

How does the lack of control trigger negative behavioral feedback from consumers?

——A study on the negative emotions caused by the lack of control based on the SOR framework

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Abstract:

As AI-powered service agents become increasingly embedded in customer service operations, understanding how these systems shape consumer experiences is critical. This study investigates the psychological pathway through which perceived control deficits in AI service interactions trigger consumer emotional responses. Drawing on the extended S–O–R framework, we conceptualize perceived control loss as the key stimulus (S) that activates attribution processes (O), leading to negative emotions (R) such as frustration, anger, or helplessness. A thorough literature review reveals that prior studies have largely overlooked how perceived control functions as a cognitive stimulus that intensifies consumer blame assignment and emotional reactions in automated service contexts. By clarifying this process, our research advances theoretical insights into AI–consumer interactions and offers a practical roadmap for managing emotional risks in automated service environments. The proposed model also highlights how consumers’ attribution of service failures—whether to the AI agent, system design, or brand—can shape the intensity and direction of their emotional responses. This study thereby enriches the understanding of consumer cognition–emotion pathways in AI services and provides guidance for balancing automation efficiency with user experience.

Keywords: AI service agents; perceived control; attribution; consumer emotion; S–O–R framework.

1. Introduction

In response to the growing prevalence of AI customer service, this study focuses on a critical yet underexplored psychological process: whether consumers' perceived lack of control in highly automated service contexts triggers negative emotional responses through a responsibility attribution pathway. Thus, the core research question (RQ) posed by this study is: Does perceived lack of control induce consumers' negative emotional responses via responsibility attribution pathways? Addressing this question not only responds to pressing challenges in managing consumer experience with AI service but also fills important gaps in linking perceived lack of control with emotional mechanisms in existing literature.

According to Gartner, by 2027, approximately one-quarter of organizations will adopt chatbots as their primary customer service channel. As businesses increasingly integrate AI-powered service agents into their operational infrastructures, consumer interactions with AI are steadily increasing. AI service agents have demonstrated significant advantages in enhancing process efficiency and reducing operational costs through automation. Existing studies indicate that AI chatbot systems can significantly reduce waiting times and labor costs in standardized services, while also enhancing response speed, availability, and issue resolution efficiency [1]. These findings highlight the "cost reduction and efficiency" logic of AI service on the enterprise side.

However, consumers do not always experience positive outcomes in actual AI service interactions; in some contexts, they may exhibit pronounced negative experiences. Academic studies and a large volume of online consumer complaints (such as social media posts and Black Cat Complaint platforms) indicate that in certain AI service scenarios, consumers often experience significant negative emotional reactions due to a lack of process control. In practice, examples like "unable to reach human agents" in phone services, rigid conversation flows on web or app interfaces, and limited preset options often lead users to gradually lose dominance over the service, resulting in strong perceived lack of control [2]. When forced to accept AI-determined processes, consumers frequently display emotions such as anger, helplessness, and anxiety [3], expressed through low satisfaction, negative comments, or complaint behaviors on social platforms. This emotional mechanism induced by perceived lack of control has become a critical risk point in managing AI customer experience, requiring systematic attention and in-depth exploration by academia and practice.

Against this backdrop, more consumers have voiced concerns about "sense of control." For instance, although AI

responds quickly, it is often "fast but ineffective"; whereas human agents, despite longer wait times, are more likely to gain emotional resonance due to stronger empathy and flexibility. This contradiction between "improved efficiency" and "deprived experience" reflects the structural tension between corporate operational logic and user emotional logic in service automation, becoming an unavoidable challenge in designing AI service systems.

In recent years, with the broad application of AI in customer service, a growing body of research has employed the Stimulus–Organism–Response (SOR) framework to explore how AI influences consumers' cognition, emotions, and behaviors. A careful review of relevant literature reveals that existing studies mainly conceptualize the stimulus (S) as observable features of AI systems—such as anthropomorphism, communication competence, perceived intelligence, and information quality—and examine how these features affect organism-level responses (O), including trust, satisfaction, empowerment, or engagement, ultimately shaping behavioral intentions like adoption, continued use, or brand loyalty [4, 5, 6]. Some studies further expand this paradigm by exploring how technological or social attributes of AI foster customer participation and value co-creation or by considering moderators such as AI readiness, privacy concerns, and individual needs for human interaction [4, 7, 8]. Overall, these studies have significantly advanced our understanding of how positive attributes of AI services elicit favorable consumer perceptions and intentions.

