

Article

Investigation of User Acceptance Mechanisms for Social Check-In and Photo Capture Features in Citywalk-Related Applications with Technology Acceptance Model

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Abstract

In the context of the high development of mobile internet and social media, the social clocking and photographing function of tourism applications has become a key factor to enhance user experience and enhance product competitiveness. Citywalk, as a new way of exploring cities, emphasizes individuality and social interaction by providing a walking experience of the city's history and culture. This study is based on the Technology Acceptance Model, combined with the Use and Gratification Theory, to systematically explore the core mechanisms that influence user acceptance and continued use of the social check-in and photo-taking function in Citywalk-related applications (app). Firstly, this article analyzes the impact of perceived usefulness and perceived ease of use on user technology adoption through a technology acceptance model. At the same time, the five major needs of use and satisfaction theory (information needs, entertainment needs, social interaction needs, identity confirmation needs, and escapism needs) are introduced as external influencing variables to construct an optimized technology acceptance model. Secondly, based on this theoretical framework, this article proposes relevant research hypotheses and designs a questionnaire for empirical analysis. Reliability analysis, validity analysis, and regression analysis are used to verify the relationship between influencing factors and user behavior. The research results reveal relevant research questions, namely, the core factors influencing users' use of social check-in and photo-taking functions (RQ1), elucidating the mechanism of technology perception on user satisfaction and willingness to continue using (RQ2), and identifying the acceptance gap between user needs and actual experience in existing feature designs (RQ3). At the same time, this article provides optimization strategies for the Citywalker App (Version 1.0) and similar products to enhance user experience, strengthen social communication effects, and promote market promotion. Ultimately, this study aims to provide theoretical support and practical guidance for the design of tourism social media functions and promote innovative development in related fields.

Keywords: citywalk; technology acceptance model; uses and gratifications theory; social check-in photo function; user behavior



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1. Definition and Research Overview

1.1. Citywalk App Design Background

1.1.1. Citywalk Background

The concept of Citywalk originated in London at the end of the 20th century. As the conflict between walking and vehicles intensifies in urban centers, walking as a sustainable

mode of urban transportation has received attention. Citywalk has gradually developed into a distinctive tourism experience, closely integrated with cultural elements such as urban literature, landscape depiction, and avant-garde art.

Since 2020, Citywalk has rapidly become popular in China and has gradually become a new way for young people to explore cities. The rise of this trend is mainly driven by two aspects: on the one hand, the pressure of urban life prompts people to seek ways to relax both physically and mentally; on the other hand, there is an increasing demand for personalized experiences and exploration of urban culture. Users use Citywalk to find a balance between living space and urban space in busy urban environments and share their exploration journeys through social media platforms.

1.1.2. Target Audience for Citywalk

According to industry research, Citywalk's main target audience is young people aged 18–35, including white-collar workers, single youth, and married families with children. These users generally live in new first tier cities and above, with high cultural literacy and consumption ability. Their expectations for the tourism experience are more diversified, focusing on personalization, independent exploration, and social sharing. In addition, the peak period of Citywalk activities is mainly concentrated on weekends and holidays, and users tend to use fragmented time for short-distance exploration, and record and share their journeys through social media to gain social interaction and a sense of identity.

From the perspective of user motivation, the target audience of Citywalk typically has the following characteristics:

- Urban white-collar workers: Under high-intensity work pressure, they hope to relax their body and mind by exploring on foot, while seeking novel urban experiences.
- Social users: These users tend to share their Citywalk journeys on social media, and enjoy taking photos and getting interactive feedback.
- Cultural explorer: interested in history, architecture, and art, hoping to learn about urban culture and historical changes through Citywalk.
- Married families with children: Seeking a relaxed, safe, and educational way of short-distance travel, Citywalk provides a city exploration mode suitable for parent-child experiences.

In addition, the peak period of Citywalk activities is mainly concentrated on weekends and holidays, and users tend to use fragmented time for short-distance exploration, and record and share their journeys through social media to gain social interaction and a sense of identity.

1.1.3. Function Design of Citywalk App

Based on the preliminary questionnaire survey and in-depth user interviews conducted on the functional requirements of Citywalk products, this study roughly categorizes user needs into 10 types, aiming to comprehensively improve the Citywalk experience for users. The specific requirements are as follows:

- Check-in journey map function: Users only need to input information about the tourist attractions they are interested in, set the expected destination and time, and this function can intelligently plan a reasonable route, providing clear guidance for the user's itinerary.
- Check-in route guidance function: With advanced navigation technology, it can not only accurately guide users to scenic spots, but also help users quickly find specific photo locations, ensuring that they do not miss any exciting moments.

- AR restoration scene function: Using cutting-edge AR technology, through the phone camera, users can travel through time and space, take photos of those disappeared points, and feel the integration of history and reality.
- The function of comparing the past and present: At a specific location, this function helps users replicate the shooting perspective of classic old photos, generate a comparison map of the past and present, and vividly display the changes of the city.
- Automatic copy generation function: Deeply explore the cultural characteristics of tourist destinations and automatically generate high-quality copy that matches them. Users can choose their favorite copy from it to enrich their sharing content on social media.
- Live image generation function: Add brief dynamic effects, music adaptation, and personalized copy to the original images, making the images shared by users more vivid and interesting, and stand out.
- Photo template function: By intelligently recognizing the outer contours of buildings and people, multiple landmark photo templates are provided. Users can select templates and embed themselves in landmark backgrounds, completing the transition from passive reception to active creation.
- Personalized sticker function: In the image processing stage, it provides users with a rich variety of identity tags, personalized stickers and other materials, helping to create a unique and personalized image. For example, the sticker text of “Historical Detective Home” and “Route Roaming Home” is directly self-labeled.
- Image filter function: In response to the impact of objective factors such as poor shooting equipment and unfavorable weather on image quality, adjusting image parameters and adding rich filters can greatly improve the image effect.
- Virtual character headgear function: Fully considering the needs of social anxiety users who do not like to show their faces, we provide unique virtual character headgear, allowing social anxiety users to freely check in and take photos.

1.2. Technical Acceptance Model

The Technology Acceptance Model (TAM) is an important theoretical model in the field of information systems and communication studies, mainly used to explain users' acceptance and usage behavior towards new technologies (Davis, 1989). Among them, it believes that users' acceptance of new technologies is mainly influenced by two core variables, namely perceived usefulness and perceived ease of use. These two factors will affect the end acceptance of users, thereby affecting their willingness to use.

The TAM model continues to evolve with the development of information technology. Venkatesh and Davis (2000) proposed TAM2, which introduces external variables such as social influence and cognitive processes. Venkatesh et al. (2003) further proposed the Integrated Technology Acceptance Model (UTAUT), which considers factors such as social impact, user experience, and usage environment, making it applicable to a wider range of technology application scenarios.

