IEEE Access
Multidisciplinary ⋮ Rapid Review ⋮ Open Access Journal

Received 2 July 2024, accepted 29 July 2024, date of publication 2 August 2024, date of current version 11 September 2024.

Digital Object Identifier 10.1109/ACCESS.2024.3437418

RESEARCH ARTICLE

Factors Influencing User Intentions on Interactive Websites: Insights From the Technology Acceptance Model

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ABSTRACT This study harnesses the Technology Acceptance Model (TAM) to unravel the influence of design elements on user interactions with interactive websites. Specifically, it examines the impact of interface simplicity, navigational usability, content readability, interactive feedback, personalized experience, and aesthetic pleasure on users' perceived ease of use and perceived usefulness, ultimately affecting their intent to engage with such platforms. Employing a mixed method that integrates questionnaire surveys with Structural Equation Modeling (SEM) and semi-structured interviews, the research meticulously explores the dynamics between various aspects of web design and user engagement. The qualitative interviews provided deeper insights into user preferences, revealing that while interface simplicity and content readability are universally appreciated, navigational usability and personalized experience often evoke mixed reactions. Participants highlighted the importance of intuitive design and timely feedback, but also noted that excessive customization options could lead to frustration. The findings underscore the significance of these design elements in not only enhancing the user experience on interactive platforms but also in elevating user engagement and satisfaction levels. This study contributes valuable knowledge for web developers and designers aiming to optimize interactive websites, ensuring they are more aligned with user preferences and expectations.

INDEX TERMS Interactive website, technology acceptance model, aesthetic pleasure, interface simplicity.

I. INTRODUCTION

In today's digital era, the design of website interfaces critically shapes user experiences, acting as a pivotal interface between businesses and users. With the internet's pervasive presence and the rapid progression of technology, websites have become essential platforms for user interaction. In this user-centric era, the architecture of interactive websites is not merely at the front line of user engagement but also as a fundamental element in sculpting user experiences, directing user behavior, and amplifying user satisfaction.

The associate editor coordinating the review of this manuscript and approving it for publication was Mouquan Shen.

The field of Human-Computer Interaction (HCI) plays a crucial role in understanding and enhancing the design of these interactive platforms. HCI focuses on the design and use of computer technology, emphasizing the interfaces between people (users) and computers. Preece, Rogers, and Sharp highlight that effective HCI design not only improves usability but also enriches user experiences by ensuring that websites are intuitive and accessible [1]. This perspective aligns with the principles of user-centered design, which prioritize users' needs and preferences throughout the design process.

Web design, a significant aspect of HCI, also involves understanding user interaction patterns and creating

interfaces that are not only functional but also engaging, and aesthetically pleasing [2]. Gould and Lewis emphasize that the principles of usability—effectiveness, efficiency, and satisfaction—should guide the design process to ensure that users find the website both useful and enjoyable [3].

Similarly, exceptional interface design is paramount in providing consistently positive user interactions on a website. Herfandi et al. underscored the significance of interface design in forging initial user impressions and maintaining prolonged satisfaction [4]. The website's layout, serving as the cornerstone of its design, crucially influences users' efficiency in locating desired information. Research conducted by Dianat et al. supports this, identifying webpage layout and performance as the foremost determinants of usability, with personal characteristics playing a minimal role in affecting user satisfaction [5]. This highlights the importance of adept layout design in enhancing website usability and satisfaction.

Moreover, the design of navigation is indispensable for facilitating seamless access to information. Research by Guo et al. discovered a negative relationship between visual complexity and user satisfaction, underscoring the value of straightforward and intuitive navigation in improving user experience [6]. Additionally, the choice of color scheme extends beyond aesthetic appeal, embodying the brand's emotional essence and values. Karina emphasized that the elements of e-service environment, like aesthetic allure, layout, and functionality, are vital in fostering customer satisfaction and loyalty. The color scheme, in particular, plays a crucial role in evoking emotional responses and enhancing the appeal of the website [7].

For website design, UI and UX serve different roles, with attractive UI focusing on aesthetic design and User Experience (UX) emphasizing the user's overall interaction with the product [8]. Many usability tests separate studies of UI and UX. On one hand, numerous studies focus on the aesthetics and usability evaluation of website layout, which falls under the attractive user interface (UI) category in HCI [9]. For instance, research by Rendell et al. found that website UI design affects user mood, attention, enjoyment, and trust in specific contexts [10]. Moreover, using images of natural environments in UI design can increase users' purchase intentions [10].

On the other hand, some studies focus on the practical value and overall impression of websites, considered as part of the UX domain [8]. For example, the design of e-commerce websites tends to reduce user operation steps and enhance navigation systems to simplify decision-making processes [11].

While understanding the distinction between UI and UX is crucial for those studying web or mobile app design, website users typically do not differentiate between these concepts [12]. Instead, they view them holistically from a consumer's perspective [13]. From a product standpoint, UI and UX are seen as an integrated service. However, contemporary interactive website designs often overemphasize individual elements of UI and UX, neglecting their synergistic effects and the fulfillment of actual user needs. Therefore, interactive website design should return to the basics, focusing on meeting user needs to enhance the overall user experience.

This study endeavors to investigate the design factors within interactive websites that influence, and potentially determine, users' readiness to engage. Extending the Technology Acceptance Model, it aims to elucidate the intricate relationship between design elements and user browsing intentions. The outcome seeks to provide actionable insights for crafting more efficacious and user-centric online spaces. Web developers and designers are thus encouraged to judiciously consider these design elements, ensuring a collective contribution towards an unparalleled user experience.

II. LITERATURE REVIEW AND HYPOTHESIS

A. INTERFACE SIMPLICITY (IS)

A consensus in the literature underscores interface simplicity, marked by visual and functional clarity, as pivotal for enhancing user experience and technology adoption. Eytam, Tractinsky, and Lowengart demonstrated that users find simple interfaces more accessible, thus improving the quality of interaction [14]. This accessibility does not compromise functionality but meets users' expectations for efficient engagement. Joo et al. extended this concept within the Technology Acceptance Model (TAM), showing that ease of use significantly enhances the perceived utility of technology in mobile learning environments [15], suggesting that minimized effort in technology interaction increases its perceived value. In the realm of Massive Open Online Courses (MOOCs), Wang et al. observed that simplicity not only elevates ease of use but also positively influences perceived usefulness through better content quality and emotional connection [16]. Yuan et al. supported this, indicating that simplicity in interfaces boosts both perceived ease and usefulness by lowering cognitive load and fostering user engagement [17].

