurrency market played a significant role. In 2022, the cryptocurrency market experienced a notable decline, with prices plummeting to below $17,000, marking a new low since 2020 (Ian Webster, 2023). This downturn can be attributed to various factors, foremost among them being a prevailing sentiment of distrust stemming from the persistent occurrence of scams within the cryptocurrency ecosystems since their inception in 2016. The prevalence of these scams underscored the necessity for a regulatory framework to govern the crypto industry. Consequently, certain countries, including China, opted to implement stringent measures by outright banning all digital currencies, thereby dealing a significant blow to the overall cryptocurrency market. The market demonstrated characteristics of both overreaction and trend persistence, indicating the presence of behavioural biases and market inefficiencies.

To summarize, throughout the years the crypto market has unfortunately become a fertile breeding ground for scams that exploit a wide range of heuristics and mental biases. My research has shown that individuals are susceptible to cognitive biases such as availability bias, confirmation bias, and social proofing tendencies when making investment decisions in the cryptocurrency space. Scammers take advantage of these biases by employing deceptive tactics, promising quick and substantial returns, and leveraging the fear of missing out (FOMO) to lure unsuspecting investors. Additionally, the complexity and novelty of cryptocurrencies can make it challenging for individuals to fully understand the risks involved, making them more vulnerable to fraudulent schemes. The lack of regulatory oversight and the pseudonymous nature of transactions in the crypto market further exacerbated the problem, providing scammers with an environment conducive to their illicit activities. The psychological torture inflicted by scams can have long-lasting effects on the mental well-being of individuals, potentially leading to depression, anxiety disorders, and even suicidal ideation. The financial losses incurred as a result of scams can lead to significant psychological distress, including feelings of worry, anxiety, and panic. Victims often experience a sense of betrayal and loss of trust, which can have long-lasting effects on their mental well-being. Shame, embarrassment, and self-blame are common emotional responses among scam victims.

Chapter 3: Psychological effects of dark marketing and how we can safeguard users.

In light of the illustrations presented regarding the exploitation of cognitive biases and heuristics by dark patterns, as well as their pervasive presence in contemporary design choices of companies, several inquiries arise. It becomes pertinent to assess the actual effectiveness of these patterns and the extent of the threat they pose, not only in terms of financial implications for their targets but also their psychological impact. While research has examined the impact of dark patterns on consumer decision-making, there is a lack of understanding regarding the ultimate harm they inflict on consumers. Mathur, Kshirsagar, and Mayer (2021) highlight that existing literature on dark patterns has primarily focused on describing their characteristics, but there is a growing recognition of the normative concerns underlying these descriptions. These concerns revolve around individual and collective welfare, regulatory objectives, and individual autonomy. These perspectives provide a foundation for comprehending the various harms that can arise from dark patterns. Consequently, the following sections will delve into these harms, examining their effects on consumer autonomy and personal and structural consumer detriment. Furthermore, in this chapter, I shall analyse also how dark patterns affect neurodivergent individuals to an even greater extent and how these manipulative design choices, therefore, cause even more extensive harm to this vulnerable, cognitively different yet sizeable portion of consumers. Finally, it is crucial to examine the existence of regulatory measures aimed at safeguarding all consumers from such practices and evaluate their efficacy. This chapter aims to address these inquiries comprehensively and ultimately propose a viable solution to tackle the mounting concerns associated with dark patterns, particularly within the digital market.

3.1 The tested effectiveness and harms of dark patterns on the average user.

First off, to assess the effectiveness of such practices, I will reference the article "*Shining a light on dark patterns*" by Jamie Luguri and Jacob Strahileviz (2021). The contents of the article analyse the results of an experiment conducted by the two researchers who wanted to situate themselves in Amazon or Microsoft's shoes as much as possible and did it by setting up a new e-commerce platform.

To put that research plan in motion, an online survey was administered to a nationally representative (census-weighted) sample of American participants (2021) recruited by Dynata, a professional survey research firm. respondents who took too long or too little time to complete the survey were removed from the sample, as well as those who failed an attention check. Firstly, removing two participants who started and ended the survey on different days, the average completion time was computed and set at 11.5 minutes. Furthermore, participants who took less than 4 minutes and more than 47.5 minutes (two standard deviations above the survey completion time) were also removed. Additionally, participants were asked an attention check question that asked them to "Please select "Strongly agree" for this question below to show that you are paying attention." Those that failed to answer accordingly were removed from the sample. At the end of the survey participants were asked to indicate how seriously they took the survey on a scale from 1 ("not at all seriously") to 5 ("extremely seriously"). Participants who answered 1 were also removed from the sample. This left a final sample of 1,963 participants. The experiment comprised two distinct phases. In the initial phase, upon completion of the survey in which study participants answered various demographic questions including age, gender, race, education, income, employment, political orientation, and region of the country, the participants were deceived into believing that they had been enrolled in a costly identity theft protection service and they were given the opportunity to opt-out of the service. The subsequent phase of the experiment involved randomly assigning participants to one of three groups: a control group devoid of exposure to any dark patterns, a mild dark patterns group exposed to a limited number of mild dark patterns, and a severe dark patterns group exposed to a greater number of stronger dark patterns. The researchers then measured the rate at which participants in each group chose to opt out of the identity theft protection service. The findings of the