In the contemporary era of mobile internet, the technology acceptance model is still being given new application scenarios by scholars. Lin and Lu (2011) pointed out in their study of social media user behavior that perceived usefulness not only includes functional value, but also involves social value; that is, whether users believe that using the platform contributes to social interaction. Zheng (2023) analyzed the key role of immersive experience and social impact on short video users when studying the user behavior of the TikTok short video platform and indicated that it is necessary to integrate user experience-related factors into the TAM framework to more comprehensively understand the driving factors of user behavior.

1.3. Use and Satisfaction Theory

The theory of use and gratification originated from media research in the 1940s, initially used to analyze the impact of mass media (such as radio and television) on audiences (Veillé, 1949). In the 1970s, this theory was systematized by Katz et al. who proposed that the audience is not passively receiving information but has the motivation to actively choose a medium to meet specific needs (Katz et al., 1973). With the development of new media, researchers have extended this theory to the behavior of internet using, social media, and mobile applications (Sundar & Limperos, 2013).

Related research generally believes that the audience's use of media is mainly based on the following five core needs: information needs, entertainment needs, social interaction needs, identity confirmation needs, and escapism needs. Specifically, information needs stem from people's desire to obtain information, aimed at increasing their understanding of society, the world, and the environment; entertainment needs refer to the use of media's entertainment functions to help people relax, entertain, or seek pleasure; the demand for social interaction arises from people seeking social interaction or a sense of belonging; identity confirmation needs refer to the use of media to assist individuals in establishing, confirming, and expressing their identity, in order to obtain clear psychological belonging; and the need to escape reality arises from an individual's desire to escape from the pressures, problems, or monotonous environments of daily life. If the above five core needs can be met during the user's use, then theoretically speaking, the design of a medium or application can better stimulate the user's willingness to use and promote the formation of long-term usage habits.

In the context of social media, the use and satisfaction theory is widely applied to study users' content production, sharing, and consumption behavior. For example, Whiting and Williams (2013) found that the main motivations for users to use social media include information acquisition, social interaction, self-expression, and entertainment experience. On visual content sharing platforms such as Instagram and Xiaohongshu (rednote), Choi and Sung (2018) found that users are mainly driven by needs such as social identity, personal brand building, and emotional expression.

1.4. Research Question

The current issues with Citywalk-related applications, such as lack of guidance for gameplay, lack of richness in content creation, and insufficient driving force for social communication, not only reflect functional deficiencies, but also point to potential technical perception barriers and psychological gaps for users during use. Therefore, this article attempts to approach from a theoretical perspective and construct a research framework based on the technology acceptance model and the use and satisfaction theory. The following three research questions are proposed:

RQ1: What core requirements will significantly affect users' perceived usefulness and perceived ease of use of the social check-in and photo-taking feature on the Citywalk App?

RQ2: After users perceive the practicality and convenience of the features, how do these perceptions further affect their technical satisfaction and willingness to continue using them?

RQ3: Is there an acceptance gap between user needs and actual experience in the current design of the photo check-in function? Which specific paths have not been significantly established?

This study will answer the above questions through theoretical modeling and empirical testing and provide theoretical support and practical guidance for the functional optimization of tourism social applications.

2. Model Construction of Social Check-In and Photo-Taking Function

2.1. Influencing Factors of the Model Through the Use and Satisfaction of Theoretical Settings

Before constructing the model in this study, it is necessary to design the product functionality based on Citywalk to correspond with the five theoretical requirements for usage and satisfaction. After demonstrating the effective relationship between them, the five requirements will be identified as the key factors affecting perceived ease of use and perceived usefulness in the technology acceptance model. After sorting out the product functions and theoretical research, it was found that the product functions in Citywalk App can meet the five major needs of users based on current academic research, as follows.

The information requirement corresponds to the check-in journey map and check-in route guidance function. Firstly, regarding the check-in journey map function, [Kelly et al. \(2022\)](#) pointed out that journey maps can effectively help users understand their travel scenarios, especially in complex urban environments where users' perception of routes often relies on clear information transmission. Secondly, regarding the check-in route guidance function, [Taneja et al. \(2023\)](#) pointed out that by providing users with comprehensive information and choices through route navigation, they can make more informed judgments about their needs.

The entertainment needs correspond to the AR restoration scene function and the present and past comparison image function. Firstly, regarding the AR restoration scene function, [Mehmood et al. \(2018\)](#) found that technologies with interactive and entertainment functions can attract users to participate more actively, indicating the effectiveness of AR technology in improving user experience and meeting entertainment needs. Secondly, regarding the function of comparing the past and present, [Bushey \(2014\)](#) pointed out that comparing the past and present can enhance users' entertainment experience through visual interaction. This visual representation can encourage users to compare the same location at different points in time, thereby stimulating their curiosity and exploratory desire.

The demand for social interaction corresponds to the automatic copy generation function and live streaming image function. Firstly, regarding the automatic copy generation function, [Yang et al. \(2021\)](#) pointed out that social media engagement is closely related to the enhancement of travel experience. The quality of the copy directly affects the frequency of users sharing content, further enhancing social interaction. Secondly, regarding the live streaming function, [Aluri et al. \(2015\)](#) found that the combination of visual and auditory senses can greatly enhance audience engagement. This dynamic presentation allows users to better showcase their travel experiences on social media, promoting interaction and feedback among users.

The identity confirmation requirement corresponds to the photo template function and personalized sticker function. Firstly, regarding the photo template function, [Schwartz and Halegoua's \(2014\)](#) study suggested that photo templates enable users to participate in cultural expression and identity confirmation in a legitimate manner, thereby strengthening their self-image identification. Secondly, regarding the personalized sticker function, according to [Liu and Sun's \(2020\)](#) research, personalized digital expressions such as emojis and stickers can enhance users' self-presentation, promote their self-expression on social media, and help them showcase their personal characteristics and identity.

The need to escape reality corresponds to the image filter function and character headgear function. Firstly, regarding the image filter function, [Kircaburun and Griffiths' \(2018\)](#) study suggested that social media use is closely related to the need to escape reality. Users optimize their online performance through filters to seek psychological pathways for temporary emotional escape. Secondly, regarding the function of character headgear, [Dhelim et al. \(2022\)](#) emphasized that virtual avatars (such as character headgear) can provide users with a sense of security. Especially for users with social anxiety disorder, it

can significantly reduce their psychological stress and interact with them in a more relaxed and enjoyable manner.

After verifying the relationship between these five requirements and perceived ease of use and perceived usefulness, the corresponding product functions that meet the requirements will be included as an important component of the questionnaire questions. Users will score based on the application's functional description to obtain data, which will help validate the technology acceptance model for the tourism photo check-in function.

2.2. Optimization of Technology Acceptance Model

Structural equation modeling (SEM), as an extension of general linear models, integrates statistical techniques of factor analysis and path analysis, and can effectively handle and analyze complex multivariate research data. Specifically, it can be divided into two stages: model development and estimation evaluation.

