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Article

Impact of user experience on user loyalty in generative artificial intelligence: A case study of ChatGPT

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Abstract: This study aims to examine the pathways through which the user experience (UX) of ChatGPT, a representative of generative artificial intelligence, affects user loyalty. Additionally, it seeks to verify whether ChatGPT's UX varies according to a user's need for cognition (NFC). This research proposed and examined how ChatGPT' UX affect user engagement and loyalty and used mediation analysis using PROCESS Macro Model 6 to test the impact of UX on web-based ChatGPT loyalty. Data were collected by an online marketing research company. 200 respondents were selected from a panel of individuals who had used ChatGPT within the previous month. Prior to the survey, the study objective was explained to the respondents, who were instructed to answer questions based on their experiences with ChatGPT during the previous month. The usefulness of ChatGPT was found to have a significant impact on interactivity, engagement, and intention to reuse. Second, it was revealed that evaluations of ChatGPT may vary according to users' cognitive needs. Users with a high NFC, who seek to solve complex problems and pursue new experiences, perceived ChatGPT's usefulness, interactivity, engagement, and reuse intentions more positively than those with a lower NFC. These results have several academic implications. First, this study validated the role of the UX in ChatGPT. Second, it validated the role of users' need for cognition levels in their experience with ChatGPT.

Keywords: generative AI; ChatGPT; user experience; engagement; need for cognition

1. Introduction

Rapid advancements in artificial intelligence (AI) have sparked various innovations in everyday life (Jeon, 2024). Among the diverse implementations of AI, generative AI has garnered growing interest. Generative AI systems, known for their ability to create content based on data, can generate text, images, music, and other types of content (Casteleiro-Pitrez, 2024). In line with this increasing interest, major technology companies worldwide have begun introducing generative AI competitively (Casheekar et al., 2024). OpenAI's ChatGPT, introduced in November 2022, is recognized as one of the most prominent generative AI systems (Casheekar et al., 2024). As a large language model, ChatGPT is known for its natural language generation capabilities that enable seamless interactions with users (Paul et al., 2023; van Dis et al., 2023). ChatGPT understands the user input and generates appropriate responses, providing an experience akin to human conversations (Casheekar et al., 2024; Paneru et al., 2024). In March 2023, OpenAI introduced GPT-4, which possesses advanced language comprehension and generation abilities, thereby enhancing the user experience (UX) (Wulandari et al., 2023).

As interest in ChatGPT has grown, academic focus on designing platforms to enhance ChatGPT's UX has intensified (Davenport, 2020). Given that user interaction is a primary function of generative AI systems such as ChatGPT, ChatGPT's UX is

increasingly regarded as a concept that requires strategic management. Currently, the utility of ChatGPT has been demonstrated in various fields, including personal assistance, customer service, education, and healthcare. This utility translates into positive feedback for ChatGPT through improved UX. ChatGPT can provide accurate answers to complex questions, understand user intentions, and predict responses, thereby continuously improving the quality of user interaction. Positive UXs with ChatGPT not only increase the likelihood of continued use and recommendation but also play a crucial role in enhancing user adoption and retention rates. However, research examining the impact of ChatGPT's UX, comprising usefulness and interactivity, on ChatGPT evaluations is still in its early stages (Guzman and Lewis, 2020). Therefore, verifying the influence of ChatGPT's UX on user engagement and reuse intentions is necessary.

The objective of this study is to examine the pathways through which the UX of ChatGPT, as a representative of generative AI, affects user loyalty. To achieve this, this study differentiates ChatGPT's UX into usefulness and interactivity, hypothesizing that users' perceptions of ChatGPT's usefulness and interactivity lead to increased engagement and higher reuse intentions. Additionally, this study seeks to verify whether ChatGPT's UX varies according to a user's need for cognition (NFC). NFC is conceptualized as an individual's intrinsic motivation to solve complex problems in cognitive information processing systems (Cacioppo and Petty, 1982). Users are likely to require cognitive resources to learn and accept ChatGPT, implying the necessity of intrinsic motivation to utilize these cognitive resources. Based on this discussion, this study hypothesizes that evaluations of ChatGPT's UX will differ according to users' levels of NFC and aims to verify this hypothesis.