These studies collectively affirm that interface simplicity directly fosters user satisfaction and willingness to use technology, making technology interactions more intuitive and approachable. Thus, a meticulously designed, simple interface is essential for fostering technology acceptance. This leads to the hypotheses:

H1: Interface simplicity positively impacts perceived ease of use.

H2: Interface simplicity positively impacts perceived usefulness.

B. NAVIGATION USABILITY (NU)

Navigation Usability (NU) stands as a cornerstone in shaping users' technology engagement, directly impacting their perceived ease of use and intentions to use the technology. Studies on car navigation systems have underscored NU as a decisive factor in fostering adoption intentions [18],

spotlighting the importance of navigational simplicity in augmenting user ease and adoption rates. Rivero, Kalinowski, and Conte have shown the utility of Design Usability Evaluation (DUE) in pinpointing and addressing navigation and usability issues early, suggesting that refined navigation design markedly improves user ease and overall experience [19]. Furthermore, Cheng's work on mobile learning (m-learning) underscores the significant influence of NU on technology acceptance, advocating for enhancements in navigational features to boost user perception of ease and utility, thereby encouraging technology adoption [20]. Research by Tsai et al. on social platform use among older adults indicates that NU substantially betters perceived ease of use, positively skewing usage intentions [21]. These findings collectively assert the criticality of NU in technology design, revealing that well-designed navigation not only heightens perceived ease but also amplifies adoption intentions through enhanced user satisfaction. Hence, the following hypotheses are proposed:

H3: Navigational usability positively influences users' perceived ease of use.

H4: Navigational usability positively influences users' perceived usefulness.

C. CONTENT READABILITY (CR)

Extensive research has found that Content Readability (CR) significantly impacts Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). For instance, Tao et al. observed in their study of Massive Open Online Courses (MOOCs) that user interface design, content quality, and emotional engagement positively affect PEOU and PU within the Technology Acceptance Model (TAM) framework [22]. Similarly, Yang and Lee explored the user acceptance of streaming media devices and revealed that content quality indirectly influences the flow experience and PU [23], thus emphasizing the pathway through which content readability enhances user experience and PU.

Moreover, a meta-analysis study by Zhou et al. demonstrated that the main influencing factors for mobile reading include PU, PEOU, and interface design, proving that content readability directly affects the perceived ease of use and usefulness of mobile reading applications [24]. In fact, perceived ease of use is largely affected by content readability, which in turn significantly impacts perceived usefulness and user attitudes [25]. Specifically, factors such as perceived ease of use, enjoyment, trust, knowledge, and skills, serve as latent determinants affecting the use of consumer-generated content in apparel shopping [26].

Therefore, it is evident that content readability universally impacts PEOU and PU across different domains and platforms. These studies collectively underscore the importance of considering content readability in the design of technological products and services. Hypotheses proposed are:

H5: Content Readability positively influences Perceived Ease of Use.

H6: Content Readability positively influences Perceived Usefulness.

D. INTERACTIVE FEEDBACK (IF)

In the digital era, interactive feedback (IF) has become increasingly prominent, directly impacting user experience and indirectly facilitating technology adoption. Yang and Lee discovered that experienced users' intentions to use automated immigration systems (e-Gate) were positively influenced by their attitudes and perceived ease of use, underscoring the significance of enhancing user experience through positive interactive feedback [23]. This notion was expanded by Wang et al. in their study within intelligent learning environments, where features like personalized, real-time feedback, and smart interactions significantly benefitted positive online learning outcomes, highlighting the importance of incorporating effective interactive feedback to enhance learning experiences in educational technology design [27].

From a higher education services perspective, Celuch and Robinson explored how customer feedback processes contribute to perceived customer orientation and emotional commitment, revealing that establishing effective feedback mechanisms enables educational institutions to better meet student needs and enhance institutional loyalty [28]. In the neuropsychological study, the profound impact of interactive feedback on user perception was explored by measuring users' neurophysiological states during technology use and how these states interact with perceived ease of use and usefulness [29], broadening our understanding of interactive feedback's effects and providing scientific grounding for designing technology products that meet users' psychological and physiological needs.

Focusing on online shopping apps, Al Amin examined how psychological, situational, and interactive technology feedback variables collectively influence technology adoption, offering a comprehensive framework integrating the Expectancy Confirmation Model, Health Belief Model, and Technology Acceptance Model to understand the role of interactive feedback in online shopping behaviors [30]. Furthermore, Huang emphasized the interplay between perceived usefulness, perceived ease of use, and learning motivation in blended learning environments, confirming the positive impact of interactive feedback on learning satisfaction and revealing the potential value of designing effective interactive feedback mechanisms to enhance learning motivation [31]. Thus, it's evident that interactive feedback broadly affects users' perceptions of technology's ease of use and usefulness across various domains, stressing the importance of considering interactive feedback in technology design.

Based on these insights, the following hypotheses are proposed:

H7: Positive interactive feedback positively influences users' perceived ease of use.

H8: Positive interactive feedback positively influences users' perceived usefulness.

E. PERSONALIZED EXPERIENCE (PE)

The impact of personalized experience (PE) on users' Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) has been consistently demonstrated across various studies. Moslehpour et al. introduced a novel model that merges personality traits with the Technology Acceptance Model (TAM) attributes to assess the impact of personality (conscientiousness, openness) and technological perceptions (perceived usefulness, perceived ease of use) on e-shopping intentions [32]. This research underscores the significance of personalized experiences in e-commerce, especially in enhancing user experience and driving purchase intentions. Tran and Kim expanded on this by examining how individual traits and social factors affect the fluid experience of video conferencing services users and their intentions to continue using these services [33], highlighting the roles of social factors and personality in shaping user perceptions.

Furthermore, Altarteer and Charissis evaluated the application of 3D semi-immersive virtual reality (VR) systems in online luxury goods customization services, exploring the impact of personalized experiences on user attitudes [34]. Their findings indicate that perceived presence, usefulness, ease of use, and experiential value significantly positively affect attitudes towards 3D VR semi-immersive systems. Chen integrated the TAM and Task Technology Fit (TTF) models to explore the impact of personalized experiences on the adoption of automotive telematics devices, revealing the critical role of personalized experiences in enhancing perceived usefulness and ease of use [35]. Chiang, Boakye, and Tang emphasized the importance of personalized products or services in enhancing user attitudes and intentions through their analysis of the impact of e-learning system design quality on usage intentions, highlighting the role of high-quality design in improving personalized experiences [36]. Through various mechanisms, personalized experiences significantly influence users' perceptions of technology's ease of use and usefulness. From e-commerce and virtual reality to educational technology, personalized experiences have proven to be a crucial element in increasing user satisfaction and technology adoption rates.

