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Same same, but different: consumers' decision–making process and psychological disempowerment in the digital society

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ABSTRACT

Digital transformation has empowered consumers, but also increased the difficulty of decision making. Lacking a holistic understanding of how digital transformation has changed consumers' decision-making processes and their perceptions of psychological *dis*empowerment, we conducted a mixed-methods field experiment. We systematically and comprehensively compared the decision-making process in a traditional non-digital and a digital consumption context. Our results show that consumers can feel disempowered in both contexts, albeit under different conditions of information availability. Psychological disempowerment can be reduced in both contexts by seeking different sources of advice, but still leads to greater regret about the decision in the non-digital context.

Introduction

Consumers' purchasing behavior has gradually shifted from the non-digital to the digital context as recent statistics show. Global retail e-commerce sales quadrupled between 2014 and 2022 (Statista, 2023) and the share of online shoppers in Europe has increased by 20% in the last ten years (Eurostat, 2023). The COVID-19 pandemic that began in 2020 has further accelerated the digitalization of society in the consumption context (Amankwah-Amoah et al., 2021; Guthrie et al., 2021). The online shopping platform Amazon, for example, tripled its profits during the pandemic as online shopping increased significantly due to social distancing regulations (BBC, 2021). This rise of digital technologies empowers consumers as increased information availability and flexibility forms the basis for self-determined decision making (Broniarczyk & Griffin, 2014) and allows consumers to (collectively) raise their voice (Nguyen et al., 2020).

However, while digital transformation has created an environment that empowers consumers (e.g. through price transparency and access to real-time information), this new environment can also be disempowering as it increases the availability of information (e.g. comparison websites, customer reviews), leading to information overload and decision difficulty (Broniarczyk & Griffin, 2014; Hu & Krishen, 2019). While the literature points to both effects, it remains unclear how exactly consumers' perceived empowerment – or a lack thereof – differs between the digital and traditional consumption contexts. To answer this question, we adopt the theoretical perspective of consumer psychological disempowerment (i.e. a situation in which consumers feel restricted in their freedom of choice and action, overwhelmed and dependent, lose control and do not know how to proceed (F. Schweitzer & Van den Hende, 2016)). A systematic comparison of the consumer decision-making process (i.e. information search, information processing, and decision outcomes) is needed to obtain an overall picture of the impact of the shift to the digital context on consumer psychological disempowerment, as previous research has shown that different modes of acquisition can change consumers' decision-making process (Lawson et al., 2021). This is particularly important as consumer perceptions of empowerment or disempowerment may have changed in recent years and marketers need to understand how to respond to these changing perceptions.

Following the call for more empirical research on the persistence of traditional consumer behavior in the age of digital transformation (Ashman et al., 2015), we therefore pose the following research question: *How does the decision-making process of consumers in digital and non-digital contexts differ in terms of consumer psychological (dis)empowerment?* Using a mixed-

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method field experiment with 108 participants, the study systematically and holistically compares the decision-making process in a traditional non-digital ("offline") and digital ("online") consumption context with regard to consumer psychological disempowerment.

With our findings, we contribute to the literature on the *consumer decision-making process in the digital society* by providing a comprehensive and comparative understanding of the decision-making process in digital and non-digital contexts, particularly regarding consumer psychological disempowerment. Previous research on this topic has been theoretical or exemplary in nature (e.g. Ashman et al., 2015; Darley et al., 2010; Punj, 2012) or empirically focused only on parts of the decision-making process (e.g. He & Rucker, 2023; Hu & Krishen, 2019). Our research introduces the perspective of consumer psychological disempowerment to this literature and allows us to make an overall assessment of how the decision-making process has changed in the shift to the digital context: It is true that switching to the digital context also entails some disempowering elements, but nevertheless, regret about the decision is lower in the digital context due to the additional third-party advice. Our derived theoretical model explains this result.

We also contribute to the literature on *consumer psychological (dis)empowerment in the digital society* by empirically showing how exactly consumer psychological disempowerment differs in digital and non-digital contexts due to the different information environment. The previous literature on consumer empowerment discusses the factors that enable consumer empowerment, lead to decision difficulty, and resolve decision difficulty in the digital society (e.g. Broniarczyk & Griffin, 2014; Han & Broniarczyk, 2022; Hu & Krishen, 2019). We complement this stream by showing that psychological disempowerment is a phenomenon that is relevant in both digital and non-digital contexts, but differs in nature as the causes (i.e. information availability) and outcomes (i.e. decision regret) are different in the two contexts.

Literature review

The (traditional) consumer decision–making process

Consumer decision making generally refers to "the processes by which consumers arrive at some type of decision (usually a purchase)" (Hoyer, 1984, p. 822). Scholars conceptualize different stages of the decision-making process that are subject to the influence of various individual, problem-related, situational and contextual factors (Chauhan & Sagar, 2021; Darley et al., 2010). Perhaps the best known model is that of Engel et al. (1968), who define five phases: problem recognition, information search, alternative evaluation, purchase and post-purchase evaluation. Such a sequential model is not free from criticism (Ashman et al., 2015), but most scholars agree that there are at least two relevant decision-making phases (i.e. information search, information processing) and resulting decision outcomes (Häubl & Trifts, 2000; Hoyer, 1984). The present study follows this line of research and defines information search and information processing as the central phases of the decision-making process.[1]

Information search describes the activities and behaviors that consumers engage in, such as consulting various sources, to gather a range of choice alternatives and collecting and integrating information before making a choice (Ashman et al., 2015; Schmidt & Spreng, 1996). Previous literature has particularly focused on the scope of information search, duration and type of information sources (Peterson & Merino, 2003) and distinguished between exploratory and directed search (Etco et al., 2017). Consumers typically form consideration sets of different alternatives that differ not only in the number of alternatives, but also in the number and levels of attributes for each alternative. Information search behavior depends on the individual's abilities, but also on the motivation for the search (e.g. the perceived benefits and costs of the search) (Schmidt & Spreng, 1996). Traditionally, consumers obtain information about new products and services from information sources such as sellers (e.g. stores, catalogs), media (e.g. newspapers, television), and other people (e.g. salespeople, friends) (Peterson & Merino, 2003). Search behavior also varies and can depend on individual factors. For example, some consumers go to great lengths to find the best alternative and search broadly and deeply for information ("maximizers"), while others opt for a sufficiently good decision and search less broadly and deeply ("satisficers") (Karimi et al., 2015; Lysonski et al., 1996).

Information processing theory assumes that consumers first exclude alternatives and then choose from a smaller consideration set (i.e. "eliminate, then choose") (Gao et al., 2022). Dual process theory explains how judgments and decisions are based on

[1]While problem recognition is a necessary precondition for any decision, it does not necessarily determine the actual choice or how it is made. Similarly, the purchase situation as the stage when the consumer actually acquires the product or service is the implementation of the decision, rather than a stage in the process of making the decision. Focusing on the determining stages of the actual decision (i.e. information search and information processing) as well as the respective decision outcome helps us to study the core mechanisms of decision making.

two types of information processing systems: (1) System 1, also referred to as the associative system, intuition, or heuristic processing, and (2) System 2, also referred to as the rule-based system, analytic, or rational processing (Stanovich & West, 2000). The heuristic pathway generally describes an automated, fast, effortless, and largely unconscious thought process, whereas the rational pathway involves more analytical, slower, effortful, and consciously controlled thought processes (Kahneman, 2003). Consistent with core mechanisms described in the dual process theory, consumer decision making research has found that individuals' processing ability is limited and that consumers often rely on heuristic decision rules to select products for and from their consideration sets (Hauser, 2014). The ability to process information decreases when the consumer is presented with more than ten pieces of information. In addition, information overload can occur when many alternatives are not categorized or involve decision trade-offs that are difficult to compare, and when consumers are under time pressure (Scheibehenne et al., 2010). To facilitate the decision-making process, consumers apply heuristics, shortcuts in information processing, to examine many products faster and with lower cognitive and search costs, and to quickly find a decision that is "good enough" but not optimal (Hauser, 2014; Malhotra, 1982). The most common heuristics include the following decision rules: conjunctive, disjunctive, lexicographic by aspect, elimination by aspect, take the best, additive, equal weights, linear and tallying (Hauser, 2014). Relevant cues and perceptual stimuli that influence the evaluation of alternatives include environmental factors such as store design and surroundings or perceptions of sales staff, product-related factors such as sensory cues, visual information, physical features, quality, price, brand and affective cues (Baker et al., 2002; Biswas et al., 2014; Darke et al., 2006; Oxoby & Finnigan, 2007; Townsend & Kahn, 2014). In addition, consumers often seek advice from family and friends. This allows them to quickly access relevant information from trusted sources, receive emotional support, and foster social ties (Berger, 2014).

Decision making outcomes refer to the consequences for the consumer post-purchase. Decision-making outcomes can be objective in terms of value for money (e.g. choosing the dominant alternative corresponds to the best objective decision quality), but can also include a subjective component that describes how satisfied the individual is with the decision outcome (e.g. high satisfaction with the choice corresponds to high subjective decision quality) (Häubl & Trifts, 2000). In addition, previous research shows two different aspects of subjective outcomes: satisfaction with the choice (i.e. with the process of decision making) and satisfaction with the outcome (i.e. with the final experience of the outcome of the choice) (Heitmann et al., 2007; Karimi et al., 2018). Satisfaction with the choice and satisfaction with the outcome also have long-term consequences, e.g. they determine consumer loyalty to the brand, repeated purchase behavior, and word of mouth (Heitmann et al., 2007). Finally, regret about both the chosen product and the decision process can arise due to an unfavorable comparison result between the foregone alternative and the chosen product or decision process (N. Das & Kerr, 2010; Tsiros & Mittal, 2000).

Most critiques, adaptations and research based on the Engel, Kollat, & Blackwell (EKB) model (Engel et al., 1968) are premised on the recognition that context plays an important role in the design and outcome of decision-making processes (Ashman et al., 2015). Digital transformation is undoubtedly one of the biggest contextual changes we have witnessed and therefore requires special attention to advance the field of research. In the following, we therefore review what we already know about the consumer decision-making process in the digital context.

The consumer decision–making process in the digital society

The rise of the internet, social media, and artificial intelligence (AI) has led to innovations such as e-commerce and comparison portals that are changing the way consumers find out about new products, communicate about them, and make purchasing decisions (Darley et al., 2010; Power & Phillips-Wren, 2011). We refer to *digitalization* in the consumer context as digital technologies that now enrich the consumer decision-making process (and exclude new digital products and services as a target of purchase). Typical digital technologies in the consumer context include social and connective technologies (e.g. social media and social networks), mobile information and communication technologies (e.g. smartphones), (AI-based) analytics technologies (e.g. tools that aggregate and visualize large amounts of data, such as online comparison portals), and cloud technologies (e.g. platforms that provide storage space and services online) (Nicolai & Schuster, 2018). Digitalization has thus primarily shifted consumer decision-making from an offline to a digital online context.

To understand the changes in the consumer decision-making process in the digital society, we conducted a literature review and – for the sake of simplicity – divided the most important findings into the three relevant decision-making phases of information search, information processing and decision outcomes (Table 1).[2] Research aiming to understand the transition from traditional to digital contexts in consumer decision-making is generally quite fragmented and focuses on a specific phase of the process. This literature usually takes a quantitative or experimental approach and looks at a small part of the decision-making process (e.g. He & Rucker, 2023; Hu & Krishen, 2019). Research that takes a holistic view is usually theoretical or exemplary in nature (e.g. Ashman et al., 2015; Darley et al., 2010; Punj, 2012). Authors taking a holistic view of how the consumer decision-making process has changed in the digital context note that the consumer decision-making process is now "a seamless and iterative activity" (Faulds et al., 2018, p. 325) and "requires retailers to adopt a more holistic mindset that focuses on the process rather than [. . .] on the decision outcome" (Faulds et al., 2018, p. 335). We briefly discuss the changes in the digital context in relation to the three phases of the decision-making process.

As *information searches* become increasingly complex, new digital decision aids have entered the market to facilitate the search process by offering consumers a smaller and more individualized set of potential alternatives (Häubl & Trifts, 2000). Therefore, digital decision aids can increase decision quality and satisfaction because they reduce effort (Bechwati & Xia, 2003; Häubl & Trifts, 2000). Furthermore, digitalization is shifting the nature of information sources from professional sources (e.g. travel agencies) to nonprofessional, often crowd-based sources (e.g. consumer-generated blogs or reviews) (Ashman et al., 2015), and from the physical to the digital sphere (Peterson & Merino, 2003). Consumers now have access to real-time information (Faulds et al., 2018). As a result, the number and complexity of available information sources has increased enormously, sometimes making the search process more complex, but also opening up the possibility of providing consumers with more complete information (Broniarczyk & Griffin, 2014). For example, the search behavior itself depends on uncertainty (He & Rucker, 2023) and some sources describe it as less effortful and more time saving (Peterson & Merino, 2003). The consideration sets consumers build may also differ between channels, e.g. mobile search and web search (Zhang et al., 2022).

