Artificial Intelligence and Decision Autonomy In Streaming Platforms

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ABSTRACT

Drawing on the expectation–confirmation theory and autonomy in AI, this research investigates how AI-based choices (vs. own choice) have detrimental effects on consumers' autonomy. A series of experimental studies suggest that AI choices reduce consumer satisfaction, highlighting the underlying mechanism of performance expectancy. In addition, while a mismatch in AI decision-making (i.e., a disjoint between consumers' preferences and AI choices) might backfire, the negative effects of AI decision-making on consumers' outcomes are mitigated when AI choices match consumers' preferences. By doing so, we make significant theoretical and practical contributions to research on consumers' sense of autonomy while interacting with AI.

Keywords: Artificial Intelligence, Autonomy, Decision-Making

Track: Consumer Behavior

1. Introduction

The managerial value of knowing customers' reactions to algorithmic judgments using AI is critical for streaming platforms as the popularity of algorithms in consumer-facing decisions spreads (Yalcin et al., 2022). In practical terms, companies rely on AI to facilitate consumer experiences via digital assistants and personalized content (Bolton et al., 2018). Although AI brings countless advantages for firms and consumers (Puntoni et al., 2021), we expect that AI will have a negative impact on consumers' autonomy. In fact, when there is a replacement of human decision-making, AI can diminish consumers' autonomy with an impact on their well-being (André et al., 2018) as autonomy is a crucial aspect of consumer choice (Wertenbroch et al., 2020). Despite the importance of AI and human in decision-making, dilemmas, tensions, or contradictions can also arise from their interaction (Huang & Rust, 2018; Huang et al., 2019). Importantly, however, little is known about the autonomy-technology tensions caused by AI in decision-making. We start to fill this gap by bringing the literature on expectation confirmation theory (Hossain & Quaddus, 2012) and autonomy in AI (André et al., 2018; Wertenbroch et al., 2020) to examine how AI vs. own choices influence consumers' autonomy. Across our experimental studies, we reveal the impact of adding AI into decision-making and the resulting autonomy-technology tensions. Our studies show that when AI is part of the decision-making, it creates an autonomy-technology tension that reduces consumers' performance expectancy and, consequently, reduces their satisfaction. We propose that performance expectancy underlies AI decision-making on consumer satisfaction. Furthermore, we show that the effect of AI decisions on consumer satisfaction is contingent on the nature of the content. This research provides important theoretical and managerial implications. First, we contribute to research on consumers' interactions with AI as a decision-maker (Lee, 2018, Yalcin et al., 2022). Second, this research explores the mediating role of performance expectancy (Araujo et al., 2020, Jung et al., 2018) on the relationship between AI vs. human decision and consumer satisfaction. Third, we bridge the expectation–confirmation theory (Dabholkar et al., 2000, Oh et al., 2022) and autonomy in AI (André et al., 2018; Wertenbroch et al., 2020) to investigate the dilemmas, tensions, or contradictions that may arise from using AI. Finally, our study has practical insights for streaming companies in balancing AI and consumers' autonomy.

2. Theoretical Background

2.1 AI Decision-Making and Consumers' Autonomy

AI is a key tool for helping companies predict customers' preferences (Davenport et al., 2020, Wertenbroch et al., 2020), answer customer needs and desires, and make their decision-making easier (Guha et al., 2021). This is especially relevant as, for example, in the streaming context, consumers

sometimes do not want to search through the library of shows and films to find something new to watch (Deighton, 2021). As such, streaming platforms have invested in AI to provide users with the next best content by giving them access to personalized services. By doing this, AI is decreasing choice overload and trying to provide the next best option in the streaming context (Guha et al., 2021). Nevertheless, consumers can also derive pleasure from their own decisions. Feeling that they lack that ability can lead to adverse reactions and consequences, impacting the quality of choice and consumer satisfaction (Hermann, 2021). This phenomenon represents autonomy-technology tensions. AI can be beneficial for consumers. However, if AI can substantially predict their preferences, consumers can also understand it as a loss of autonomy with implications for their choices and evaluations (André et al., 2018). Therefore, the welfare-enhancing benefits of AI can backfire and generate consumer reactance if they weaken the sense of autonomy consumers seek in their decision-making. In our research, we propose AI can lead to dilemmas, tensions, or contradictions due to its implications on consumers' autonomy which we coined autonomy-technology tensions. In this sense, consumers can be less satisfied when they experience AI choices vs. when they can choose on their own.