Based on these insights, the hypotheses proposed are:

H9: Personalized experience positively influences users' perceived ease of use.

H10: Personalized experience positively influences users' perceived usefulness.

F. AESTHETIC PLEASURE (AP)

In the digital age, aesthetic appeal and emotional engagement have emerged as central elements in shaping user satisfaction, a concept widely acknowledged across numerous studies. As technology evolves, from traditional product design to digital media and emerging technologies like augmented reality (AR), the importance of aesthetics and emotion has become more pronounced. Kazmi et al. revealed how AR technology positively influences consumer purchasing decisions by enhancing the aesthetic and emotional aspects of the user experience, especially in developing countries' fashion markets [37]. Liu et al. applying the Stimulus-Organism-Response (S-O-R) theory, delved into how the aesthetic design of website homepages affects user satisfaction, emphasizing the crucial role of aesthetic design in shaping first impressions and satisfaction [38], thus proving that aesthetics is more than just an additive beauty factor in digital products and services. Seo et al. s experimental study found perceived usability and aesthetics are positively correlated with users' emotional value and engagement, highlighting the importance of considering emotional responses in website design [39].

Further, Achiche et al. explored how product features like shape and color influence users' aesthetic evaluations and satisfaction through emotional responses, proving the role of aesthetic design in enhancing product performance and user satisfaction [40]. Bhandari et al. analysis from an affective perspective on how perceived visual aesthetics influence user evaluations, especially in mobile applications, showed that aesthetic design triggers emotional responses, affecting quality perceptions and attractiveness, thus reinforcing the importance of aesthetics in digital product design [41]. Bigne et al. explored how brand love acts as a mediating variable between consumer satisfaction and emotional responses, influencing loyalty behaviors and social media usage, revealing the role of emotional connection in brand management and highlighting the importance of emotional factors in shaping user behavior in the social media era [42].

Coursaris and Osch's Cognitive-Affective Model of Perceived User Satisfaction (CAMPUS) showed the complementary and interdependent effects of usability and aesthetics in information systems design on user satisfaction [43]. The power of aesthetic design lies in its profound impact on how users perceive and adopt technology. Recent research shows that aesthetically pleasing designs do more than enhance visual enjoyment; they play a key role in shaping users' perceptions of technology's ease of use and usefulness. Lazard and King study on how visual complexity affects eHealth website evaluations highlighted aesthetics' role in enhancing perceived ease of use and usefulness [44]. Similarly, there is investigation into job search websites further confirmed the positive impact of aesthetic appeal on user satisfaction [37]. Varela's crowdsourcing evaluation of web performance and design on user experience quality (QoE) found that visual attractiveness significantly impacts the overall experience [45]. Aljukhadar and Senecal's study from a website usability perspective explored how aesthetics influence technology acceptance, further confirming the importance of aesthetic appeal [46]. Guinea's et al. neuropsychological research provided insights into how users respond to aesthetic design on an intrinsic level, emphasizing aesthetics' impact on perceived ease of use and usefulness [29].

Thus, through studies across multiple domains and perspectives, it is evident that aesthetic appeal significantly affects users' perceptions of technology's ease of use and usefulness. Aesthetic design not only enhances users' visual

experience but also increases technology acceptance and user satisfaction in various ways.

Hence, the hypotheses proposed are:

H11: Aesthetic pleasure positively influences users' perceived ease of use.

H12: Aesthetic pleasure positively influences users' perceived usefulness.

G. PERCEIVED EASE OF USE (PEOU)

Perceived Ease of Use (PEOU), a core component of the Technology Acceptance Model (TAM), is the subjec tive evaluation of how easy a user believes it is to use a particular product, system, or service. This concept underscores the notion that the degree to which a user accepts and intends to use technology is influenced by their perception of its ease of use. Lee et al. found that PEOU positively influenced user attitudes and behavioral intentions toward using voice interfaces, indicating that users are more likely to adopt and utilize technology they perceive as easy to use [47]. Furthermore, research by Zhou et al. discovered that interface design significantly boosts PEOU, which, in turn, positively affects Perceived Usefulness (PU) [24]. Similarly, Cahyono and Susanto, in their examination of mobile e-government website user design, confirmed the influence of interface design components on PEOU and the positive impact of PEOU on PU [48].

Based on these insights, the hypotheses proposed are:

H13: Perceived Ease of Use is positively correlated with the perceived usefulness of interface design.

H14: Perceived Ease of Use positively influences users' attitudes towards use.

H. PERCEIVED USEFULNESS (PU)

Perceived Usefulness (PU) is the user's perception of the efficiency and convenience offered by a product, service, or system. Research indicates that PU significantly influences users' attitudes towards usage. For instance, studies have validated the significant effect of Perceived Ease of Use (PEOU) on PU and attitudes towards use, as well as the impact of PU on behavioral intentions [49]. Furthermore, research by Siahaan and Nasution discovered that the direct influence of PEOU on transactional behavior intentions is less significant than its indirect effect through PU [50]. Additional studies have uncovered the direct impact of PU on the intention to use. Chawla and Joshi, in their examination of mobile banking acceptance, found that PU significantly affects users' attitudes and intentions to use [51]. Likewise, studies have shown that PEOU, perceived behavioral control, and perceived risk positively influence users' attitudes towards using social media for learning, whereas PU did not significantly impact attitudes. Therefore, a significant relationship exists between user attitudes and the intention to use.

Based on these insights, the following hypotheses are proposed:

H15: Perceived Usefulness is positively correlated with users' attitudes towards usage.

H16: Perceived Usefulness is positively related to the intention to use the website.

I. ATTITUDE TO USE (ATU)

User Attitude towards Use (ATU) reflects overall evaluations and feelings about a specific interface design, including perceptions of aesthetics, functionality, and ease of use. These elements collectively indicate whether a user is likely to adopt or continue using the design in the future. Initial research demonstrates the significant impact of a website's visual design on consumers' purchase intentions, highlighting visual design's role in establishing trust and shaping ATU, thereby positively influencing online purchase intentions [52]. Furthermore, Irawan and Rahman explored the effects of gaze and product prominence in visual content on social media engagement [53]. Their findings that digital visual engagement positively impacts ATU and purchase intentions further affirm visual design's importance in molding user attitudes and intentions. Additionally, Hartono and Holsapple assessed the influence of website visual design quality on visitors' attitudes and behavior [54]. They found that a website's aesthetic, functional, and symbolic quality positively affects intentions to use the site and generate positive word-of-mouth, emphasizing visual design's critical role in shaping user intentions.