2.2.1. Model Development Stage

This stage aims to construct a hypothetical model that meets the concepts and technical requirements of SEM analysis. This study is mainly based on the technology acceptance model, supplemented by the use and satisfaction theory. Firstly, regarding the technology acceptance model, the study sets it as the basis for the photo check-in function model, which considers perceived usefulness and perceived ease of use as the core factors influencing users' acceptance of new technologies, and technology acceptance also affects their willingness to use. Secondly, regarding the use and satisfaction theory, it proposes that there are five core needs for users to use media. Based on the demonstration of their respective relationships with the Citywalk App, the study identifies them as key factors affecting perceived usefulness and perceived ease of use. This forms an idealized photo check-in function model for cost research, as shown in Figure 1.

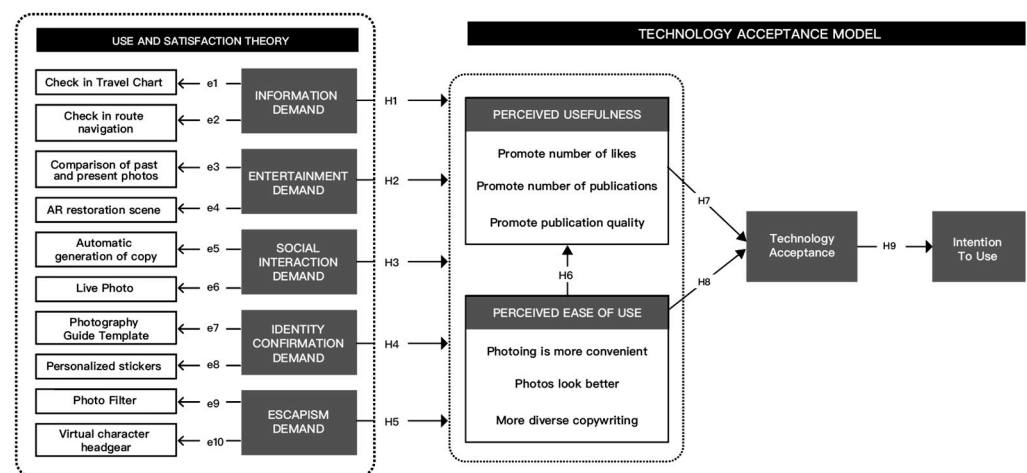


Figure 1. Ideal Citywalk camera check-in function model.

2.2.2. Estimation and Evaluation Stage

Use actual collected measurement data to verify the rationality of the constructed conceptual model. By designing a survey questionnaire specifically for the social check-in and photo-taking feature of the Citywalk App, collect user feedback and evaluation data on each feature. Using professional statistical software to analyze data, calculate model parameters, evaluate the fit between the model and actual data, and evaluate the model from multiple dimensions. Finally, based on the analysis results, the model is discussed to determine whether the hypothesis is valid and draw research conclusions.

2.3. Research Hypothesis

The use and satisfaction theory proposes that there are five core needs for users to use media. This study considers it as a key factor affecting perceived usefulness and perceived ease of use, and proposes the following hypotheses:

- H1.** *The satisfaction of information needs has a significant positive impact on perceived usefulness and perceived ease of use.*
- H2.** *The satisfaction of entertainment needs has a significant positive impact on perceived usefulness and perceived ease of use.*
- H3.** *The satisfaction of social interaction needs has a significant positive impact on perceived usefulness and perceived ease of use.*
- H4.** *The satisfaction of identity confirmation needs has a significant positive impact on perceived usefulness and perceived ease of use.*
- H5.** *Satisfying the need to escape reality has a significant positive impact on perceived usefulness and perceived ease of use.*

The technology acceptance model believes that perceived usefulness and perceived ease of use are the core factors that affect users' acceptance of new technologies, and technology acceptance will have an impact on their willingness to use them. Based on this, this study proposes the following hypotheses:

- H6.** *Perceived ease of use has a significant positive impact on perceived usefulness.*
- H7.** *Perceived usefulness has a significant positive impact on technology satisfaction.*
- H8.** *Perceived ease of use has a significant positive impact on technology satisfaction.*
- H9.** *Technical satisfaction has a significant positive impact on willingness to use.*

2.4. Questionnaire Design

The survey questionnaire of this study mainly includes the basic information section and the measurement scale section. Design a measurement scale based on the elements contained in the technology acceptance model and the theory of usage and satisfaction and obtain a questionnaire on the factors influencing users' acceptance of the technology for clocking in and taking photos.

2.4.1. Basic Information Section

Personal information section: By asking users about their gender, age, occupation, and other information, we can understand their basic social attributes. Users of different genders, ages, and occupations may have significant differences in their usage habits of tourism and mobile applications.

Behavioral habits section: Set questions about the number of Citywalks per year, photo check-in habits during travel, and the frequency of sharing photos or check-in on social media after travel. These questions can provide insights into the level of user engagement in Citywalk activities, as well as their dependence on social check-in and photo-taking behaviors during their travels.

2.4.2. Measurement Scale Section

The questionnaire measurement scale for factors affecting users' acceptance of the check-in and photo-taking function technology includes nine latent variable measurement scales. The analysis of latent variable scales is a component of the technology acceptance model theory and the use and satisfaction theory. The scales were measured using the Likert 5-point scale method, with "1 = completely disagree, 2 = somewhat agree, 3 = no idea, 4 = somewhat agree, 5 = strongly agree".

In terms of topic setting, the four variables in the theoretical part of the technology acceptance model are set based on user feedback on the convenience, functional value, overall evaluation, and future usage tendency of the Citywalk App check-in and photo-taking function. The specific content of the questionnaire is shown in Table 1.

Table 1. Specific content of the Citywalk App photo check-in function questionnaire.

Measured Variable	Number	Code	Question Items
Perceived Ease of Use	11	PEOU1	The Citywalker app will be able to help my social media posts gain more likes and interactions.
	12	PEOU2	The Citywalker app will help promote my frequency of posting on social media.
	13	PEOU3	The Citywalker app will help improve the quality of my social media posts.
Perceived Usefulness	14	PU1	The Citywalker app will make it more convenient for me to clock in and take photos.
	15	PU2	The Citywalker app will make my photos posted on social media look better.
	16	PU3	The Citywalker app will make my copywriting on social media more diverse.
Technical Satisfaction	17	ST1	Are you satisfied with the functional description of the Citywalker app?
	18	ST2	To what extent do you think the Citywalker app will address the demand for social check-in?
	19	ST3	Do you think the Citywalker app will meet your expectations for similar products in terms of technology?
Intention to Use	20	IU1	Would you be willing to use the Citywalker app for photo taking and check-in during your future travels?
	21	IU2	Do you feel that the current situation without the Citywalker app is inconvenient?
	22	IU3	Would you be willing to recommend the Citywalker app to your friends or social circle?
Information Needs	1	IN1	Do you think the check-in journey map on this app will help you better plan your travels?
	2	IN2	Do you think the route navigation function of this app will help you reach the photo location more conveniently?
Entertainment Needs	3	ENN1	Do you think the comparison function of past and present photos in this app can increase the fun of travel?
	4	ENN2	Do you think the AR restoration scene feature of this app will enhance your immersive experience?
Social Interaction Needs	5	SIN1	Do you think the automatic copy generation function of this app will help you improve the content of your social media sharing copy?
	6	SIN2	Do you think the live image generation function of this app can better showcase the journey on social media than static images?
Identity Confirmation Needs	7	ICN1	Do you think that using the photo template guidance function of this app to take higher quality check-in photos at scenic spots can enhance your personal image on social media?
	8	ICN2	Do you think the personalized sticker feature of this app will make your photos more personalized?