In the *information processing* phase, the amount of information and freedom of choice can lead to decision difficulty (Broniarczyk & Griffin, 2014). Information overload typically occurs in situations where the amount of information exceeds the processing capacity (Hunter et al., 2024). The number of attributes and the distribution of attribute levels are considered to be the main factors for information overload (Lee & Lee, 2004). However, choice difficulty, is mitigated by well-articulated consumer preferences and consumer knowledge, individual maximization tendencies, the organization and presentation of information, review quality and the use of decision aids (Broniarczyk & Griffin, 2014; Chernev et al., 2015; Han & Broniarczyk, 2022; Hu & Krishen, 2019).

Authors also describe a discrepancy between offline and online product evaluation, as the type of information (i.e. sensory/physical experience, representation of attributes) differs between contexts (Dzyabura et al., 2019). The relevance of perceptual cues can likewise differ, for example, brand and price evaluation seem to be more relevant online (Saini & Lynch, 2016; Scarpi et al., 2014). Social influence, however, is still important, for example, offline social interactions influence online demand (Kim et al., 2019).

In terms of *decision outcomes*, authors describe that brand loyalty can be higher online (V. Shankar et al., 2003). Purchase behavior may also be different online, as consumers choose fewer vices, for example (Huyghe et al., 2017). Authors further describe that the lack of touch experience can reduce the purchase intention of consumers with a concrete mind-set of a product (Liu et al., 2017), but also that price transparency can increase purchase acceleration (Hanna et al., 2019). Research shows that maximizers – consumers who search for the best possible option and engage in intensive information search and processing – can be more satisfied online because they have more options available to make the best choice (Karimi et al., 2018). In addition, researchers emphasize that in the digital age, satisfaction with the choice also depends on the evaluation by others (e.g. if the purchase is presented on social media and receives likes) (Ashman et al., 2015).

Most pressingly, however, the authors report conflicting results on how the digital context leads to favorable or unfavorable decision outcomes in terms of satisfaction and decision quality. Some previous

[2]We specifically searched for articles that compared some or more phases of decision making between the offline and online digital contexts or that explicitly researched a digital/online context and mentioned one or more phases of decision making. We limited our review to journals that were rated at least "C" in the VHB journal ranking JOURQUAL 3 (https://vhbonline.org/vhb4you/vhb-jourqual/vhb-jourqual-3/tabellen-zum-download), the established journal ranking in German-speaking countries.

Table 1. Selected articles in leading marketing journals on consumer decision-making process.

Information Search	Information Processing	Decision Outcome
Digital decision aids: • Decision aids decrease size but increase the quality of consideration set of alternatives (Häubl & Trifts, 2000) • Electronic aids exert less effort than human aids (Bechwati & Xia, 2003) • Increased use of intelligent agents (Peterson & Merino, 2003) • Additive-compensatory aids are perceived less restrictive, higher quality and less effort than elimination aids (Wang & Benbasat, 2009) • Non-anthropomorphic digital assistants increase reactance, choice difficulty, and satisfaction (Pizzi et al., 2021) Information sources: • High need for cognition leads to use of online information sources (S. Das et al., 2003) • Increase in number of different source (types) (Klein & Ford, 2003) • Number of physical information sources decreases (Peterson & Merino, 2003) • Use of other sources decrease (Ratchford et al., 2003) • Shift from professional sources to non-professional sources (Ashman et al., 2015) • Enduring interconnectedness between consumer and retailer (Faulds et al., 2018) • Access to real-time information (Faulds et al., 2018) Search behavior: • Social loneliness leads to more web surfing for entertainment (S. Das et al., 2003) • No increase in amount of considered information (Peterson & Merino, 2003) • Time and effort for information search decreases (Peterson & Merino, 2003) • More structured search behavior (Peterson & Merino, 2003) • Reduction in search (Ratchford et al., 2003) • Product recommendations increase number of page visits (Senecal et al., 2005) • General amount of Internet search and low search costs increase Internet use for information search (Jepsen, 2007) • Prior knowledge and category memory structure reduce online search effort (Rose & Samouel, 2009) • Motivation and ability increase online search effort (Rose & Samouel, 2009) • Time and effort spent same as offline (Anesbury et al., 2016) • No prior and positive reputation increase online information search (Lallement et al., 2020) • Moderate uncertainty leads to high information search (He & Rucker, 2023) Consideration sets: • Consideration sets more stimulus than memory driven (Peterson & Merino, 2003) • Product scarcity narrows consideration sets, resource scarcity broadens consideration sets (R. Hamilton et al., 2019) • Larger consideration sets in mobile vs. traditional online channels (Zhang et al., 2022)	Brand evaluation: • Brand names can be more important online when little information is available (Degeratu et al., 2000) • Less focus on brand information than attribute information (Peterson & Merino, 2003) • Brand effect can compensate online for intangibility (González-Benito et al., 2015) • Brand effect greater online (Saini & Lynch, 2016) Price evaluation: • Price sensitivity is higher online (Degeratu et al., 2000) • Less price sensitive online (Chu et al., 2010) • Price consciousness increases online (Scarpi et al., 2014) • Online higher price dispersion, when the number of pure online retailers is high (Zhuang et al., 2018) Risk evaluation: • Women perceive higher level of risk in online purchasing (Garbarino & Strahilevitz, 2004) • Online shopping risks increases online price dispersion (Zhuang et al., 2018) Social influence: • Site recommendation by a friend stronger effect on women (Garbarino & Strahilevitz, 2004) • Passive and active online evaluative tools (Ashman et al., 2015) • Online shoppers ask for friends and family endorsement online and offline (Hall et al., 2017) • Customized communication to consumers (Faulds et al., 2018) • Review quality and self-determined review quantity decrease information overload (Hu & Krishen, 2019) • Offline social interactions influence online shopping demand (Kim et al., 2019) Type of information: • Factual information higher impact online than sensory attributes (Degeratu et al., 2000) • Cognition more relevant than affect (Peterson & Merino, 2003) • Quality of information increases choice quality (Korhonen et al., 2018) • Resource scarcity reduces the effect of external cues (R. Hamilton et al., 2019) • Evaluation discrepancies between online and offline products due to visual/physical experience and attribute representation (Dzyabura et al., 2019) • High subjective-experiential knowledge gap leads to higher importance of external information sources (Tajdini, 2021) Amount of information: • Number of attributes and distribution level of attributes increase information overload (Lee & Lee, 2004) • Information processing increases information overload (Lurie, 2004) • Information expansion and choice freedom lead to decision difficulty (task complexity, tradeoff difficulty, preference uncertainty) (Broniarczyk & Griffin, 2014) • Intermediate amount of information maximize purchase likelihood (Branco et al., 2016)	Satisfaction: • Efforts saved through decision aids increase satisfaction (Bechwati & Xia, 2003) • Customer satisfaction same online and offline (V. Shankar et al., 2003) • Time and cost savings lead to higher satisfaction (Kohli et al., 2004) • Information overload decreases satisfaction and confidence and increases confusion (Lee & Lee, 2004) • Satisfaction depends on virtual satisfaction of others (Ashman et al., 2015) • Consumers with higher product knowledge more satisfied with process due to shorter duration (Karimi et al., 2018) • Maximizer consumers more satisfied with choice due to more alternatives the consider (Karimi et al., 2018) • Decision difficulty decreases decision satisfaction (Hu & Krishen, 2019) • Consumers with higher product knowledge less impacted by negative effect of decision difficulty on decision satisfaction (Hu & Krishen, 2019) • Perceived value drives satisfaction online, quality and expectations drive satisfaction offline (Hult et al., 2019) • Customers more satisfaction-sensitive online (Hult et al., 2019) Purchase: • Low interpersonal trust leads to less web purchases (S. Das et al., 2003) • Fewer selection of vices (Huyghe et al., 2017) • No touch reduces purchase intention and willingness to pay for consumers with a concrete mindset of a product (Liu et al., 2017) • Price transparency increases purchase acceleration and willingness to pay (Hanna et al., 2019) Choice Quality: • Decision aids increase the quality of consumers' purchase decisions (Häubl & Trifts, 2000) • Decrease in time and cognitive costs and increase in product knowledge and trust increase decision quality (Punj, 2012) • Increase in risk, information filtration through recommendation agents, digital attributes, perceptual and affective cues decrease decision quality (Punj, 2012) • High emotional consumers have higher choice quality with hedonic than utilitarian products (Korhonen et al., 2018) Loyalty: • Loyalty to service provider higher online (V. Shankar et al., 2003) • Higher brand and size loyalty online (Chu et al., 2010) • Trust offline for loyalty important, but online also perceived value/quality and satisfaction required (Silva & Goncalves, 2016)

research suggests an *empowering* notion of the consumer decision-making process in the digital age. Time and cost savings and less effort through decision aids can lead to higher satisfaction (Bechwati & Xia, 2003; Kohli et al., 2004) and increase choice quality (Häubl & Trifts, 2000). Access to real-time information and greater price transparency also give consumers more control over the process and bargaining power (Faulds et al., 2018; Hanna et al., 2019). However, freedom of choice and the expansion of information can also have a *disempowering* effect and lead to information overload, decision-making difficulties, confusion and lower satisfaction (Broniarczyk & Griffin, 2014; Chauhan & Sagar, 2021; Hu & Krishen, 2019; Lee & Lee, 2004). Hence, we take a consumer psychological (dis)empowerment perspective to understand this contradictory phenomenon better.

A consumer psychological (dis)empowerment perspective

Previous research understands consumer empowerment primarily as the willingness and ability to control the choice and decision-making process, and as power through increased information and understanding (Hu & Krishen, 2019; F. Schweitzer & Van den Hende, 2016). For example, consumer empowerment refers to "the strengthening of a person's abilities, rights, or authority to consume or otherwise fulfill their objectives as a marketplace actor" (Kozinets et al., 2021, p. 429). However, empowerment also goes beyond the power and control of consumption choices and the removal of constraints that hinder them, and includes the ability to control discourses (Papaoikonomou & Alarcon, 2017). It is not just about individuals making decisions, but also about groups articulating their beliefs (Tiu Wright, 2006). Empowerment in this context is usually described as a mental, psychological and perceived state of achieving one's own goals (V. Schweitzer & Simon, 2021) and demonstrating one's demands, accompanied by a physical act (Tiu Wright, 2006).

Authors also describe various elements of consumer empowerment, such as control over the composition of choices, progress and information about other consumers (Wathieu et al., 2002); meaningfulness, self-efficacy, self-determination, and impact (F. Schweitzer & Van den Hende, 2016); choice, voice, justice, inclusion, catalysis, and consciousness-raising (Kozinets et al., 2021); or consumer choice, access to marketplace information, consumer voice, and consumer experience (Han & Broniarczyk, 2022). The supply side can also strengthen consumer empowerment through engagement strategies, e.g. by creating and selecting something for a brand, or maximizing the number, diversity and engagement level of consumers (Acar & Puntoni, 2016).

In contrast to empowerment, disempowerment is a much less frequently used term. The shift to the digital context and consumer control may be less desirable than it seems, as it can hurt the experience of decision making and consumption (Wathieu et al., 2002). Freedom of choice and information expansion are a double-edged sword, as they can also lead to cognitive overload, paralysis, postponement of decisions and poor choices (A. Shankar et al., 2006; Wathieu et al., 2002). Chauhan and Sagar (2021) describe that this information overload can lead to consumer confusion, the failure to correctly interpret the product during information processing. F. Schweitzer and Van den Hende (2016) describe perceived disempowerment as the feeling of consumers that their freedom of choice and action is restricted and that they lose control and autonomy as a result. Disempowerment is therefore conceptually the opposite of empowerment. They represent two sides of a scale, with empowerment on the one hand encompassing a high degree of control and influence over decisions, and disempowerment on the other hand meaning a low degree of control and influence – and dependence (F. Schweitzer & Van den Hende, 2016).

In summary, the digital context offers potential for empowerment due to the increasing availability of information and choice, but this can also lead to decision-making difficulties and disempowerment (Broniarczyk & Griffin, 2014). Despite two decades of research on consumer behavior in digital contexts, we lack a holistic understanding of how information search, information processing and decision outcomes are changing as a result of the digital transformation, including in terms of consumer psychological disempowerment. We turn away from looking at individual phenomena of consumer decision-making in the digital society in isolation and propose an integrated, comparative view of the digital and non-digital decision-making process to answer our research questions: *How does the decision-making process of consumers in digital and non-digital contexts differ in terms of consumer psychological (dis) empowerment?*

Method

The aim of this research to create a holistic understanding of the differences between consumer decision making in digital and non-digital contexts, particularly with regard to consumer psychological disempowerment, requires an integrative research approach that provides both deep insights into consumer decision-making

processes and comparative findings in digital and non-digital contexts. We therefore use a mixed methods approach. We are conducting a qualitative diary study as a field experiment in which participants make two decisions, one in a digital context and one in a non-digital context. In this way, we can gain deep insights into the participants' thoughts, feelings and behaviors throughout the decision-making process. We combine this diary data with a citizen science approach in which participants reflect on and compare their own decisions at the end of the study. A quantitative pre- and post-survey provides additional insights into the decision outcomes, and allows us to control for various conditions such as the digital or non-digital context, external effects, task perceptions as well as individual characteristics and decision-making styles. We believe that this approach best meets the requirements that arising from the complexity and heterogeneity of the consumer decision-making process.