experiment revealed that participants exposed to dark patterns were more inclined to sign up for the service compared to those who were not exposed. Moreover, the severity of the dark patterns exerted an influence on the outcomes, with participants exposed to severe dark patterns demonstrating a higher likelihood of signing up for the service than those exposed to milder dark patterns (Luguri & Strahileviz, 2021). The experiment was meticulously designed to emulate real-world conditions, employing deception to elicit participants' revealed preferences and simulating the potential financial consequences of their decisions. The results of the experiment provide robust evidence supporting the efficacy of dark patterns in manipulating users into making choices they would not have made otherwise. Furthermore, the findings suggest that the degree of severity in dark pattern design can greatly impact their effectiveness, more specifically, the mild exposure proved to raise subscriptions by a factor of two, whilst the severe exposure almost quadrupled the subscription rates compared to the control group (Luguri & Strahileviz, 2021). This experiment therefore proves the effectiveness of dark patterns, emphasizing how users, especially in the heavy exposure group, could end up spending significantly more than they would have otherwise.

Having now established the effectiveness of dark patterns, this next section will delve into the harms done to the individuals in terms of impacts on consumer autonomy and personal and structural consumer detriment.

Harms to consumer autonomy

Personal autonomy refers to the ability to make independent choices based on one's own competence and genuine endorsement of the reasons behind those choices (Susser, Roessler, & Nissenbaum, 2019). Dark patterns, on the other hand, can undermine consumers' autonomy by influencing them to make choices they wouldn't have made otherwise, limiting their options, or creating obstacles to the exercise of choice (Mathur, Kshirsagar, & Mayer, 2021). It is important to note that dark patterns often create an illusion of control rather than providing actual control to consumers. Some dark patterns explicitly impact consumer autonomy through forced actions or obstructions, while others have a more subtle influence through interface interference or sneakiness. The subversion or impairment of consumer autonomy, decision-making, or choice are defining characteristics of dark patterns, as reflected in the proposed working definition outlined in Chapter 4. Furthermore, the erosion of

autonomy through online manipulation can have broader societal consequences, including threats to democracy and freedom of expression (Susser, Roessler, & Nissenbaum, 2019).

Personal consumer detriment

The literature on dark patterns has emphasized personal detriment as the main normative concern associated with these deceptive design techniques (Mathur, Kshirsagar, & Mayer, 2021). Personal consumer detriment resulting from dark patterns can be broadly categorized into three main areas: financial loss, privacy harms, and psychological detriment and time loss. It is important to note that these harms can accumulate when multiple dark patterns are employed simultaneously, and they often have interconnected effects (for example, financial and privacy loss can contribute to psychological detriment).

Financial loss

Financial harm is acknowledged as the main welfare effect of dark patterns in the literature (Mathur et al., 2021). Dark patterns, such as sneak into basket, hidden fees, drip pricing and sales cues are designed to get consumers to buy more things than they need or spend more money than they intended. In addition, other dark patterns such as preselecting, urgency and confirm-shaming can indirectly cause financial detriment by nudging users to make bad choices or keep needless subscriptions. Especially problematic are dark patterns that involve hidden or hard-to-cancel subscriptions, which can mean continuous financial obligations that multiply over time and accrue into big losses compared to one-time purchases (Mathur et al., 2021). Yet, a thorough inter-comparative analysis of different dark pattern-induced financial harms is not currently available as of today, given that the scale can differ depending on the research methods used. Hence, the cost of individual dark patterns remains largely unaccounted for despite research and enforcement efforts to expose them. For instance, studies indicate that drip pricing can cause spending to more than double (Blake et al., 2021). FTC enforcement actions resulted in significant cash settlements paid out to affected consumers. In addition, other financial consequences of a dark patterns portfolio have been documented in an unrelated sector (hotel booking sites) including misleading urgency signals, scarcity claims and deceptive discounting suggestions (OECD 2021). Additional research by consumer protection agencies has effectively documented the monetary consequence of dark patterns.