2. Literature review and hypothesis

2.1. Generative AI—ChatGPT

AI is defined as a computer program, algorithm, or system developed to mimic human intelligence and behavior (Huang and Rust, 2018). It has evolved through the convergence of technologies such as machine learning (ML), natural language processing (NLP), deep learning (DL), big data, and robotics (Syam and Sharma, 2018). Among the various forms of AI, generative AI has garnered growing interest. Generative AI systems create outputs, such as text or images, based on user-provided prompts (Casteleiro-Pitrez, 2024; Wang et al., 2023). With the development of social media and the widespread distribution of various types of content, generative AI is increasingly being used as a tool for creating new content. By inputting prompts into generative AI, new content, such as text, images, and videos, can be produced through DL-based algorithms. The concept of "generation" goes beyond recognizing data and outputting results; it involves creating entirely new content that did not previously exist (Casteleiro-Pitrez, 2024; Pizzi et al., 2023). As cloud computing and social media become more ubiquitous, the volume of data is increasing and computer specifications are advancing, leading to enhanced learning capabilities of generative AI.

Among the numerous companies showcasing generative AI worldwide, OpenAI's ChatGPT has garnered the most attention (Paul et al., 2023; van Dis et al., 2023). Since its introduction in November 2022, ChatGPT has registered one million

users in just five days and surpassed 100 million users within a month. For comparison, it took Netflix 3.5 years, Airbnb 2.5 years, Twitter 2 years, Facebook 10 months, and Instagram 2.5 months to exceed one million users. ChatGPT is a generative AI chatbot that utilizes NLP technology based on a generative model. ChatGPT, which learns from vast amounts of text data, can engage in conversations on various topics, providing consistent and contextually appropriate responses to user queries. The more specific the user's question, the higher is the likelihood of receiving a relevant answer (Casteleiro-Pitrez, 2024; Pizzi et al., 2023; Wang et al., 2023). This capability stems from the nature of ChatGPT as a conversational AI tool. Unlike traditional conversational platforms that provide answers within a pre-learned dataset, ChatGPT generates and infers language through DL, thereby enabling interactive communication (Paul et al., 2023; Wulandari et al., 2023).

Currently, ChatGPT extends beyond NLP tasks, such as translation, document summarization, and answering questions, to perform tasks such as Excel and Python coding. OpenAI released the GPT-3.5 model, developed through reinforcement learning from human feedback, which further enhanced its conversational abilities. In March 2023, OpenAI introduced GPT-4, a large-scale multimodal model capable of generating text from both image and text inputs, while reducing hallucinations.

2.2. ChatGPT's UX

Although generative AI can be approached from a technical perspective based on AI technologies, its user acceptance hinges on enhancing the UX. To improve user satisfaction during interactions with generative AI, elevating UX is essential to improve the UX (Paneru et al., 2024). UX encompasses the various types of experiences encountered throughout a product, system, or service journey, including emotional, perceptual, physical, and mental responses (Norman, 2003). Initially introduced to explore human–computer interaction, UX has since expanded to fields such as cognitive science, design, and, more recently, service systems (Hassenzahl and Tractinsky, 2006; Hinderks et al., 2019; Norman, 1998, 2003).

UX is often considered similar to a user-centered design (UCD). Both concepts emphasize the centrality of users in the design process, but differ conceptually. UCD focuses on creating user-friendly designs to meet user needs, whereas UX considers the emotional and attitudinal aspects before, during, and after product use (Hinderks et al., 2019). Therefore, UX encompasses not only the functionality and usefulness of a product but also the cognitive and emotional responses triggered by all contexts of product.

Generative AI provides useful content by analyzing user language or text and responding to appropriate messages (Paneru et al., 2024). Through reinforcement learning, generative AI is programmed to respond to user-intended messages, necessitating the strategic management of usefulness and interactivity in UX (Dehnert and Monge, 2022; Paul et al., 2023). Specific descriptions of the usefulness and interactivity of generative AI platforms are as follows (Gao et al., 2022):

Usefulness is defined as the ability of users to solve practical problems It assesses the extent to which generative AI can address user issues (Jeon, 2023a). Users must perceive generative AI as both practical and useful for acceptance. Interactivity is

defined as the degree to which generative AI responds promptly and accurately to user intentions (Jeon, 2021, 2023b). Generative AI provides an experience similar to reality by recognizing user prompts and responding accordingly. Effective and consistent interaction during conversations with generative AI fosters interactivity, ultimately enhancing user engagement.

Previous studies indicated that a high UX in generative AI increases user engagement. This suggests that the usefulness and interactivity of ChatGPT, a generative AI tool, can enhance the UX (O'Brien and Toms, 2008; Paneru et al., 2024; Paul et al., 2023; Vo et al., 2022). Jeon (2023) revealed that interactions with useful XR applications can increase user engagement and lead to strong loyalty. In addition, continuous interaction with AI avatars in XR environments fosters identification and engagement with XR platforms (Jeon, 2021). Based on this discussion, it can be anticipated that users who perceive web-based ChatGPT as useful and interactive will not only experience higher engagement but also develop loyalty and intention for continuous use (Huang et al., 2021; Jiang et al., 2022). Based on this discussion, the following hypothesis is proposed:

H1: The usefulness of ChatGPT positively affects reuse intentions through the mediation of interactivity and engagement.