Data collection

Study design

The core of our research is a field experiment with a 2 × 3 (context: digital vs. non-digital x product category: low, medium, high external effects) study design. Participants were assigned to one of three product categories differentiated by their external effects on society and the environment (low, medium and high externalities) and were asked to make two purchasing decisions, one in a digital and one in a non-digital context. In this way, we can compare how the decision-making process changes in the digital age among participants, while controlling for possible specificities of the product categories among participants.

Regarding the *context* of the two purchase decisions that each participant had to make, one of the decisions took place in a traditional, non-digital environment and one in a digital environment. In the non-digital environment, participants were not allowed to use digital media to search for information, process information or make the actual decision. In the digital environment, participants were allowed to use all sources, channels and tools of the digital and non-digital world. We randomized whether participants completed the digital or non-digital decision task first.

In terms of *product categories*, the product category with low external effects included a cross trainer and a tent, the product category with medium external effects included a bicycle and a coffee maker, and the product category with high external effects included a scooter and an air-condition. As a coauthor team, we brainstormed on these products based on our knowledge of their potential externalities. Eight experts in the field of sustainability then assessed the suitability of the products for each product category. The experts assessed the extent of each product's externalities (i.e. negative and positive impacts on society and the environment) in the three phases of the product lifecycle – production, use, and disposal – on a three-point scale. We calculated the average externalities score for all experts and product life cycle stages. We found that tent ($M = 1.38$) and cross trainer ($M = 1.63$) had the lowest external effect, followed by coffee maker ($M = 1.79$) and bicycle ($M = 1.96$), and air-condition (2.46) and scooter (2.58) had the highest external effect. The pretest confirmed the assignment of the products to the respective product categories. We randomized for each participant which product in the category was in the digital or non-digital context. The study design is shown in Figure 1.

Participant Recruitment

We recruited participants in Switzerland via social media, advertising on various internet platforms, and offline through advertising in grocery stores. Participants received a link for a *pre-survey* in which they were asked to indicate whether they had purchased the six products in the last three years, as well as their perceived knowledge of each of the six products. They were also asked about their digital skills, gender, age, and education. A personal identifier (i.e. the last four digits of the cell phone number) allowed them to be matched to the qualitative diary data and the follow-up survey. We assigned participants to one of three product categories, taking into account their previous purchasing behavior and prior knowledge (which should be low to avoid bias in information search and processing), and attempted to ensure an even distribution of age and gender across the three product categories. Participants were also required to sign a consent form (mainly for privacy reasons).

Procedure

Each participant had to make two decisions about different products in one product category in order to reduce learning effects when searching for information (no actual purchase was required). Participants had a total of two weeks to make each purchase decision. Participants were given a detailed description of their tasks. Participants had to record all relevant aspects of the decision-making process in an electronic diary. It was not enough for the participants to imagine the purchasing process, they also had to actually carry it out (e.g. visit a store). To document the decision-making process, participants used an instant messenger app (WhatsApp, end-to-end encrypted). The data provided

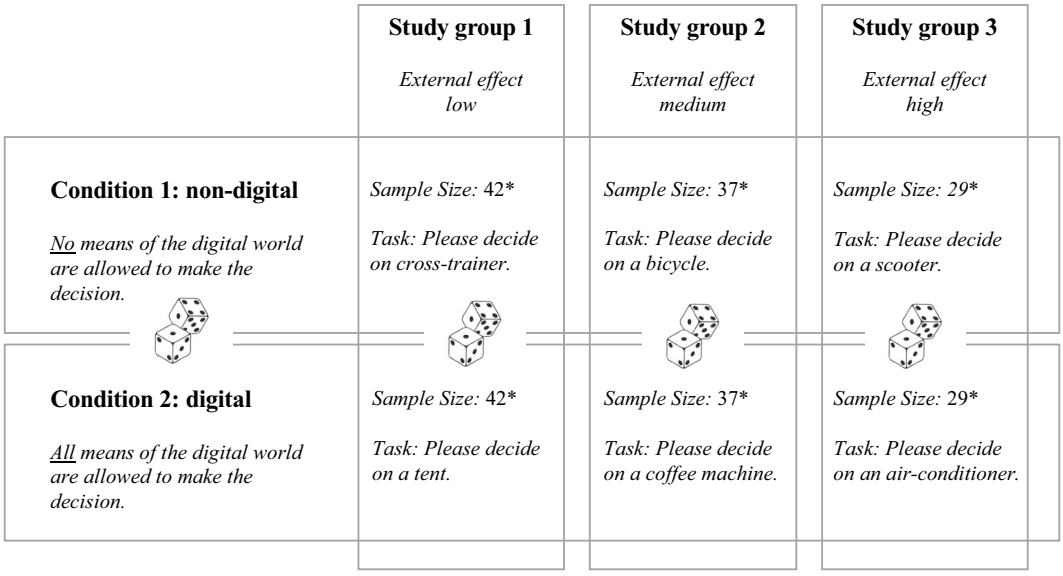


Figure 1. Study design.
Order of condition and products are randomized.
*Participants in the non-digital condition are the same as in the digital condition because each participant will be in each condition.

by the participants included text messages, photos, and audio recordings. Each participant was in a messaging group with two researchers from the research team. This form of electronic diary enabled the researchers to immediately view and evaluate the information provided by the participants. Researchers had the opportunity to suggest further information by replying to the participant. This real-time interaction provided the opportunity to obtain additional information about actual situations, such as emotions in cases where participants tended to be very descriptive in their documentation. To avoid strong interference from the researcher, the research team agreed in advance on several possible questions. These included, for example, "How did this source of information help you?," "How do you feel in this situation?," or "How satisfied are you with your decision?."

After completing the two purchasing tasks, participants were given a *post-survey* with information on individual characteristics such as decision-making style (rational, intuitive), maximization tendency, independent-interdependent problem solving, need for cognition, regret tendency, indecisiveness, Big 5 personality traits, personal values, and income. In addition, we asked about purchase decision regret in the digital and non-digital task, consideration of social and environmental issues in the digital and non-digital task, satisfaction with outcome and process in the digital and non-digital task, and realism of the scenario and task, and whether they had actually made or would make the purchase (a seven-point Likert scale was used for almost all measurements, see Appendix). In line with our citizen science approach, participants were also given a third task in which they were asked to reflect on their emotions and compare the two tasks.

Compensation

Participants were compensated with 100 CHF each. To increase the incentive to make a real purchase decision, they also participated in a lottery and had the chance to win up to 500 CHF for their final product decision (while participants usually stopped the study at the purchase decision, the two winners had the chance to buy the product and present the receipt for the product purchase to receive the compensation). Participants also received a personal analysis of their individual (decision-making) characteristics compared to the other participants.

Data analysis

The study combines qualitative and quantitative data analysis methods.

Qualitative Analysis

To analyze the qualitative electronic diary data, we followed a grounded theory process (Glaser & Strauss, 2009). First, we downloaded all digital diaries and transcribed all audio and video material. We then coded the data using the qualitative research software MAXQDA

(also used in Chauhan & Sagar, 2021; Hartwig & Jacob, 2022). We applied three coding steps: open coding, axial coding, and selective coding (Strauss & Corbin, 1990). Two authors independently coded the digital diaries using an open coding approach. During the coding process, the researchers kept as much information as possible in the codes to ensure validity. For example, the quotation «It felt good to keep control» (ZC 8542, line 133) remained exactly the same in the first coding step. After the initial coding of a third of all diaries, the same researchers discussed their first impressions and categorized the codes (axial coding). The core phases of the decision-making process – information search, information processing, and decision outcome – served as the guiding structure of the first level. The remaining diaries were coded by the two researchers, categorizing the codes one by one. The open code above, for example, was assigned to the emotions in the information search phase. To ensure high reliability of the results, a third researcher went through all the data provided by the participants, validating previous codes, clarifying them, and adding codes where necessary. This approach resulted in more than 7,000 first-level codes. We also wrote short summaries (memos) of each participant's decision-making process.

In line with the citizen science approach, our participants were also given the task of reflecting on their own decision-making processes. Specifically, we created a video in which they were instructed to (1) draw and annotate two emotion curves, one for each task, indicating milestones in the decision-making process as well as the corresponding emotional state (positive or negative), and (2) compare the first and second tasks, highlighting differences in search strategy, information evaluation, etc. The co-analysis by the participants allowed us to uncover the actual thoughts and emotions more deeply.

We combined all the data (electronic diaries, our brief summaries of each participant, each participant's reflection including the emotion curves) and performed the third step, selective coding. In an iterative process, we looked for patterns (Yin, 2009) in the participants' decision-making processes. As we read and studied the data, the research team created propositions, went back to the data to look for evidence for these propositions, discarded propositions, created new or refined propositions. One of the most startling findings was that consumers often felt "disempowered" in both contexts. We focused on the causes and conditions of this interesting result and developed a theoretical model and corresponding propositions.

Quantitative Analysis

While the qualitative data analysis enabled us to formulate propositions and provide qualitative evidence for them, the quantitative analysis provided further information – and sometimes even helped to confirm the propositions. In particular, we used the pre- and post-survey data to analyze whether the decision outcomes differed depending on the context of the decision-making process and depending on the external effects product categories. We also counted codes to support our propositions resulting from the qualitative analysis.

In total, we recruited 108 participants who completed all tasks of the study. 79 participants were female (73%), the mean age was $M = 29.75$, $SD = 11.532$ with an age range of 19 to 69 years. 59 participants (55%) had a bachelor's degree or higher. 63 participants (59%) had an income between 0 and 6,000 CHF per month, and 25 participants (23%) earned more than 10,000 CHF per month. Of the 108 participants, 42 were assigned to the tent and cross trainer product category (lowest external effects), 37 to the coffee maker and bicycle product category (medium external effects), and 29 to the scooter and air-condition product category (highest external effects).

Findings

Regarding the differences in decision outcomes for each *context* (digital vs. non-digital), we found that process satisfaction was higher in the digital context and purchase regret was lower in the digital context. There were no significant differences in outcome satisfaction (Table 2).

The relevance of social and environmental aspects for the decision-making process also did not differ between the digital and non-digital contexts. Secondly, we found that the differences between the *external effects product categories* had no influence on the decision outcomes (Table 3).

The results of our study show the differences and similarities of consumers' decision-making processes in digital and non-digital contexts, with a particular focus on their perception of disempowerment. The study shows that information search and processing occur in small, repetitive, simultaneous cycles, so the following distinction between the two serves only to simplify the picture. Figure 2 provides an overview of the theoretical model and propositions.

Information search

Our findings show that consumers in both digital and non-digital contexts experience a lack of psychological empowerment (disempowerment), i.e. a situation in which they feel restricted in their freedom of decision

Table 2. Differences between digital and non-digital scenario with paired sample T-Test.

Construct Pair	Mean	SD	Mean Difference Digital & Non-Digital	T	P-Value
Outcome satisfaction digital	5.38	1.656	.19	1.005	.317
Outcome satisfaction non-digital	5.19	1.647			
Process satisfaction digital	5.14	1.424	.70	3.178	.002
Process satisfaction non-digital	4.44	1.665			
Purchase decision regret digital	2.01	1.077	−.52	−3.770	<.001
Purchase decision regret non-digital	2.53	1.505			
Relevance social aspects digital	3.02	1.788	−.269	−1.631	.106
Relevance social aspects non-digital	3.29	1.977			
Relevance environmental aspects digital	3.13	2.158	−.176	−.876	.383
Relevance environmental aspects non-digital	3.31	2.194			
Control variables					
Scenario realism digital	5.67	1.433	.51	2.416	.017
Scenario realism non-digital	5.16	1.603			
Task realism task 1	4.83	2.155	−.11	−.401	.689
Task realism task 2	4.94	2.161			
Process realism task 1	5.81	1.647	.34	1.493	.138
Process realism task 2	5.47	1.732			
Actual purchase task 1 (reverse)	1.86	.352	.01	.185	.854
Actual purchase task 2 (reverse)	1.85	.361			

Table 3. Differences between external effect categories with analysis of variance.