Though there is proof of financial harm caused by some forms of dark patterns, the evidence for many others remains mostly anecdotal. This is due, in part, to how well-established certain patterns like subscription traps and drip-pricing have become as problematic along with previous efforts of amassing evidence and enforcement actions. Another possible explanation for the poor science could be that some dark patterns are much more challenging to work with in regards to assessing the scale of financial losses associated with them, particularly if detriment is hidden from the consumer. For instance, consumers could be misled into paying a higher price for something by confirm-shaming, dark patterns like trick questions or false hierarchy without even understanding just how much money they are losing as a result (OECD 2022).

Privacy harms

The privacy implications of dark patterns have been underscored by academia and multiple actors, such as lawmakers and consumer organizations (Mathur et al., 2021). Privacy-invasive dark pattern techniques may be used to obfuscate or push privacy-intrusive defaults, make privacy related-choices or information hard to engage with/do/see/opt out of and use nagging/shaming techniques to coerce users into accepting privacy-intrusive settings. As a result, this can lead to users revealing more personal information than they originally intended and thus potentially exposing themselves to additional threats. Similarly, a CPRC (2022) survey in Australia uncovered that 25% of individuals shared more personal data than they intended as a result of dark patterns.

The assessment of privacy harms caused by dark patterns is more difficult than assessing their financial harm due to the absence of quantifiable metrics. Nonetheless, privacy harms typically don't cause tangible economic or physical harm, so courts struggle to see them (Citron & Solove, 2022). In addition, consumer complaints can be suppressed when people do not know their privacy has been compromised. Assessing the harm resulting from a personal data transaction is equally convoluted for the user, balancing short-term service benefits against long-term privacy loss (Citron & Solove, 2022). Some scholars characterize the harm from privacy-intrusive dark patterns as a higher "data price" paid by consumers for a free online service, receiving welfare-reducing ads without the commensurate increase in quality (attribution format: Morton & Dinielli 2020). Instead, Gunawan et

al. (2021) suggest quantifying the cost of evading privacy-invasive dark patterns as an estimate for their harm.

Psychological detriment and time loss

Psychological harm ranges from emotional distress—frustration, shame, and a sense of deceit—and an unnecessary expenditure of mental effort (Mathur et al., 2021). Anger and cognitive load can result from taking advantage of consumer inaction, limited agency, focus or time. For instance, nagging and trick questions that involve repetitive or confusing click-throughs can increase frustration and cognitive load. Patterns that are addicting in nature and able to keep you around longer and hold your gaze for a bit can be labelled as dark and considered addictive. Major online platforms' dependence upon addictive user interface designs to retain consumer attention is outlined by the Stigler Committee (2019). The common user interface patterns on social media platforms, like infinite scroll and autoplay features, trigger addictive usage among consumers (Purohit, Barclay, & Holzer 2020). Loot boxes have been seen as containing dark patterns that contribute to addiction in video games, especially among kids (King & Delfabbro, 2018). These loot boxes can be characterised as "gamblification" (due to their resemblance to slot machines) and as "predatory monetisation schemes", concealing long-term costs until players are financially and psychologically committed (King & Delfabbro, 2018).

Multiple end-user experience studies indicate dark patterns cause poor emotional-physiological reactions in consumers. Gray et al. (2021) found that when subjected to manipulative digital product experiences, consumers frequently undergo intense emotions such as distress, anger and annoyance. With regard to particular dark pattern types, Conti and Sobiesk (2010) discovered that all tested malicious interface techniques led to frustration among participants and "making users frustrated", was the main impact of such techniques, while other frustrating impacts were lower-effective ("Installation of Applications without Permission") or non-existent ("Unnecessarily Frequent Interruptions," Hard to Find Content," "Forces Waiting"). Shaw (2019) reports that 33% of his sample exposed to scarcity and social proof claims on hotel booking sites expressed negative reactions such as contempt and disgust. However, not all dark patterns provoke emotional responses. E.g., Luguri and Strahilevitz (2021) found no change in mood from confirm-shaming, hinting at a

level of habituation. Studies have also found that consumers tend to assign blame to companies using dark patterns. Bhoot et al. (2020) showed that business owners were the main ones to blame for dark patterns. Most participants in the study (Gray et al., 2021) assigned manipulative experiences in digital products to the designer, developer, or stakeholders rather than themselves.

Consumer structure damage

Damage to the consumer structure can arise from dark patterns through cumulative, even if imperceptible, individual harms. Such an impact can be considered from different points of view, primarily in connection to its consequences for competition, consumer confidence and market performance (Mathur et al., 2021).