2.3. Need for cognition

Despite the introduction of generative AI based on DL and ML, several users remain hesitant to adopt such technologies. According to the technology adoption cycle theory, the intention to adopt new technologies varies based on individual characteristics. This is because the cognitive information processing involved in adopting innovative technologies can differ according to individual levels of NFC. NFC is conceptualized as an individual's intrinsic motivation to enjoy thinking and solving complex problems independently (Cacioppo and Petty, 1982). This reflects the psychological tendency to focus on intrinsic enjoyment during self-information processing and active cognitive activities (Haugtvedt et al., 1992).

Individuals with a high NFC prefer systematic information processing based on central cues to logically analyze problems. Consequently, they focus on evaluating the attributes of each product during the evaluation process. In contrast, individuals with a low NFC prefer heuristic information processing. They tend to rely on the opinions of others or peripheral cues because they only partially understand external information. During the product evaluation process, they focus on external attributes (such as advertising models or images) instead of product attributes. Notably, an individual's NFC is not fixed and can vary depending on the surrounding context or situation. Even those with a high NFC may rely on peripheral cues when faced with information overload or when solving problems involuntarily, thereby bypassing thorough cognitive processing (Wheeler et al., 2005). Conversely, those with a low NFC might engage in elaborate thinking when confronted with highly involving tasks (Axsom et al., 1987; Evans and Petty, 2003; Lassiter et al., 1996).

Based on this discussion, the level of NFC is expected to play a significant role in the evaluation of ChatGPT. Consumers with a high NFC are likely to have strong curiosity about new experiences and a higher propensity for risk-taking to solve

difficult problems. As mentioned previously, consumers must perceive high relative advantages and low complexity in their use of new technologies. Therefore, adopting ChatGPT requires strong motivation to solve new problems and a high propensity for risk-taking regarding uncertain technology. Users with a high NFC are expected to exhibit greater curiosity about new experiences or tasks, resulting in a higher willingness to actively use ChatGPT, a representative of generative AI. On the other hand, users with a low NFC are expected to have a relatively low motivation to adopt ChatGPT and exhibit a conservative attitude toward its technology, owing to a lack of cognitive resources to explore its utility (Hollender et al., 2010).

In summary, adopting ChatGPT based on DL and ML requires sufficient cognitive resources and a strong motivation to utilize these resources. Therefore, users with a high NFC are expected to have a strong motivation to explore ChatGPT, perceiving higher usefulness and interactivity, leading to increased engagement and continued use intentions. Conversely, users with a low NFC are expected to perceive lower levels of usefulness, interactivity, engagement, and loyalty toward ChatGPT than those with a high NFC. Based on this discussion, the following hypothesis is proposed:

H2: Users with a high NFC will perceive higher levels of usefulness, interactivity, engagement, and loyalty toward ChatGPT than those with a low NFC.

3. Scale and data collection

The measurement items used in this study are as follows: Usability was defined as the pragmatic and functional performance of a ChatGPT and was measured by three items: “It is practical,” “The functions are useful,” and “It is used for appropriate purposes.” Interaction was defined as predictability and meeting expectations and was measured by three items: “ChatGPT responds as I desire,” “It can interact with me,” and “It understands my intentions well” (Jeon, 2023a). Engagement was defined as the quality of user immersion ChatGPT: “I was immersed while using ChatGPT,” “I lost track of time while using it,” and “I concentrate while using it.” Intention to reuse was defined as a user’s intention to maintain relationship with ChatGPT: “I intend to continue using ChatGPT in the future,” “Even if other generative Ais exist, I will continue to use ChatGPT,” and “If possible, I will reuse ChatGPT” (Huang et al., 2021; O’Brien and Toms, 2008). Finally, NFC was defined as individual’s intrinsic motivation to enjoy thinking and solving complex problems independently: “I enjoy learning new solutions to problems,” “I tend to solve complex problems well,” “I enjoy learning new solutions to any problem,” and “I am proactive in tasks that require a lot of thought.”

The data were collected by an online marketing research company. Respondents were selected from a panel of individuals who had used ChatGPT within the previous month. Prior to the survey, the purpose of the study was explained to the respondents, who were instructed to answer questions based on their experiences with ChatGPT during the previous month. The author explained the purpose of the research to the participants and informed them that they could withdraw their participation at any time, all personal data would be kept confidential according to the Korean Statistical Law, and all data would be destroyed after one year. All items were measured using a

7-point Likert scale. This research proposed and examined how ChatGPT' UX affect user engagement and loyalty and used mediation analysis using PROCESS Macro Model 6 to test the impact of UX on web-based ChatGPT loyalty.