Construct	External Effect Category	N	Mean	SD	F	P-Value
Outcome satisfaction Difference digital & non-digital	Low	42	−0.40	1.556	1.279	.282
	Medium	37	−0.37	1.085		
	High	29	−0.89	1.629		
	Total	108	−0.52	1.438		
Process satisfaction Difference digital & non-digital	Low	42	0.48	2.381	1.111	.333
	Medium	37	−0.19	1.761		
	High	29	0.28	1.688		
	Total	108	0.19	2.011		
Purchase decision regret Difference digital & non-digital	Low	42	1.17	2.622	1.709	.186
	Medium	37	0.22	1.843		
	High	29	0.66	2.272		
	Total	108	0.70	2.301		
Relevance social aspects Difference digital & non-digital	Low	42	−0.38	1.287	1.759	.177
	Medium	37	0.14	1.946		
	High	29	−0.62	1.879		
	Total	108	−0.27	1.711		
Relevance environmental aspects Difference digital & non-digital	Low	42	0.02	1.645	.636	.531
	Medium	37	−0.49	1.895		
	High	29	−0.07	2.802		
	Total	108	−0.18	2.086		

and action, overwhelmed, lose control, or dependent and do not know how to proceed (F. Schweitzer & Van den Hende, 2016). However, this situation differs in the two contexts in that consumers in the digital context have access to a large amount of information, which often leads to information overload, while consumers in the non-digital context are confronted with information scarcity, which leads to a perceived information deficit.

Information Overload

The increase in available information in the digital environment leads to information overload, as the amount of information can exceed limited cognitive abilities (Hu & Krishen, 2019; Hunter et al., 2024) and lead to decision difficulty (Broniarczyk & Griffin, 2014) and confusion (Chauhan & Sagar, 2021). Sometimes the feeling of being overwhelmed occurred right at the beginning, because individuals did not know where to start because there were so many channels, websites, and information.

> I felt helpless at the thought of searching the internet for bikes to buy. (KF 0182, line 92)

> The huge selection is annoying. I would rather have ten devices. I know this well from myself. The more choice, the less I am motivated to buy with good consideration. (ZC 0796, line 74)

Table 4. Shows all mean values, standard deviations, and correlation coefficients of the quantitatively measured variables in the pre- and post-surveys.

	Construct	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Outcome satisfaction digital	5.38	1.656	1														
2	Outcome satisfaction non-digital	5.19	1.647	.258**	1													
3	Process satisfaction digital	5.14	1.424	.445**	0.021	1												
4	Process satisfaction non-digital	4.44	1.665	0.041	.516**	−0.105	1											
5	Purchase decision regret digital	2.01	1.077	−0.151	−0.151	−.204*	−0.024	1										
6	Purchase decision regret non-digital	2.53	1.505	−0.005	−.455**	0.132	−.447**	.419**	1									
7	External effects	1.88	0.806	−0.021	0.045	−0.075	0.081	0.002	0.12	1								
8	Relevance social aspects digital	3.02	1.788	0.168	−0.027	0.116	0.148	.254**	0.172	.209*	1							
9	Relevance social aspects non-digital	3.29	1.977	0.055	0.05	0.089	0.16†	0.155	0.064	.221*	.591**	1						
10	Relevance environmental aspects digital	3.13	2.158	0.14	−0.157	0.07	0.08	0.183†	.223*	.262**	.409**	.278**	1					
11	Relevance environmental aspects non-digital	3.31	2.194	0.096	0.018	0.178†	0.148	.193*	0.136	.285**	.473**	.400**	.540**	1				
12	Rational decision style	5.49	0.99	0.117	−0.064	0.1	0.128	−0.081	−0.025	−0.142	0.144	0.133	0.066	0.102	1			
13	Intuitive decision style	4.1	1.311	−0.009	0.005	−0.067	.189*	0.163†	0.041	0.09	0.043	−0.04	−0.036	−0.012	−.322**	1		
14	Maximization decision style	4.39	1.026	0.14	−0.002	0.139	0.085	0.048	0.151	−0.122	0.167†	0.173†	−0.02	0.038	.650**	−.207*	1	
15	Independent problem solving	4.23	0.925	−0.04	−0.058	0.02	0.028	0.158	.233*	−0.023	−.211*	−.244*	−0.041	−0.047	0.015	0.006	0.127	1
16	Interdependent problem solving	4.71	1.111	0.096	0.111	−0.077	0.078	0.029	−0.103	−0.017	.228*	.254**	−0.053	0.056	0.149	0.033	0.144	−.568**
17	Need for cognition	5.13	1.122	−0.029	0.019	0.111	0.003	−.284**	−0.06	−0.145	−0.096	−0.124	−0.064	−.221*	.218*	−.211*	0.122	0.065
18	Regret propensity	3.55	1.362	0.119	−0.034	−0.076	−0.052	.262**	.212*	0.01	−0.031	−0.078	0.007	−0.05	0.128	−0.135	.328**	0.144
19	Indecisiveness	3.44	1.276	−0.002	−0.105	−0.117	−0.164†	.289**	.201*	0.099	−0.018	−0.025	0.054	0.064	0.031	−0.124	0.057	0.006
20	Big5 Extraversion	4.06	1.252	0.078	0.086	0.04	0.143	−0.146	−0.001	−0.054	0.071	−0.018	−0.015	−0.127	0.07	−0.108	0.17†	−0.066
21	Big5 Agreeableness	5.38	1.073	−0.083	0.07	0.029	0.068	0.065	0.013	0.07	0.152	0.08	−0.058	0.001	−0.021	0.137	−0.135	−0.144
22	Big5 Conscientiousness	5.55	1.282	0.022	0.088	0.109	.294**	−.191*	−.293**	0.024	0.122	0.053	0.112	−0.004	.224*	−0.184†	0.138	−0.116
23	Big5 Emotional stability	5.14	1.348	0.079	0.15	0.029	.214*	−0.156	−.209*	0.028	0.139	0.144	0.013	0.025	0.085	0.013	0.096	0.091
24	Big5 Openness	5.79	0.93	0.004	−0.044	0.16†	−0.042	−.313**	−0.008	0.053	0.016	0.021	0.098	0.028	.217*	0.109	0.128	−0.16†
25	Egoistic values	4.13	1.116	0.045	0.013	0.018	−0.057	0.014	0.117	−.236*	−0.104	0.006	−.242*	−.246*	.208*	−0.155	.370**	0.132
26	Altruistic values	6.09	1.011	−0.037	−0.133	0.026	−0.01	−0.168†	−0.077	−0.095	−0.119	−0.07	−0.071	0.109	0.073	0.013	−0.161	−0.031
27	Biospheric values	5.71	1.242	−0.024	−0.141	0.159	−0.005	−0.044	0.049	0.039	0.013	0.007	.241*	.329**	0.096	0.061	−0.094	0.11
28	Digital skills	5.59	0.893	−0.038	0.144	−0.037	−0.002	0.012	0.007	0.062	−0.186†	−0.122	−.234*	−.288**	0.002	0.126	0.015	.221*
29	Income	3.85	2.838	−0.048	0.058	0.055	−0.117	−.219*	−0.129	−0.05	−0.022	0.054	0.007	−0.097	−0.03	−0.048	−0.103	−0.123
30	Gender	1.27	0.445	−0.089	−.272**	−0.089	−0.147	−0.033	0.161†	0.065	−0.1	−0.003	−0.134	−0.18†	0.037	−0.006	0.074	.294**
31	Age	29.75	11.532	−0.058	−.189*	0.101	0.005	−.221*	−0.009	0.024	−0.009	−0.002	0.124	0.03	0.036	−0.055	−0.136	.204*
32	Education	7.24	1.818	−0.003	−0.184†	0.063	−.217*	−.302**	−0.017	−0.082	−0.111	−0.079	0.044	−0.18†	−0.018	−.206*	−0.183†	−0.046

	Construct	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
16	Interdependent problem solving	1																
17	Need for cognition	−0.126	1															
18	Regret propensity	0.089	−0.059	1														

(*Continued*)

Table 4. (Continued).

	Construct	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
19	Indecisiveness	0.091	−0.188†	.635**	1													
20	Big5 Extraversion	0.065	−0.021	−0.148	−.207*	1												
21	Big5 Agreeableness	.242*	0.09	−0.11	−0.16†	−0.037	1											
22	Big5 Conscientiousness	0.068	.369**	−0.073	−.285**	0.032	.262**	1										
23	Big5 Emotional stability	0.018	.246*	−.434**	−.663**	0.137	0.106	.299**	1									
24	Big5 Openness	0.053	.250**	−.284**	−.289**	.263**	.254**	0.074	0.091	1								
25	Egoistic values	0.18†	0.126	0.155	−0.112	.263**	−0.174†	0.072	0.104	−0.006	1							
26	Altruistic values	0.071	0.02	−0.005	0.059	−0.182	0.143	0.042	−0.165†	0.006	−0.144	1						
27	Biospheric values	−0.117	0.08	0.051	0.152	−0.151	0.022	0.005	−0.174†	0.104	−.299**	.664**	1					
28	Digital skills	−0.046	0.125	0.054	−0.069	−0.044	0.09	−0.031	0.183†	−0.003	0.152	−0.135	−0.15	1				
29	Income	−0.011	.192*	−0.014	−0.087	−0.061	0.023	0.109	0.037	0.057	0.026	−0.105	−0.036	0.085	1			
30	Gender	−0.15	0.141	−0.032	−.215*	−0.144	−0.169†	−0.09	0.179†	−0.007	.327**	−0.145	−0.106	.198*	.203*	1		
31	Age	−.355**	.245*	−.454**	−.367**	−0.059	0.087	0.125	.248**	.266**	−0.133	0.102	0.182†	−0.076	0.15	.213*	1	
32	Education	−0.18†	.223*	−.234*	−0.15	0.093	−0.117	−0.051	0.085	0.149	0.008	−0.047	−0.07	0.019	0.142	0.104	.401**	1

Mean values, standard deviation and correlation analysis for survey constructs (** p < .001; * p < .05; † p < .10).

At other times, information overload occurred as individuals delved deeper into the subject matter and the information branched out in the form of references to more and more websites, discussions, stores, and tests. When consumers cannot find helpful filters, reviews or comparison tests, they do not know what to do next.

> The agony of choice is real and I feel a bit overwhelmed :P (ZC 9881, line 47)

> Because this vehement browsing, this digesting of all the information, all the reports, all the evaluations from all the people who got something like this and then simply this exponentially increasing possibility of models that you have available, or of versions and other things, that was a bit overwhelming in that sense. (ZC 3133, line 154)

Although some consumers appreciate that they can easily search for a variety of information online and save time because they can search anywhere, anytime, many consumers have the opposite experience:

> I actually find offline searching less exhausting than online searching, because with online searching you can get lost in it and spend a lot of time without getting anywhere. (ZC 5378, line 131)

As the quotes already show, consumers perceive the information overload as an inhibitor of progress in their decision-making process, combined with feelings of helplessness and being overwhelmed. These feelings are in contrast to the notion of the empowered consumer who has the self-efficacy and skills to use the information to make a good decision. In line with previous research (e.g. Chauhan & Sagar, 2021; Hu & Krishen, 2019; Hunter et al., 2024), we suggest that too much information in the digital context can lead to psychological disempowerment in the form of information overload.

Proposition 1. *Consumers may experience information overload due to the variety of information available in the digital context.*

Information Deficit

Like an oversupply of information, a lack of information can also lead to consumers becoming psychologically disempowered and deciding not to purchase products (Branco et al., 2016). In contrast to the digital environment, the non-digital context is characterized by a relative scarcity of information, and the effort required to obtain this information is also higher (e.g. physically visiting stores)(Peterson & Merino, 2003). Consumers in this context feel that they lack the relevant and necessary information to properly search for and evaluate alternatives.

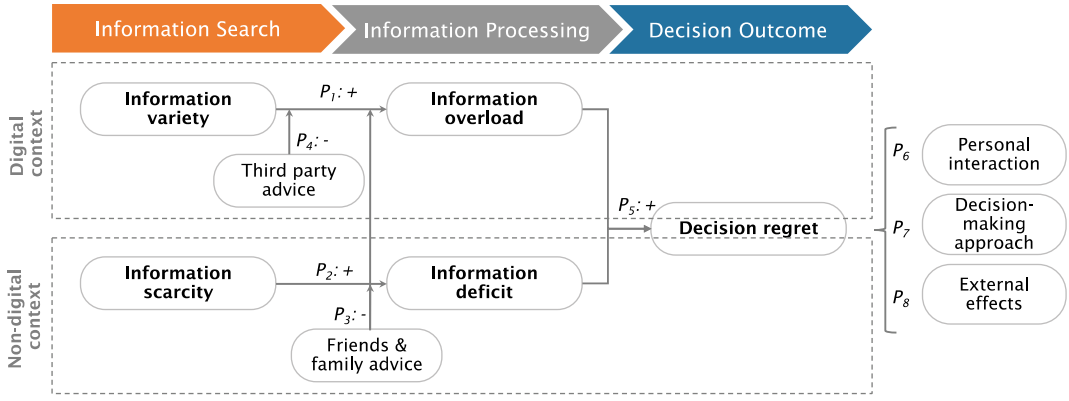


Figure 2. Consumers' (Psychologically Disempowering) decision-making process in the digital and non-digital context.