However, a rigorous synthesis of this body of work shows that most SOR-based studies have primarily focused on affective or attitudinal organism responses, with limited attention to more granular cognitive processes, such as how consumers attribute responsibility when AI interactions fall short of expectations. Although prior research explored differences in responsibility attribution for chatbot failures under mandatory versus voluntary use contexts, they positioned attribution within an expectation-disconfirmation perspective without explicitly embedding it as a core organism mechanism linking perceptions to emotional outcomes [2]. Moreover, while they acknowledged that such attributions could evoke emotions like anger or disappointment, they did not empirically examine these emotional reactions.

Notably, despite increasing automation potentially constraining consumers' ability to direct service processes, existing research seldom considers perceived lack of control as an independent stimulus or as a psychological trigger activating deeper cognitive and emotional responses. The prevailing focus remains on technological or interactional attributes that enhance trust or satisfaction, with insufficient inquiry into how increased automation

and reduced consumer agency produce perceived lack of control.

Against this backdrop, this study poses the following core research question:

Does perceived lack of control in AI-driven customer service interactions trigger negative emotional responses through responsibility attribution pathways?

To address this question, the present study investigates how consumers' perceived lack of control in AI-driven service interactions serves as a psychological stimulus (S), activating responsibility attribution processes (O) that subsequently give rise to discrete negative emotional responses (R) within an extended S–O–R framework. By embedding responsibility attribution pathways into this model, this research seeks to illuminate how perceived lack of control translates into negative emotional experiences, thereby deepening theoretical understanding of consumer psychological processing in AI service contexts and providing actionable insights for managing AI-driven customer experiences.

Based on this critical review, this study identifies an underexplored mechanism: consumers' perceived lack of control in highly automated AI service interactions functions as a salient stimulus (S), triggering responsibility attributions (O), which in turn give rise to discrete negative emotional responses (R) such as anger, frustration, or helplessness. By embedding this responsibility attribution pathway within the SOR framework, this study aims to illuminate how perceived lack of control translates into emotional experiences, thereby deepening theoretical understanding of consumers' psychological processing in AI service contexts.

2. Literature References

2.1 Perceived Lack of Control as the Stimulus (S)

Perceived control captures how strongly individuals believe they can influence outcomes, reflecting their sense of having the necessary means to shape events [9]. This concept is foundational across psychology and is often examined in service contexts, especially in failure recovery scenarios where consumer perceptions of influence are directly tied to satisfaction and trust [10]. In traditional service settings, higher perceived control has been linked to increased feelings of empowerment and reduced frustration.

However, in AI-driven service environments—particularly automated customer service chatbots—these dynamics are markedly different. Due to rigid dialogue flows and system-controlled escalation paths, customers frequently find

themselves unable to adjust conversation pacing or steer interaction content [11]. Such pre-scripted systems diminish users' sense of agency—their subjective experience of control over actions and their consequences—which in these contexts directly translates into reduced perceived control. Existing studies on human-computer interaction emphasize that maintaining perceived control is central to positive user experiences [12], yet research explicitly exploring perceived lack of control as a primary stimulus in AI service settings remains limited. This underlines the importance of systematically investigating how reduced perceived control in automated contexts functions as a distinctive external stimulus (S) shaping consumer experiences.

2.2 Attribution as the Organism Process (O)

When customers perceive a lack of control, they naturally engage in cognitive processes to interpret and explain the source of negative experiences. Attribution theory suggests that individuals seek to assign responsibility to make sense of why certain outcomes occurred. This process of responsibility assessment plays a central role in shaping subsequent psychological states.

Within AI service encounters, assigning responsibility is especially prominent. Customers might hold the AI system's technical flaws, broader system architecture, or the brand's strategic decisions accountable when failures occur. Research has shown that in automated service failures, customers often direct blame toward the company rather than solely toward the technology, suggesting that responsibility judgments reach beyond evaluations of mere technical adequacy [13]. While some researchers have explored how forced versus voluntary chatbot interactions influence responsibility attribution patterns, they largely treated responsibility attribution as a peripheral consequence of unmet expectations, rather than as a core organism-level process linking perceived lack of control to emotional outcomes [3]. Thus, despite recognition that responsibility attribution occurs in AI service failures, existing literature rarely positions it explicitly as a mediating psychological mechanism between perceived lack of control and consumer emotions.

