

Runge, Julian; Wentzel, Daniel; Huh, Ji Young; Chaney, Allison

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“Dark patterns” in online services: a motivating study and agenda for future research

Julian Runge^{1,2} · Daniel Wentzel² · Ji Young Huh¹ · Allison Chaney¹

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Abstract

Some companies offering online services employ tactics that make it hard for customers to quit their accounts. These tactics are commonly referred to as “dark patterns” and may include hiding the cancelation procedure, asking customers to go through an excessive number of steps to complete the cancelation, or simply not letting customers quit their accounts straight away. Arguably, dark patterns are the result of misaligned incentives between companies and customers as companies can still benefit from their customers’ data even if they no longer use the companies’ services. Against this background, the authors conduct an observational survey of the state of current market practice and call for future research that enhances our understanding of dark patterns, their organizational antecedents, customers’ psychological responses to these tactics, and the wider consequences of dark patterns for firms and markets.

Keywords Dark patterns · Online services · Platform economy · Privacy

The advent of digital communication channels has significantly lowered the barriers for canceling services. Rather than having to write a letter or visit a physical store to complete a cancelation process, customers can exit a service agreement by completing a few clicks online. Such lowered barriers typically apply to pure online

✉ Daniel Wentzel
wentzel@time.rwth-aachen.de

Julian Runge
julian.runge@duke.edu

Ji Young Huh
jiyoung.huh@duke.edu

Allison Chaney
allison.chaney@duke.edu

¹ Fuqua School of Business School, Duke University, 100 Fuqua Drive, Durham, NC 27708, USA

² School of Business and Economics, RWTH Aachen University, Templergraben 55, 52062 Aachen, Germany

players (e.g., Netflix) as well as companies that sell a physical product or service but also have a digital presence (e.g., New York Times). In response, companies frequently make it difficult for customers to actually quit their services. They may hide the cancellation procedure in their website or simply not let customers quit their accounts straight away, offering a “grace period” instead. Such tactics are typically referred to as “dark patterns” (Gray et al., 2018).

To examine the prevalence of these tactics, we conducted an observational study comparing the steps needed for joining vs. quitting online services. We first selected 40 well-known platforms across a variety of industries (see Table 1). We examined 31 of these platforms on their desktop website and 14 on their mobile app, based on the more commonly observed use context.¹ For sign-up and cancellation procedures, we recorded the number of clicks required for completion, number of clicks actually spent, elapsed time, and noticeable characteristics throughout the procedures.

Our results highlight that many firms employ tactics that make deleting accounts much harder than creating accounts. Common tactics include requiring repetitive confirmation steps, suggesting deactivation rather than deletion, offering grace periods, or providing excessive details on reasons why one may not want to quit. These tactics significantly increase the effort needed for quitting an account. On average, creating an account required 18 actual clicks and took 1.7 min. In contrast, deleting the account required 27 actual clicks and took 4 min. Table 1 also compares the effort required for creating vs. deleting an account. Amazon, for example, has a cancellation-to-signup ratio of 220% on its app in terms of number of clicks required. This means that a user has to spend more than twice the clicks to cancel versus to create an account.

1 Why do companies use dark patterns?

An important question concerns why companies use dark patterns. One straightforward explanation is that companies believe that dissuading customers from leaving will increase the likelihood that they will re-engage in the future. Another explanation is that companies can still benefit from customers even if they are no longer active users. As long as they keep their accounts, companies have stronger legal grounds to keep using the data collected about a user. This data, in turn, can be leveraged for product development and targeting purposes (Wedel & Kannan, 2016). In fact, maintaining access to existing user data is gaining in relevance as it becomes harder for firms to collect data about users due to nascent privacy initiatives (Johnson et al., 2022).

Hence, cancellation processes create misaligned incentives between customers and firms. That is, companies may have an explicit interest in preventing their customers from quitting and resort to dark patterns to this effect. Should these tactics prove successful, this may entail substantial costs for consumers in the form of

¹ Several platforms were examined on both websites and mobile apps, yielding a total number of 45 observations.

