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Article

How to Utilize Generative AI to Compose Music through the Diary for the Possibility about User Experience and Service?

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Abstract: This study explores the potential of generative AI to transform diary writing into a music-based creative activity, addressing the growing significance of AI-generated content in everyday cultural practices. While prior research has examined diary-based music composition and AI music interfaces, few studies have empirically evaluated the integration of generative AI music with diary content in terms of emotional response, service perception, and usability. To bridge this gap, this study aimed to design a conceptual AI-based diary app that converts personal diary entries into lyrics and automatically generates genre-specific music reflecting contextual data (e.g., date, weather, location, and emotion). An experimental evaluation was conducted with 73 participants who listened to four AI-generated songs composed from one month of diary entries and reviewed a prototype UI. Using a 5-point Likert scale, all key factors received positive evaluations above 4.0 (emotional enthusiasm: 4.39; emotional immersion: 4.31; sympathy: 4.21; convenience: 4.23; service immersion: 4.34; retention intention: 4.19). Multiple regression analysis revealed significant positive relationships between music immersion and service awareness ($p < .01$), with adjusted R^2 values ranging from 0.241 to 0.354. The System Usability Scale score averaged 86.13, exceeding the acceptability benchmark of 75. These findings indicate that diary-based AI music services can enhance emotional immersion and user retention through convenience and personalization. The study implies strong practical potential for generative AI-driven creative services and contributes empirical evidence for future AI-based cultural content design.

Keywords: Generative AI; User experience; UX; Service design; Speculative Design.

1. Introduction

With the rapid advancement of generative artificial intelligence (AI), creative production is no longer limited to trained experts. Generative AI systems can now produce paintings, videos, texts, and music that approximate human creative output. In particular, AI-based music generation platforms have enabled users to compose songs through simple text prompts, lowering technical barriers to music production. This technological shift suggests a broader cultural transformation in how individuals record, interpret, and express their everyday experiences.

Traditionally, diaries have functioned as private, text-based records of daily events, emotions, and reflections. For this reason, diaries have been utilized as a means to enhance the experience of digital services. As mentioned above, electronic diaries have been increasingly used in various ways to collect momentary data on experienced feelings, cognitions, behaviors, and social contexts in real-life situations [1], [2]. Additionally, previous research has explored digital diaries that analyze human emotions in detail using biosensors [3]. However, prior research on the functions of generative AI remains insufficient.

As generative AI increasingly converts text into multimodal outputs such as images, audio, and video, diary practices are also expected to evolve. Although prior studies have demonstrated that diary content can serve as a valuable source for cultural production, and other research has explored AI-generated music as an inde-

pendent creative tool, the integration of personal diary writing with AI-driven music generation remains underexplored. Existing studies have either focused on educational diary-based composition within constrained formats or examined interface feasibility without empirically validating emotional and service-level outcomes. To put it simply, it is predicted that generative AI will transform how humans record information, shifting from text-based records to content formats such as video [4], [5].

This problem persists because diary narratives and song lyrics differ structurally and emotionally, making direct conversion technically and conceptually challenging. Moreover, previous research has not sufficiently examined how AI-generated music based on personal diaries influences users' emotional immersion, empathy, and perception of service usability. As above, the main contribution of this investigation to explorer the conceptual possibility of advanced service with Generative AI. Specifically, this paper proposes:

a) The propose the ability to document existing thoughts through generative AI that can convert text into images and music into content.
b) The possibility of experience of writing that records one's feelings and events being produced as music content.
c) The possibility of AI analyzing data on regions, weather, and emotions related to the diary to improve the selection of music genres and lyrics.

This research is organized as follows: Section 2 summarizes literature review as experimental background. Section 3 approaches the design of experiments and Prototyping. Section 4 reviews the result of survey. Lastly, Section 5 concludes the study with a summary, discussion of future extensions and limitations of the investigation.

2. Literature Review

2.1. Theoretical framework

A diary is a private record that documents the author's daily experiences, thoughts, and impressions. Because using words that express emotions (emotional labeling) is an effective method for managing experiences, this approach can induce magnetic resonance effects in humans [6]. This is because individual stories can serve as unique elements for service and content development [7].

In this way, the diary serves as a content medium capable of eliciting empathy for others by recording emotions. Kim (2022) defined the diary as a tool for developing content that transforms everyday events, even those without dramatic elements, into tragic narratives that reflect social structures [8]. Park (2022) explored the potential of utilizing diary content for producing various media, such as performances, magazines, and webtoons, based on the Yeolha Diary (열하일기, 熱河日記), written by Jiwon Park, a Joseon-era scholar [9]. Lee (2015) examined the possibility of developing and utilizing cultural content derived from scholars' diaries preserved by the Korean Studies Promotion Agency [10]. As demonstrated, previous research suggests that diaries can serve as original sources for creating diverse content.