Data were collected from 200 respondents and analyzed. Regarding respondent characteristics, 100 females (50.0%) and 100 males (50.0%) were present. The age distribution showed that 70 respondents (35.0%) were in their 20s, 70 respondents (35.0%) were in their 30s, and 60 respondents (30.0%) were in their 40s.

4. Results

4.1. Reliability and validity

The reliability analysis results indicated strong internal consistency across the measured constructs. Specifically, the reliability coefficients (Cronbach's alpha) for the constructs were as follows: usefulness (α = 0.873), interactivity (α = 0.876), engagement (α = 0.924), and loyalty (α = 0.842). These high coefficients suggest that the items within each construct consistently measure the same underlying concepts. Correlation analysis also revealed significant relationships among the variables, confirming their interrelatedness (**Table 1**).

Table 1. Correlation analysis.

	Usefulness	**Interactivity**	**Engagement**	**Loyalty**
Usefulness	1	0.532**	0.637**	0.718**
Interactivity		1	0.606**	0.604**
Engagement			1	0.695**
Loyalty				1

[1] **$p < 0.001$.

4.2. Impact of ChatGPT's usefulness on loyalty

This study hypothesized that the perception of ChatGPT's usefulness leads to increased interactivity, engagement, and loyalty (**Table 2**). To test this hypothesis, a dual mediation analysis was performed. The results demonstrated that ChatGPT's perceived usefulness significantly impacted interactivity (β = 0.534, $p < 0.001$), engagement (β = 0.372, $p < 0.001$), and loyalty (β = 0.415, $p < 0.001$). Additionally, interactivity had a significant effect on both engagement (β = 0.438, $p < 0.001$) and loyalty (β = 0.193, $p < 0.001$), and engagement significantly influenced loyalty (β = 0.313, $p < 0.001$). These findings support Hypothesis 1, confirming that the perceived usefulness of ChatGPT drives user engagement and loyalty through increased interactivity (**Figure 1**).

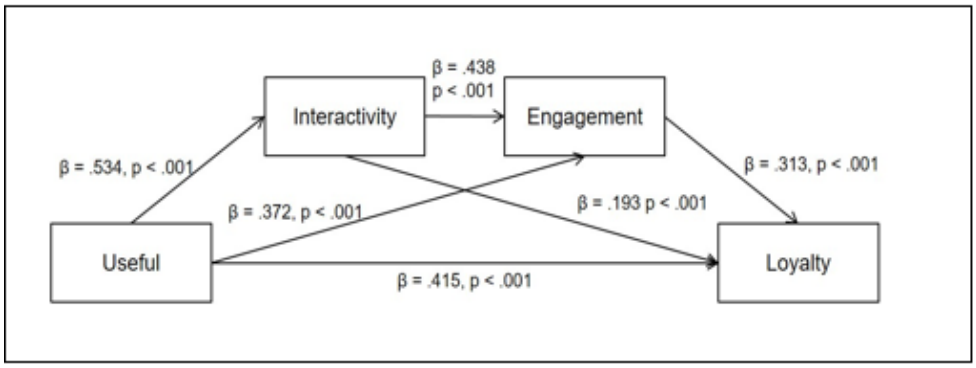

Figure 1. Mediation analysis.

Table 2. Mediation analysis using process macro model 6.

Outcome Variable: interactivity							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
useful	0.6263	0.5319	0.0709	8.8389	0.0000	0.4866	0.7661
Outcome variable: Engagemt							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
useful	0.6321	0.4387	0.0853	7.4092	0.0000	0.4639	0.8004
interactivity	0.4556	0.3723	0.0725	6.2882	0.0000	0.3127	0.5985
Outcome variable: Loyalty							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
useful	0.4968	0.4154	0.0692	7.1819	0.0000	0.3604	0.6332
interactivity	0.1961	0.1931	0.0569	3.4454	0.0000	0.0839	0.3084
Engagement	0.2601	0.3134	0.0511	5.091	0.0000	0.1593	0.3608
Outcome variable: Loyalty							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
useful	0.8582	0.7176	0.0592	14.4978	0.0000	0.7415	0.9750
Indirect effect of *X* on *Y*							
	Effect	**BootSE**	**BootLLCI**	**BootULCI**			
TOTAL	0.3022	0.0430	0.2224	0.3909			
Ind1	0.1027	0.0527	0.0163	0.2188			
Ind2	0.1375	0.0484	0.0529	0.2385			
Ind3	0.0621	0.0198	0.0272	0.1042			