Table 1 Platforms across a variety of industries

Platform	Format	Sign-up			Cancellation			Cancellation-to-signup ratio		
		Time spent (mins)	# of clicks (min.)	# of clicks (spent)	Time spent (mins)	# of clicks (min.)	# of clicks (spent)	Time spent (mins)	# of clicks (min.)	# of clicks (spent)
Airbnb	Website	2.1	16	18	1.3	8	8	63%	50%	44%
Amazon	App	1.0	10	10	6.5	22	56	653%	220%	560%
Amazon	Website	2.5	15	19	6.5	16	26	260%	107%	137%
Asana	Website	2.2	18	22	3.2	5	39	145%	28%	177%
BBC	Website	1.7	18	18	0.8	6	6	47%	33%	33%
Bumble	App	2.5	30	37	0.4	6	6	17%	20%	16%
Doordash	App	1.6	9	9	4.9	13	27	314%	144%	300%
Etsy	Website	0.6	5	6	3.1	14	18	500%	280%	300%
Expedia	Website	1.3	5	7	4.5	10	27	346%	200%	386%
Facebook	App	2.7	22	23	3.0	11	23	110%	50%	100%
Facebook	Website	1.4	19	26	3.0	8	33	214%	42%	127%
Fox News	Website	2.3	27	41	0.5	3	3	20%	11%	7%
Gmail	App	3.4	22	24	1.3	10	10	38%	45%	42%
Gmail	Website	1.4	10	12	2.0	11	11	146%	110%	92%
Grubhub	App	1.6	10	18	9.6	30	45	619%	300%	250%
Hinge	App	2.7	52	59	0.5	5	6	17%	10%	10%
Hotels.com	Website	1.0	6	7	21.0	16	124	2100%	267%	1771%
Lyft	App	1.9	18	19	2.9	19	34	151%	106%	179%
Medium	Website	1.3	14	18	1.3	6	6	95%	43%	33%
MSN	Website	1.9	23	25	3.7	32	42	197%	139%	168%
Netflix	Website	3.3	18	19	5.0	6	27	152%	33%	142%
New York Times	Website	1.3	8	8	4.0	21	30	316%	263%	375%
Open Table	Website	2.0	5	5	3.7	13	23	188%	260%	460%
Outlook	Website	1.8	17	22	4.2	39	57	237%	229%	259%
Overleaf	Website	0.6	3	4	1.0	6	6	165%	200%	150%
ProtonMail	Website	1.9	21	21	1.8	11	14	95%	52%	67%
Redfin	Website	0.7	4	4	0.9	4	4	131%	100%	100%
Resy	Website	1.7	13	16	16.0	12	75	932%	92%	469%
Sephora	Website	1.4	6	7	11.0	9	48	786%	150%	686%
Slack	Website	1.7	13	15	8.6	10	47	515%	77%	313%
Snapchat	App	2.0	21	23	5.5	11	27	276%	52%	117%
Spotify	App	1.3	13	14	2.2	17	27	176%	131%	193%
Spotify	Website	1.4	19	23	3.3	15	24	238%	79%	104%
SquareSpace	Website	2.8	11	26	5.4	16	43	195%	145%	165%
TikTok	App	1.6	10	10	1.1	8	10	67%	80%	100%
Tinder	App	2.2	31	43	1.0	10	12	44%	32%	28%
Trello	Website	1.0	11	11	3.5	9	34	337%	82%	309%
Twitter	App	1.7	21	25	1.4	9	12	83%	43%	48%
Vimeo	Website	1.1	5	7	1.0	6	6	90%	120%	86%
Wordpress	Website	1.6	7	8	1.4	8	8	86%	114%	100%
Yahoo	Website	3.0	18	21	5.3	11	36	179%	61%	171%
Yelp	App	1.1	12	14	3.5	21	35	328%	175%	250%
Yelp	Website	1.3	11	14	2.0	15	18	154%	136%	129%
Zillow	Website	0.9	4	5	5.7	13	28	671%	325%	560%
Zoom	Website	1.7	18	28	1.5	7	8	89%	39%	29%

unwanted targeting (Gray et al., 2018) or revelation of their private information in undesired ways (Waldman, 2020).