> I acquired fewer products, much less information about the quality and the product, and less knowledge in the offline search for the same amount of time than in the online search. I have felt much more demotivation and frustration experiences as well as deficits of self-efficacy due to the resinous offline search. (RK 4258, line 141)

> The first thing that strikes me is that I felt quite helpless and lost in the offline process. I didn't quite know how and where to start. In addition to the initial difficulties, I also noticed that during the offline decision I was much more concerned about whether I had chosen the right product or whether I should continue searching. (ZC 7595, line 84)

> Thereupon I have inquired in my circle of acquaintances about stores where you can buy good and cheap bikes. In the process, my mood has sunk a bit, because I was dissatisfied with being able to look at so few offers (because to go to more than 3–4 stores in my opinion would be too much time invested in a purchase like a bike that now has no higher importance). So, I realized that despite the advice of friends/family the offer I will see is relatively limited. (KF 4831, line 57)

Consumers reported that it was difficult for them to find any information at all. They usually had to visit specific stores, ask for catalogs and brochures, or talk to someone in their personal circle who was familiar with the product category in question. This process leads to negative emotions among consumers, which are reflected in a lack of self-determination.

> During the offline process, I felt overwhelmed for long stretches and dependent on others and their knowledge/goodwill. This feeling of powerlessness was very unpleasant. (KF 4831, line 73)

The lack of self-determination also results from the perceived dependence on the information provided by the seller, the lack of (price) comparison options and the compulsion to adhere to store opening hours.

Proposition 2. *Consumers may experience an information deficit due to scarcity of information in the non-digital context.*

To summarize, there are two different mechanisms that lead consumers to experience a lack of empowerment in both digital and non-digital environments. The quantitative data also supports these findings. In the online context, 86 out of 108 participants (and a total of 313 codes) mentioned negative and disempowering emotions in relation to information search, information processing and process satisfaction. In the offline context, even 103 out of 108 participants (and a total of 665 codes) mentioned negative emotions. These results suggest that the concept of psychological disempowerment may be more pronounced in the offline context.

Information processing

To cope with the perceived information overload or lack of information, consumers use various tactics such as heuristics and perceptual cues (e.g. Akdeniz et al., 2013; Hauser, 2014). For example, they opt for a specific (important) decision criterion such as a certain brand or store, the cheapest price, the best design, the first "good-enough solution," or they rely on their intuition. However, consumers also seek advice from third parties such as family, friends, salespeople, reviews and decision aids (Häubl & Trifts, 2000; Hu & Krishen, 2019; Kim et al., 2019), and we have found that these sources can also differ between the digital and non-digital contexts.

Coping Through Feedback from Family and Friends

Social influence, such as through family and friends, refers to various ways in which secondary actors

influence consumers' thoughts, feelings, and behaviors (Argo & Dahl, 2020). Family and friends play an important role in coping with psychological disempowerment by exerting informational and normative influence (Kim et al., 2019). In the non-digital context, they provide information about alternatives, and in the digital context, they help narrow down the choices and select an alternative with recommendations. Although some consumers find in-store salespeople's advice useful or trust the salesperson's advice, many consumers in the non-digital context rely on advice from family and friends. One consumer describes:

> [. . .] in the store I often feel overwhelmed when a stranger gives me a device recommendation for something I have not so much knowledge about. Hope the personal contacts will fix it ?. (RK 6430, line 31)

In contrast, a consumer writes in the digital context:

> I talked with my partner yesterday late about the machine. Our preference is fully automatic machines. For him, the hygiene aspect is also very important, which is why he would also go back to the cheaper of the last two coffee machines. So we both have the same favorite. Otherwise, I have not managed to look in the brochures. But since my friend, who lives with me in the same household, has the same opinion as me, I feel comfortable with my decision. (KF 9432, line 82–85)

Conversations with family and friends, for example, include real-life experiences and sensory information that can only be obtained limited extent online:

> The conversation with my mom's friend definitely helped me the most, because he extended the knowledge I had gained on my own and I realized that a 125cc bike would be much more suitable for me. He was able to tell me so many things that I had not yet found out in my online research. (RK 2991, line 124)

Therefore, despite the availability of online reviews or comparison portals, personal feedback from trustworthy people is still important:

> I noticed that whether I was allowed to use the internet or not, I relied on my friends. Personally, I tend to buy more directly. On the Internet, I am often overwhelmed by the choice, but I also do not trust sellers only. I prefer to ask someone I know well and who gives me the security to buy the right thing. (ZC 9264, line 87)

> However, the critical factor for me in the online and offline decision-making process was the experience and help from friends and family. Since I know these people, I know that I can trust them, and they certainly do not want to push a product on me that would not actually be the perfect product for me. (RK 8229, page 3)

Previous research has also shown that offline feedback is still relevant for online purchases (Kim et al., 2019). Therefore, we propose that the social influence of family and friends is important in both digital and non-digital contexts. The results are supported by quantitative evidence. In the offline context, 66 out of 108 participants (219 codes) mentioned family and friends when searching for information, processing information or as a crucial milestone. In the online context, family and friends were mentioned by 51 out of 108 participants (170 codes) – slightly fewer, but still a significant number of participants and codes.

Proposition 3. *Consumers rely on feedback of family and friends to resolve the lack of psychological empowerment in the digital and non-digital context.*

Coping Through Third-Party Information

In the digital context, third-party digital information such as decision aids, customer reviews and professional comparisons can also help to manage information overload (Broniarczyk & Griffin, 2014; Hu & Krishen, 2019). While the first party is the manufacturer of the product or service and the second party is the seller, third parties are perceived as independent voices that do not directly benefit from the product purchase. Third parties include, for example, comparison portals, which facilitate the comparison of alternatives by summarizing important features, and customer reviews. The role of third-party information is to reduce information asymmetry when relevant product features are not observable (Akdeniz et al., 2013). Such third parties also exist in the non-digital context (e.g. magazines, radio reports), but in the non-digital context of this study they basically played no role.

> Well, and the sacred Internet was then also the thing that put a damper on the whole thing again. Because there is of course a lot of information on the Internet, whether you like it or not. [. . .] And that's why I thought, with my basic knowledge, I first need a few testimonials from people who have tested it themselves or from people who test things professionally, right?. (ZC 3133, line 153)

> The search overwhelms me a bit. First, because I do not know my way around and have never bought one. And second, because there are many different offers. [. . .] I have informed myself on various websites and finally relied on the customer reviews. (ZC 3768, lines 21&29)

> And these test and customer reports help a lot, I realized. You can see for yourself what people think.

> With the test reports, you can say that it comes from the experts, they have a clue. Customer reports, you know, these are buyers. There are several of them who think it's good or bad. So if you see that 90 out of 100 people have given five stars and 10 have given one, then the product is really good. And because you can quickly search for different products on the Internet, I've noticed that the choice becomes a bit more difficult: If you have a choice, you're spoiled for choice. (ZC 7043, line 122)

Previous research has also shown that third-party information such as decision aids and reviews are becoming increasingly important in the digital context in order to structure information, filter and compare products and make recommendations, thereby reducing information overload (Broniarczyk & Griffin, 2014). The relevance of third-party information in the digital context is reflected in the quantitative data: in the online context, 72 out of 108 participants (229 codes) mentioned online reviews and tests, while in the offline context only 38 out of 108 participants (61 codes) mentioned brochures and catalogs.

Proposition 4. *Consumers rely on third-party information to resolve the lack of psychological empowerment in the digital context.*

Decision outcome

Consumers regret their decisions due to a lack of psychological empowerment. If consumers feel they have too little information, they may not be able to choose the best alternative and are afraid of missing out. If consumers feel they have too much information, they may lose sight of the big picture and are also unable to choose the best alternative. In both cases, the uncertainty that the choice is not the best remains, especially if friends and family or information from third parties cannot mitigate the perceived information overload or information deficit. Regret arises when consumers realize after the purchase that a foregone alternative could have led to a better situation – this can refer to the chosen product or to the decision-making process (N. Das & Kerr, 2010). A suboptimal decision process can refer to a less intensive information search and a suboptimal product purchase can refer to a better performing product that consumers only discover after the purchase (N. Das & Kerr, 2010).

Even though feedback from family and friends is sometimes not enough to balance the information overload caused by the large amount of information available online, consumers in the digital context still have two mechanisms (i.e. family and friends and third-party information) to cope with the information overload and reduce the feeling of disempowerment and subsequent regret about the decision. Therefore, regret over the decision was found to be lower in the digital context. In the non-digital context, consumers were afraid of overlooking something important in their decision, although some consumers find the decision process easier because they do not have to check as much information or rely on advice from in-store sales staff. However, potentially better value for money in other stores appears to be a major source of potential regret:

> Also I was afraid to miss any offer or sale if you do not search online. (KF 8531, image)

> (1) "How do I know that there are not other manufacturers that offer similar/same machines. Are they better/worse? Am I missing something?
> (2) If I want to get "the best price," I would have to spend at least a whole day shopping in Zurich and go through all the stores, which is not worth it in the end.
> (3) Is there a new model coming out soon that is "much" better?
> (4) How do the grinders perform in long-term tests? "No problems" as an answer is just a bit spongy and not tangible enough.
>
> –> Offline I feel a great uncertainty about the purchase decision, even if I made it based on the info I have and my needs." (KF 2605, line 106–110)

> I had the feeling that online you can look for more things and I was also unsure when buying, whether I have considered the right things and all the information. Whether the price is right above all. (ZC 9826, line 167)

> The main thing I noticed was the extreme difference in the selection options, especially for such specific things. On the Internet, I had hundreds of options and comparison possibilities with just a few clicks, which suited me very well, because I felt I could choose the best for me. And in the store, where I visited relatively large specialty stores, I still only had the opportunity to choose from very few products and the selection options I felt not fully satisfactory. And, depending on the case, also too expensive. (ZC 1873, line 97)

The higher decision regret in the non-digital context is also reflected in the quantitative data. The paired-sample t-test shows that purchase regret is higher in the non-digital context than in the digital context ($M_{Digital} = 2.01$, $M_{Non\text{-}digital} = 2.53$, $p < .000$). Whether

participants regret their purchase decisions in general seems to depend on individual characteristics such as the general regret propensity and indecisiveness or lack of conscientiousness (see Table 4). In addition to the higher decision regret in the non-digital context, we found differences between the digital and non-digital contexts in process satisfaction ($M_{Digital}$ = 5.14, $M_{Non\text{-}digital}$ = 4.44, p = .002), but not in outcome satisfaction ($M_{Digital}$ = 5.38, $M_{Non\text{-}digital}$ = 5.19, p = .317). This shows that, above all, the decision-making process is more pleasant in the digital context. However, this could also be a consequence of getting used to online shopping. Since regret can result both from the decision-making process (e.g. limited information search) and from the product purchase (e.g. foregoing a better alternative), regret about the decision may be higher in a non-digital context.

Proposition 5. *Decision regret is lower in the digital context than in the non-digital context.*

Individual emotions and characteristics

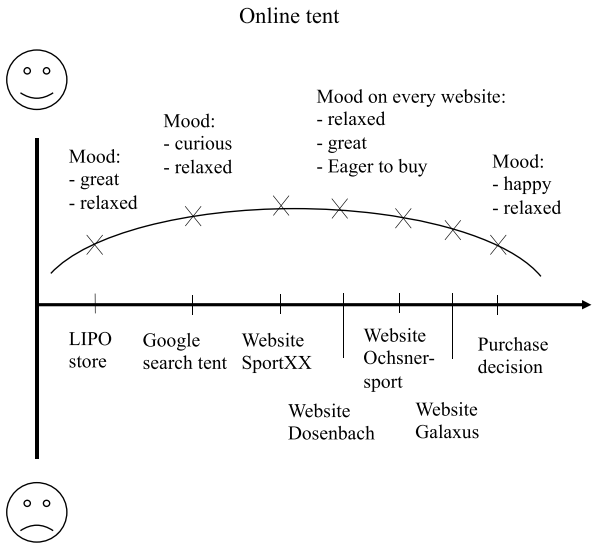
Although both digital and non-digital contexts can create psychologically disempowering situations that differ in nature, in this part of the findings we discuss individual aspects that have remained the same in both digital and non-digital contexts and that can be perceived as empowering or disempowering regardless of context. These individual aspects show the boundaries of the context for consumer psychological (dis) empowerment.