4.3. Differences in ChatGPT user experience based on need for cognition

To test Hypothesis 2, an analysis of variance (ANOVA) was performed. The results exhibited significant differences in the perceptions of usefulness, interactivity, engagement, and loyalty based on the users' levels of NFC (**Table 3**). Specifically, users with a high NFC perceived ChatGPT's usefulness (M = 5.84), interactivity (M = 5.37), engagement (M = 5.27), and loyalty (M = 5.59) more positively than those with a low NFC (useful: M = 5.20, interactivity: M = 4.41, engagement: M = 4.21, and loyalty: M = 4.75), with all comparisons yielding highly significant results (F-values ranging from 29.576 to 53.561, p < 0.001). These findings suggest that users with a

higher NFC evaluate ChatGPT more favorably across all the examined dimensions (**Figure 2**).

Table 3. One-way Anova.

Source	Dependent variable	Type III Sum of Squares	df	Mean Square	*F*	
Correct Model	Useful	20.327a	1	20.327	29.576	0.000
	Interactivity	46.176b	1	46.176	53.561	0.000
	Engagement	55.284c	1	55.284	40.618	0.000
	Loyalty	35.311d	1	35.311	37.106	0.000
Intercept	Useful	6024.594	1	6024.594	8765.812	0.000
	Interactivity	4733.918	1	4733.918	5491.041	0.000
	Engagement	4454.495	1	4454.495	3272.740	0.000
	Loyalty	5294.389	1	5294.389	5563.566	0.000
nfcgroup	Useful	20.327	1	20.327	29.576	0.000
	Interactivity	46.176	1	46.176	53.561	0.000
	Engagement	55.284	1	55.284	40.618	0.000
	Loyalty	35.311	1	35.311	37.106	0.000
Error	Useful	136.082	198	0.687		
	Interactivity	170.699	198	0.862		
	Engagement	269.496	198	1.361		
	Loyalty	188.420	198	0.952		