2.2 Autonomy-Technology Tensions: An Expectation-Confirmation Approach

The Expectation–Confirmation Theory (ECT) has been widely used to explain repurchase intentions and satisfaction (Dabholkar et al., 2000, Oh et al., 2022), to understand the entire customer experience (Lee & Kim, 2020; Park, 2020), and to investigate the information system users' continuance intention (Hossain & Quaddus, 2012) One of the key factors of ECT is performance expectancy. Research has shown that performance expectancy is an essential predictor of customer emotions, influencing consumers' acceptance of AI device use in service encounters (Gursoy et al., 2019). Customers use performance expectancy to assess the costs and advantages of AI device usage, and these aspects serve as critical predictors of customers' emotions regarding their readiness to embrace the use of AI devices. As such, higher levels of performance expectancy lead to higher levels of overall positive emotions toward the intention to use AI robotic devices (Lin et al., 2020). The present research proposes that performance expectancy mediates the effect of AI vs. human decisions on satisfaction. In particular, when AI makes the decision, there is a conflict between autonomy and technology that decreases consumers' performance expectations and, as a result, decreases satisfaction. Yet, although algorithms are now more sophisticated than ever by reflecting a wide variety of information, such as the characteristics of both current and past consumers, they don't always reflect customer preferences (Puntoni et al., 2021). AI algorithms sometimes fail to work the way they should or in a way that matches consumers' expectations (Davenport et al., 2020). As such, the suggestions of AI do not always match consumers' preferences, creating situations of mismatch. Hence, consistent with our theorizing,

we predict that autonomy-technology tensions can reduce consumer satisfaction. However, we also propose that this effect will be contingent on the nature of the streaming content. That is, a mismatch between the consumer's preferences and AI decisions will amplify the negative impact on consumer satisfaction due to the autonomy-technology tension. However, in a case of a match, consumers are equally satisfied by AI choices vs. their own choices, i.e., the detrimental effects of the autonomy-technology tensions can be mitigated.

3. Overview of the Studies

Our predictions were tested in a set of experimental pre-registered studies. Study 1 shows that incorporating AI into decision-making decreases consumer satisfaction. Study 2 further advances our theory revealing that the nature of the streaming content (match vs. mismatch) may influence the autonomy-technology tension. Finally, study 3 reveals the underlying mechanism of performance expectancy, i.e., when AI is the decision-maker, it creates an autonomy-technology tension that reduces consumers' performance expectancy and, consequently, has a negative impact on satisfaction.

Study 1: Own vs. AI choice and Consumers' Satisfaction

Participants and Design. 199 American Netflix users were recruited online in exchange for a small nominal payment (Amazon Mturk, 54,3% women, M_{age}=41.44; SD_{age}=13.065). Study 1 employed a one-factor between-subject design (AI vs. own choice).

Procedure, Stimuli and Measures. The participants were randomly assigned to one of two experimental conditions. Participants were asked to imagine that they were on Netflix browsing for something to watch next. They were also told that Netflix was working on a new AI tool to power content recommendations. The two scenarios were adapted from (Chen & Sengupta, 2014). In the own-choice condition, participants were told that they could freely choose if they wanted to use the tool that would provide them with the options or choose on their own without the help of the AI tool. Conversely, participants in the AI condition were required to use the AI tool and see its suggestions. The extent to which participants were satisfied with the new Netflix AI tool was measured using a 3-item satisfaction scale adapted from Chung et al., 2020: "I am satisfied with Netflix's AI tool", "I am happy with Netflix's AI tool", "I think Netflix's AI tool did a good job". The participants rated on a 9-point scale (1= Strongly disagree to 9= Strongly agree). As for manipulation checks, the respondents were asked to indicate if they had the freedom to decide between the two options or if the tool assigned them to one (1=Freedom to 9=Assigned).