2.2. The emotional empathy-inducing effect of music

Music is a powerful means of expressing human emotions, offering a more direct impact than verbal expressions such as words and writing. Shin (2016) suggested that the emotional content in music enhances recall ability and sensitivity, thereby fostering empathy with certain characters [11]. Kim (2019) proposed that modern popular music, often used as a tool for listeners to relate to as if it were their own story, influences emotional empathy [12]. Thus, music is reported to have a significant effect on a person's emotions [13], [14].

Furthermore, beyond merely listening to music, the use of music as a novel service genre has been explored. Jin (2005) examined the potential of music-based therapy services to enhance emotional expression [15]. This is attributed to music's ability to evoke shared emotional responses. Consequently, it appears that music can induce specific emotions and foster emotional consensus among individuals, making it a promising foundation for developing specialized services.

2.3. The Status of Music by Generative AI

With the recent advancements in generative AI technology, the ability to create content that matches human creative output has been achieved. Among generative AI music services, notable examples include Suno and Udio. These services generate melodies that convey emotion and atmosphere for specific genres using simple keywords or sentences, and they compose music based on user-provided lyric prompts. Consequently, the Suno and Udio platforms share a similar structure. This structure involves: (1) specifying the music genre as text or selecting a recommended genre, (2) writing the music lyrics, and (3) defining the pattern parameters of the music. Users can combine and blend multiple music genres to achieve their desired style. Additionally, when writing lyrics, users can enclose a solo section, chorus, or repetitive phrase (hook) of a specific instrument in brackets to specify it as a parameter. The interface of these services is summarized in Figure 1.

Nowadays, users can generate music relatively freely thanks to music generative AI, as mentioned above. Consequently, music created by generative AI has been used in various content, such as variety shows and advertisements on YouTube. Examples include background music generated by AI on the YouTube channel of Korean-Japanese fighter Choo Sung-hoon, as well as advertising music for local promotions and medical postpaid sys-

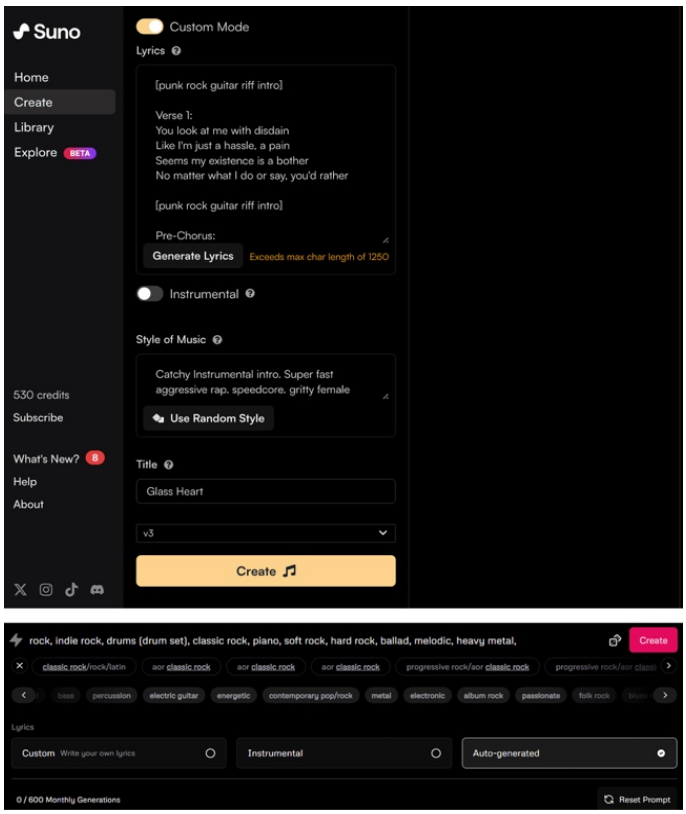


Figure 1. The interface structure of the music Generative AI 'Suno'(Top) and 'Udio'(Bottom).