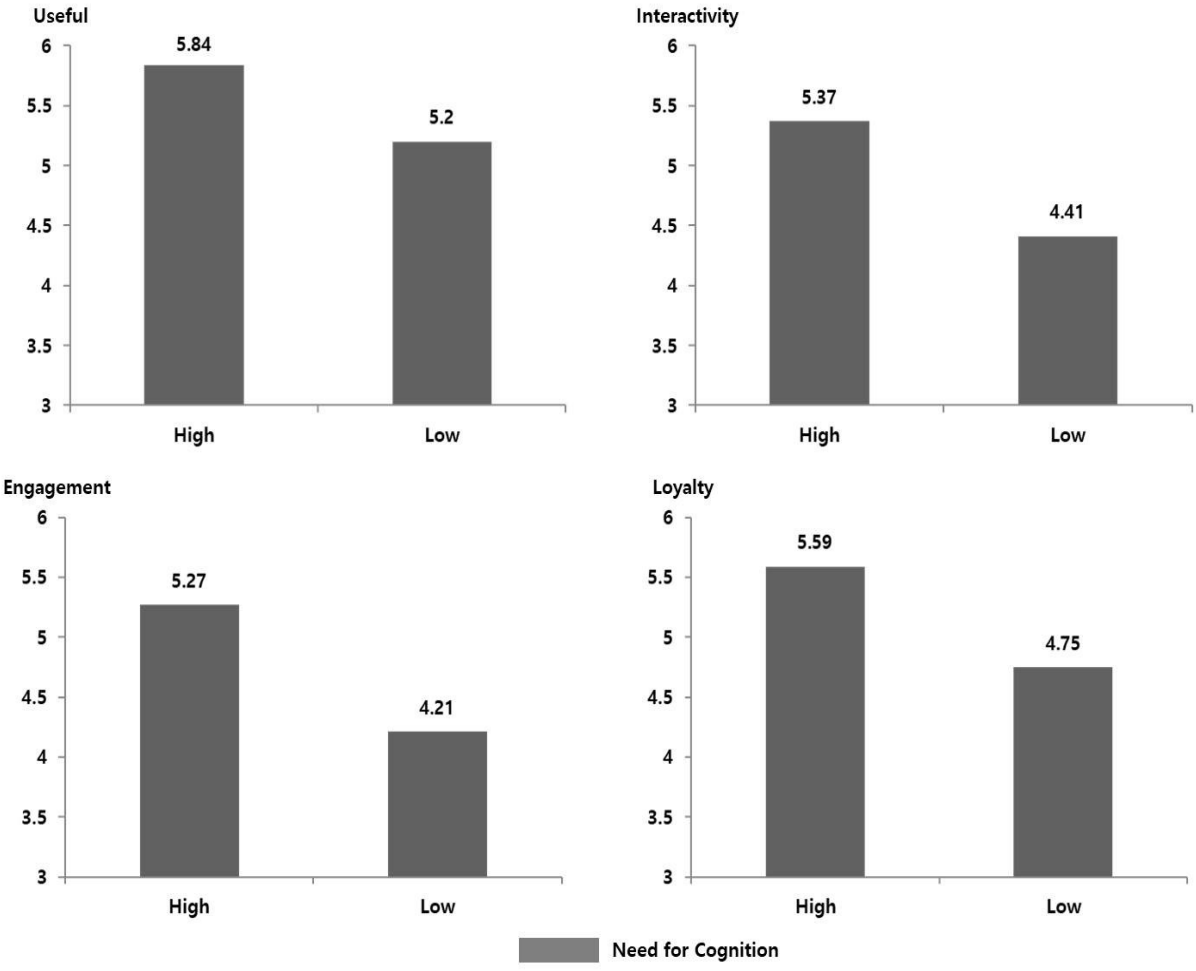

Figure 2. Differences in ChatGPT UX based on NFC.

4.4. Differences in the impact of ChatGPT's usefulness on loyalty based on need for cognition

This study further investigated whether the pathways through which ChatGPT's perceived usefulness impacts loyalty differ according to users' NFCs. For users with a high NFC, the analysis revealed that perceived usefulness significantly influenced interactivity ($\beta = 0.486$, $p < 0.001$), engagement ($\beta = 0.566$, $p < 0.001$), and loyalty ($\beta = 0.454$, $p < 0.001$). While interactivity significantly impacted engagement ($\beta = 0.250$, $p < 0.05$), it did not significantly affect loyalty ($\beta = 0.095$, $p = 0.240$). Engagement, however, significantly influenced loyalty ($\beta = 0.337$, $p < 0.001$). This indicates that for high NFC users, engagement mediates the relationship between interactivity and loyalty (**Table 4**, **Figure 3**).

Table 4. Mediation analysis using process macro model 6—NFC high.

Outcome Variable: Interactivity							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
Useful	0.6142	0.4869	0.1181	5.1989	0.000	0.3794	0.8490
Outcome variable: Engagemt							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
Useful	0.9154	0.5661	0.1381	6.6262	0.000	0.6408	10.1900
Interactivity	0.3210	0.2504	0.1095	2.9313	0.0043	0.1033	0.5387
Outcome variable: Loyalty							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
Useful	0.5753	0.4549	0.1195	4.8141	0.000	0.3377	0.8129
Interactivity	0.0955	0.0953	0.0808	1.1818	0.2406	-0.0652	0.2562
Engagement	0.2636	0.3371	0.0759	3.4737	0.000	0.1127	0.4145
Outcome variable: Loyalty							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
Useful	0.9273	0.7332	0.0922	10.0573	0.000	0.7440	1.1105
Indirect effect of X on Y							
	Effect	**BootSE**	**BootLLCI**	**BootULCI**			
Total	0.2783	0.0702	0.1529	0.4282			
Ind1	0.0464	0.0768	−0.0540	0.2302			
Ind2	0.1908	0.0877	0.0280	0.3675			
Ind3	0.0411	0.0269	0.0037	0.1067			

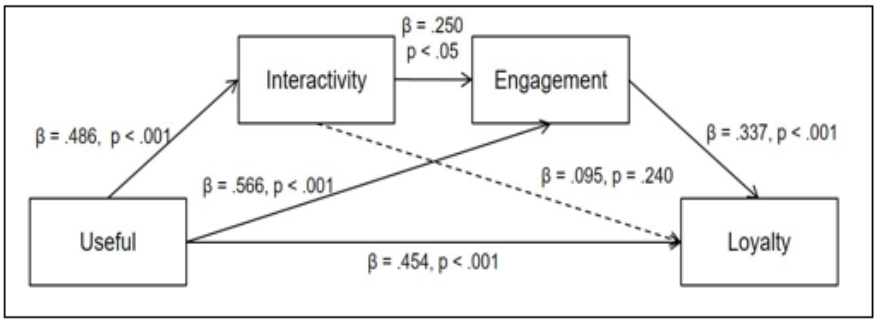

Figure 3. Mediation analysis—NFC high.