2.3 Emotional Responses as the Response (R)

Emotional responses are the final outcome in the SOR framework and have been a focus in service research for decades. Negative service encounters often evoke anger, helplessness, or frustration, which in turn influence behaviors like complaining or switching providers [14]. In automated service contexts, these emotional reactions are similarly pronounced. However, many studies stop at de-

scribing general affective responses without systematically connecting them to preceding cognitive processes like attribution.

Importantly, literature on responsibility attribution suggests that where consumers direct blame significantly alters emotional outcomes. If failures are attributed to controllable external agents—such as deliberate brand policies to automate service—anger is more likely. Conversely, if perceived as stemming from uncontrollable system constraints, emotions like helplessness or resignation may dominate [2]. Despite these insights, few studies have integrated these emotional consequences into a cohesive SOR chain specifically anchored in perceived control deficits and attribution.

2.4 Summary of Gaps

In sum, while prior work has robustly examined individual elements of this chain—perceived control, attribution tendencies, and emotional consequences—most studies treat these constructs in isolation. There remains a critical gap in explicitly modeling how perceived lack of control in AI service interactions trigger attribution processes, which in turn generate specific negative emotions. This omission limits our understanding of the full psychological mechanism by which automated service environments impact consumer well-being. Addressing this gap, the present study adopts a focused SOR framework where perceived control deficits serve as the stimulus (S), attribution processes as the organism response (O), and negative emotions as the final outcome (R), thereby offering a more comprehensive perspective on consumer reactions in AI-mediated service failures.

3. Conceptual Framework

Extensive research has shown that following service failures, users typically engage in responsibility attribution processes to understand the reasons for these failures and adjust their subsequent interactions with the company accordingly [15]. From a self-serving bias perspective, users are more inclined to claim responsibility for successes while attributing failures to external circumstances or other agents [16]. Studies in service robot contexts similarly indicate that this self-serving tendency remains pronounced even in highly automated environments: users facing failures with service robots predominantly attributed negative outcomes to external factors, whereas they

were more likely to credit themselves for successes [17].

However, existing studies also reveal that the direction of responsibility attribution is not fixed but is influenced by users' perceived lack of control during service interactions. Prior studies indicate that when customers perceive a greater sense of control, they tend to link outcomes more directly to their own actions, which heightens feelings of responsibility and boosts satisfaction [18]. Conversely, under low perceived control, responsibility attribution still occurs but tends to shift toward external agents such as service staff or the brand itself, often triggering stronger dissatisfaction and complaints. This pattern has also been corroborated in AI chatbot contexts, where diminished freedom during interactions (reflecting lower perceived control) markedly increased the likelihood of users attributing service shortcomings to AI constraints or brand policies, ultimately reducing favorable evaluations [3].

Building on these insights, it can be further inferred that in highly automated AI customer service settings, users—due to their limited ability to influence the process—are prone to experiencing perceived lack of control. When encountering service failures or unmet expectations, they are thus likely to attribute responsibility either to the AI itself (e.g., perceived lack of intelligence or rigid conversational flows) or to the brand's strategic choices (such as employing AI to replace human agents for efficiency), forming pronounced external responsibility attributions at the cognitive level. These external attributions can subsequently give rise to discrete negative emotions, such as anger (when users believe the brand or AI should have performed better) or helplessness and anxiety (when issues are perceived as stemming from complex, uncontrollable AI systems).

Accordingly, this study builds on the existing “control–attribution–outcome” chain by proposing a streamlined S–O–R framework tailored to highly automated service environments. It conceptualizes perceived lack of control as the core psychological stimulus (S), specifies external responsibility attributions—differentiating between attributions to AI capabilities and to brand decisions—as the key organism-level cognitive mechanism (O), and refines emotional responses into discrete negative emotions (R) such as anger and helplessness. This model not only extends current understandings of the responsibility attribution–emotion mechanism in AI-driven service contexts but also offers a theoretical basis for designing automated service systems that better preserve customers' emotional experiences and relationship quality (see Fig. 1).