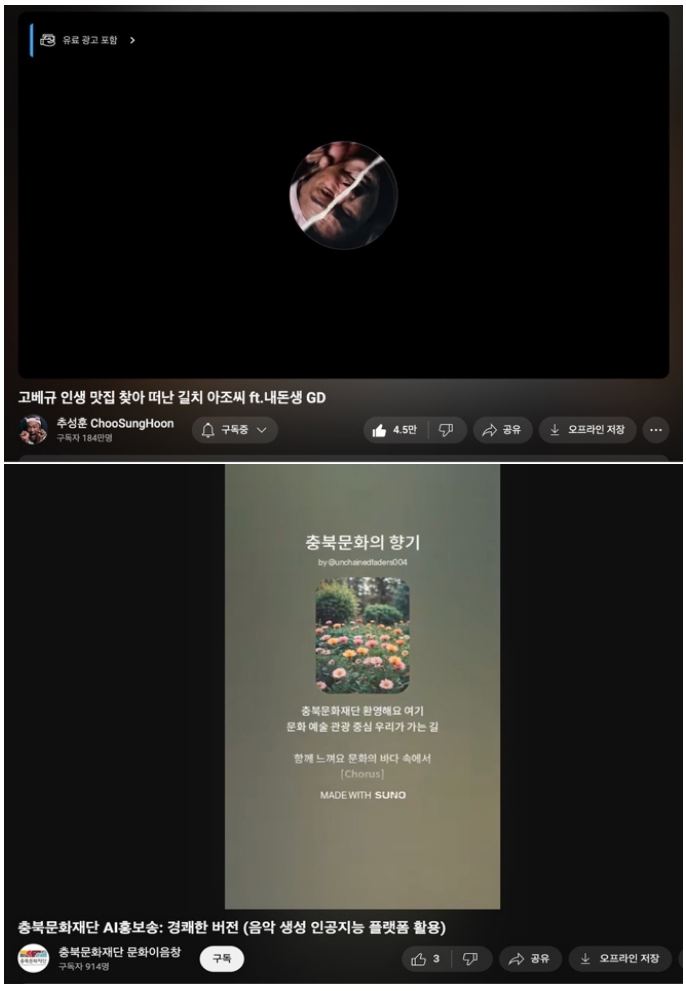


Figure 2. Cases of using Generative AI music on Chu Sung-hoon channel (Top) and Chungcheongbuk-do Cultural Foundation (Bottom) of YouTube.

tem campaigns produced by government offices in Chungcheongbuk-do, Korea (Figure 2).

3. Research Approach

3.1. Research Stage

Among popular music, some songs are based on personal experiences or the stories of others. This type of music often draws from diaries or autobiographical accounts. For example, 'Liquid State', which was by the English rock band Muse, was about bassist alcoholism experience from Chris Wolstenholme who is one of the band members. In addition, the 'Muscle Museum' was an autobiographical piece about the obscurity status of Muse. Pop singer Katy Perry's "Waking Up in Vegas" was an anecdote to tease her boyfriend for getting married.

As mentioned above, in narratives that include personal stories, such as diaries, the expression of emotions can serve as a means to evoke empathy in others [16], [17]. This occurs because individuals can consciously or unconsciously maintain, create, and alter their emotions through stories conveyed in music [18], [19]. Additionally, music offers unique insights into how and why it can more effectively trigger personally meaningful memories compared to other everyday cues [20]. Diaries influence listeners similarly to music because they establish a musical pattern that communicates by creating a distinct domain within subjective consciousness and individual tastes embedded in the personal narrative [21].

Therefore, studies have begun to explore the creation of music based on diaries. Kim (2014) investigated this possibility by developing an educational program for sixth-grade elementary students to compose songs using diaries as a basis for daily life music [22]. However, this study proposed a method of recording daily life within a specific framework for music composition, which limited the form of the diary. Park et al. (2025) suggested a service that integrates generative AI music with diaries [23]. Nevertheless, their research was limited to exploring the feasibility of a smartphone app-based user interface that generates music using generative AI, rather than directly investigating the composition and utilization of music through diary-based generative AI. As above, this study is summarized a research stage in Figure 3.

3.2. Research Objectives

Currently, generative AI creates songs based on user-provided prompts specifying the genre and lyrics. However, there is no service that facilitates the entire task process, allowing users to generate music seamlessly while naturally engaging with the platform. Consequently, this study faces limitations in conducting empirical research to observe existing services and identify improvements through Gap Analysis. In response, this research adopts a speculative design approach, which seeks to overcome the constraints of correlationism—the idea