Table 1. *Cont.*

Measured Variable	Number	Code	Question Items
Escaping Reality Needs	9	ERN1	Do you think that the filters and other image enhancement features of this app will help solve the problem of poor shooting conditions in real life and improve the visual effect of your photos?
	10	ERN2	Do you think that the virtual character headgear feature of this app is more willing to take photos and check-in in scenes where you are unwilling to show your face?

3. Empirical Testing of Models

3.1. Analysis of the Basic Situation of the Questionnaire

3.1.1. Analysis of Questionnaire Collection Situation

This study mainly collected data through online questionnaires. After the questionnaire was published on the Wenjuanxing platform, it was disseminated through various social platforms such as WeChat and Xiaohongshu, and a total of 621 questionnaires were collected. During the effective questionnaire screening process, according to the set question items in the questionnaire, “How many Citywalks do you have per year?” After deleting 15 questionnaires that answered “almost never”, there were still 606 valid questionnaires remaining, with an effective rate of 97.58%.

3.1.2. Questionnaire Description Statistical Analysis

The population characteristics of this questionnaire survey mainly include the gender, age, and occupation of the respondents. The specific sample distribution is shown in Table 2. The basic survey of travel situation includes the annual average number of trips, travel photography habits, travel sharing habits, etc. The detailed statistical results are shown in Table 3.

Table 2. Questionnaire description statistical analysis (dimension of population characteristics).

Dimension	Option	Subtotal	Proportion
Gender	Male	271	44.72%
	Female	355	55.28%
Age	Under 18 years old	65	10.73%
	18–25 years old	207	34.16%
	26–35 years old	156	25.74%
	36–50 years old	106	17.49%
	50 years old and above	72	11.88%
Career	Student	220	36.30%
	Employees of enterprises	149	24.59%
	Technician	70	11.55%
	Civil servants	65	10.73%
	Freelancer	100	16.50%
	Other	2	0.33%

Dimension 1: Descriptive statistical analysis of demographic characteristics.

From the gender distribution of the respondents, the proportion of females is significantly higher than that of males. In terms of age distribution, the respondents mainly focus on the young group aged 18–35, while the proportion of users aged 36 and above is relatively small, which is consistent with the current trend of younger mobile internet users. From the perspective of occupational composition, the student group has the highest

proportion, while the proportion of vocational groups such as technical personnel and civil servants/public institution personnel is relatively low.

Table 3. Questionnaire description statistical analysis (dimension of travel situation).

Dimension	Option	Subtotal	Proportion
Frequency of Citywalks per year	Almost Never	0	0.00%
	1–2 times	132	21.78%
	3–5 times	153	25.25%
	6–9 times	179	29.54%
	More than 10 times	142	23.43%
Habit of taking check-in photos during journey	Frequently	222	36.63%
	Occasionally	314	51.82%
	very seldom	6	10.23%
	Not at all	8	1.32%
Habit of sharing photos to social media after journey	Frequently	214	35.31%
	Occasionally	284	46.86%
	very seldom	98	16.17%
	Not at all	10	1.65%

Dimension 2: Travel situation description, statistical analysis.

From the Citywalk frequency of the respondents, high-frequency participants account for a relatively high proportion, with 52.97% of users participating in Citywalks more than 6 times a year. This data reflects that Citywalk, as an emerging way of urban exploration, has formed a stable high-frequency user group with a high overall participation rate.

In terms of photo check-in behavior, the respondents showed a strong willingness to participate, with 88.45% of users having a photo check-in habit and only 1.32% of users having no photo habit at all. This result confirms that taking photos for check-in has become an indispensable part of modern travel, and users have a universal demand for recording their itinerary through images.

In terms of social sharing behavior, the willingness of respondents to share after traveling is more obvious, with 82.17% of users sharing photos or check-in records on social platforms, and only 1.65% of users not sharing at all. This data indicates that social sharing has become an important extension of the Citywalk experience, where users not only enjoy the exploration process itself, but also value self-presentation and interactive communication through social media.

3.2. Data Analysis Methods

3.2.1. Mean Variable Analysis

Based on the analysis of the means of observed variables, it can achieve the analysis of specific items and provide data driven for proposing development suggestions in the following text. Based on this, this article conducts a descriptive analysis of the observed variables in two dimensions: the technology acceptance model and the use and satisfaction theory model.

(1) Mean analysis of using and satisfying theoretical related scales

Calculate the mean of the scales related to information needs, entertainment needs, social needs, identity confirmation needs, and escapism needs proposed based on path dependence theory. The specific calculation results are shown in Table 4.

Table 4. Use and satisfy the mean data table of theoretical-related scales.

Variables	Code	Mean Score	Sort	D-Value of Mean	Standard Deviation of D-Value	p-Value
Information Need	IN1	3.98	1	0.11	0.897	$p < 0.01$
	IN2	3.86	2			
Entertainment Need	ENN1	4.04	1	0.45	1.006	$p < 0.01$
	ENN2	3.59	2			
Social Interaction Need	SIN1	3.93	2	−0.08	0.994	$p = 0.05$
	SIN2	4	1			
Identity Confirmation Need	ICN1	3.93	1	0.49	1.095	$p < 0.01$
	ICN2	3.44	2			
Escaping Reality Need	ESN1	3.9	1	0.43	1.076	$p < 0.01$
	ESN2	3.47	2			

In the dimension of information demand, users' significant preference for the "check-in journey map" ($M = 3.98, p < 0.01$) reveals their high dependence on structured information during the travel planning stage. In contrast, although the rating of "Route Navigation" ($M = 3.86$) is slightly lower, its significance ($p < 0.01$) still indicates the practicality of this function as a basic tool, especially in unfamiliar environments where users have a rigid demand for real-time path guidance.

In the dimension of entertainment demand, the extremely high rating of the "Comparison Chart of Past and Present" ($M = 4.04, p < 0.001$) highlights the dominant role of visual narrative in user behavior. On the other hand, the lower acceptance of "AR restoration scenes" ($M = 3.59, p < 0.001$) may be due to the interference of the complexity of technical interaction on user experience.

In the dimension of social demand, the difference in ratings between the automatic copy generation function (mean = 3.93) and the live scene generation function (mean = 4.00) did not reach statistical significance ($p = 0.187, p = 0.187$). This phenomenon may stem from two reasons: firstly, the potential complementarity between the two types of functions in social content creation, and secondly, the trade-off between operational complexity and user perception may also affect the convergence of ratings.