Based on these insights, the following hypothesis is proposed:

H17: ATU is positively correlated with the Intention to Use (ITU).

J. RESEARCH MODEL

As depicted in Figure 1, the study is grounded in the Technology Acceptance Model (TAM) and, guided by the preceding analysis and literature review, has developed a model to understand which factors within website interface design influence user experience in the digital era. This model serves to identify key design elements that significantly affect user perceptions of ease of use, usefulness, and ultimately, their attitude towards and intention to use digital interfaces. Through this model, the research aims to dissect the intricate relationship between design aesthetics, functionality, and user interaction with technology, providing insights into designing more engaging and user-friendly websites.

III. RESEARCH DESIGN

This study selected 20 popular interactive websites highly regarded in the field of professional design. A total of 204 participants were recruited to browse these websites in a random order and rate them based on their subjective preferences on a scale of 1 to 10.

To mitigate the primacy and isolation effects, participants were engaged in a backward counting task to distract their attention after browsing and rating each website. They were instructed to start from 100 and decrement by odd numbers

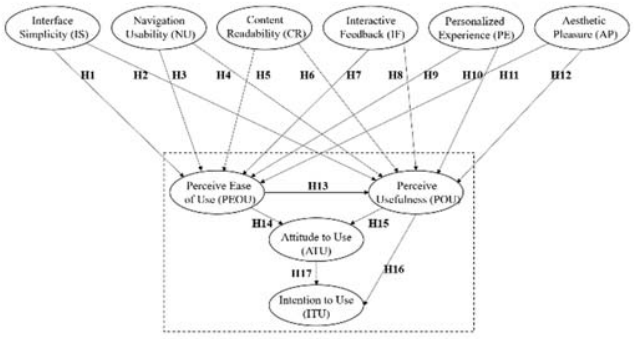

FIGURE 1. Research model.

TABLE 1. Willingness-to-use ranking of interactive sites.

Rank	Website	Mean (SD)
1	Behance - behance.net	5.502 (1.055)
2	Dribbble - dribbble.com	5.498 (1.311)
3	Awwwards - awwwards.com	5.492 (1.242)
4	SiteInspire - siteinspire.com	5.488 (1.113)
5	Pttrns - pttrns.com	5.462 (1.263)
6	Niice - niice.co	5.432 (1.082)
7	Webflow - webflow.com	5.416 (1.654)
8	Adobe XD Ideas - xd.adobe.com/ideas/	5.389 (1.057)
9	The FWA - thefwa.com	5.306 (0.986)
10	CSS Design A- cssdesignawards.com	5.217 (1.458)
11	Smashing Ma -smashingmagazine.com	5.109 (1.362)
12	Muzli - muz.li	4.984 (1.222)
13	Typewolf - typewolf.com	4.698 (1.306)
14	Designmodo - designmodo.com	4.692 (1.022)
15	Creative Bloq - creativebloq.com	4.676 (1.317)
16	Plink - useplink.com	4.674 (0.986)
17	Autumn - iamsterdam.com	4.665 (1.365)
18	Rouserlab - rouserlab.com	4.662 (1.569)
19	Creative Studio - ed.studio	4.659 (1.568)
20	GretaThunberg - theyearofgreta.com	4.655 (1.477)

(e.g., 3, 5, 7, etc) until they could no longer continue or reached the 60-second limit. Data collection took place over three weeks, and the scores for each website were aggregated to rank them accordingly. As shown in Table 1, the top five websites by popularity were Behance, Dribbble, Awwwards, SiteInspire, and Pttrns.

The study focused on the top five websites ranked to explore the mechanisms behind users' willingness to use interactive websites. A new group of participants was recruited to freely browse these five websites and, after becoming familiar with them (with a 10-minute limit), complete a survey questionnaire. The study was divided into two groups, collectively gathering 457 questionnaire responses over a period of seven weeks.

A. RESEARCH METHOD

The research primarily collected data through questionnaire surveys and validated the Structural Equation Modeling (SEM) using AMOS.

The choice of covariance-based Structural Equation Modeling (CB-SEM) over partial least squares structural equation modeling (PLS-SEM) in this study is driven by several factors relevant to the study's context and requirements. CB-SEM is particularly well-suited for theory testing and confirmation, aligning with the study's aim to validate complex theoretical models and hypotheses. This method offers accurate parameter estimates and comprehensive fit indices, essential for evaluating model fit and ensuring the robustness of the theoretical constructs being tested [55].

In contrast, PLS-SEM, while advantageous for exploratory research and situations with small sample sizes or when the focus is on prediction, is less effective for confirming theories due to its limitations in providing global goodness-of-fit indices [56]. PLS-SEM also tends to be less robust in handling complex models with multiple constructs and relationships, which is a critical requirement for this study [57]. Additionally, PLS-SEM's reliance on composite scores rather than latent variable scores can lead to less precise estimations of model parameters and higher standard errors [56].

Given the large sample size, the complexity of the model, and the need for precise parameter estimation and validation, CB-SEM was chosen to ensure a thorough evaluation and confirmation of the theoretical model. This choice aligns with prior studies in website usability and user experience research, where CB-SEM has been effectively employed to validate complex theoretical frameworks [58].

As proposed by Marsh, each construct should consist of at least three items. Therefore, in the initial questionnaire design, we ensured that each construct had five items to guarantee feasibility during confirmatory factor analysis. Moreover, to ensure the accuracy and comprehensiveness of the 11 constructs in the questionnaire, each item's question was designed with reference to relevant published journal articles. However, it is noteworthy that for some items, without related research, such as Interface Simplicity (IS) and Content Readability (CR), we referred to similar studies to design the questions for these items.

B. QUESTIONNAIRE DESIGN

The questionnaire consists of two parts. The first part is about demographics, including background information like age, gender, marital status, etc. The second part concerns the impact of website interface design elements on the willingness to use the website, measured on a Likert scale of 7 points (1 = very disagree, 7 = very agree). In addition to the classic TAM, the questionnaire also includes Interface Simplicity (IS), Navigation Usability (NU), Content Readability (CR), Interactive Feedback (IF), Personalized Experience (PE), and Aesthetic Pleasure (AP). After completing the demographics section, participants randomly browse the top 5 websites and then complete the second part of the questionnaire. As shown in Table 2, except for Interactive Feedback (IF), other constructs were based on related or similar studies. Some items did not exhibit acceptable reliability, so to ensure the model remained within a reasonable range, these items were removed. Specifically, the first question for IS, NU, and PEOU was deleted; the fourth question for IF was deleted; and the fifth question for AP was removed.

