Caught by Design? A Differentiated Perspective on Digital Decision Making Through the Influence of Deceptive Design Patterns

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BACKGROUND

DECEPTIVE DESIGN PATTERNS (DDP): digital design structures that influence user behavior in the interest of companies – often contradictory to users intention (Brignull, 2023)



promote fast, impulsive decisions (e.g., by generating social pressure, exploiting biases, capturing attention; Monge Roffarello et al., 2023)

VS

increase the complexity of decisions (e.g., by hiding information, adding extra barriers; Mathur et al., 2021)

MATERIALS AND METHODS

Online Experiment | Nov '23 – Mar '24 | pre-registered at OSF: https://osf.io/72nq6

EXPERIMENTAL TASK: Visit a news-website and decline all not task-related offers!

Subjects are repeatedly exposed to pop-ups with non-task related content (=offers / requests for consent).

> **H**₃ H₂ H₄ H1 **AR** = DDP + dwell_time_{DDP} + priorExp + time_{Website}



Disruption and

Societal Change

OK!

CONSEQUENCES: increased acceptance of unwanted offers and loss of money & data, increased decision time, negative emotions (EC, 2022; Luguri & Strahilevitz, 2021)

digital decision making = DDPs embedded in complex decision space: many subsequent decisions, conflicting interests, time pressure, ... (cf. Bhoot et al., 2020)

AIM: separating deceptive potential and complexity of the specific design vs. "contextual" factors of DDPs

RESEARCH QUESTION

How do DDPs influence digital decision-making behavior?

H1 | design itself

H2 | dwell time on a DDP

H₃ | repeated exposure to the same DDP

H4 | dwell time on a website

Acceptance Rate [= accepting not taskrelated offers]

v m × m m × m × m × m

02:18 left!

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IOK!



RESULTS

n = 112 age: M = 28.05 (SD = 12.39) students: 78.76 % education: 76.79 % bachelor or master degree Analysis: logistic regression and odds ratios based on generalized estimating equations, Bonferroni-Holm correction for multiple testing

H1 Deceptive Design Pattern χ2(8) = 1538.200, p = < .001	H4 Duration of Website Use (= number of completed trials)	H2 Time [trial] (= time in ms for each single trial, subject and DDP centralized) $\chi^2(1) = 19.982$ $p = < 0.001$	Acceptance Rate (AR) for DDP and Content donation
HI / control OR = 44.74 [6.27, 319.44], p = <.001 II / control OR = 11.96 [1.79, 79.66], p = <.001	χ2(1) = 3.125, <i>p</i> = .077	short / long OR = 1.0001 [1.0001, 1.0002], <i>p</i> = <.001	newsletter cookie
PS / control OR = 125.83 [16.99, 931.98], p = <.001 TQ / control OR = 613.84 [91.07, 4137.63], p = <.001		Time [subject] (= mean time in ms for each subject)	account abo
	ACCEPTANCE	χ2(1) = 20.166, <i>p</i> = < .001	control CS HI II LSM LTM PS SP TQ
Website Content	RATE	short / long OR = 1.0002 [1.0001, 1.0003], <i>p</i> = <.001	
<pre></pre>		Age	Dwell Time and Acceptance Rate for DDPs
cookie / account OR = 3.18 [2.22, 4.54], <i>p</i> = <.001		χ2(1) = 10.437, <i>p</i> = < .001	
cookie / newsletter OR = 2.47 [1.71, 3.58], <i>p</i> = <.001		young / old OR = 0.985 [0.976, 0.9994], <i>p</i> = .0012	PS TQ
cookie / push OR = 2.01 [1.35, 2.99], <i>p</i> = <.001	H ₃ Previous		
cookie / donation OR = 2.22 [1.37, 3.61], <i>p</i> = <.001	Experience	DDP Knowledge	
push / account OR = 1.58 [1.15, 2.18], p = <.001	$v_2(2) = 0.018 \ n = .991$	$y_2(1) = 1.500, n = .221$	Acceptance (0 = no, 1 = yes)

DISCUSSION

highest impact on acceptance: DDP [II, HI, PS, TQ], content [cookie-banner], dwell time [less time ~ more acceptance] and individual differences [age and average dwell time]

DDP: cognitive (TQ), motoric (PS) and visual (II, HI) barriers crucial – motivational and emotional ones less influential

time: more time may help to reduce acceptance, but not always the determining factor

interindividual differences: complex asssociations (age ~ increased dwell time, higher dwell_time ~ lower acceptance rate, higher acceptance rate ~ age) -> asssessing individual characteristics (e.g., digital literacy, ...)

content: even in a clear defined setting are cookie banners not perceived as DDPs

AR

-> new decision-based ontology of deceptive patterns: increases vs. decreases complexity, necessary skills to resist

 \rightarrow design of DDPs itself & interindividual differences seem crucial in complex digital decisions

References

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