In the dimension of identity confirmation requirements, the significant advantage of the "photo template" ($M = 3.93, p < 0.001$) reflects users' risk avoidance behavior in social check-in. In contrast, the lower acceptance of "personalized stickers" ($M = 3.44, p < 0.001$) exposes two possible behavioral contradictions: firstly, the homogeneous design of existing sticker libraries is difficult to meet users' demands for unique identity labels; secondly, the operational cost of manually adding stickers conflicts with the user's behavioral goal of "quick publishing".

In the dimension of escaping reality needs, the high acceptance of the "filter function" ($M = 3.90, p < 0.001$) reveals users' preference for technology modification rather than identity hiding. Users are more inclined to beautify while preserving authenticity (such as adjusting lighting and optimizing skin tone), rather than completely virtualizing the image (such as $M = 3.47$ for headgear function, $p < 0.001$).

(2) Mean analysis of technical acceptance model related scales

Calculate the mean of the perceived ease of use scale, perceived usefulness scale, technology satisfaction scale, and willingness to use scale proposed based on the technology acceptance model. The specific calculation results are shown in Table 5.

Table 5. Mean data table of technical acceptance model-related scales.

Variables	Code	Mean Score	Sort
Perceived Ease of Use	PEOU1	3.89	2
	PEOU2	3.62	3
	PEOU3	3.92	1
Perceived Usefulness	PU1	3.92	1
	PU2	3.9	2
	PU3	3.89	3
Technical Acceptance	SA1	3.99	1
	SA2	3.93	2
	SA3	3.84	3
Intention To Use	IU1	4.04	1
	IU2	3.85	2
	IU3	3.77	3

According to the scale analysis of perceived ease of use, perceived usefulness, technology acceptance, and willingness to use based on the technology acceptance model, research data shows that users have a high overall acceptance of the Citywalk App.

The analysis of the perceived usability dimension shows that the respondents' recognition of the usability of the Citywalk App is focused on the content quality improvement function. Specifically, the highest rating was given to "Improving the Quality of Social Media Publishing" (PEOU3, mean 3.92), indicating that users are most confident in the app's ability to optimize the efficiency of creating social sharing content; next is "helping to obtain social media interaction volume" (PEOU1, average 3.89), reflecting users' expectations for the effectiveness of content dissemination; and the lower mean of "promoting publication frequency" (PEOU2, mean 3.62) suggests that users are more concerned with content quality rather than simply increasing publication volume. The slight difference (0.03 points) between PEOU3 and PEOU1 indicates a consensus among users on the correlation between "quality optimization" and "increased interaction", but the significant difference (0.3 points lower than PEOU3) between PEOU2 suggests that overemphasizing publication frequency may deviate from users' core demand for usability.

In the dimension of perceived usefulness, users' evaluation of the practicality of the Citywalk App shows a feature of prioritizing functional efficiency. The rating for "convenience of taking photos for check-in" (PU1, mean 3.92) is slightly higher than "beautifying social media photos" (PU2, mean 3.9) and "enriching social media copy" (PU3, mean 3.89), indicating that users value the simplification of the operation process more than additional content optimization features. The slight difference (0.02–0.03 points) between PU1, PU2, and PU3 indicates that users have a holistic understanding of practicality, even though agility, visual appeal, and copywriting diversity collectively support usefulness evaluation. However, the high average value of PU1 further reveals that users are more sensitive to basic functions such as quick check-in, while the subtle difference between PU2 and PU3 may stem from the "visual first" usage habit in social scenarios.

The survey results of the technical satisfaction dimension indicate that users generally hold a positive attitude towards the technical implementation capability of the Citywalk App, but there is room for optimization. The highest score for "functional satisfaction" (ST1, mean 3.99) indicates that the core functional design of the app is clear and meets user expectations; addressing social check-in needs (ST2, mean 3.93) comes second, reflecting users' recognition of its adaptability to different scenarios; and the lower rating of "expected level of technology" (ST3, mean 3.84) suggests that some users' expectations for technical details such as algorithm accuracy and stability have not been fully met. The close correlation

between ST1 and ST2 (with a difference of 0.06 points) indicates that the implementation of functionality is highly correlated with the ability to solve requirements, while the relative weakness of ST3 (0.15 points lower than ST1) may be due to the complexity of technical implementation or comparison with competitors.

The survey results on the use intention dimension indicate that users have different future usage tendencies and social communication intentions towards the Citywalk App. The scores for “future usage intention” (IU1, mean 4.04) and “perceived inconvenience after the lack of such apps” (IU2, mean 3.85) were significantly higher than those for “recommendation intention” (IU3, mean 3.77), indicating that users have a high dependence on apps, but lack motivation to actively promote them. The reasons may be related to subjective preferences, privacy concerns, or functional substitutability of social products. It is worth noting that the rating of IU2 is still higher than the neutral value ($3.85 > 3$), indicating that the lack of the app may cause slight inconvenience to users, but it is not enough to drive strong recommendation behavior.

3.2.2. Reliability Analysis

Reliability analysis is the core method for evaluating the internal consistency of a scale. A Cronbach’s alpha coefficient higher than 0.7 indicates an acceptable level of reliability for the scale, and the total correlation coefficient (CITC) of the correction items needs to be ≥ 0.4 to ensure that the overall correlation between the items and the scale meets the standard. This study is based on actual data from a questionnaire survey and uses SPSS 19.0 to test the relevant subscales, while observing the Cronbach’s alpha coefficient after deleting a certain item. In this study, the Cronbach’s alpha coefficients for all dimensions met the standard, indicating stable correlation between items, reliable reliability, and no need to adjust items. In addition, the CITC value also meets the standards, and the scale design is scientific. The specific results are as follows (Table 6).

Table 6. Reliability scale analysis data table.

Scale	Test Variable	CITC	α Coefficient of Deleted Items	Cronbach α Coefficient
Information Need	IN1	0.772	0.792	0.868
	IN2	0.719	0.841	
Entertainment Need	ENN1	0.669	0.732	0.811
	ENN2	0.607	0.793	
Social Interaction Need	SIN1	0.658	0.758	0.816
	SIN2	0.646	0.768	
Identity Confirmation Need	ICN1	0.654	0.697	0.792
	ICN2	0.546	0.809	
Escaping Reality Need	ESN1	0.667	0.739	0.813
	ESN2	0.601	0.806	
Perceived Ease of Use	PEOU1	0.659	0.722	0.804
	PEOU2	0.596	0.788	
	PEOU3	0.698	0.683	
Perceived Usefulness	PU1	0.717	0.819	0.859
	PU2	0.748	0.79	
	PU3	0.737	0.8	
Technical Acceptance	SA1	0.75	0.791	0.86
	SA2	0.739	0.801	
	SA3	0.719	0.82	
Intention To Use	IU1	0.737	0.679	0.817
	IU2	0.643	0.782	
	IU3	0.641	0.78	

3.2.3. Validity Analysis

Using SPSS 19.0 (IBM, Located in Amonk, NY, USA), the KMO of the total scale was calculated to be 0.952 (greater than 0.5), and Bartlett's sphericity test value was 10,456.211, $\text{sig} < 0.001$. The difference is significant and suitable for factor analysis (Table 7).