TABLE 2. Questionnaire design.

Constructs	Items	Reference
Interface Simplicity (IS)	1. The website has a minimalist design that enhances my experience **(Delete).** 2.The design of the website avoids unnecessary complexity and distractions. 3. I find the website interface to be clean and uncluttered. 4. It's easy to understand what each element on the website does. 5. The layout of the website is straightforward and easy to follow.	[59]
Navigation Usability (NU)	1. The website's menu is well-organized and user-friendly **(Delete)**. 2. Finding information on the website is straightforward. 3. I can navigate through the website easily. 4. I feel confident moving around the website without getting lost.	[60]
Content Readability (CR)	1. The text on the website is easy to read. 2. The website uses fonts that are clear and comfortable to read. 3. Information on the website is presented in a way that is easy to understand. 4. The website's content is well-structured, making it easy to scan through.	[61]
Interactive Feedback (IF)	1. The website provides helpful feedback when I interact with it. 2. When I perform actions on the website, I get clear confirmation that they've been successful. 3. The website offers assistance through interactive elements when I need it. 4. The website quickly shows me if something goes wrong **(Delete)**. 5. I receive prompt and useful responses when using the website's interactive features.	NA
Personalized Experience (PE)	1. The website offers a personalized experience tailored to my preferences. 2. I receive recommendations that are relevant to my interests on the website. 3. The website allows me to customize my user experience. 4. I feel that the website adapts to my needs and usage patterns.	[62]
Aesthetic Pleasure (AP)	1. The website's design is visually pleasing to me. 2. I enjoy the use of colors and images on the website. 3. The aesthetic design of the website enhances my overall satisfaction. 4. The website's design is beautiful. 5. The visual appeal of the website contributes to my enjoyment **(Delete)**.	[63]
Perceived Ease of Use (PEOU)	1. I find the website easy to use. 2. Learning to navigate the website is effortless. 3. I can use the website effectively without needing help. 4. Interacting with the website does not require a lot of mental effort.	
Perceived Usefulness (PU)	1. Using the website improves the way I complete my tasks **(Delete)**. 2. The website provides valuable information that meets my needs. 3. The features provided by the website are beneficial to me. 4. I find the website to be a useful tool.	[64]
Attitude to Use (ATU)	1. I have a positive attitude towards using the website. 2. I think using the website is a good idea. 3. My overall impression of the website is favorable. 4. I feel using the website is enjoyable.	
Intention to Use (ITU)	1. I intend to use this website in the future. 2. I will recommend this website to others. 3. I plan to continue using this website regularly. 4. I would choose this website over similar websites.	

C. PARTICIPANTS

This study was conducted primarily in urban areas with high internet penetration rates, focusing on groups who frequently use internet services and web browsing. The research set a requirement that participants must have experience with various website interfaces to ensure they have a practical understanding and feeling of different aspects of web design. Before the participants filled out the questionnaire, we provided an introduction to the importance of web design and its impact on user experience satisfaction to ensure they fully understood the subject and purpose of the study.

Through promotions on social media platforms like WeChat, Weibo, and Xiaohongshu, 456 people participated in the study. Through the questionnaire, we collected data the participants' willingness to use web design and potential influencing factors, such as Interface Simplicity (IS), Navigation Usability (NU), Aesthetic Pleasure (AP), etc. Furthermore, before data collection, researchers provided participants with an overview of the study, a guide to data collection, and an informed consent form.

IV. RESULTS

A. DATA PREPROCESSING

The study eliminated 42 invalid samples, including filing errors, incomplete questionnaires, and subjects who did not fully browse the web pages, resulting in 415 valid questionnaires. According to research by Tabachnick, Fidell, and Ullman, data for a large sample size is considered to follow a normal distribution when the absolute values of skewness and kurtosis are less than 1.5 [65]. As shown in Table 3, the absolute values of all items under each construct in this study are less than 1.5, indicating that all data were normally distributed.

B. RELIABILITY AND VALIDITY TEST

Initially, the research conducted the KMO and Bartlett's Test on all items. The results showed that the KMO was 0.909, greater than 0.8, indicating that the data of the entire scale are very suitable for factor analysis. Similarly, in the Bartlett's Test of Sphericity, the Approx. Chi-Square was 10739.843, $df = 703$, $p < 0.000$, passing the significance test at the 1% level. This further proves that the data of the entire scale are very suitable for factor analysis.

Secondly, as shown in Table 4, through the Total Variance Explained of the scale, there are 8 factors with Initi al Eigenvalues greater than 1, and one very close to 1. The initial eigenvalues of component 1 is 11.191, explaining 29.450% of the variance; for component 2, the initial eigenvalues are 4.799, explaining 12.629% of the variance; and for component 3, the initial eigenvalues are 2.604, explaining 6.854% of the variance. Overall, the Cumulative explanatory variance is 76.805%. Therefore, it can be determined that extracting 10 common factors from the 37 items is relatively ideal for explaining the original data.

Moreover, numerous studies suggest that based on the results of the Total Variance Explained, the appropriate number of factors should also be confirmed by identifying the inflection point in the distribution changes in the Scree

TABLE 3. Descriptive statistics and normal distribution tests.

Items	N	Mean	SD	Min	Max	Skewness	Kurtosis
IF1	415	5.10	1.507	1	7	-.589	-.150
IF2	415	5.29	1.460	1	7	-.623	-.011
IF3	415	5.32	1.518	1	7	-.611	-.018
IF5	415	5.38	1.527	1	7	-.820	.551
PU2	415	5.81	1.046	2	7	-.898	1.332
PU3	415	5.84	1.042	1	7	-.937	1.155
PU4	415	5.75	1.018	2	7	-.776	1.083
IS2	415	5.48	1.096	2	7	-.664	.508
IS3	415	5.56	1.057	2	7	-.831	.454
IS4	415	5.50	1.096	2	7	-.981	1.236
IS5	415	5.47	1.179	1	7	-.756	.424
PEOU1	415	5.43	1.159	1	7	-.602	-.150
PEOU2	415	5.38	1.167	1	7	-.617	-.010
PEOU3	415	5.39	1.159	1	7	-.623	-.019
PE1	415	5.45	1.246	1	7	-.814	.552
PE2	415	4.91	1.325	1	7	-.801	.419
PE3	415	5.10	1.497	1	7	-.659	.183
PE4	415	5.07	1.384	1	7	-.746	.532
NU2	415	4.98	1.386	1	7	-.779	.457
NU3	415	4.81	1.403	1	7	-.988	.845
NU4	415	4.92	1.392	1	7	-.807	.445
ITU1	415	5.67	.995	1	7	-.881	.153
ITU2	415	5.40	1.133	1	7	-.740	.123
ITU3	415	5.29	1.183	2	7	-.764	.429
ITU4	415	5.62	1.092	1	7	-.706	.833
ATU1	415	5.49	1.193	1	7	-.722	.724
ATU2	415	5.35	1.289	1	7	-.665	.048
ATU3	415	5.40	1.191	1	7	-.416	-.553
ATU4	415	5.42	1.225	2	7	-.586	-.114
CR1	415	5.39	1.073	1	7	-.869	1.352
CR2	415	5.39	1.172	1	7	-.736	.665
CR3	415	5.52	1.019	2	7	-.489	-.213
CR4	415	5.54	1.058	2	7	-.912	1.123