Results and Discussion

Manipulation Checks. The results from the Independent Samples T-test table suggest that the autonomy manipulation worked as expected. Participants in the AI condition reported higher levels of freedom (M_{AI} = 4.19, SD_{AI}= 3.126) in comparison to participants in the own choice condition ($M_{ownchoice}$ = 5.89, $SD_{ownchoice}$ = 2.854; t(197) =38.70, p < .001).

Satisfaction. Independent-Samples T-Test showed that participants in the own choice condition presented higher satisfaction values than participants in the AI condition ($M_{ownchoice}$=6.48 vs. M_{AI}=5.86; $t(197)$ =1.197; p=0.025).

Study 1 provides initial evidence that reduced autonomy resulting from AI reduces satisfaction compared to a situation where they can freely choose the content they want to watch.

Study 2: Human decision vs. AI decision (match vs. mismatch) and Consumers' Satisfaction

Participants and Design. Participants were recruited using Prolific in exchange for a small nominal payment. This time besides Netflix users, we also recruited users from other streaming platforms (e.g., HBO, Disney+, Hulu, and Amazon prime). At the beginning of the study, participants were asked to indicate their favorite streaming platform and answer a battery of questions based on that choice. There were 203 participants (65.5% women, M_{age}=36.64; SD_{age}=12.72). The study employed a one-factor between-subject design with three experimental levels (own choice vs. AI (match) vs. AI (mismatch)).

Procedure, Stimuli, and Measures. Participants were randomly assigned to one of three conditions. In the own-choice condition, participants were informed that they could choose a movie from the streaming platform or use the new AI tool that would suggest six movies for them to watch. In the AI conditions, participants had to use the AI tool that would provide them with three options. The content of the three options matched or mismatched their preferences by asking them if they would rather watch a comedy or a drama. To measure satisfaction, the same items from the previous study were used. As for manipulation checks, the respondents had two questions. First, they had to answer whether they could choose to use the AI tool or they had to use it (1= Choice; 9=Implied). They also indicated if the suggestions from the AI tool were based on their preferences or not (1=Match; 9=Mismatch).

Results and Discussion.

Manipulation Checks. One-way ANOVA results suggest that the level of autonomy manipulation was successful. Specifically, participants in the mismatch and match condition reported higher levels ($M_{AI(mismatch)}$ = 4.84, $SD_{AI(mismatch)}$= 3.061), ($M_{AI(match)}$ = 3.99, $SD_{AI(match)}$= 3.048), in comparison to the participants in the own choice condition ($M_{ownchoice}$ = 2.64, $SD_{ownchoice}$ = 2.165; F(2, 200) = 10.687, p < .001, ηp^2 = 83.335). Regarding the mismatch question, participants in the AI

(mismatch) condition reported higher levels of preference mismatch ($M_{AI(mismatch)}$ = 6.33, $SD_{AI(mismatch)}$= 2.837) than participants in the human decision condition ($M_{ownchoice}$ = 3.78, $SD_{ownchoice}$= 2.575) and in the AI (match) condition ($M_{AI(match)}$ = 2.10, $SD_{AI(match)}$ = 1.680; F(2, 200) = 53.763, p < .001, ηp^2 = 308.989).

Satisfaction. A main effect of the three-level autonomy factor was observed on satisfaction (F(2, 200)=9.795, p<0.001). In addition, considering the multiple comparisons of Sidak, there was a significant difference between the participant's level of satisfaction in AI (match) vs. AI (mismatch) conditions (M_{match}=6.17 vs. $M_{mismatch}$=4.56, p<0.001). However, there is no significant difference between the satisfaction of a participant in their own choice and the AI (match) conditions (p=0.011).