Table 7. Validity inspection indicators analysis data table.

Inspection Indicators	Value
KMO sampling suitability quantity	0.952
Bartlett sphericity test chi square value	10,456.211
Degrees of Freedom (df)	351
mN (Sig.)	0.000

Based on the sample data, factor analysis was conducted using SPSS 19.0, principal component analysis was used, and the maximum variance method was used for orthogonal rotation to extract components with eigenvalues greater than 1. The sample rotation component matrix was formally investigated (see Table 8). Overall, according to the criterion of factor loadings greater than 0.5, a total of nine principal components were extracted, and all items showed good factor loadings in the corresponding factors. The main loadings were all greater than 0.6, and there was no significant cross loading. Therefore, there was no need to delete any items, which is consistent with the original scale design structure, indicating that the questionnaire has good structural validity; From the perspective of the "publicness" indicator, the publicness of all items is above 0.7, with a minimum of 0.716 and a maximum of 0.846, indicating that each item can be effectively explained by the extracted factors and has good publicness and representativeness.

Table 8. Validity factor analysis data table.

Item Code	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Commonality
IN1	0.278	0.748	0.179	0.236	0.151	0.134	0.146	0.129	0.072	0.808
IN2	0.116	0.81	0.188	0.09	0.187	0.127	0.139	0.095	0.086	0.8
ENN1	0.317	0.355	0.227	0.256	0.175	0.055	0.591	0.08	0.057	0.735
ENN2	0.053	0.113	0.039	0.062	0.111	0.187	0.843	0.169	0.195	0.844
SIN1	0.292	0.203	0.678	0.21	0.149	0.015	0.114	0.199	0.113	0.719
SIN2	0.046	0.178	0.734	0.166	0.195	0.215	0.155	0.114	0.137	0.741
ICN1	0.335	0.191	0.298	0.292	0.081	0.08	0.177	0.615	0.038	0.746
ICN2	0.063	0.037	0.089	0.013	0.103	0.252	0.119	0.801	0.295	0.829
ESN1	0.272	0.264	0.331	0.294	0.122	0.597	0.127	0.099	0.062	0.741
ESN2	0.031	0.071	0.038	0.002	0.124	0.84	0.11	0.233	0.227	0.846
PEOU1	0.381	0.334	0.352	0.326	0.072	0.106	0.128	0.046	0.448	0.722
PEOU2	0.157	0.04	0.132	0.129	0.101	0.186	0.154	0.216	0.8	0.814
PEOU3	0.311	0.248	0.215	0.31	0.165	0.142	0.15	0.099	0.581	0.718
PU1	0.285	0.261	0.202	0.66	0.231	0.085	0.181	0.13	0.092	0.744
PU2	0.126	0.171	0.196	0.716	0.25	0.188	0.159	0.124	0.247	0.797
PU3	0.2	0.212	0.228	0.717	0.175	0.155	0.146	0.155	0.145	0.772
SA1	0.735	0.192	0.19	0.247	0.252	0.127	0.168	0.079	0.082	0.794
SA2	0.677	0.204	0.195	0.18	0.245	0.16	0.117	0.143	0.165	0.718
SA3	0.697	0.191	0.146	0.116	0.182	0.166	0.149	0.156	0.282	0.744
IU1	0.31	0.255	0.207	0.24	0.694	0.1	0.134	0.063	0.069	0.78
IU2	0.308	0.129	0.255	0.232	0.681	0.052	0.121	0.042	−0.056	0.716
IU3	0.085	0.182	0.073	0.121	0.788	0.164	0.128	0.161	0.258	0.817

By using factor analysis to extract factors with eigenvalues greater than 1, a total of nine principal components were obtained, and their factor eigenvalues were compared with the total variance explained (Table 9). The cumulative explanatory total variance of these nine principal components reached 77.527%, indicating a strong correlation between each item and the factor. The factor structure has good explanatory power for the original variable and meets the criteria for validity judgment.

Table 9. Validity analysis data table.

Number	Code	Initial Eigenvalue Extraction			Extraction of Sum of Squares Loading			Rotation of Sum of Squares Loading		
		Total	variance%	cumulative%	Total	variance%	cumulative%	Total	variance%	cumulative%
1	IN	12.623	46.7%	46.7%	2.908	10.7%	10.7%	2.908	10.7%	10.7%
2	ENN	1.666	6.1%	52.9%	2.806	10.3%	21.1%	2.806	10.3%	21.1%
3	SIN	1.156	4.2%	57.2%	2.6	9.6%	30.7%	2.6	9.6%	30.7%
4	ICN	1.092	4.0%	61.2%	2.591	9.5%	40.3%	2.591	9.5%	40.3%
5	ESN	0.957	3.5%	64.7%	2.214	8.2%	48.5%	2.214	8.2%	48.5%
6	PEOU	0.917	3.3%	68.1%	2.034	7.5%	56.1%	2.034	7.5%	56.1%
7	PU	0.852	3.1%	71.3%	2.02	7.4%	63.6%	2.02	7.4%	63.6%
8	SA	0.833	3.0%	74.4%	1.938	7.1%	70.7%	1.938	7.1%	70.7%
9	IU	0.741	2.7%	77.1%	1.726	6.3%	77.1%	1.726	6.3%	77.1%

3.3. Analysis of Hypothesis Test Results

This study tested nine research hypotheses using structural equation modeling (SEM). Table 10 presents the standardized path coefficients, significance levels, and hypothesis validation results in their entirety.

Table 10. Hypothesis test results analysis data table.

Route	Value- β	Value-SE	Value-z	Value-p	Hypothesis Test Conclusion
Use and Satisfaction Theory $\rightarrow$ PU					
IN $\rightarrow$ PU	0.185	0.054	3.297	0.001	H1 support
ENN $\rightarrow$ PU	0.229	0.063	3.733	0.000 *	H3 support
SIN $\rightarrow$ PU	0.294	0.072	4.31	0.000 *	H5 support
ICN $\rightarrow$ PU	0.069	0.063	1.106	0.269	H7 not supported
ERN $\rightarrow$ PU	0.21	0.056	3.747	0.000	H9 support
Usage and Satisfaction Theory $\rightarrow$ PEOU					
IN $\rightarrow$ PEOU	0.115	0.055	1.978	0.048	H2 support
ENN $\rightarrow$ PEOU	0.147	0.065	2.271	0.023	H4 support
SIN $\rightarrow$ PEOU	0.235	0.077	3.179	0.001	H6 support
ICN $\rightarrow$ PEOU	0.081	0.064	1.28	0.201	H8 not supported
ERN $\rightarrow$ PEOU	0.218	0.058	3.644	0.000	H10 support
TAM internal path relationship					
PU $\rightarrow$ PEOU	0.203	0.073	2.726	0.006	H11 support
PU $\rightarrow$ SA	0.444	0.064	6.794	0.000 *	H12 support
PEOU $\rightarrow$ SA	0.478	0.066	7.192	0.000 *	H13 support
SA $\rightarrow$ IU	0.79	0.044	18.781	0.000 *	H14 support

* Value-p shows 0.000 indicating Value-p < 0.001.