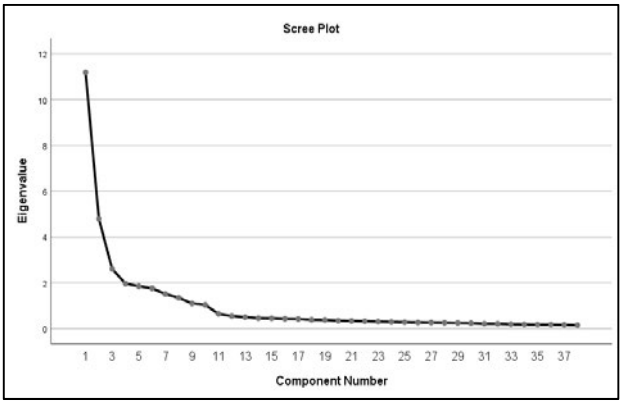

FIGURE 2. The result of scree plot.

Plot [66], [67]. As shown in Figure 3, the line flattens after component 10, indicating that extracting 10 common factors from the 33 items of the questionnaire is appropriate. This further validates and reinforces the results of the Total Variance Explained.

Finally, as shown in Table 5, exploratory factor analysis was conducted through the Rotated Component Matrix. The results showed that all items were classified into 10 constructs, and all items had factor loadings greater than 0.6, ranging between 0.65 and 0.89. According to Murtagh and Heck, a factor loading greater than 0.5 is acceptable, and greater than 0.6 is considered ideal [68]. Therefore, it can be concluded that the questionnaire possesses high validity.

The results of convergent validity, as shown in Table 6, indicate that all items could effectively predict the corresponding constructs, with $p < 0.001$. Additionally, the measured items of each construct were reliable (Cronbach's $\alpha > 0.65$). The convergent validity of all constructs was also found to be ideal (AVE ranged from 0.610 to 0.771 and CR ranged from 0.85 to 0.95). Importantly, the model had an appropriate fit, with Chi-square (χ^2) = 1284.618, df = 633, χ^2/df = 2.029. According to related research, a Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI) greater than 0.9 are considered ideal, and greater than 0.8 are deemed acceptable. Similarly, the goodness of fit index (GFI) and Adjusted AGFI need to be greater than 0.8, while the Root-mean-square error of approximation (RMSEA) should be less than 0.08 [69]. Therefore, it can be determined that the questionnaire possesses ideal reliability and convergent validity.

As shown in Table 7, discriminant validity was tested by comparing the square roots of AVE for each construct with the correlation coefficients. To ensure discriminant validity, the square roots of the AVE should be greater than the correlation coefficients of each construct. The results showed that the research model of this study has satisfactory discriminant validity.

C. RESULTS OF HYPOTHESES TESTS

The results of the structural equation modeling constructed in this study are shown in Figure 3 and Table 8. The results indicate that Interface Simplicity (IS) can significantly predict Perceived Ease of Use (PEOU) ($\beta = 0.366$, t = 6.403, $p < 0.001$) and is also a predictive variable for Perceived Usefulness (PU) ($\beta = 0.366$, t = 6.403, $p < 0.001$), supporting hypotheses H1 and H2. Navigation Usability (NU) does not have a significant impact on PEOU ($\beta = 0.366$, t = 1.503, $p = 0.133$), but NU's negative impact on PU is statistically significant ($\beta = -0.140$, t = −2.441, $p < 0.05$), thus H3 is not supported, but H4 is supported. Content Readability (CR) has a significant positive impact on both PEOU and PU (H5, $\beta = 0.229$, t = 3.519, $p < 0.001$; H6, $\beta = 0.344$, t = 4.890, $p < 0.001$).

Interactive Feedback (IF) does not significantly affect PEOU (H7, $\beta = 0.019$, t = 0.369, p = 0.712), but it has a significant positive impact on PU (H8, $\beta = 0.110$, t = 2.018, $p < 0.05$). Personalized Experience (PE) as a predictive variable does not have a statistically significant impact on PEOU (H9, $\beta = -0.070$, t = −1.319, $p < 0.05$), but it has a significant negative impact on PU (H10, $\beta = -0.070$, t = −1.319, $p < 0.05$). Aesthetic Pleasure (AP) has a very significant positive impact on PEOU (H11, $\beta = 0.206$, t = 3.549, $p < 0.001$) and also a statistically significant impact on PU (H12, $\beta = 0.322$, t = 5.181, $p < 0.001$).

Differently from the classic Technology Acceptance Model (TAM), the impact of PEOU on PU was not significant (H13, $\beta = 0.084$, t = 1.238, p = 0.216), suggesting that in the

TABLE 4. Total variance explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.191	29.450	29.450	11.191	29.450	29.450	3.351	8.818	8.818
2	4.799	12.629	42.078	4.799	12.629	42.078	3.275	8.618	17.436
3	2.604	6.854	48.932	2.604	6.854	48.932	3.164	8.326	25.761
4	1.960	5.158	54.090	1.960	5.158	54.090	3.098	8.153	33.914
5	1.849	4.865	58.955	1.849	4.865	58.955	2.959	7.788	41.702
6	1.762	4.638	63.593	1.762	4.638	63.593	2.922	7.690	49.391
7	1.514	3.984	67.576	1.514	3.984	67.576	2.866	7.542	56.934
8	1.355	3.565	71.141	1.355	3.565	71.141	2.794	7.354	64.287
9	1.107	2.913	74.054	1.107	2.913	74.054	2.516	6.621	70.908
10	1.045	2.751	76.805	1.045	2.751	76.805	2.241	5.896	76.805

TABLE 5. Rotated component matrix.