Conversely, for users with a low NFC, perceived usefulness significantly impacted interactivity ($\beta = 0.407$, $p < 0.001$), engagement ($\beta = 0.331$, $p < 0.001$), and loyalty ($\beta = 0.400$, $p < 0.001$). Interactivity also significantly influenced both engagement ($\beta = 0.365$, $p < 0.001$) and loyalty ($\beta = 0.250$, $p < 0.001$), and engagement significantly influenced loyalty ($\beta = 0.252$, $p < 0.05$). These results suggest that for low NFC users, both interactivity and engagement are important pathways through which perceived usefulness translates into loyalty (**Table 5**, **Figure 4**).

Table 5. Mediation analysis using process macro model 6—NFC low.

Outcome Variable: Interactivity							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
Useful	0.4112	0.4075	0.0883	4.6582	0.0000	0.2363	0.5862
Outcome variable: Engagemt							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
Useful	0.4109	0.3315	0.1059	3.8778	0.00002	0.2008	0.6209
Interactivity	0.4485	0.3652	0.1050	4.2722	0.0000	0.2404	0.6566
Outcome variable: Loyalty							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
Useful	0.4450	0.4006	0.0861	5.1670	0.0000	0.2743	0.6158
Interactivity	0.2755	0.2502	0.0865	3.1863	0.0019	0.1041	0.4469
Engagement	0.2266	0.2528	0.0733	3.0915	0.0025	0.0813	0.3719
Outcome variable: Loyalty							
	Coeff	**Standardized coeff**	**SE**	***t***	***p***	**LLCI**	**ULCI**
Useful	0.6932	0.6239	0.0832	8.3357	30000	0.5284	0.8580
Indirect effect of *X* on *Y*							
	Effect	**BootSE**	**BootLLCI**	**BootULCI**			
Total	0.2234	0.0574	0.1220	0.3463			
Ind1	0.1020	0.0456	0.0293	0.2060			
Ind2	0.0838	0.0415	0.0166	0.01808			
Ind3	0.0376	0.0186	0.0089	0.0796			

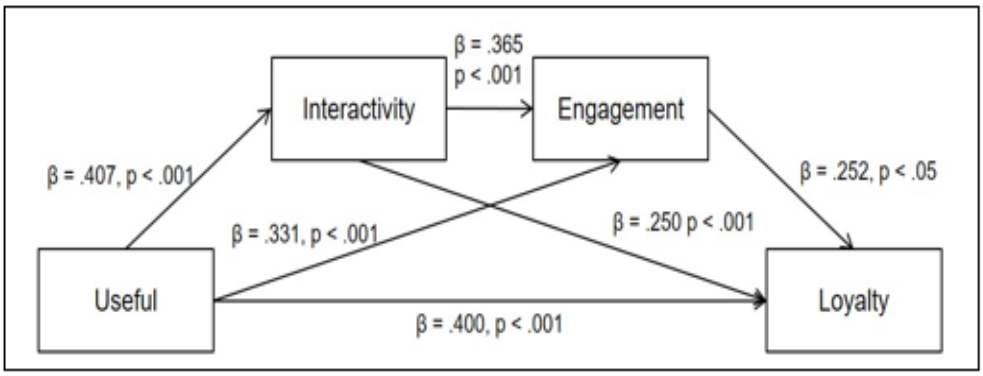

Figure 4. Mediation analysis—NFC low.

5. Discussion and conclusion

5.1. Findings and contribution

This study aimed to explore the UX pathways of ChatGPT, a representative of generative AI, and to verify the differences based on users' NFC levels. The findings of this study are as follows:

First, the usefulness of ChatGPT was observed to have a significant impact on interactivity, engagement, and the intention to reuse. This suggests that usefulness and interactivity, which are key concepts that constitute the UX, can enhance user involvement with ChatGPT and play a role in forming intentions for continued use.

Second, it was revealed that evaluations of ChatGPT may vary according to users' NFC levels. Users with a high NFC, who seek to solve complex problems and pursue new experiences, perceived ChatGPT's usefulness, interactivity, engagement, and reuse intentions more positively than those with a lower NFC. This implies that despite the introduction of generative AI, the time taken for acceptance may differ according to users' NFCs levels.

Third, the pathways through which ChatGPT's UX affects engagement and reuse intentions differ based on users' NFC levels. In particular, users with a high NFC demonstrated that their reuse intentions were formed after being immersed in the interaction with ChatGPT compared to those with a lower NFC. This indicates that users who prefer logical and evidence-based information processing are more likely to form intentions for continued use of ChatGPT if it is perceived as useful and interactive.