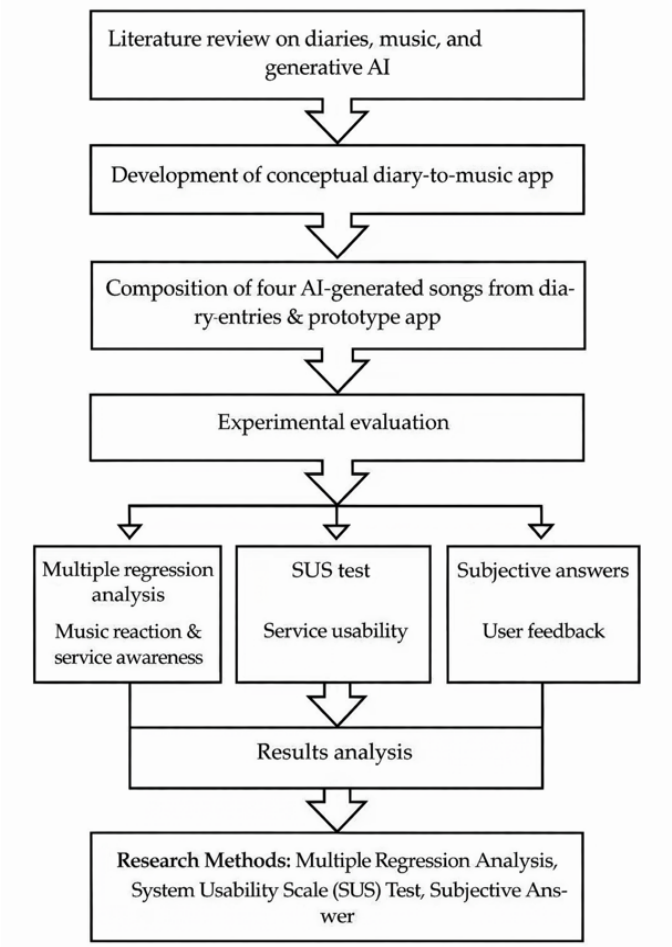


Figure 3. Steps of the research procedure.

that non-existent phenomena and objects cannot be observed. Speculative design aims to explore concepts that do not yet exist and to bridge the gap between potential ideas and their practical realization [24]. Building on this, by examining examples of successful music imbued with personal stories and emotions, this study proposes a concept for a generative AI music service and investigates new possibilities for its technical application.

3.3. The direction of research

This study implements a diary app service based on generative AI technology that transforms daily life diary entries into music and investigates the potential for diaries and future services composed of music. This refers to a research plan that involved constructing a virtual person and a scenario based on a story related to an individual's privacy, used as a prompt in Generative AI [25]. It is assumed that content development can be achieved by leveraging personal stories within Generative AI. As above, this study designs an experiment based on the following three directions.

a) The music composition: The music used as research material was generated through Generative AI. It was based on diaries written by the researcher over the course of one month. The music was intended for subjects to listen to and evaluate its potential. Additionally, four songs were composed in different genres, with each genre reflecting the weather, location, and emotions recorded on the diary entry date. The music was created by first converting the diary entries into lyrics using ChatGPT, which were then input as prompts into Suno to generate the music.

b) AI recommendations: This study developed the UI design based on the following requirements for a conceptual service app. First, it utilizes the smartphone's GPS and date recognition functions. Additionally, the AI function was designed to recommend and select a music genre appropriate for the weather and date on which the diary entry was written. Second, to generate music from a user's diary entry, the AI recommends lyrics by editing the user's diary. The scenario in which the user directly writes diary content as lyrics within the Generative AI interface shown in Figure 1 is not suitable as an AI prompt because the structure of lyrics differs significantly from that of a diary.

c) Utilizing the Structure of Music Generative AI: The UI design for the usability evaluation of the concept app is based on the structure and task flow of the Generative AI shown in Figure 1. Accordingly, the concept was designed to include the process of selecting and agreeing on music genres and parameters within a UI that mirrors the structure of music Generative AI, as well as the music generation and sharing processes and functions.

3.4. The direction of research

The prototype involved accessing the app to write a diary entry, after which AI converted the diary into lyrics, recommended music genres, and even generated music. During this process, the AI reviewed the diary lyrics, checked the date, weather, and location of the entry, and then suggested an appropriate music genre. Finally, the AI generated the music itself. This workflow is summarized in Figure 4, and the UI design based on this process is detailed in Table 1.

Furthermore, the music comprised four genres: dance, ballad, and rock based on K-pop, as well as rock based on J-pop. The lyrics were created by prompting ChatGPT to compose diary entries from June to July 2025, reflecting experiences from visits to Korea and Japan, in order to align with the music generated by the AI service Suno.

3.5. The evaluation factors

This study aims to examine the effectiveness of using Generative AI technology for listening to music within the context of diary writing as a genre and lyrics crea-