Study 2 replicates the results from Study 1, i.e., consumers, when faced with a reduced (vs. increased) human autonomy resulting from AI replacement, impact customers' outcomes. In addition, this effect can be mitigated by AI recommendations that are aligned with consumers' preferences. Otherwise, the negative effect due to the reduced autonomy motivated by technology substitution is amplified.

Study 3: The Underlying Effect of Performance Expectancy

Participants and Design. 323 American Netflix users were recruited online through Mturk in exchange for a small nominal payment (53% men, M_{age}=38.83; SD_{age}=11.058). Study 3 employed a one-factor between-subject design with three experimental levels (own choice vs. AI (match) vs. AI (mismatch)).

Procedure, Stimuli, and Measures. Participants were randomly assigned to one of three conditions. Participants were asked to imagine that they were on Netflix, looking for what to watch next. Additionally, there were also informed that Netflix was developing a new AI tool to power content recommendations and that the tool would pop up on their screens with two options. In the own-choice condition, participants were told that they could choose one of the two options. Participants in the AI condition were asked to indicate which option they would like to pick. However, they were informed that to balance the number of viewers for each show and to guarantee the maximum quality of streaming, Netflix's new AI tool was designating them to watch the option that was different from the one that had been chosen by the last viewer using the tool. Nevertheless, they were, in fact, randomly assigned to the option which was aligned or against their preferences. The three scenarios were adapted from (Chen & Sengupta, 2014). Once again, to measure satisfaction, the same items from the previous study were used. Performance expectancy was captured with three items adapted from Venkatesh et al. (2003): "I find this Netflix AI tool useful in deciding what to watch", "Using this Netflix AI tool enables me to decide what to watch quickly", "Using this Netflix AI tool increases my efficiency in deciding what to watch". The same point scale was used as before. As for manipulation checks, the respondents

were asked to indicate if they had the freedom to decide between the two options or if the tool was assigned to them (1=Freedom to 9=Assigned).

Results and Discussion.

Manipulation Checks. One-way ANOVA results suggest that the level of autonomy manipulation worked as expected. Participants in the AI (mismatch) condition reported higher levels (M = 6.22, SD= 0.255) in comparison to participants in the AI (match) condition (M = 6.03, SD= 0.265), and in the own choice condition (M = 5.42, SD = 0.265; F(2, 320) = 2.561, p = .079, ηp^2 = 18.842).

Satisfaction. A main effect of the three-level autonomy factor was observed on satisfaction (F(2, 320)=4.267, p=0.015). Naturally, participants who were allowed to make their own choices ($M_{ownchoice}$=6.91) were more satisfied than those assigned to a movie that didn't match their preferences ($M_{mismatch}$=6.22; p=0.014). Nonetheless, there was no significant difference between the own choice condition and AI (match) ($M_{low\text{-}autonomy\ match}$=6.69; p=0.753).

Mediation Effect of Performance Expectancy. A mediation analysis using Hayes Process (model 4, Hayes, 2017; n=5000) was conducted. The mediator was performance expectancy, the independent variable was AI vs. human decision, and the dependent variable was satisfaction. The effects were tested using a bootstrap estimation approach with 5000 samples. Mediation results indicated the significant direct effect of AI vs. own choice on satisfaction (direct effect [c] = 0.1442; 95% CI: 0.0107 to 0.2776) and significant mediation effect of performance expectancy on the relationship of AI vs. own choice on satisfaction (indirect effect (a × b) = 0.2007; 95% CI: 0.0069 to 0.4067).

Study 3 suggests that consumers are willing to give up some control if AI can provide them with an option aligned with their choices (match). In other words, there is no significant difference in consumers' satisfaction when AI chooses what they are going to watch vs. their own choices. Nevertheless, as expected, this doesn't happen when the decision is not aligned with their preferences. In addition, this study also demonstrates that performance expectancy is a partial mediator of the relationship between AI vs. human decision on satisfaction.