These findings have several academic implications. First, this study validates the role of the UX in ChatGPT. Interest in ChatGPT, which represents generative AI, has grown, and various studies on ChatGPT have been conducted in academia. However, most studies have focused on the technical utility of ChatGPT, and a lack of research on the UX and journey of those who use it exists. This study is significant in that it distinguishes ChatGPT's UX in terms of usefulness and interactivity and verifies the pathway through which users develop reuse intentions via engagement.

Second, this study validates the role of users' NFC levels in their experience with ChatGPT. Users use ChatGPT to solve specific problems, implying that they aim to collect data or information through ChatGPT to resolve these issues. The researcher anticipated that users' evaluations of ChatGPT would differ according to their information processing during problem solving and discovered significant differences based on users' NFC levels.

This study has several practical implications. First, the results suggest that UX management strategies can enhance the relationship with Chat GPT. Many companies prefer an aggressive strategy to improve UX, incorporating various types of physical, cognitive, and affective reactions within AI platforms. This approach indicates that AI platforms are shaped by both utility and interactivity dimensions, which together influence users' responses. Based on this study's findings, marketers can leverage the dynamic effects of UX over time by organizing, planning, and implementing marketing programs for users who have yet to commit to AI platforms. This strategy can continuously provide new experiences.

Second, it suggests that the design of generative AI should be useful and interactive. Unlike existing platforms, ChatGPT focuses on conversations with users through text or voice. When accessing ChatGPT, the chat window is displayed immediately, allowing users to ask questions instantly. This indicates that users can interact with ChatGPT through conversation, which enhances engagement and improves the UX within a short amount of time. Based on the results of this study, it is proposed that future generative AI designs should enhance usefulness and interactivity to improve UX and increase user immersion.

Finally, it suggests marketing programs that target users with a high NFC. This study found that users with a high NFC perceive ChatGPT's UX, engagement, and reuse intentions positively. Users with a high NFC prefer logical and sophisticated thought processes. When introducing new generative AI, if customized marketing programs are developed and operated to target users with a high NFC, the acceptance of the technology is expected to spread rapidly.

5.2. Limitation

This study has the following limitations. First, the concepts of design innovation, specifically novelty and aesthetics, which are components of ChatGPT's UX, were not examined. Platform design should be defined as an activity that goes beyond merely designing the appearance of the platform; it also involves structuring the platform to facilitate user interactions. To build design innovation based on UX, including novelty and aesthetics is necessary, as well as usefulness and interactivity (Jeon, 2021). However, this study focused solely on UX and did not consider novelty or aesthetics. Therefore, future research that includes both novelty and aesthetics in the UX of generative AI is expected to be meaningful.

Second, this study did not account for users' prior knowledge of and familiarity with ChatGPT. Since its introduction in November 2022, ChatGPT has gained a large number of users worldwide over a short period. Its ability to collect a variety of knowledge and information through conversational AI services has garnered global attention. However, users' knowledge of and familiarity with ChatGPTs varies. Although ChatGPT is designed to be user-friendly, the experience with generative AI and the resulting familiarity can differ. This study focused on users' NFC levels in verifying ChatGPT's UX but did not consider their prior knowledge and familiarity with ChatGPT. Thus, future research examining the effects of users' prior knowledge of and familiarity with ChatGPTs is expected to be significant.

Third, this study did not consider the differences in design sensitivity among users evaluating ChatGPT's UX. User design sensitivity may vary during the ChatGPT UX evaluation process. Bloch et al. (2003) proposed the concept of centrality of visual product aesthetics (CVPA) to describe an individual's sensitivity to product design. The CVPA varies based on a person's design acumen and value perception of the design. Consumers with high design acumen tend to rely on visual tendencies when processing external information, leading to a heightened sensitivity to product design. Consequently, they place emphasis on and recognize the aesthetic design value of products (Yalch and Brunel, 1996). According to Bloch et al. (2003), consumers exhibit different levels of sensitivity to a product's visual aesthetics. Based

on this discussion, it is expected that user responses to ChatGPT's UX will vary according to their CVPA. In other words, interactions between the UX and CVPA are expected to occur during users' acceptance of ChatGPT. Therefore, verifying differences in UX acceptance based on user design sensitivity could lead to meaningful research.

Finally, this sample may limit the generalizability of the results, as it excludes younger and older populations who may have different experiences with ChatGPT. In online research, sampling bias can occur because participation is often restricted to individuals who are particularly motivated to respond. This leads to selection bias, as the perspectives and characteristics of these participants may differ significantly from those of the broader target population. Consequently, the data collected may not accurately reflect the true situation, thereby undermining the validity and reliability of the research findings. Future research could enhance its robustness by incorporating a more diverse sample, including users with varying levels of familiarity and interaction with AI technologies.

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