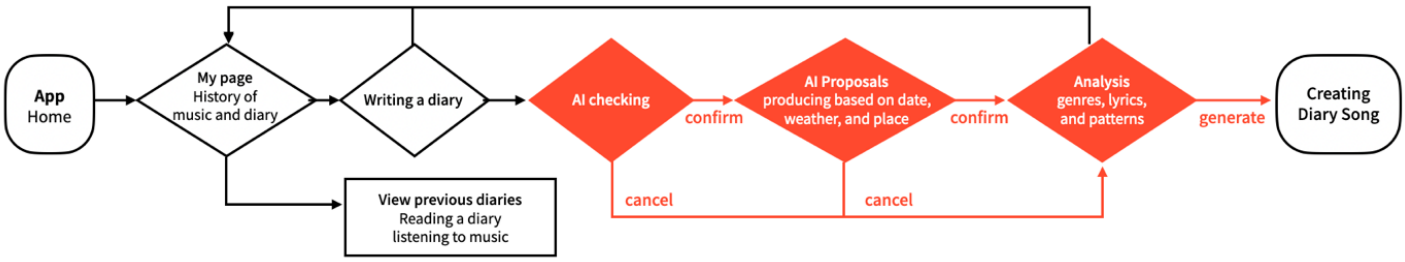
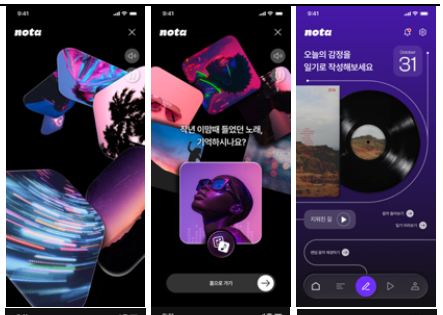
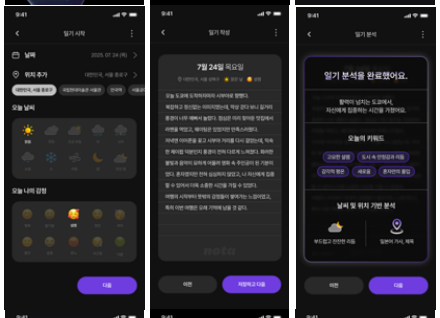
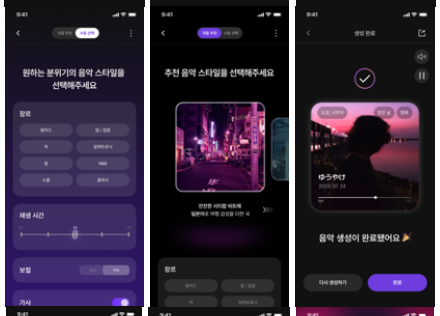
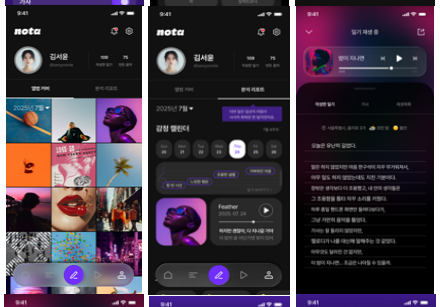
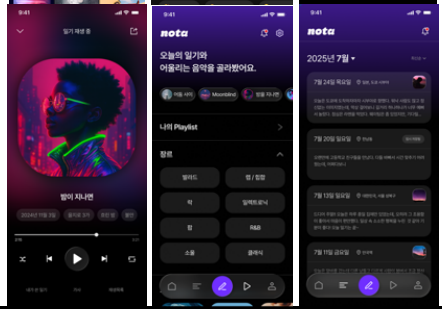
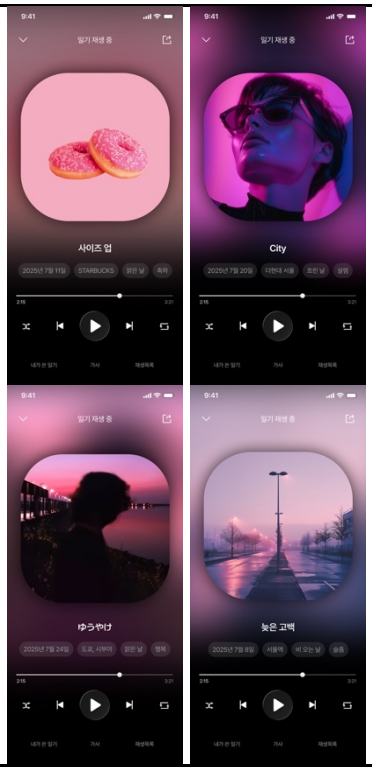


Figure 4. Task flow model for concept App service.

Table 1. Prototype UI design for concept service.

Scenario	UI design
#1. Home	
#2. Writing a diary and AI recommendations for the lyrics	
#3. Select music genre and generating music	
#4. My pages	
#5. Listening to Music	
#6. Previous Music (Research materials)	

tion. Accordingly, the evaluation criteria were established based on previous research, as outlined below. The evaluation questions and survey format are summarized in Table 2.

a. Music and service evaluation: This study aimed to compose music using AI based on diary content. Accordingly, the musical response and service awareness were cross-verified. Lee et al. (2015) proposed the concepts of 'emotional enthusiasm,' 'emotional immersion,' and 'sympathy' as psychological effects of music reaction [26]. Eom & Lee (2025) suggested that 'convenience,' 'immersion,' and 'retention' influence user experience. Therefore, this study examined how the psychological impact of diary-based music generation relates to service recognition through these factors [27].

b. Usability test: Before launching the service, the System Usability Scale (SUS) test is a quick and relatively straightforward method to assess market potential. Accordingly, this study conducted a SUS test to evaluate the feasibility of a

Table 2. Evaluation questions and survey.