Weaker or distorted competition

Dark pattern usage has a variety of anticompetitive effects. Certain dark patterns eliminate or reduce the incentives for consumers to compare offers and choose the best one, which defeats competition. As an example, Rasch et al. (2020) show how drip pricing impairs consumers' ability to find the lowest price by reducing price transparency. More instances are opt-out, decoy effect and limited-time/quantity. In addition, specific dark patterns effectively entrench consumers into the existing services and create obstacles in switching (forced registration/ hidden subscriptions / difficult cancellation). Dark patterns preventing web browser switching have been identified by the Australian Competition and Consumer Commission (ACCC) (ACCC, 2021). Companies can benefit from increasing their sales, and harvesting more personal data or attention time from consumers even though the quality of their goods or services might not be better by themselves employing dark patterns. This could give them a competitive advantage over companies that don't use dark patterns. Dominant firms might use dark patterns to entrench their market power.

When dark patterns undermine the capacity of consumers to select firms based on the merits of their product offerings, it distorts the competitive process as a whole (Day and Stemler 2020). Additionally, competitive pressures can cause firms to systematically employ and depend on dark patterns in the absence of explicit bans. The dangers of an inefficient "phishing equilibrium"—where firms may have to

resort to deception in order to compete, due to the presence of asymmetry and behavioural market failures—have been stressed by economists (Akerlof & Shiller, 2016). In the context of dark patterns, an inefficient market equilibrium may occur, where firms also compete through the effectiveness of their dark patterns, including particularly salient aspects of a user interface design, rather than purely on the price and quality of their products.

Lower consumer trust and engagement

Trust is a key part of the equation between online businesses and consumers - "the expectation that firms will deal fairly and predictably" (Waldman, 2020). The sneakier dark patterns, which are set to make potentially privacy-conscious users inadvertently reveal more about themselves or pay more than they intended — have the potential to backfire severely if businesses lose customers' trust by being seen as manipulative or dishonest. Maier and Harr (2020) showed how over-utilization of manipulative techniques reduces customers' trust in a company, undermining its credibility. Voigt, Schlögl and Groth (2021) found that a strong correlation existed between consumer irritation caused by dark patterns and trust in the brand. Further research has illuminated the impact of particular dark patterns. For instance, Shaw (2019) discovered that when hotel booking sites talked about scarcity and provided social proof claims on their screens it created distrust in the site for 40%, or say almost half, of consumers. Ultimately, unchecked use of dark patterns may lead consumers to exit the market by corroding trust (Luguri & Strahilevitz, 2021). Findings from the surveys indicate that dark patterns may cause a user to cease using (either temporarily or permanently) websites and apps, as an over-exposure to dark patterns evocates a feeling of distrust to the point of feeling "conned" when attempting or required to make an interaction as per web standards.

3.2 The effects of manipulative design choices on the more vulnerable subset of consumers.

The research experiment analysed in Lugury & Strahileviz (2021), despite its extensive utility, may have inadvertently excluded a marginalized group of individuals, namely the neurodivergent population. The exclusion criteria employed in participant selection raise several concerns in this regard. Firstly, the exclusion of individuals who took either too long or too little time to complete the survey could potentially result in the exclusion of those exhibiting symptoms of attention deficit disorders, such as ADHD, or individuals experiencing anxiety who may rush through the survey due to a sense of urgency. Additionally, the utilization of an "attention test" as a criterion may further discriminate against individuals affected by ADHD. Furthermore, even if some neurodivergent individuals were included in the pool of observed test subjects, the survey did not include specific questions tailored to their experiences. The survey solely inquired about age, gender, race, education, income, employment, political orientation, and region of residence, without addressing clinically or self-diagnosed mental disorders. It is important to note that these mental disorders, as we will explore in the subsequent section of this chapter, significantly influence the threshold at which design choices transition from being merely efficient to becoming manipulative.

Research has consistently shown that individuals with anxiety tend to exhibit heightened activity in the amygdala, a key brain region involved in risk assessment and fear processing (Sehlmeyer et al., 2010). This increased fear response can make individuals with anxiety more susceptible to fear-based cognitive biases, such as artificial scarcity and loss aversion. For example, individuals with anxiety may be more vulnerable to design elements aimed at creating a sense of urgency, such as timers or artificial scarcity, as they may feel compelled to make a purchase out of fear of missing out on an artificially limited opportunity. Moreover, individuals with obsessive-compulsive disorder (OCD) may have disruptions in the ventromedial prefrontal cortices, which play a crucial role in decision-making processes (Sehlmeyer et al., 2010). As a result, individuals with OCD may be more vulnerable to dark patterns that either increase cognitive load or provide an easy way to alleviate it. For instance, they may be more likely to exhibit a status quo bias, accept pre-

selected options, or be influenced by the bandwagon effect, selecting what is popular (Sehlmeyer et al., 2010). We see a glaring example of this when looking at Amazon's "Frequently bought together" design present on many products' landing pages fig5.