4. General Discussion

Three experimental studies demonstrate autonomy-technology tension caused by AI. Our findings demonstrate that the reduced human autonomy resulting from an AI substitution has a negative impact on satisfaction. However, that effect is contingent on the nature of the streaming content. When there is a mismatch between consumers' preferences and AI, AI can backfire. In contrast, when there is a match with consumers' preferences, there is no effect on satisfaction resulting from a decrease in the autonomy

of the decision. In addition, this research explores the underlying mechanism of performance expectancy. By doing so, we provide important theoretical and managerial implications for the consumers' autonomy, choice, and AI tensions literature.

4.1 Theoretical Implications

This research deepens our understanding of AI algorithms in the streaming context by contributing to the literature in at least three significant ways. First, we add to research on consumers' interaction with AI as a decision-maker (Lee, 2018, Yalcin et al., 2022). Our findings extend previous work by showing a more nuanced understanding of how AI might impact consumers' outcomes, i.e., the detrimental impact of having AI on the decision-making process is contingent on the nature of the decision.

Our research also contributes to the expectation-confirmation theory (Dabholkar et al., 2000, Oh et al., 2022) by examining the mediation role of performance expectancy between the relationship between AI vs. human decision and consumers' satisfaction. Our results suggest that when AI is the decision-maker, it creates an autonomy-technology tension that reduces consumers' performance expectancy and, consequently, damages satisfaction. Naturally, consumers evaluate the benefits and costs of using AI devices using performance expectancy, and these factors are significant predictors of their emotions regarding their readiness to use AI (Lin et al., 2020).

Finally, our research bridges the expectation–confirmation theory (Dabholkar et al., 2000, Oh et al., 2022) and autonomy in AI (André et al., 2018; Wertenbroch et al., 2020) to investigate the autonomy-technology tensions, i.e., the dilemmas, tensions, or contradictions that may arise from the participation of AI on the decision making and result decrease in the consumers' autonomy. We expanded on previous work by illustrating how AI interference can cause autonomy-technological tensions.

4.2 Managerial Contributions

Our findings have important practical implications for using AI in the context of streaming. This research aims to provide guidance for the streaming landscape to employ AI, as little research has been conducted on the impact of AI on consumers' perceptions and experiences in a streaming platform (Spilker & Colbjørnsen, 2020). Hence, this study provides marketers with a new perspective on attracting potential streaming users through AI recommendations. AI has changed how consumers experience streaming and has proven to be a powerful and key tool (Yalcin et al., 2022). However, managers should be aware of the impact of a failure on its use. Therefore, a major challenge for streaming tech companies is balancing AI decisions and consumers' autonomy. Consumers are willing to lose part of their autonomy in streaming platforms, but in case of a mismatch with their preferences, it

impacts their experience in the platform. Hence, our results offer insights into how the use of algorithms for consumer-facing choices may affect customer perceptions of the business.

5. Limitations and Future Research

Despite our contributions, this study has significant shortcomings that can be addressed in future research. The first limitation of our work comprises the manipulation that participants came through. While in our study, the participants were informed that the company was using AI. In fact, not all consumers are aware that streaming platforms use it to provide such services. In addition, we considered that the decision-making process was exclusively made by humans vs. AI. Nevertheless, future research could explore the consumer impressions of decisions made by human-AI collaboration. Furthermore, our studies focused only on streaming platforms. However, future studies could explore the autonomy-technology tensions in a different digital context. Finally, an important avenue for future research is to explore how a failure of an experience with an AI algorithm.

References

André, Q., Carmon, Z., Wertenbroch, K., Crum, A., Frank, D., Goldstein, W., Huber, J., van Boven, L., Weber, B., & Yang, H. (2018). Consumer Choice and Autonomy in the Age of Artificial Intelligence and Big Data. *Customer Needs and Solutions*, *5*(1–2), 28–37. https://doi.org/10.1007/s40547-017-0085-8

Araujo, T., Helberger, N., Kruikemeier, S., & de Vreese, C. H. (2020). In AI we trust? Perceptions about automated decision-making by artificial intelligence. *AI & SOCIETY*, *35*(3), 611–623.

Chen, F., & Sengupta, J. (2014). Forced to be bad: The positive impact of low-autonomy vice consumption on consumer vitality. *Journal of Consumer Research*, *41*(4), 1089–1107.