Factors		Questions
Musical Reaction	Emotional enthusiasm	Did the music and lyrics above feel like a unique experience?
	Emotional immersion	Are you attached to the music and lyrics above?
	Sympathy	Can you relate to the music and lyrics above?
Service Awareness	Convenience	Do you think the music and services above will be easy to use?
	Immersion	Do you feel that the results of the music and service above are sufficient?
	Retention	Are you willing to use the music and services above again?
SUS test	(1)	I think that I would like to use this system frequently.
	(2)	I found the system unnecessarily complex.
	(3)	I thought the system was easy to use.
	(4)	I think that I would need the support of a technical person to be able to use this system.
	(5)	I found the various functions in this system were well integrated.
	(6)	I thought there was too much inconsistency in this system.
	(7)	I would imagine that most people would learn to use this system very quickly.
	(8)	I found the system very cumbersome to use.
	(9)	I felt very confident using the system.
	(10)	I needed to learn a lot of things before I could get going with this
Short answer question		Please feel free to tell me the cause or factor that influenced the above evaluation

Table 3. Result of average value about evaluation (n=73).

Factors		Average
Musical Reaction	Emotional enthusiasm	4.39
	Emotional immersion	4.31
	Sympathy	4.21
Service Awareness	Convenience	4.23
	Immersion	4.34
	Retention	4.19

Table 4. Result of multiple regression analysis (n=73).

Factors		Regression Coefficient	
		t	p
Convenience	Emotional enthusiasm	0.391	0.696
	Emotional immersion	0.137 **	0.004
	Sympathy	0.247	0.265
Adjusted R^2: 0.286, ANOVA – F:10.61 ***, p=0.000			
Immersion	Emotional enthusiasm	-0.512	0.610
	Emotional immersion	2.874 **	0.005
	Sympathy	2.666 **	0.009
Adjusted R^2: 0.354, ANOVA – F:14.17 ***, p=0.000			
Retention	Emotional enthusiasm	-0.186	0.852
	Emotional immersion	2.191 *	0.031
	Sympathy	1.951 *	0.049
Adjusted R^2: 0.241, ANOVA – F:9.61 ***, p=0.000			

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

concept service that composes music from a diary using Generative AI.

c. Short answer question: This study employed non-structured short answer questions to identify the factors influencing the quantitative survey.

4. Results and Discussion

4.1. The Progress of Experiment

The experiment was conducted on subjects in their 20s and 40s from August 9 to 16, 2025. The subjects consisted of individuals affiliated with the researcher's institution. Recruitment was conducted over approximately 10 days through notices posted on the school's official website and social media platforms (e.g. Instagram, Facebook).

After listening to four songs and watching the UI prototype video shown in Table 1, the subjects completed the questionnaire presented in Table 2. A total of 73 participants took part in the study. The average scores for all evaluation questions were positive, with ratings of 4 points or higher. The evaluation results are summarized in Table 3.

4.2. Verification of the Relationship between Music Response and Service Awareness

Multiple regression analysis is a statistical technique used to examine the effects of two or more independent variables on a single dependent variable. This study identified three variables related to 'Musical Reaction' and 'Service Awareness' based on previous research. The significance of the relationships among these variables was assessed to determine whether Musical Reaction affects Service Awareness.

Table 5. Result of SUS test and Shapiro-Wilk test (n=73).

M (Result of SUS test)	Test of Normality (Shapiro-Wilk)	
86.13	W	P
	8546 ***	.000

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Multiple regression analysis was conducted to investigate the relationship between music reaction and service recognition. The model, which included these two factors, was found to be significant, as the p-value from the analysis of variance was less than the significance level of 0.05. However, the adjusted R^2 value for the relationship between music reaction and service recognition was below 0.4, indicating a low correlation. In this regard, it should be acknowledged that the influence of the musical reaction variable, as predicted in the study, has limited goodness of fit concerning service recognition.

Furthermore, in the analysis of the relationship between all factors of concept service recognition and the 'Immersion' aspect of music reaction, the p-value was less than 0.05. As indicated, there was a positive (+) relationship between music reaction immersion and service recognition. Additionally, the 'Retention' factor of concept service recognition showed a positive (+) relationship with both 'Sympathy' and 'Emotional Immersion' in music reaction. Therefore, if a Generative AI-based music composition service becomes more convenient, the emotional immersion experienced in music will also increase. Moreover, improvements in immersion and retention within the Generative AI music composition service will enhance emotional immersion and sympathy related to music reaction. The results of the analysis are summarized in Table 4.