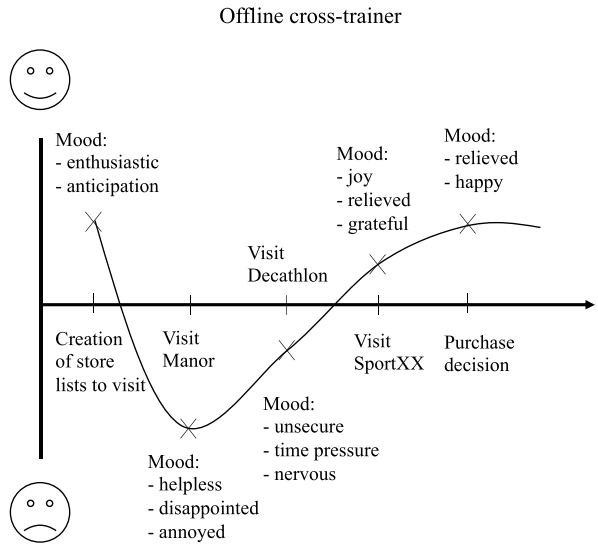
Sources Influence Emotions

The results of the emotion curve show that personal feedback and interaction with real people (i.e. family and friends, but also salespeople), as well as physical experiences, often lead to a change in emotional state. In particular, interaction with family and friends leads to positive emotions in both digital and non-digital contexts – an empowering feeling. Face-to-face interactions with family and friends generally seem to provide consumers with a trusted environment that is perceived as a positive atmosphere. However, feedback from professional salespeople can also lead to negative, disempowering feelings: "Very intimidated by salesperson, felt uncomfortable and ignorant" (KF 9624, emotion curve). In addition to face-to-face interactions, a visit to the store allows consumers to test and experience the product, which usually has an impact on their emotions.

> After I had digested the visit to the two stores I was still not 100% satisfied with my options and went after the advice of my mother still in another store. There I was advised again and could also test drive, which has increased my mood significantly because it has made the whole process a little more real and tangible, so it was not just facts and figures about the bikes that can be somewhat overwhelming. (KF 4831, 59–60)

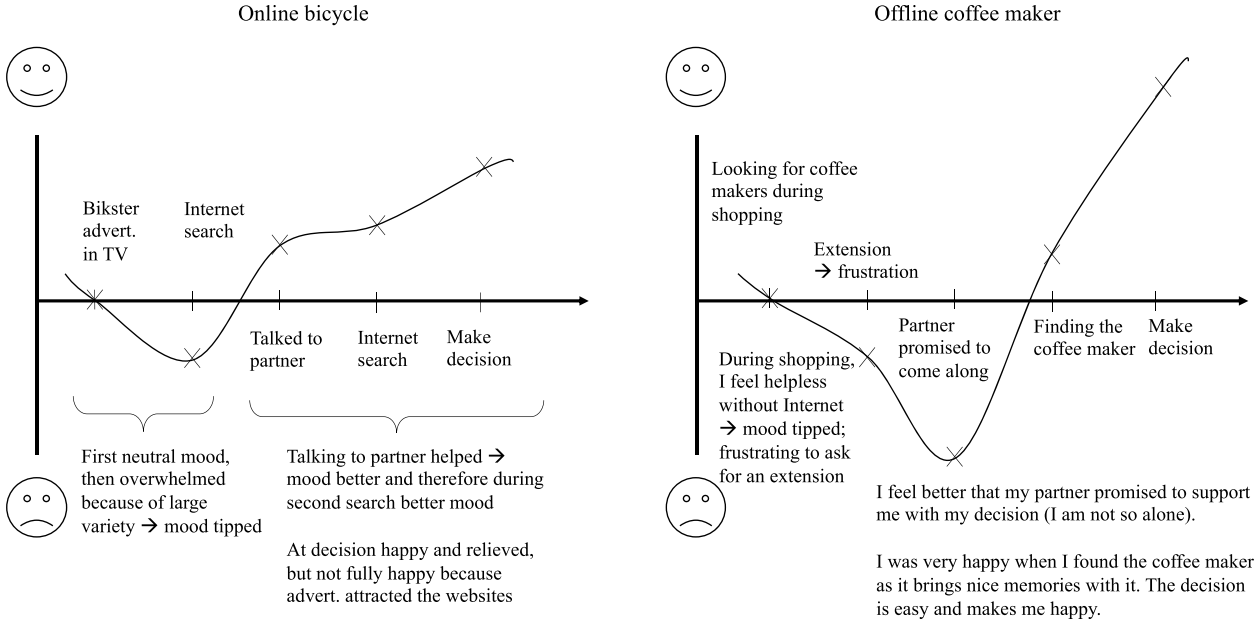
Moreover, the digital context does not seem to be able to generate as high a level of emotion as real-life interactions. The two emotion curves below, in which a participant compares his/her emotional phases during the offline and online decision-making process, show that emotions in the online environment (left image) are relatively constant (and positive), while participants in the offline environment (right image) experience helplessness and disappointment, but also joy and relief after visiting some stores.





(ZC 7415, emotion curve)

In the emotion curve below, the participant in the online setting (curve on the left) generally had a lower emotion level, and the increase in emotion resulted from a conversation with the partner. In the offline setting (curve on the right), the participant experienced a sharp drop in the emotion curve due to helplessness without the Internet. Emotions only rose again when the partner promised to support the participant in her decision-making process.



(KF 4698, emotion curve)

As the following quote summarizes, physical interactions and experiences remain most important for consumers' emotions.

> Direct contact with salespeople and scooters appealed to me more emotionally (which I don't just mean in a positive way: I like factual decisions. The emotional component leads away from the factual decision ("this scooter looked great, I want to buy it tomorrow," "Oops - I didn't ask about the tank size. Anyway . . .") and probably increases the risk of not being completely happy with the decision after the purchase). (RK1373, line 163)

Consumer emotions can thus evoke feelings of empowerment and disempowerment, particularly in face-to-face and physical interactions, which are more relevant in non-digital contexts. This is consistent with previous research showing, for example, that the behavior of salespeople can evoke positive emotions (Mallalieu & Nakamoto, 2008). The quantitative results further confirm the proposition: while physical interactions with family and friends or local salespeople influence participants' emotions and perceived milestones in the offline context (78 out of 108 participants mention such codes with a total of 251 codes), such physical interactions are less present when online search is possible, but still remain important (42 out of 108 participants mention such codes with a total of 83 codes).

Proposition 6. *Personal interactions and physical experiences during the decision process can lead to a change in the emotional state in the digital and non-digital context.*

Individual Decision-Making Approach

Although the decision-making process, including the specifics of information search, information processing, and decision outcomes, may differ greatly between the digital and non-digital contexts, we found that individual decision-making approaches appear to be a constant feature, at least during the study period. For example, a participant who seeks to maximize information in the online context also seeks to do so in the offline context, and participants who are satisfied with the first "good" solution also show this decision-making style in both contexts. Maximizers refer to consumers who tend to find the best option and conduct extensive search and evaluation, while satisficers choose a solution that is good enough (Karimi et al., 2018). The excerpts from the digital diary of the person below show that she follows a similar approach in both digital and non-

digital contexts: She studies magazines, visits (websites of) big stores, and focuses heavily on price as the deciding criterion.

> Online task:
>
> I will look at the newspapers tonight when I'm home. Maybe there is just a bike on sale. In addition, I will then look for offers on the Internet, for example, from Migros SportXX, Ochsner Sport and Decathlon.
>
> [Later] Looked at the offers from the newspaper. Am interested in the bike for 199.- instead of 349.- CHF. I will look around until the end of the week both in the store and in the newspaper and will make a definite decision at the end of the week/beginning of next week. The bike must not be too expensive but must still have a certain quality. Price-performance ratio is very important! (KF 3446, lines 10–16)
>
> Offline task:
>
> I will now during the week visit some stores and look at coffee machines. I'm thinking especially Fust, Melectronics and Interdiscount. I will also look at the newspapers and a possible offer also on the spot more closely.
>
> [Another day] Today I will look at coffee machines at Fust.
>
> [Later] Was at Fust, have looked at coffee machines. In general, the coffee machines appealed to me, but price-wise not at all. I will look for a suitable offer in the newspaper. Possibly go to Conforama, they always have good promotions. Karstadt Konstanz has recently had a 600 € coffee machine (fully automatic) for 300 € on offer. If I'm in Constance soon, I'll go by there, because then I even get the VAT refunded. (KF 3446, lines 63-73)

Similarly, the person below asks their family and friends first, regardless of the context (digital vs. non-digital):

> Offline task:
>
> I don't know very much about air conditioners. The first thing I do is write to my acquaintances/family and ask them what they recommend. Of course, the price also plays an important role. Therefore, I would like to know how much other people pay on average for an air conditioner. (RK 5333, line 11)
>
> Online task:
>
> I started the search for a scooter yesterday. The first thing I did was ask my dad, since he owns a scooter himself. I also wrote to some friends who own a scooter (haven't heard back from them yet). I also searched the internet for scooters, but I mainly found sites with secondhand scooters (e.g. Tutti.ch) or just saw scooters on Galaxus. I didn't really find what I was looking for on the internet. I plan in the next few days with my father to visit a scooter store nearby. (RK5333, line 63)

Therefore, we assume that the individual approach to decision making generally remains constant across contexts, despite the different availability of information. Depending on the individual decision-making approach, consumers may feel empowered or disempowered by more or fewer information. However, since the individual decision-making approach is constant across contexts, maximizers (satisficers) might search for information just as intensively (less intensively), so our quantitative evidence did not show any correlations between the decision outcome satisfaction, process satisfaction and decision regret and the maximization tendency (see Table 4).

Proposition 7. *The individual's approach to decision making remains the same in both digital and non-digital contexts.*

Accounting for Externalities

In terms of product category, we found that participants who had to choose between products with higher externalities also included environmental and social considerations to a greater extent. The correlation coefficients between the extent of externalities and the relevance of social aspects ($r_{Digital}$=.209, $r_{Non\text{-}digital}$=.221) and environmental aspects ($r_{Digital}$=.262, $r_{Non\text{-}digital}$=.285) in the decision-making process are positive and significant at $p < .05$. This indicates that participants are indeed aware of potential externalities and take them into account in their decision-making process. In contrast, we found no difference in the consideration of social and environmental aspects between the digital and non-digital contexts ($M_{Social,digital} = 3.02$, $M_{Social,non\text{-}digital} = 3.29$, $p = .106$; $M_{Environ,digital} = 3.13$, $M_{Environ,non\text{-}digital} = 3.31$, $p = .383$), suggesting that the availability of more information does not necessarily lead people to consider it. Rather, it is biospheric values that stimulate the consideration of environmental issues in decision making in digital ($r = .241$) and non-digital contexts ($r = .329$). The example of the participant below shows that the person takes environmental aspects into account both in the offline task of buying a bicycle and in the online task of buying a coffee machine.

> Online task:
>
> I was also convinced by the following arguments: [. . .] the high waste production of the capsule machine put me off (KF0091, line 22)
>
> Offline task:
>
> I think it is good that it is second-hand, because I do not feel the need to buy a new bike. (KF0091, line 64)

This participant also considers environmental aspects in the offline task of buying an air conditioner and in the online task of buying a scooter.

> Offline task:
>
> I will pay particular attention to energy-efficient models, preferably nothing that has to be permanently installed, i.e. mobile and it should be environmentally friendly. (RK2991, line 14)
>
> Online task:
>
> I also decided to mainly look for an occasional scooter as I don't particularly support buying new and would only look for a new scooter as a plan B. (RK2991, line 47)

It therefore seems to be more a question of personal values and the product category than the availability of information in a digital or non-digital context to include information on external effects in the decision-making process. The quantitative count also supports this result: in the online context, 28 out of 108 participants (62 codes) mention environmental and social effects and in the offline context, 26 out of 108 participants (48 codes) mention environmental and social effects.

Proposition 8. *The individual's approach to consider external effects of products remains the same in both digital and non-digital contexts.*

Discussion

How does the consumer decision-making process in digital and non-digital contexts differ in terms of consumer psychological (dis)empowerment? In our study, we provide an answer to this question and show that consumers experience disempowerment (i.e. information overload and information deficit) in both digital and non-digital contexts. However, the cause of psychological disempowerment is different as consumers in the non-digital context face information scarcity, while in the digital context they face information variety. Consumer psychological disempowerment can be mitigated by different sources of advice in the non-digital and digital contexts (i.e. friends and family and additional information from third parties, respectively), but leads to higher decision regret in the non-digital context as consumers fear missing out on relevant information. We also note some conditions that remained constant in the digital and non-digital contexts. In particular, the emotional relevance of physical interactions remains important in the digital environment, and individual decision-making approaches and consideration of external effects depend on individual characteristics rather than context. These findings have implications for theory and practice.