2 Needed future research on dark patterns

While there has been some initial research on dark patterns in computer science and legal studies, these studies are largely descriptive in nature, mostly documenting the existence of these practices (Gray et al., 2018; Luguri & Strahilevitz, 2021). There is, however, no research that clarifies how consumers respond to dark patterns or examines the consequences of these tactics for consumers, companies, and society at large. In the following, we outline a number of research questions that revolve around company-related antecedents, consumer-level responses, and market-related consequences.

2.1 Companies

To gain a fuller understanding of dark patterns, research will need to identify the organizational antecedents driving the use of such patterns. For instance, are companies that exhibit a particular culture (e.g., a culture focused on competitiveness, permissiveness, or “Us-versus-Them” mentality), that are affected by specific industry constraints (e.g., industries characterized by high competitive pressure), or that pursue specific marketing strategies (e.g., aggressive growth) more likely to rely on dark patterns? In this respect, it is interesting to note that our study shows that some companies that are typically known for their strong focus on customer experience are also the ones relying heavily on dark patterns (e.g., Amazon, Spotify, Slack), suggesting a somewhat ambivalent understanding of customer orientation. Interestingly, Table 1 also reveals that some companies actually make canceling easier than subscribing (e.g., Airbnb, Gmail, Tinder). While this may reflect mere operational differences, it may also be possible that these companies consider canceling as part of a holistic customer experience and would thus attempt to create a seamless process.

2.2 Consumers

Our study shows that companies use different tactics to prevent customers from quitting (see also Gray et al., 2018). Thus, future research may not only want to classify these tactics but may also link them to consumers’ decision-making processes. First, consumers may not complete a cancellation process because they do not want to invest the effort necessary for doing so. Arguably, this response aligns with tactics that make canceling a cumbersome process (e.g., hiding the cancellation procedure). Second, consumers may believe that quitting may be a mistake after all, especially when they feel they have little to lose by remaining loyal (e.g., when the services are free to use). Possibly, this kind of reaction may be triggered by tactics destined to increase anticipated regret (e.g., by pointing out what customers lose by canceling;

Zeelenberg & Pieters, 2007). Third, customers may choose to stay with the company because this “feels right” on a gut level. That is, customers may feel that it is best to stay with a firm simply because the “stay” option is highlighted in bright colors and thus easier to process (Novemsky et al., 2007). Research of this kind may also allow assessing the effect of individual differences across consumers. For instance, one may argue that consumers’ responses to dark patterns are contingent on their digital literacy, socioeconomic status, or specific disadoption intent (Lehmann & Parker, 2017).

2.3 Consequences

In terms of market-level responses, research will need to examine the consequences of dark patterns. That is, are consumers more likely to stay loyal after having been exposed to dark patterns? Answering this question will not only require controlled lab studies but also field experiments testing the real-life responses to dark patterns. Importantly, consumer-related effects may extend beyond these immediate stay/leave decisions. From a long-term perspective, it may be interesting to examine if consumers that have been prevented from quitting actually re-engage with the company or whether they will show reactance because they feel they are being held hostage.

Moreover, research may link consumer responses to more downstream consequences. For instance, will the reliance on dark patterns lead to greater profitability because a company has a larger customer base or access to more customer data? As such, recent studies document that smaller platforms are more impacted by privacy regulations than larger “walled gardens” with substantial existing customer databases (Peukert et al., 2022). Or could it be the case that dark patterns will undermine profitability by negatively affecting a company’s image or undermining customer trust? Arguably, these effects are not mutually exclusive and future research may establish under which conditions positive or negative effects are more likely to occur.

3 Conclusion

Our exploratory study highlights that dark patterns are still used by companies to prevent customers from quitting. Understanding the nature, effects, and costs of these patterns should be a key subject for researchers as such knowledge will help to better align the incentives of consumers, companies, and society at large.

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Declarations

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Conflict of interest The authors declare no competing interests.

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