4.3. Result of SUS test

The System Usability Scale (SUS) is a standardized survey tool designed to measure the user-friendliness and perceived ease of use of a service. This test offers the advantage of being quick and straightforward, consisting of 10 questions rated on a 5-point Likert scale, administered immediately after a user experiences a product without requiring a complex experimental setup. Specifically, it assesses users' subjective satisfaction with the ease of use. Therefore, it can be an effective method for evaluating the usability of prototypes.

The result for the concept service in this study was evaluated to be above 75 points, which is considered an acceptable level (M = 86.13). Additionally, to determine whether the evaluation results follow a normal distribution, the study conducted the Shapiro-Wilk test, which is an effective method for analyzing small samples. Since the p-value from the Shapiro-Wilk test was less than the significance level of 0.05, it was concluded that the SUS test scores for each subject do not follow a normal distribution. The results of the SUS test and the Shapiro-Wilk test are summarized in Table 5.

4.4. Short answer summary

The presence or absence of an effect was confirmed through quantitative analysis; however, non-structured short answer questions were used to identify which causes had an effect. Among these short answer responses, content that corresponded to or was repeated in the quantitative summary was categorized and presented as shown in Table 6.

This study predicts that the individual's privacy concerns, as expressed in the short answer, may have had a negative impact on psychological responses. This psychological factor may have functioned as a variable with limited goodness of fit regarding service recognition in musical responses. This is sensitive information, where privacy corresponds to an individual's human rights, and the user chooses actions to protect their information within the digital service [28]. Therefore, it can be considered a variable that reflects emotional or psychological sensitivity to the service. Therefore, future research will aim to reassess the influence of individual privacy on service outcomes by examining methods to control the content of the disclosed diary.

4.5. Summary

This study explored the potential of using generative AI to compose music based on data such as dates, weather, locations, emotions, and diary entries. To achieve this, participants were asked to provide self-written diary entries as prompts for lyric composition via ChatGPT. Subsequently, four songs were created using Suno, a music-generating AI. Each of the four songs was composed in a different genre. The experiment involved writing diary entries within a conceptual user interface and developing a prototype for the music composition process.

The experiment utilized a 5-point Likert scale to evaluate participants' reactions to music and their recognition of the concept service related to Generative AI. Additionally, the relationship between these two factors and the potential usability was assessed using the System Usability Scale (SUS) test. Furthermore, non-structured subjective questions were included in the final part of the investigation to examine the factors influencing the evaluations.

As a result, the average investigation score exceeded 4 points. Therefore, music reaction and service recognition were evaluated positively. Furthermore, a positive correlation was observed between the two factors: service recognition and music reaction. In particular, all components of concept service recognition showed a positive relationship with the 'Immersion' aspect of music reaction. Additionally, the 'Retention' component of concept service recognition was positively correlated with both

Table 6. Evaluation questions and survey (n=73).

Cause	Answer
Service immersion caused by a simple process	*"I wrote a diary, specified the weather or date, and AI analyzed and recommended the music, so I thought it would be fun to fall into the service easily."* -p6, 17
	"I think it would be complicated and stressful to keep a diary considering the lyrics, but I think I'll use it often because it's so simple because AI improves and recommends the contents of the diary to the music structure and selects genres." -p 27, 30
	"I think I'll listen to this song and keep a diary often because it makes my emotions into music easily. I think I can use it easily, and I think I'll lose weight easily because I think a variety of music will come out just as people's emotions change every day." -p 37 55
Retention from convenience and high-performance	*"The only music in the world comes out so easily, and I'm willing to use it often because the song completion is high without studying composition."* p19, 57
	"With this quality, I think it's good to give a gift to someone on a special day and make it my own art. I don't use my diary often, and I often post it as a story on my blog or Instagram, and I think I'll share this song instead of my diary." p31, 62
Satisfaction induced by personal experience	*"I loved that the diary I wrote was made into my own song that is one and only in the world, and it feels special that I can use it on my SNS, etc."* -p2,25
	"I liked that I felt like I could experience being a minstrel, and I think it would be a new way to record and express my experiences and feelings." -p18, 38
	"I think it's a useful service when I look back on my day later or when I remind myself of the memories of that time if I can simply make my daily life into music." -p5, 51
Precautions	*"It's like Instagram, but I use emojis when I leave my daily routine, and I'm curious how they would be expressed. It would be nice if memes, photos, and non-letter parts were recognized as well."* -p23
	"The diary is extremely personal, so it's a bit burdensome to spread. The song is good, but the diary has so much personal content that it seems important how to determine this part." - p42

the 'Sympathy' and 'Emotional Immersion' aspects of music reaction. The System Usability Scale (SUS) test results indicated that the concept achieved an acceptable level of usability. Participants reported satisfaction with the simple process and easy functionality, which facilitated immersion in the concept and the creation of songs based on personal experiences. In conclusion, this study demonstrated that a service using Generative AI to produce music from diaries containing personal experiences has the potential to become a positive avenue for future business ventures.