	1	2	3	4	5	6	7	8	9	10
IF3	.893									
IF2	.885									
IF1	.868									
IF5	.859									
ATU1		.869								
ATU4		.829								
ATU3		.829								
ATU2		.827								
IS3			.827							
IS2			.825							
IS4			.811							
IS5			.742							
PE4				.856						
PE3				.847						
PE2				.845						
PE1				.816						
PEOU2					.782					
PEOU1					.769					
PEOU4					.746					
PEOU3					.734					
AP4						.792				
AP1						.760				
AP2						.757				
AP3						.752				
CR3							.773			
CR1							.745			
CR2							.736			
CR4							.695			
ITU2								.753		
ITU4								.744		
ITU1								.729		
ITU3								.693		
NU4									.853	
NU3									.846	
NU2									.796	
PU2										.820
PU3										.799
PU4										.659

context of interactive website design, individuals' perceived ease of use may not affect their perceived usefulness. Apart from this, the other paths of influence in the TAM were validated, including the positive impact of PEOU on Attitude Toward Using (ATU) (H14, $\beta = 0.135$, t = 1.238, $p < 0.05$), PU on ATU (H15, $\beta = 0.429$, t = 6.425, $p < 0.001$), PU on

TABLE 6. Reliability and convergent validity test results.

			Unstd.	t	C.R.	P	Std.	SMC	Cronbach's α	CR	AVE
IS	<---	IS2	1.000				.822	.676	.897	.898	.689
	<---	IS3	1.011	.050	20.111	***	.863	.745			
	<---	IS4	1.015	.053	19.296	***	.834	.696			
	<---	IS5	1.044	.057	18.208	***	.798	.637			
NU	<---	NU2	1.000				.851	.724	.893	.893	.736
	<---	NU3	1.017	.050	20.383	***	.855	.731			
	<---	NU4	1.023	.050	20.615	***	.867	.752			
CR	<---	CR1	1.000				.741	.549	.864	.866	.617
	<---	CR2	1.149	.077	14.964	***	.780	.608			
	<---	CR3	1.052	.067	15.638	***	.821	.674			
	<---	CR4	1.061	.069	15.272	***	.798	.637			
IF	<---	IF1	1.000				.852	.726	.930	.931	.771
	<---	IF2	1.025	.042	24.469	***	.901	.812			
	<---	IF3	1.077	.043	24.900	***	.910	.828			
	<---	IF5	1.008	.046	21.995	***	.847	.717			
PEOU	<---	PEOU1	1.000				.815	.664	.862	.863	.611
	<---	PEOU2	.967	.059	16.383	***	.783	.613			
	<---	PEOU3	.927	.059	15.770	***	.755	.570			
	<---	PEOU4	.953	.059	16.164	***	.773	.598			
PU	<---	PU2	1.000				.841	.707	.837	.838	.633
	<---	PU3	.906	.061	14.970	***	.765	.585			
	<---	PU4	.901	.060	15.110	***	.779	.607			
ATU	<---	ATU1	1.000				.843	.711	.906	.907	.709
	<---	ATU2	1.089	.053	20.719	***	.850	.723			
	<---	ATU3	.995	.049	20.395	***	.840	.706			
	<---	ATU4	1.014	.050	20.130	***	.833	.694			
ITU	<---	ITU1	1.000				.832	.692	.871	.875	.637
	<---	ITU2	1.108	.061	18.055	***	.809	.654			
	<---	ITU3	1.024	.066	15.523	***	.716	.513			
	<---	ITU4	1.095	.059	18.562	***	.830	.689			
AP	<---	AP1	1.000				.669	.448	.856	.861	.610
	<---	AP2	1.029	.075	13.766	***	.803	.645			
	<---	AP3	1.079	.079	13.632	***	.793	.629			
	<---	AP4	1.153	.081	14.224	***	.847	.717			
PE	<---	PE1	1.000				.802	.643	.892	.893	.677
	<---	PE2	1.102	.060	18.357	***	.831	.691			
	<---	PE3	1.229	.068	18.084	***	.821	.674			
	<---	PE4	1.159	.063	18.505	***	.837	.701			

Intention to Use (ITU) (H16, $\beta = 0.612$, t = 9.793, p < 0.001), and the positive impact of ATU on ITU (H17, $\beta = 0.174$, t = 3.310, p < 0.001).

V. SEMI-STRUCTURED INTERVIEW

To further explore the underlying mechanisms and details behind the quantitative analysis results, the study recruited 10 participants for semi-structured interviews. This format is ideal for delving into the deeper reasons and nuances behind quantitative findings [70]. Semi-structured interviews allow researchers to maintain direction while giving respondents enough space to express their views and experiences, thus yielding richer data [71].

TABLE 7. Discriminant validity.

	ITU	ATU	PEOU	PU	AP	PE	IF	CR	NU	IS
ITU	**.798**									
ATU	.477	**.842**								
PEOU	.535	.344	**.782**							
PU	.631	.484	.488	**.796**						
AP	.600	.367	.521	.547	**.781**					
PE	.023	-.122	-.084	.019	.045	**.823**				
IF	.106	-.032	.069	.200	.080	.509	**.878**			
CR	.687	.448	.555	.542	.529	.007	.200	**.785**		
NU	.457	.324	.471	.278	.404	-.060	.061	.546	**.858**	
IS	.484	.276	.605	.498	.448	.024	.100	.465	.472	**.830**

TABLE 8. Structural equation modeling results.

Hypothesis	Paths			Unstd.	S.E.	t-value	P	β	Results
H1	PEOU	<---	IS	0.37	0.058	6.403	***	0.366	Support
H2	PU	<---	IS	0.203	0.054	3.753	***	0.230	Support
H3	PEOU	<---	NU	0.064	0.043	1.503	0.133	0.086	Not Support
H4	PU	<---	NU	-0.092	0.038	-2.441	0.015	-0.140	Support
H5	PEOU	<---	CR	0.263	0.075	3.519	***	0.229	Support
H6	PU	<---	CR	0.345	0.069	4.980	***	0.344	Support
H7	PEOU	<---	IF	0.014	0.037	0.369	0.712	0.019	Not Support
H8	PU	<---	IF	0.068	0.032	2.108	0.035	0.110	Support
H9	PEOU	<---	PE	-0.100	0.047	-2.129	0.033	-0.112	Support
H10	PU	<---	PE	-0.055	0.041	-1.319	0.187	-0.070	Not Support
H11	PEOU	<---	AP	0.237	0.067	3.549	***	0.206	Support
H12	PU	<---	AP	0.324	0.063	5.181	***	0.322	Support
H13	PU	<---	PEOU	0.074	0.060	1.238	0.216	0.084	Not Support
H14	ATU	<---	PEOU	0.153	0.071	2.161	0.031	0.135	Support
H15	ATU	<---	PU	0.556	0.087	6.425	***	0.429	Support
H16	ITU	<---	PU	0.704	0.072	9.793	***	0.612	Support
H17	ITU	<---	ATU	0.154	0.047	3.310	***	0.174	Support

Notably, during the pilot study, it was observed that registered users and visitors of interactive websites provided different feedback on NU, CR, and PE. Therefore, in the formal interviews, stratified sampling was used, referencing ATU coefficients to categorize respondents into five levels. Additionally, the frequency of interaction with the websites was considered to ensure diversity and representativeness in the sample. This method helps in gaining a deeper understanding of the user experience across different groups, offering direct insights for website optimization.