In the research hypothesis, H1–H3 and H5–H9 both passed significance tests ($p < 0.05$), indicating that information needs, entertainment needs, social interaction needs, and escapism needs have a significant positive impact on perceived usefulness (PU) and perceived ease of use (PEOU), and the internal path relationship of the technology acceptance model (perceived ease of use $\rightarrow$ perceived usefulness $\rightarrow$ technology satisfaction $\rightarrow$ willingness to use) has been validated. Among them, the driving effect of social interaction demand on PU and PEOU is most prominent ($\beta = 0.294$), which confirms the core demand of users for social communication function; that is, to obtain interactive feedback and social recognition through high-quality content. The strong effect of escaping reality needs on PU and PEOU ($\beta = 0.218$) reveals the key role of technology assisted functions (such as virtual headgear, filter optimization) in reducing user social anxiety and improving operational fluency.

However, the impact of identity confirmation requirements on PU and PEOU ($\beta = 0.069$, $p = 0.269$) did not reach a significant level, which deviates from research expectations. This result may be due to limitations in the design of existing photo templates:

although standardized photo templates can provide composition guidance, they fail to fully meet users' needs for personalized identity expressions. For example, template homogenization leads to content convergence, weakening users' motivation to construct a "spatial self" through unique images. In addition, the low adaptability of the personalized sticker function (such as static design and lack of scene-based labels) further limits its role in identity confirmation.

3.4. Model Structure Verification Analysis

3.4.1. Analysis of Model Fitting Situation

This study tested the path coefficients and model fit using the maximum likelihood estimation method. Based on the questionnaire data, the overall adaptability index of the model is shown in Table 11.

Table 11. Data table for model fitting analysis.

Indicators	Judgment Criteria	Actual Values	Adaptability Conclusions
χ^2/df	<3	3.389	Acceptable
RMSEA	<0.08	0.063	Good
CFI	>0.9	0.93	Good
NFI	>0.9	0.904	Good
SRMR	<0.05	0.049	Good

From the fitting results, RMSEA (0.063), CFI (0.93), and NFI (0.904). All key indicators have reached a good adaptation level, indicating that the model can effectively explain the data. Although the chi square degree of freedom ratio ($\chi^2/\text{df} = 3.389$) is slightly higher than the standard threshold, it is still acceptable in large sample ($N = 606$) studies (Kline, 2015). In addition, the average variance extraction (AVE) of each latent variable is greater than 0.5, and the combination reliability (CR) is higher than 0.7, further verifying the internal consistency and convergence validity of the model.

3.4.2. Path Effect Analysis

According to the data validation of the Citywalk technology acceptance model (Figure 2), there is a significant differentiation in the impact of using and satisfying the five major needs of the theory on the variables of the technology acceptance model. Based on the strength and significance level of the path coefficient (β value), this study defines the path with a standardized coefficient $\beta \geq 0.20$ and $p < 0.01$ as the "dominant position" definition, while the "differentiated path" refers to different needs affecting user technology perception through significantly different mechanisms.

Social interaction and the need to escape reality are the dominant paths. The path coefficient of social interaction demand on PU and PEOU is the highest ($\beta = 0.294$, $p < 0.001$), indicating that users' dependence on social communication functions (such as automatic copy generation and dynamic content sharing) is the core factor driving practicality evaluation. This result indicates that the demand for social interaction directly enhances users' recognition of functional value by enhancing content dissemination efficiency; the effect of escaping reality needs on PU and PEOU is significant ($\beta = 0.218$, $p < 0.001$), reflecting that technical auxiliary functions (such as virtual headgear and filter optimization) indirectly enhance users' perception of usability by reducing operational complexity. This type of feature helps users avoid the limitations of real-life shooting conditions, such as poor weather and insufficient device performance, thereby completing social content production more smoothly.

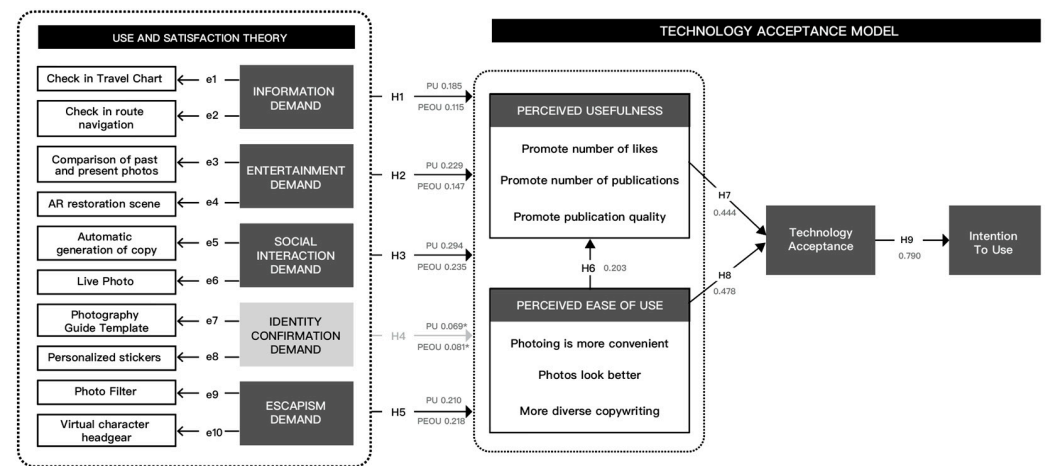


Figure 2. Acceptance model* of Citywalk technology after data validation.

4. Research Conclusion and Functional Design Strategy

4.1. Research Problem Analysis

This study is based on the technology acceptance model and the theory of usage and satisfaction. Through empirical analysis, it explores the user acceptance mechanism of the social check-in and photo-taking function on the Citywalk App and systematically verifies the three research questions (RQ1–RQ3) initially proposed. The specific results are as follows:

(1) Conclusion of Research Question 1

When users use the social check-in and photo-taking function of the Citywalk App, their social interaction needs, escapism needs, information needs, and entertainment needs all have a significant positive impact on perceived usefulness or perceived ease of use. Among them, the impact of social interaction needs is the most prominent ($\beta = 0.294$ for PU and PEOU), indicating that users' dependence on social communication functions is the core factor driving their technological acceptance. In contrast, the impact of identity confirmation requirements on PU and PEOU did not reach a significant level ($\beta = 0.069$, $p = 0.269$), which may be related to the homogeneous design of existing photo templates and sticker functions, which did not fully meet users' needs for personalized expression. Based on this conclusion, this study proposes the following suggestions.