Chung, M., Ko, E., Joung, H., & Kim, S. J. (2020). Chatbot e-service and customer satisfaction regarding luxury brands. *Journal of Business Research*, *117*, 587–595. https://doi.org/10.1016/J.JBUSRES.2018.10.004

Dabholkar, P. A., Shepherd, C. D., & Thorpe, D. I. (2000). A comprehensive framework for service quality: an investigation of critical conceptual and measurement issues through a longitudinal study. *Journal of Retailing*, *76*(2), 139–173.

Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, *48*(1), 24–42. https://doi.org/10.1007/s11747-019-00696-0

Deighton, K. (2021). *Can't Decide What to Stream? Netflix's New Feature Will Choose for You - WSJ*. The Wall Street Journal. https://www.wsj.com/articles/cant-decide-what-to-stream-netflixs-new-feature-will-choose-for-you-11619618402

Gursoy, D., Chi, O. H., Lu, L., & Nunkoo, R. (2019). Consumers acceptance of artificially intelligent (AI) device use in service delivery. *International Journal of Information Management*, *49*, 157–169. https://doi.org/10.1016/J.IJINFOMGT.2019.03.008

Hermann, E. (2021). Leveraging Artificial Intelligence in Marketing for Social Good—An Ethical Perspective. *Journal of Business Ethics*. https://doi.org/10.1007/s10551-021-04843-y

Hossain, M. A., & Quaddus, M. (2012). Expectation–confirmation theory in information system research: A review and analysis. *Information Systems Theory*, 441–469.

Huang, M. H., & Rust, R. T. (2018). Artificial Intelligence in Service. *Journal of Service Research*, *21*(2), 155–172. https://doi.org/10.1177/1094670517752459

Huang, M.-H., Rust, R., & Maksimovic, V. (2019). The feeling economy: Managing in the next generation of artificial intelligence (AI). *California Management Review*, *61*(4), 43–65.

Lee, M. K. (2018). Understanding perception of algorithmic decisions: Fairness, trust, and emotion in response to algorithmic management. *Big Data & Society*, *5*(1), 2053951718756684.

Lin, H., Chi, O. H., & Gursoy, D. (2020). Antecedents of customers' acceptance of artificially intelligent robotic device use in hospitality services. *Journal of Hospitality Marketing & Management*, *29*(5), 530–549. https://doi.org/10.1080/19368623.2020.1685053

Park, E. (2020). User acceptance of smart wearable devices: An expectation-confirmation model approach. *Telematics and Informatics*, *47*, 101318.

Puntoni, S., Reczek, R. W., Giesler, M., & Botti, S. (2021). Consumers and Artificial Intelligence: An Experiential Perspective. *Journal of Marketing*, *85*(1), 131–151. https://doi.org/10.1177/0022242920953847

Spilker, H. S., & Colbjørnsen, T. (2020). The dimensions of streaming: toward a typology of an evolving concept. *Media, Culture & Society*, *42*(7–8), 1210–1225. https://doi.org/10.1177/0163443720904587

van Selm, M., & Jankowski, N. W. (2006). Conducting online surveys. *Quality and Quantity*, *40*(3), 435–456.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, *27*(3), 425–478. https://doi.org/10.2307/30036540.

Wertenbroch, K., Schrift, R. Y., Alba, J. W., Barasch, A., Bhattacharjee, A., Giesler, M., Knobe, J., Lehmann, D. R., Matz, S., Nave, G., Parker, J. R., Puntoni, S., Zheng, Y., & Zwebner, Y. (2020). Autonomy in consumer choice. *Marketing Letters*, *31*(4), 429–439. https://doi.org/10.1007/s11002-020-09521-z

Yalcin, G., Lim, S., Puntoni, S., & van Osselaer, S. M. J. (2022). Thumbs Up or Down: Consumer Reactions to Decisions by Algorithms Versus Humans. *Journal of Marketing Research*. https://doi.org/10.1177/00222437211070016