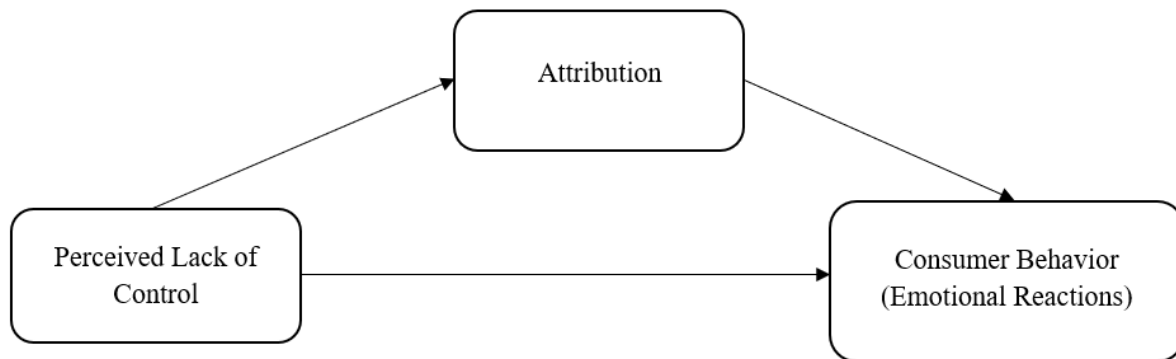


Fig. 1 Conceptual Framework

4. Discussion

This study develops a conceptual model to elucidate how perceived lack of control in AI-driven customer service interactions triggers responsibility attributions and subsequently intensifies negative emotional reactions. By critically synthesizing the S–O–R literature, it repositions perceived lack of control as the primary stimulus (S), highlights responsibility attribution as the organismic mechanism (O), and identifies negative emotions such as anger, frustration, and anxiety as the ultimate response (R). This perspective extends existing work that often centers on AI attributes—like anthropomorphism or personalization—and trust or satisfaction outcomes. Instead, it underscores the central role of subjective psychological triggers. It also refines responsibility attribution research in AI service failures by explicitly differentiating responsibility assignments to the AI agent, system design, or brand operations, thereby revealing how emotions may escalate along this chain of responsibility attribution.

Practically, the model offers strategic insights for businesses seeking to reconcile efficiency gains with consumer experience. While AI systems are deployed to automate workflows, reduce costs, and increase responsiveness, they may simultaneously restrict user agency and intensify perceptions of being trapped in rigid processes. This research highlights the risks of perceived lack of control, showing how it can fuel responsibility attributions that amplify negative emotional experiences during service interactions.

Moreover, the conceptual approach contributes methodologically by paving the way for future empirical applications. By clearly mapping relationships between perceived lack of control, responsibility attribution targets, and emotional responses, it provides a robust structure that can guide experiments, surveys, or large-scale textual analyses. This integrated S–O–R–Responsibility Attribution model serves both as a theoretical tool and a practical

diagnostic framework for managing emotional risk in AI service design.

Future studies could employ controlled experiments to systematically vary factors such as wait time, escalation options, and language style, thereby testing the causal pathways identified in this model. Researchers might also explore responsibility attribution diffusion, investigating how dissatisfaction initially directed at the AI can broaden in scope or intensity. Another important avenue would be to examine how these negative emotions, shaped by perceived lack of control and responsibility attributions, ultimately impact brand trust and loyalty, thereby extending the emotional pathway to behavioral outcomes. Further, it would be valuable to study how user characteristics—such as need for control or familiarity with AI—moderate these effects. Additionally, consumers often struggle to correctly identify whether they are interacting with a human or an AI (or even confuse simple rule-based systems for advanced AI), which could shape responsibility attribution dynamics and emotional responses. Investigating this agent identification bias as a moderator would further enrich understanding of user experiences.

By focusing on the “AI-driven after-sales service” context—where rigid, automated workflows commonly undermine perceived consumer agency—this study provides a timely exploration of how perceived lack of control drives responsibility attribution and emotional escalation. It enriches S–O–R research by explicitly linking perceived lack of control to structured responsibility attribution pathways, offering a deeper theoretical lens to interpret negative consumer emotions in automated services. This work thereby advances both academic modeling and provides actionable insights for organizations seeking to balance operational efficiency with consumer emotional experience.

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