The design of social check-in and photo-taking functions for future Citywalk-related apps should strengthen the core functions corresponding to high impact demands. Research has found that social interaction needs and escapism needs have a significant impact on PU and PEOU. Therefore, CityWalk-related apps can prioritize optimizing the generation of social content and technology-assisted play check-in photo functions. For example, an "intelligent dynamic content engine" can be developed to deeply integrate live streaming images with automatic copywriting generation. AI algorithms can be used to match images and adapt copywriting in real time, improving the richness and dissemination efficiency of content; at the same time, an "adaptive filter system" is introduced to automatically recommend filter combinations based on ambient lighting, composition features, and user historical preferences, reducing manual debugging costs and enhancing the gaming experience. The virtual headgear function can be upgraded to a "dynamic mask", supporting semi-transparent effects and scene-based design, such as holiday-themed headgear, which reduces social anxiety while preserving realism.

(2) Conclusion of Research Question 2

After users perceive the practicality and convenience of the Citywalk App's photo check-in function, these perceptions further affect their technical satisfaction and willingness to continue using it. The study validated the core path relationship of the technology acceptance model, and the results showed that perceived usefulness ($\beta = 0.382$) and perceived ease of use ($\beta = 0.291$) have a significant positive impact on technology satisfaction, which in turn directly drives usage intention ($\beta = 0.487$). This discovery indicates that users' recognition of the practicality and convenience of features is a key prerequisite for their continued willingness to use them. Based on this conclusion, this study proposes the following suggestions.

Future CityWalk-related apps can still enhance users' willingness to use them through ecological construction, incentive systems, and other functions. For example, building an aggregation platform for user generated content, supporting content classification based on geographic tags (such as historical check-in and internet celebrity location), and embedding social recommendation algorithms to promote accurate distribution of user content within interest circles, forming a positive cycle of "creation interaction recreation". In addition, incentive mechanisms such as the "Experience Value Growth System" can be introduced to convert the results of users sharing Citywalk content (such as likes and shares) into corresponding points, which can be redeemed for corresponding benefits (such as virtual medals, exclusive product features, peripheral products, attraction tickets, etc.), thereby enhancing the motivation for continuous use. This strategy aims to bridge this potential gap and maintain long-term user engagement by establishing a positive and cyclical content ecosystem and incentive system.

(3) Conclusion of Research Question 3

In the current design of the photo check-in function, there is indeed a gap in acceptance between user needs and actual experience, mainly reflected in the non-significant impact of identity confirmation needs. This phenomenon indicates that existing features have not effectively supported users' need to build social identities through personalized content. In addition, although information demand and entertainment demand have a significant impact on PU, their effect strength is relatively low, indicating that there is still room for optimization in the deep integration of information accuracy and entertainment experience for existing functions. Based on this conclusion, this study proposes the following suggestions.

Simplify the interaction design of low-dependency features. According to the current situation where the identity confirmation requirement does not exist in the technical model of the Citywalk App's photo check-in function, it reflects an imbalance between the existing standardized functions and users' personalized demands. Considering the existence of the use and satisfaction theory in communication studies and the practical usage scenarios of users in Citywalk App, it is recommended to retain the relevant functions but simplify them to reduce the cost of product design and operation. For example, upgrading the photo template library to a "user co-creation platform" that allows users to upload custom templates to enrich the gameplay while reducing operating costs; personalized stickers can introduce "scene-based labels" that automatically generate urban cultural symbols based on location information and AI, such as landmark silhouettes, and embed unique expressions in a standardized framework.

4.2. Research Conclusion

This study constructs a theoretical framework based on the Technology Acceptance Model (TAM) and the Use and Gratification Theory (U&G), aiming to explore the core factors that affect users' acceptance and continued use of the social check-in and photo-taking function on the Citywalk App. The initial model takes perceived usefulness (PU)

and perceived ease of use (PEOU) as mediating variables, introduces the five major needs of use and satisfaction theory (information, entertainment, social interaction, identity confirmation, and escapism) as external influencing factors, and proposes nine research hypotheses, covering the driving effects of needs on technology perception and the internal path relationship of TAM.

In addition, 606 valid data collected through a questionnaire were used to validate hypotheses using structural equation modeling (SEM). The results showed that the overall fit of the model was good, and all hypotheses were valid except for the impact of identity confirmation requirements on PU and PEOU, which did not reach a significant level. This phenomenon indicates that the existing identity confirmation functions of Citywalk Apps, such as standardized photo templates and static stickers, have not effectively met users' deep needs for personalized identity expressions. Relevant products should shift from "template-based guidance" to "personalized empowerment" function development.

The validated model indicates that social interaction needs and escapism needs have the most significant driving effects on PU and PEOU, and information needs indirectly affect users' technology perception through differentiated paths. As a fully mediating variable, technology acceptance has a strong transmission effect on usage intention, highlighting the necessity of multidimensional integration of user experience.

Based on the analysis of research questions RQ1–RQ3, this study concludes that users' social interaction needs, escapism needs, information needs, and entertainment needs all have a significant positive impact on perceived usefulness or ease of use when using the social check-in and photo-taking function of the Citywalk App, while the impact of identity confirmation needs has not reached a significant level; after users perceive the practicality and convenience of the photo check-in function, these perceptions do further affect their technical satisfaction and willingness to continue using it. In the current design of the photo check-in function, there is indeed a gap in acceptance between user needs and actual experience, mainly reflected in the non-significant impact of identity confirmation needs. At the same time, the article proposes the following optimization path: in the future, the social check-in and photo-taking function design of Citywalk App should strengthen the core functions corresponding to high influence needs, such as prioritizing the development of intelligent dynamic content engines and adaptive filter systems for high influence needs in social interaction and escapism; by building a content ecosystem and incentive mechanisms (such as an experience value growth system), we can further enhance users' willingness to use and improve user retention rates; and by simplifying the interaction design of low-dependency features, we can reduce the cost of product design and operation.

Overall, this study integrates interdisciplinary theories and empirical testing, combining the technology acceptance model in information systems science, the use and satisfaction theory in communication and psychology, and the analysis of urban exploration behavior in tourism studies to construct a multidimensional explanatory framework. This integration not only validates the applicability of TAM and U&G in tourism application scenarios but also expands the boundaries of technology acceptance behavior research by introducing the perspective of urban cultural experience, combining academic innovation and practical guidance value.

4.3. Research Prospects and Limitations

Although this study systematically reveals the impact mechanism of user demand on technology acceptance behavior, there are still certain limitations. Firstly, the sample population is mainly composed of young users aged 18–35 (accounting for 59.9%), and the occupational distribution is biased towards students and enterprise employees, which may limit the generalizability of the conclusion. Future research can expand the sample size

to include more middle-aged and elderly users and increase cross-cultural comparisons to test the model's generalization ability. Secondly, the model did not include external environmental variables such as socio-cultural background. In the future, moderating variables such as user technological literacy can be introduced to explore complex interaction effects. Finally, this study provides a theoretical framework and practical path for the social function design of tourism applications, but it still needs to continue to promote the iterative upgrading of user experience through interdisciplinary collaboration and technological innovation.

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