This study was conducted as early-stage research to explore the possibility of transforming traditional diary writing into music through the use of generative AI in a service context. Several studies have explored the conceptual possibilities of utilizing data and generative AI to analyze diaries that record human emotions. For example, ChatGPT has been used as an educational tool to assess language habits by analyzing the real-life language patterns of second foreign languages documented in digital diaries [29]. Additionally, it serves as an AI platform that generates customized diary content based on users' emotions to help alleviate depression [30]. While these studies demonstrate the conceptual potential of generative AI, they primarily focus on the AI's ability to analyze diaries and interpret emotions. Therefore, this study is significant because it emphasizes the generation of content by AI using diaries in their original form.

Consequently, rather than employing empirical research methods, the study focused on a conceptual inquiry to investigate this potential. The specific design, which was the prototyping as concept service, approach used involves speculative thinking about non-existent objects and phenomena. Therefore, the experimental results of this study can serve as an initial foundation for discovering new experiences enabled by AI.

4.6. Discussion

The experimental results extend prior research in three significant ways, providing theoretical implications in relation to previous studies. First, earlier research on diary-based music composition primarily focused on educational settings or conceptual interface proposals without empirical validation of emotional and service-level outcomes. This study empirically confirms that diary-based AI music generation produces high levels of emotional enthusiasm (M = 4.39), emotional immersion (M = 4.31), and sympathy (M = 4.21), thereby reinforcing theories that music enhances affective labeling and empathy. Second, previous research has emphasized music's role in emotional regulation and autobiographical memory. The significant positive relationships between emotional im-

mersion and service immersion ($p < .01$), as well as between emotional immersion, sympathy, and retention ($p < .05$), provide quantitative support for these theoretical assumptions. These findings suggest that emotional engagement functions not only as a psychological response but also as a mediating factor influencing continued service use. Third, this study advances the generative AI literature by moving beyond technical feasibility to demonstrate measurable user acceptance (SUS M = 86.13), which exceeds standard usability benchmarks. Thus, it provides empirical validation for AI-based creative service frameworks. Furthermore, from an empirical perspective on practical service development and service design, the findings indicate that simplicity and automation are critical drivers of immersion and retention. Participants repeatedly emphasized the ease of transforming personal experiences into music without requiring technical knowledge. Additionally, concerns regarding privacy highlight the need for robust data protection and selective sharing features. These findings suggest that future AI creative services should prioritize automated lyric refinement aligned with music structure, context-aware genre recommendations (considering factors such as weather, date, and emotion), and minimal user input with maximum expressive output. Moreover, personalization has emerged as a significant factor in user satisfaction. The perception of creating a "one-of-a-kind" song enhances emotional attachment and increases the intention to reuse the service. Therefore, diary-based AI music services may have practical applications in emotional self-reflection tools, social networking service (SNS) content creation, digital memory archiving, and personalized gifting services. Lastly, based on the findings, several recommendations are proposed for future research and development. These include expanding genre diversity (e.g., rap, traditional music, freestyle formats) to test emotional adaptability across various musical structures; investigating long-term usage patterns to evaluate sustained retention beyond experimental conditions; and exploring multimodal diary integration (such as images, emojis, and voice inputs) to enhance contextual richness. Furthermore, this study aims to investigate the experience newly constructed by incorporating AI tools into the human recording culture of diary-keeping. Overall, by empirically linking emotional immersion with service usability and retention, this study offers both theoretical advancements and practical guidance for future AI-driven creative platforms.

5. Limitation and future research area

Although this study composed music using Generative AI, the genre of the music was limited to melody-based styles as above. Therefore, this research will continue to explore the genre limitations of music that can be used in diaries, specifically investigating whether various genres—such as rap, freestyle, and traditional music—can effectively express individual emotions. Through this approach, we aim to propose a more positive application plan for Generative AI technology and related app services.

6. Declarations

6.1. Author Contributions

Nahyun, Woo: Conceptualization, Investigation, Resources, Writing - Original Draft, Visualization; **Jeahyun Choi:** Conceptualization, Investigation Resources, Visualization; **Hongmi Yang:** Conceptualization, Investigation, Resources, Data Curation; **Minju Kim:** Conceptualization, Investigation, Data Curation; **Jeongbin Choi:** Conceptualization, Investigation, Data Curation; **Soonkyu Jang:** Methodology, Review & Editing, Validation, Formal analysis, Project administration.

6.2. Institutional Review Board Statement

Not applicable.

6.3. Informed Consent Statement

Not applicable.

6.4. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

6.5. Acknowledgment

Not applicable.

6.6. Conflicts of Interest

The authors declare no conflicts of interest.

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