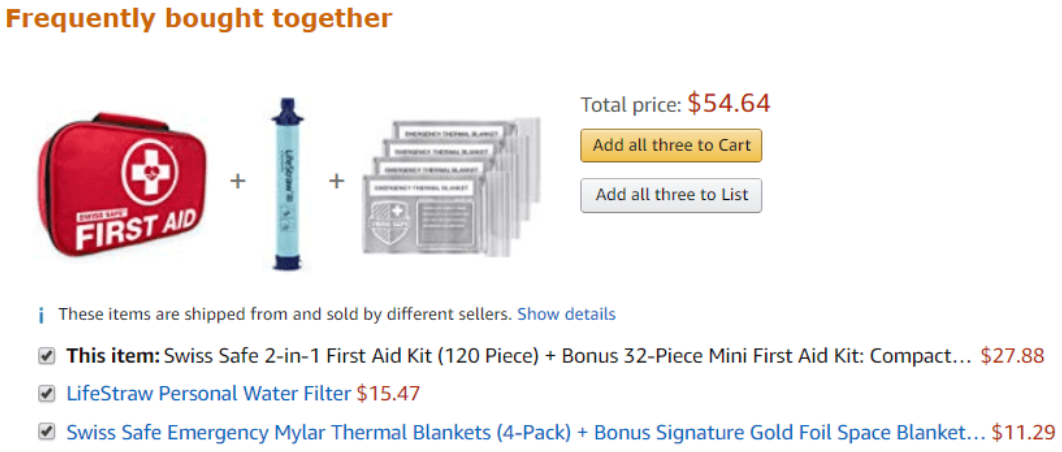

Figure 5 Frequently bought together.

Furthermore, people suffering from attention-deficit/hyperactivity disorder (ADHD), which often impairs the ability to read and process instructions, may be particularly vulnerable to dark patterns involving trick questions, miss-direction, which distract you away from important information to trick you into accepting terms or extra costs.

It is important to consider the impact of these design patterns on neurodivergent individuals when determining the acceptability of design practices. Neurodivergent individuals, including those with anxiety, OCD, ADHD, and other conditions, may have a lower threshold of resistance to persuasive tactics compared to the average user. Consequently, a design that may cause a negative experience for a neurodivergent user, such as inducing anxiety or exacerbating OCD symptoms, may occur earlier than it would for individuals without these conditions. Furthermore, many stakeholders have recognised the heightened vulnerability to dark patterns of some specific groups of people, namely the elderly, the less educated and the children. For example, with respect to dark patterns that create unnecessary transaction costs, like making it hard to opt out of something, the Stigler Committee (2019) writes "users who are less tech-savvy or do not have the extra time to devote to navigating byzantine opt-out procedures will be less likely persist so that they can express their authentic preferences in the transaction.". This example therefore especially applies to the elderly and the less educated. When it comes to children,

Radesky (2022) exposes five differences from adults that make children more susceptible to dark patterns: lack of executive functioning immaturity, making emotional connections to fictional characters, being reward-driven/seeking out rewards, data privacy ignorance/asymptotic or data ignorant and virtual currency illiteracy. Some empirical data illustrates how dark patterns may disproportionately impact specific consumer groups. For instance, Luguri and Strahilevitz (2021) discovered that the effectiveness of mild Dark Patterns is significantly greater for low-educated consumers than for high-educated ones. In a similar vein, Bongard-Blanchy et al., 2021 found that people over the age of 40 and high-school diploma holders were also less likely to recognize dark patterns. Moreover, the study by the EC in 2022 shows that dark patterns had a stronger impact on older, less educated and time-constrained consumers. Also, (Meyer et al., 2019), children; have been found to be particularly vulnerable to dark patterns in advertising in apps and in the design of loot boxes in online games especially when those features incentivise spending/personal data sharing. Taken together, these findings indicate that dark patterns can harm a range of consumer groups, with potentially heightened effectiveness on less educated consumers, older adults, neurodivergent individuals and children.