Contributions to theory

Previous literature has discussed both empowering and disempowering aspects of consumer decision-making in the digital society (Broniarczyk & Griffin, 2014; Hu & Krishen, 2019). However, it remained unclear how exactly consumer psychological (dis)empowerment differs between the digital and traditional consumption contexts. As consumer disempowerment is an overlooked aspect in the existing literature on consumer decision-making, we use the theoretical perspective of consumer psychological disempowerment (F. Schweitzer & Van den Hende, 2016) and systematically compare the decision-making process of consumers in digital and non-digital contexts to identify the perceived disempowering elements in the transition to the digital context. We show that consumer psychological empowerment is different in both contexts.

With these findings, we contribute to the literature on the *consumer decision-making process in the digital society* by providing a holistic and comparative understanding of the decision-making process in digital and non-digital contexts. Previous research on consumer decision-making processes in the digital age is theoretical or exemplary in nature (e.g. Ashman et al., 2015; Darley et al., 2010; Punj, 2012) or empirically focuses only on segments of the decision-making process (e.g. He & Rucker, 2023; Hu & Krishen, 2019). With our field experiment, we provide a comprehensive and systematic comparison of decision-making processes and can thus provide an integrative model of what has really changed in the digital age and what has remained constant. We can therefore confirm some of the empowering findings of previous studies, e.g. that the digital context has the potential to reduce time and cognitive effort and can lead to greater satisfaction (Kohli et al., 2004; Punj, 2012). However, we also shed light on the disempowering side of digital transformation. We are able to systematically compare the causes and moderators of the two different types of psychological disempowerment that we have uncovered. Our study therefore highlights that consumer decision-making models need to distinguish between digital and non-digital contexts and that perceived disempowerment in the non-digital context is not equal to perceived disempowerment in the digital context.

We also contribute to the literature on *consumer psychological (dis)empowerment in the digital society* by

empirically demonstrating how exactly consumer psychological disempowerment differs in digital and non-digital contexts due to the different information environment. Previous literature on consumer empowerment discusses the factors that enable consumer empowerment, lead to decision difficulty, and resolve decision difficulty in the digital society (e.g. Broniarczyk & Griffin, 2014; Han & Broniarczyk, 2022; Hu & Krishen, 2019). We complement this research by highlighting the different nature and outcomes of psychological disempowerment in digital and non-digital contexts, by demonstrating the potential of advice sources to mitigate information difficulties and by emphasizing boundary conditions that remain unaffected by context. Our research therefore shows that researchers studying consumer empowerment should not only focus on the empowering aspects of digital transformation, but also on the downside, the potential disempowerment of consumers.

Limitations and future research

Our study provides important insights into the differences in consumer decision-making processes in digital and non-digital contexts. In particular, we highlight the psychologically disempowering elements of both processes. However, there are of course some consumers who value the large amount of information in the digital context and others who value the smaller amount of choice in the non-digital context, so the perception of disempowerment is not equally strong for all consumers. However, as we believe that the notion of disempowerment is particularly interesting and dominant, we have focused our findings on this theme.

One of the most important limitations is certainly the habituation of consumers to online searches and purchasing. Since most participants use digital tools in their private lives, they are used to them, and switching (back) to a non-digital context also means disrupting their habits. This effect alone could lead to a less positive perception of the non-digital context. Nevertheless, the field experiment comes closest to a realistic comparison between the digital and non-digital contexts.

Furthermore, we have only focused on certain product categories and differentiated them according to the extent of their external impact on society and the environment. Although we believe that this is a very relevant aspect, there are certainly other differentiations of product categories, where the decision-making process might differ in the digital and non-digital context. These certainly include the distinction between search, experience, and credibility products, or between digital and non-digital products. Future research can therefore also consider broader differences between product categories in consumer decision processes in digital and non-digital contexts.

After all, digital is not the same as digital. With the advent of artificial intelligence, there are more and more digital tools that will certainly influence consumers' decision-making processes differently. Therefore, future research could benefit from a more detailed look at what digitalization means for consumers' decision-making process and their (dis)empowerment.

Implications for practice

Our findings have important implications for marketers. To avoid information overload in the digital context, it is not only easy-to-use third-party information that helps consumers to navigate the variety of information, but also the role of family and friends should not be underestimated in the digital context. Here, marketers could consider website features that allow family and friends to easily review and comment on the selected alternatives.

Furthermore, the results also have implications for physical consumption contexts. Since the regret of a decision is higher in a non-digital environment, marketers should think about smart ways to minimize the regret of a decision when consumers buy offline. In this case, additional (digital) comparisons and information about product feature in-store could help consumers reduce their perceived information deficit. However, they could also see physical interaction as a great opportunity to evoke positive emotions in consumers, as emotions often arise in physical contexts.

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to information that could compromise the privacy of research participants.

Ethics approval

Our research study complies with the federal regulation for research with human subjects (HRA) (https://www.bag.admin.ch/bag/en/home/gesetze-und-bewilligungen/gesetzgebung/gesetzgebung-mensch-gesundheit/gesetzgebung-forschung-am-menschen.html). Our study does not fall under the HRA (approval is only necessary for research about diseases or with personal health data) and therefore does not require IRB approval from cantonal ethics commission (KEK).

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Appendices

Appendix A

1. *A Pre-questionnaire*

Variable (items)

Identifier

Please indicate your identifier (last four digits of your mobile number). (open field)

Domain-specific consumer knowledge and prior purchase behaviour

(1) *I am knowledgeable about cross trainers*. 1 (strongly disagree) . . . 7 (strongly agree)
(2) *Did you make a purchase decision for a cross trainer in the last three years?* 1 (yes), 2 (no)
(3) *I am knowledgeable about tents*. 1 (strongly disagree) . . . 7 (strongly agree)
(4) *Did you make a purchase decision for a tent in the last three years?* 1 (yes), 2 (no)
(5) *I am knowledgeable about bicycles*. 1 (strongly disagree) . . . 7 (strongly agree)
(6) *Did you make a purchase decision for a bicycle in the last three years?* 1 (yes), 2 (no)
(7) *I am knowledgeable about coffee makers*. 1 (strongly disagree) . . . 7 (strongly agree)
(8) *Did you make a purchase decision for a coffee maker in the last three years?* 1 (yes), 2 (no)
(9) *I am knowledgeable about scooters*. 1 (strongly disagree) . . . 7 (strongly agree)
(10) *Did you make a purchase decision for a scooter in the last three years?* 1 (yes), 2 (no)
(11) *I am knowledgeable about air conditioners*. 1 (strongly disagree) . . . 7 (strongly agree)
(12) *Did you make a purchase decision for an air conditioner in the last three years?* 1 (yes), 2 (no)

Web using skill (here: adapt to digital skill) (Novak et al., 2000)

(1) *I am extremely skilled at using digital tools.*
(2) *I consider myself knowledgeable about good search techniques with digital tools.*
(3) *I know somewhat less than most users about using digital tools. (R)*
(4) *I know how to find what I am looking for with digital tools.*
(5) *How would you rate your skill at using digital tools, compared to other things you do when searching and informing yourself?*
(6) *How would you rate your skill at using digital tools, compared to the sport or game you are best at?*
(1 = strongly disagree/low to 7 = strongly agree/high)

Gender

1 (male), 2 (female), 3 (other)

Age

(open field)

Highest educational degree (Swiss education system)

1 (No degree), 2 (General Education School), 3 (Secondary School), 4 (Federal Diploma of Vocational Education), 5 (Matura), 6 (Advanced Federal Diploma of Higher Education), 7 (Bachelor degree), 8 (Master degree), 9 (Doctoral degree), 10 (Other)

2. *A Post-questionnaire*

Variable (items)

Identifier

Please indicate your identifier (last four digits of your mobile number). (open field)

Decision making style rational/intuitive (K. Hamilton et al., 2016)

Rational

(1) *I prefer to gather all the necessary information before committing to a decision.*
(2) *I thoroughly evaluate decision alternatives before making a final choice.*
(3) *In decision making, I take time to contemplate the pros/cons or risks/benefits of a situation.*
(4) *Investigating the facts is an important part of my decision-making process.*
(5) *I weigh a number of different factors when making decisions.*

Intuitive

(1) *When making decisions, I rely mainly on my gut feelings.*
(2) *My initial hunch about decisions is generally what I follow.*
(3) *I make decisions based on intuition.*
(4) *I rely on my first impressions when making decisions.*
(5) *I weigh feelings more than analysis in making decisions.*

Decision making maximization scale (Diab et al., 2008)

(1) *No matter what it takes, I always try to choose the best thing.*
(2) *I don't like having to settle for "good enough.*
(3) *I am a maximizer.*
(4) *No matter what I do, I have the highest standards for myself.*
(5) *I will wait for the best option, no matter how long it takes.*
(6) *I never settle for second best.*
(7) *I am uncomfortable making decisions before I know all of my options.*
(8) *Whenever I'm faced with a choice, I try to imagine what all the other possibilities are, even ones that aren't present at the moment.*
(9) *I never settle.*

(1 = strongly disagree to 7 = strongly agree)

Independent-interdependent problem-solving scale (Rubin et al., 2012)

Independent

(1) *When faced with a difficult personal problem, it is better to decide yourself rather than to follow the advice of others. (In)*
(2) *In general, I do not like to ask other people to help me to solve problems. (In)*
(3) *When dealing with problems, I usually find that the library and internet provide more helpful information than my friends and family. (In)*
(4) *Being able to take care of myself is a primary concern for me. (In)*
(5) *I would rather struggle through a personal problem by myself than discuss it with a friend. (In)*
(6) *I do not depend on other people to help me to solve my problems. (In)*

Interdependent

(1) *I value other people's social support when making important decisions. (Inter)*
(2) *I can count on my relatives for help if I find myself in any kind of trouble. (Inter)*
(3) *I like to get advice from my friends and family when deciding how to solve my personal problems. (Inter)*
(4) *I take my parents' advice into consideration when I make plans about my education or career. (Inter)*
(5) *I usually find other people's advice to be the most helpful source information for solving my problems. (Inter)*
(6) *I usually prefer to ask other people for help rather than to try to solve problems on my own. (Inter)*

(1 = strongly disagree to 7 = strongly agree)

Need for cognition scale (Epstein et al., 1996)

(1) *I don't like to have to do a lot of thinking. (R)*
(2) *I try to avoid situations that require thinking in depth about something. (R)*
(3) *I prefer to do something that challenges my thinking abilities rather than something that requires little thought.*
(4) *I prefer complex to simple problems.*
(5) *Thinking hard and for a long time about something gives me little satisfaction. (R)*

(1 = strongly disagree to 7 = strongly agree)

Regret propensity scale (Schwartz et al., 2002)

(1) *Once I make a decision, I don't look back. (R)*
(2) *Whenever I make a choice, I'm curious about what would have happened if I had chosen differently.*
(3) *Whenever I make a choice, I try to get information about how the other alternatives turned out.*
(4) *If I make a choice and it turns out well, I still feel like something of a failure if I find out that another choice would have turned out better.*
(5) *When I think about how I'm doing in life, I often assess opportunities I have passed up.*(1 = strongly disagree to 7 = strongly agree)

(*Continued*)

(Continued).

Variable (items)

Indecisiveness scale (Spunt et al., 2009)
Aversive
(1) *Once I make a decision, I feel fairly confident that it is a good one. (R)*
(2) *Once I make a decision, I stop worrying about it. (R)*
(3) *I become anxious when making a decision.*
(4) *I often worry about making the wrong choice.*
(5) *After I have chosen or decided something, I often believe I've made the wrong choice or decision.*Avoidant
(1) *I try to put off making decisions.*
(2) *I always know exactly what I want. (R)*
(3) *I find it easy to make decisions. (R)*
(4) *I like to be in a position to make decisions. (R)*
(5) *I usually make decisions quickly. (R)*
(6) *It seems that deciding on the most trivial thing takes me a long time.*
(1 = strongly disagree to 7 = strongly agree)

Big 5 personality traits (Gosling et al., 2003)
I see myself as:
Extraversion
(1) *Extraverted, enthusiastic*
(2) *Reserved, quiet (R)*
Agreeableness
(1) *Sympathetic, warm*
(2) *Critical, quarrelsome (R)*
Conscientiousness
(1) *Dependable, self-disciplined*
(2) *Disorganized, careless (R)*
Emotional Stability
(1) *Calm, emotionally stable*
(2) *Anxious, easily upset (R)*
Openness to Experiences
(1) *Open to new experiences, complex*
(2) *Conventional, uncreative (R)*
(1 = strongly disagree to 7 = strongly agree)

Social and environmental values (De Groot & Steg, 2007; Jansson et al., 2011)
Rate the importance of each value as guiding principles in life:
Egoistic
(1) *authority*
(2) *wealth*
(3) *social power*
(4) *influence*
(5) *ambition*
Altruistic
(1) *social justice*
(2) *equality*
(3) *a world in peace*
(4) *helpfulness*
Biospheric
(1) *preventing pollution*
(2) *protecting the environment*
(3) *respecting the earth*
(4) *unity with nature*
(1 = opposed to the value to 7 = of supreme importance)

Purchase decision regret (Inman & Zeelenberg, 2002)
(1) *How much do you regret your purchase decision in the digital context?*
(2) *How much do you regret your purchase decision in the non-digital context?*
(3) *If you could do it over, would you change your purchase decision in the digital context?*
(4) *If you could do it over, would you change your purchase decision in the non-digital context?*
(5) *How much happier would you have been if you had made a different product decision in the digital context?*
(6) *How much happier would you have been if you had made a different product decision in the non-digital context?*

Social relevance in purchase decision
(1) *To what extend did social aspects guide your decision in the digital context?*
(2) *To what extend did social aspects guide your decision in the non-digital context?*
(3) *To what extent did environmental aspects guide your decision in the digital context?*
(4) *To what extent did environmental aspects guide your decision in the non-digital context?*
(1 = not at all to 7 = very much)

(*Continued*)

(Continued).