In conclusion, in spite of the substantial safety risks and profound psychological consequences associated with dark patterns, there is a surprising lack of concerted efforts to prevent their use, and even less attention is given to addressing the needs of the most vulnerable users. The perspectives of neurodivergent users are notably absent from the design process, leaving them marginalized and disregarded. Furthermore, these manipulative designs have proven to be especially effective and harmful to the elderly, the less educated and the children. Existing research on dark patterns primarily focuses on empowering users to protect themselves through the cultivation of manipulation literacy. Manipulation literacy entails educating users about dark patterns and enabling them to identify and navigate them in real-world contexts. Consequently, the burden of responsibility is placed on the individual, rather than on the system itself, which actively perpetuates harm to vulnerable users as a whole and exacerbates discrimination against disabled neurodivergent individuals in particular.

Chapter 4: The current inefficient legislative safeguards in use and their flaws

One of the initial instances of legislative action taken to combat the proliferation and utilization of dark patterns occurred as recently as 2019 in the USA when Senators Mark Warner and Deb Fisher attempted to introduce the Detour Act (Mark R. Warner). The aim of this act was to prevent websites from deceiving users into providing additional money and data. Fisher emphasized that these manipulative user interfaces intentionally restrict comprehension and undermine consumer choice. However, this legislation only applied to platforms with over 100 million monthly active users and did not prohibit practices such as adding items to a user's online shopping cart or surreptitiously subscribing them to costly plans with hidden fees. In March 2021, California implemented an amendment to the California Consumer Privacy Act, which prohibited the use of deceptive user interfaces that substantially subvert or impair a consumer's choice to opt-out (OECD 2022). Turning to Europe, the General Data Protection Regulation (GDPR) mandates that all companies must obtain unambiguous and freely given consent from customers before collecting and utilizing personally identifiable information. However, a study conducted in 2020 by Human and Cech1 revealed that major tech companies like Amazon, Apple, Microsoft, and Facebook often employ deceptive user interfaces to discourage users from opting out, effectively coercing them into granting consent for the collection, use, and manipulation of their data. This dark pattern is known as "privacy Zuckering," named after Facebook's founder and CEO, and involves tricking users into divulging more data than originally intended (Medium, 2017). For instance, on Google, agreeing to the terms of service requires just one click, with the default option consistently being the least privacy-friendly. However, until 2018, it took a staggering 19 clicks to edit or disable personalized ads. Although Google has made some progress by reducing the process to three clicks, it still falls short of a simple "I disagree" option alongside the agree option.

[1] A Human-Centric Perspective on Digital Consenting: The Case of GAFAM

These additional steps may dissuade many users from opting out, as they must actively visit a specific website (https://adssettings.google.com/), adjust a slider, and confirm their choice.

The challenges associated with dark patterns begin with the lack of a widely accepted and standardized definition in the literature. This has resulted in ineffective legislative measures that contain loopholes and sanctions that can be easily avoided by those employing dark marketing tactics. To address these difficulties, researchers have proposed the use of specific thresholds to determine whether a practice qualifies as a dark pattern. Mathur, Mayer, and Kshirsagar (2021) suggest the application of absolute and relative thresholds based on different normative perspectives to assess whether a practice should be classified as a dark pattern. For instance, one threshold could be the level of deception defined by law, while another might involve empirical metrics to evaluate the impact of a practice relative to a baseline user interface. Luguri and Strahilevitz (2021) propose that if the consumer uptake rate of an offering associated with a specific practice in a user interface is more than double that of an alternative "neutral" user interface, then the practice could be considered a dark pattern. However, these approaches raise further questions regarding what constitutes an appropriate threshold. Some commentators have expressed concerns about the "average consumer" benchmark used in the EU Unfair Commercial Practices Directive 2005/29/EC, as it may not adequately account for practices that disproportionately harm consumers who do not meet the "average" standard and may be more vulnerable to such tactics (Howells, Twigg-Flesner, & Wilhelmsson, 2017). Additionally, there is uncertainty surrounding the definition of a "neutral" or "baseline" user interface, as some researchers argue that all design influences consumers in some way, making it impossible to have a truly neutral presentation of choices (Schneider, Weinmann, & Brocke, 2018).

Considering these challenges and caveats, the OECD Competition Committee Policy Roundtable has developed a working definition of dark commercial patterns to facilitate discussions among regulators and policymakers. The definition aims to be broad enough to encompass the range of practices commonly associated with the term in the literature, while also distinguishing dark patterns from general persuasive marketing practices.

It emphasizes that at the core of dark patterns is their detrimental effect on consumers' ability to make free and informed choices. The definition reads as follows:

"Dark commercial patterns are business practices employing elements of digital choice architecture, in particular in online user interfaces, that subvert or impair consumer autonomy, decision-making or choice. They often deceive, coerce or manipulate consumers and are likely to cause direct or indirect consumer detriment in various ways, though it may be difficult or impossible to measure such detriment in many instances."