Variable (items)
Outcome satisfaction, process satisfaction (Reutskaja & Hogarth, 2009) (1) *How much do you like the product you decided to pick in the digital context?* (2) *How much do you like the product you decided to pick in the non-digital context?* (3) *How much did you enjoy making the choice in the digital context?* (4) *How much did you enjoy making the choice in the non-digital context?* (1 = not at all to 7 = very much)
Scenario realism (Heidenreich et al., 2016) (1) *I could easily imagine the described situation earlier.* (2) *I believe that the described situation could happen in real life.* (1 = not at all to 7 = very much)
Task realism (1) *How likely is it that in reality you would also have made a decision for the product in the 2nd task?* (2) *How likely is it that in reality you would also have made a decision for the product in the 1st task?* (3) (1 = not probable 7 = very probable)
Process realism (1) *The way I chose the product in the 2nd task reflects my approach in reality.* (2) *The way I chose the product in the 1st task reflects my approach in reality.* (3) (1 = is true 7 = does not apply)
Actual purchase (1) *Have you purchased the product or will you purchase the product within the next 12 months? (task 1)* (2) *Have you purchased the product or will you purchase the product within the next 12 months? (task 2)*
Income *Please indicate the range of your average monthly gross household income*: 1 (<2,000 CHF), 2 (2,001–4000 CHF), 3 (4001–6000 CHF), 4 (6001–8000 CHF), 5 (8001–10,000 CHF), 6 (10,001–12,000 CHF), 7 (12,001–14,000 CHF), 8 (14,001–16,000 CHF), 9 (16,001–18,000 CHF), 10 (18,001–20,000 CHF), 11 (>20,000 CHF)

3. *A Examples of tasks*

1. Process and task description to the participants

In our study, we want to find out how digitalization influences consumers' purchasing decisions. For this purpose, you as a test person will carry out **two simulated purchase decisions** for a product – once with and once without digital aids. At the end of the study, you will become a researcher yourself and reflect on your experiences with the purchase decisions as part of a small analysis assignment. Accompanying the study, you will complete an initial questionnaire and a final questionnaire, in which we will record some personality traits, and which will also give you the opportunity to learn more about yourself.

Over the next four weeks, you will be asked to choose a specific product twice within a product category. You will go through the whole decision-making process as if you were actually buying the product (only omitting the final purchase). In each case, chance decides whether you may search for the corresponding product using all search channels (i.e. online and offline) or only offline.

The study aims to document, as far as possible in real time, the process of decision-making. Therefore, we will conduct a **WhatsApp chat** with you during the five weeks of the study. If necessary, we will ask queries via this chat. We will take the liberty of sending you an occasional reminder, asking if you have already taken any action toward the purchase decision.

You will receive the first task via WhatsApp once you have completed the consent form (see flowchart). If you still have questions, we can arrange an individual appointment. You will receive the second task after the first two weeks have passed, also via WhatsApp. After the four weeks, we will send you a third, final assignment in which you reflect on the two decision-making processes. You will have one week for this final assignment.

Participation in the study is remunerated at a compensation of CHF 100. Among all participants of this study, we will also compensate two products worth up to CHF 500, i.e. we will compensate for one of the products that the winners has chosen within the scope of this study. The draw will take place at the end of the year and the winners will be notified. No correspondence will be entered into about the contest. A cash payment is not possible. The legal process is excluded.

Procedure Today You have received from us the **procedure** (present document) and the link to the **pre questionnaire**. After you have completed this, we will contact you with the definitive confirmation of participation. Subsequently, we ask you to confirm your participation via the **consent form**. Once we have your consent, we will create the WhatsApp chat and send you the 1st order there.

Until Date XXX Fill out pre questionnaire (link via e-mail).

Until Date XXX Definite confirmation or rejection by the project team.

Upon agreement Clarify last ambiguities and questions (as needed).

Starting from XXX 1st task by WhatsApp. You now have 2 weeks to complete it.

Starting from XXX You will receive the 2nd task and again have 2 weeks to complete it.

Date XXX The decision-making process is now complete. You will receive the 3rd and final assignment via video message (reflection of your experience). Fill out post questionnaire.

Date XXX Deadline for submission of the last task.

2. Task Offline: Only offline search allowed [randomized order]

Initial situation: You would like to purchase a [product]. How do you proceed?

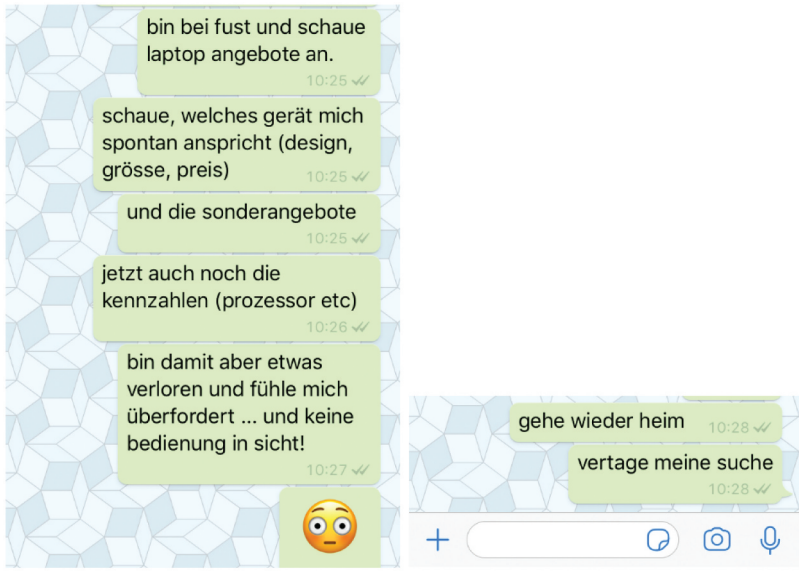
Task: Use WhatsApp to document the decision-making process, from searching for information to deciding on a specific offer. To do this, record everything that has to do with the decision-making process in real time. Describe not only what you are doing (action), but also how/with what (form), why (rationale) and how you feel about it. General thoughts about your search strategy and selection criteria are also helpful and should be noted.

Allowed forms of communication via WhatsApp: text messages, emojis, voice messages, photos, videos.

ð **Restriction**: you are not allowed to use online tools (search engines, websites, apps).

Interaction: the research team will follow the decision making process in real time and will ask queries if needed.

Example of a WhatsApp entry about buying a laptop (offline):



3. Task Online: All search channels allowed[randomized order]

Initial situation: You would like to purchase a [product]. How do you proceed?

Task: Use WhatsApp to document the decision-making process, from searching for information to deciding on a specific offer. To do this, record everything that has to do with the decision-making process in real time. Describe not only what you are doing (action), but also how/with what (form), why (rationale) and how you feel about it. General thoughts about your search strategy and selection criteria are also helpful and should be noted.

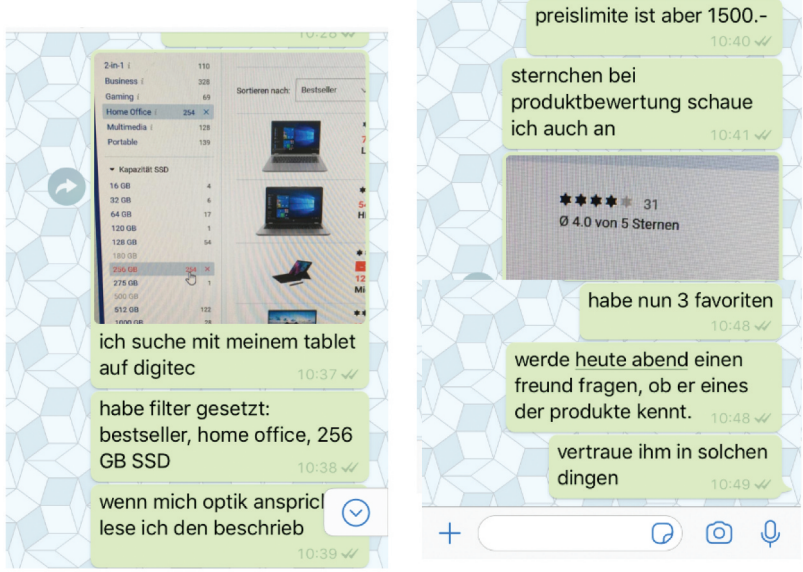
Allowed forms of communication via WhatsApp: text messages, emojis, voice messages, photos, videos.

Interaction: the research team will follow the decision making process in real time and will ask queries if needed.

4. Task analysis video [transcript]

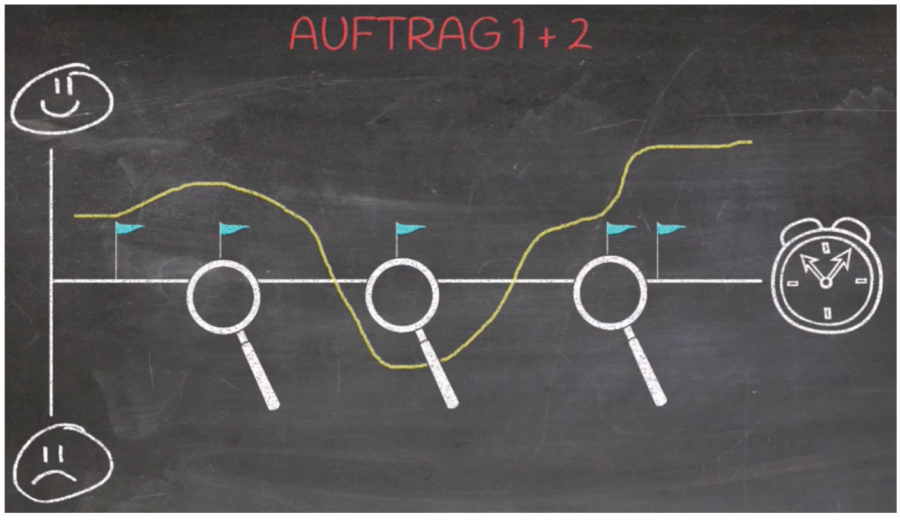
Welcome to the last part of the study. This is about analyzing and reflecting on your decision-making process. First of all, however, on behalf of the research team, I would like to thank you very much for your participation in the study. By doing so, you enable us to learn more about the influence of digitalization on our decision-making and purchasing behavior. You have already shared a lot of valuable information about your decision-making process with us via the WhatsApp chat. However, in order to be able to evaluate this in the best possible way, we are dependent on your help.

We are particularly interested in the following two aspects. How did you feel during the decision-making process and what were important milestones on the way to your decision? We will now present you with instructions on how to graph your answers to these two questions. All you need is a piece of paper and a pen.



As a first step, draw all the activities of your search on a timeline and comment on them in writing or verbally, for example in a voice message. Now label the vertical axis with two smileys. These symbolize your emotional state during the decision-making process. Now go through your chat history to reconstruct how you felt during the different phases of the decision-making process. Comment on this step as well. Then, use the chat history again and identify those events, information, or considerations that were instrumental in moving you forward in your decision making. What were the most important steps toward your goal and why were you helpful? Repeat this process for the second product as well.

- Assignment 1: First, record your activities on the timeline and comment on them in writing or verbally (e.g. voice message). Then, trace your mood trajectory and explain it as well.
- Assignment 2: Identify important milestones along the way to your decision. What information, insights, or strategies helped you move forward? Comment again in writing or orally
- Assignment 3: Now compare the online decision-making process with the offline decision-making process. How did you experience them and what differences did you notice (e.g. mood, search strategy, search intensity, time)?



As a final step, compare the online and offline decision-making processes. What differences do you notice? How did the different frameworks affect your decision making? Here is an overview of the three assignments again.

Remember to complete the first two assignments for both products. You can send us the results as a video or image file together with the explanations via WhatsApp. Thank you very much.