Following this definition, numerous Dark patterns are potentially in breach of multiple EU legislation, including GDPR which could apply to various privacy-intrusive dark patterns. Furthermore, there's the Consumer Rights Directive 2011/83/EU applies to dark patterns like hidden costs, drip pricing or hidden subscriptions (OECD, 2022). Directive 93/13/EEC on Unfair Contract Terms applies to dark patterns making termination difficult, also Directive 2010/13/EU on Audiovisual Media Services may apply in some cases (OECD 2022). Many commentators have noted that most dark patterns would also contravene USA federal laws or state laws banning deceptive and unfair practices. For instance, the FTC has applied Section 5 of its code (deception) to attack dark patterns like hard-to-cancel practices, hidden costs, forced continuity/hidden information, preselection, trick questions and disguised ads (OECD 2022). Also, Luguri & Strahilevitz (2021) argue that false activity messages; sneak-into-basket, bait and switch, forced registration, scarcity scarcity-related practices should be regarded as fraudulent acts. Tampering with indefinite-term agreements to create an interim currency or confirm-shaming are going beyond explicitly deceptive methods and might potentially be challenged under the ban on unfair trading, although this is ultimately still untested.

As a key finding, it is notable that many jurisdictions' consumer protection and data protection authorities already have (most of) the necessary tools to tackle dark patterns. The most frequent cases address a small number of dark pattern types: hidden charges/drip pricing, subscription traps, false scarcity claims and pre-selection of privacy intrusive settings. Occasions for the complete range of other dark patterns (like misleading questions, confirm-shaming/guilt trips, nagging, and price comparison prevention) seemed to be few and far between (OECD 2022). Several possible reasons exist for this inconsistency, one of which is the lack of available evidence to demonstrate breaches of relevant legislation or consumer harm resulting

from specific dark patterns, which could obstruct the commencement of enforcement proceedings. This absence of proof might be explained by limited investigatory powers or techniques, as well as that certain harms may stay hidden from consumers, especially in cases pertaining to more nuanced dark patterns (OECD 2022). With so many dark patterns and other online nastiness to combat, under-resourced consumer and data protection bodies might have to concentrate their enforcement energies on cases of the worst misconduct. There can be several possible explanations for this difference. One reason is that some dark patterns might not breach relevant laws in certain jurisdictions heavily reliant on generally worded misdeeds or demanding a high evidential threshold under them (OECD 2022). Commentators (CPRC, 2020; King & Stephan, 2021) have noted that dark patterns not overtly misleading may not be captured by prohibitions on misleading or deceptive conduct as formulated and might therefore be permitted in some jurisdictions.

In conclusion to this section of the chapter, current legislation seems to have a rough understanding of dark patterns due to much too general definitions, loose ends and glaring loopholes. Although efforts have been undoubtedly shown, the path to user protection and safeguarding might not be one characterized by the traditional prohibition model of the legislature, as dark patterns have proven to be too versatile and covert for the aforementioned examples of legal remedies. This therefore calls for an alternative method, one which I will be discussing in the upcoming section of this last chapter.

4.1: A possible solution for the safeguard of all users

To the foregoing proposals for "*fairness by design*" for platforms, requirements have been suggested for consumer-friendly digital choice architecture for online businesses in general, which can complement prohibitions. These requirements might include choice architecture in the digital sphere that is truly neutral or 'shining', nudging consumers towards what's good for them instead of business (King & Stephan, 2021). "Bright patterns" can be especially handy in a web consumer choice context where various options could be relevant to different consumers, but one option is preferred by the majority. Designing the system can mean making it either easier to pick an option that unquestionably improves consumer welfare or more difficult to pick an option that unquestionably lowers consumer welfare. This approach differs fundamentally from measures of disclosure or transparency, pertaining instead to the design of the business's choice architecture and referring to the process of consumer decision-making instead of focusing on providing information to the consumer. Hence, good consumer outcomes and experiences do not rely on the consumers' willingness to spend time analysing unnecessary amounts of information. Some examples of user-friendly designs are simply the antitheses of known dark patterns, for instance, making the more privacy-friendly option the default one when presenting users with a site's cookies; or making a cancellation process a one or two-click path, as it is for subscriptions. (OECD 2022) This approach would require businesses to design user interface methods for obtaining consumer consent using easily understandable language and symmetry in choice, whilst avoiding language or interactive elements that are confusing to the consumer, manipulative language or choice architecture, and favouring instead an easy-to-execute design.

This approach would therefore need a regulatory framework based on prevention, rather than sanction. Legislative guidance should be provided and could include visual examples of good and bad user interface designs for firms to follow. This could be potentially developed in cooperation with key stakeholders such as online businesses, user interface designers, and consumer organisations.

This guidance framework should then start at the beginning of the designing process to ensure a morally sound, efficient and non-manipulative user interface. To do so, it

would be crucial to incorporate intense investigation in this process in the shape of surveys and experiments involving not only the "average users", but also the more vulnerable ones mentioned in the previous chapters. This would ensure that the design choices of online businesses won't be the result of mere profit-seeking at the cost of the consumers. Furthermore, by including the more marginalized groups of consumers, it would be easier to make sure that even the more sensitive users won't be affected negatively by poor design choices. This could be done, again, through their active inclusion inside the pool of subjects inside of the firms' marketing research, but also even greatly, by including neurodivergent individuals inside the development team as either simple advisors or, if qualified, lead designers.

Dark patterns will likely continue to be refined and made more powerful, thanks to constant a/b testing, potentially combined with algorithmic marketing. This ever-changing format makes consumer law more suited to adopt both rule-based and principle-based approaches (OECD 2022). More precisely, targeted prescriptive rules prohibiting specified practices, could assist in tackling extant harmful dark patterns and imparting consumer authorities with clear breakpoints for intervening, and businesses with certainty around specific designs, but new dark patterns may fall outside the ambit of specific bans (OECD, 2021). Thus, well-drafted prevention-based prohibitions against deceptive, unfair or harmful commercial practices (see examples discussed above), could have consideration of the actual or likely impact on the consumer and could supplement the more traditional rule-based regulations with a forward-looking "safety net".

Final thoughts and conclusions.

I first introduced some crucial theoretical concepts regarding behavioural economics and psychology. Once a theoretical round had been established, I then shifted the discourse to nudges, further delving into their corrupt counterpart: dark nudges and patterns. From there, I provided a few empirical examples of their use case in the study conducted on Amazon and a market analysis done by myself on the economic history of cryptocurrencies and how they've turned into a fertile ground for rug-pulls, Ponzi schemes and scams in general, often exploiting heuristics of the victims through dark patterns and biases. I then moved on to an analysis of the effectiveness and harms of dark patterns on both the average and more vulnerable users, to emphasize the need for a legislative safeguard against these design practices. In the last chapter, I first researched and described the current legislative efforts in place against manipulative design practices, then I exposed their flaws proving their ineffectiveness and, lastly, I provided a possible solution to the matter, in the form of a prevention-based legislative safeguard.

With that said, dark patterns have become so pervasive in the design industry that many of them are now considered "best practice", and in the competitive race to capture users' attention, companies continually strive to outdo each other by employing more effective dark patterns in pursuit of profit. As time passes, new strategies are developed, making it increasingly challenging to keep up and combat these manipulative techniques. Consequently, the consequences of dark patterns continue to escalate, resulting in harm to increasingly vulnerable populations and widening the gap between users and designers. Given the expanding digital landscape, it is crucial to ensure a safe environment for all individuals, therefore, legislation addressing manipulative designs, such as dark patterns, is necessary, however, existing definitions are often vague, and numerous loopholes undermine their effectiveness. Moreover, these definitions fail to consider the experiences of the most vulnerable portion of the consumer pool such as individuals with disabilities who are particularly vulnerable to such practices. To combat dark patterns, several actions can be taken. First, a thorough market investigation of at least the biggest online platforms in order to recognize and sanction any illicit design pattern. Second, a campaign of regulatory prevention on the specifics of design, i.e., providing

examples of what should be done rather than simply what is banned. As an example, having a mandatory standardized template for the privacy cookies tab would undoubtedly result in a standardized easy path for users to disable privacy-intrusive cookies. Thirdly, advocacy efforts and disability-focused initiatives should prioritize amplifying the voices of all, including neurodivergent individuals. Designers have a responsibility to understand their audience as a whole and, once again, conducting research and thorough investigations into companies that blatantly employ dark patterns is essential. Drawing parallels to the emergence of data privacy laws, public awareness and engagement are crucial in addressing dark patterns, given how much the public understanding of privacy has evolved and has been taken seriously in the past decade, specifically thanks to numerous sensibilization campaigns on the matter.

As the digital world expands, it is imperative to vocalize our expectations for a safe and ethical digital environment for everyone, hence designers should critically evaluate their design choices and consider the representation of diverse users. All consumers should be motivated to purchase products based on their quality, rather than being tricked into desiring them through manipulative tactics. Transparency, honesty, and a human-centred approach should guide design practices, recognizing that users are more than mere sources of profit. Furthermore, it is vital to consider the full spectrum of human experiences, designing inclusively for marginalized populations, and creating safe spaces for neurodivergent creators to contribute to the design process.

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