As shown in Table 9, after assessing participants' ATU index, frequency of website use, and registration status, 10 formal respondents were selected. This included 6 visitors and 4 registered users of interactive websites.

A. DESIGN AND EXECUTION OF THE INTERVIEW FRAMEWORK

The primary goal of the interview was to explore the reasons behind the quantitative results, with questions designed around IS, NU, CR, IF, PE, and AP. To avoid leading question bias, the interview framework was set up in a progressive manner, starting with general questions and moving to more specific ones based on the respondents' feedback [72]. Given the semi-structured nature of the interviews, questions were adapted according to the participants' responses.

The interview framework was executed as follows (See Figure 4 for details):

(1) **General Questions (Opening):** The interview began with open-ended questions aimed at gathering the

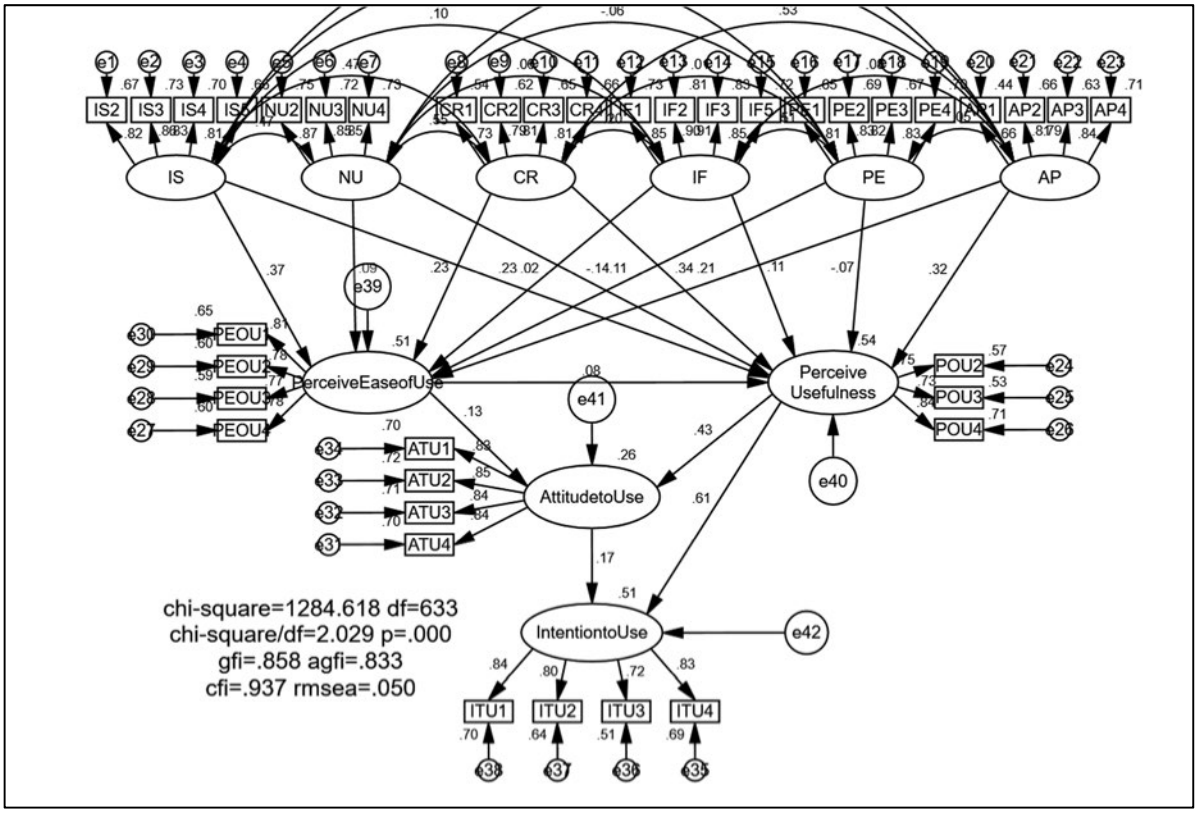

FIGURE 3. The structural equation modeling results in AMOS.

TABLE 9. Participant demographics.

No	Code	Types	Gender	ATU index	Age
1	VT-01	Visitors	Male	7	26
2	RU-01	Registered Users	Female	6.5	31
3	VT-02	Visitors	Male	6	42
4	RU-02	Registered Users	Female	5.75	30
5	VT-03	Visitors	Female	5.5	37
6	VT-04	Visitors	Female	5.25	26
7	RU-03	Registered Users	Female	5	28
8	VT-05	Visitors	Female	4.5	21
9	VT-06	Visitors	Male	4	23
10	RU-04	Registered Users	Male	3.25	24

respondents' overall impressions and experiences with the website. For example: "Would you mind talking about your feelings about this kind of website?"

(2) **Progressive Exploration (Follow-up)**: When respondents mentioned specific factors such as IS, NU, or CR in their general answers, researchers delved deeper into these topics to gather more detailed information and perceptions. For instance, if a respondent brought up navigation usability (NU), the researcher might follow up with: "Could you share your experience with the website's navigation system and your specific feelings about it?"

(3) **Exploring Unmentioned Factors (Supplementary)**: If certain predefined factors were not mentioned in the general responses, the researcher would introduce related questions at an appropriate time. These questions were carefully designed to avoid implying expected answers. For example: "While using this website, have you noticed any features related to personalized experience? How did they impact your use of the site?" This approach allowed respondents to freely express their views without feeling pressured to provide specific responses.

B. CODING AND FINDINGS

As shown in Figure 5, IS and CR were spontaneously mentioned under general questions, and all comments were positive. Regarding AP, while some respondents did not explicitly describe their aesthetic perceptions of the website, those who did mention this aspect responded positively. Further prompting revealed that even respondents who initially did not mention n AP had positive feedback when asked directly (Exploring Unmentioned Factors).

On the other hand, opinions on NU, PE, and IF were mixed. During the Exploring Unmentioned Factors stage,

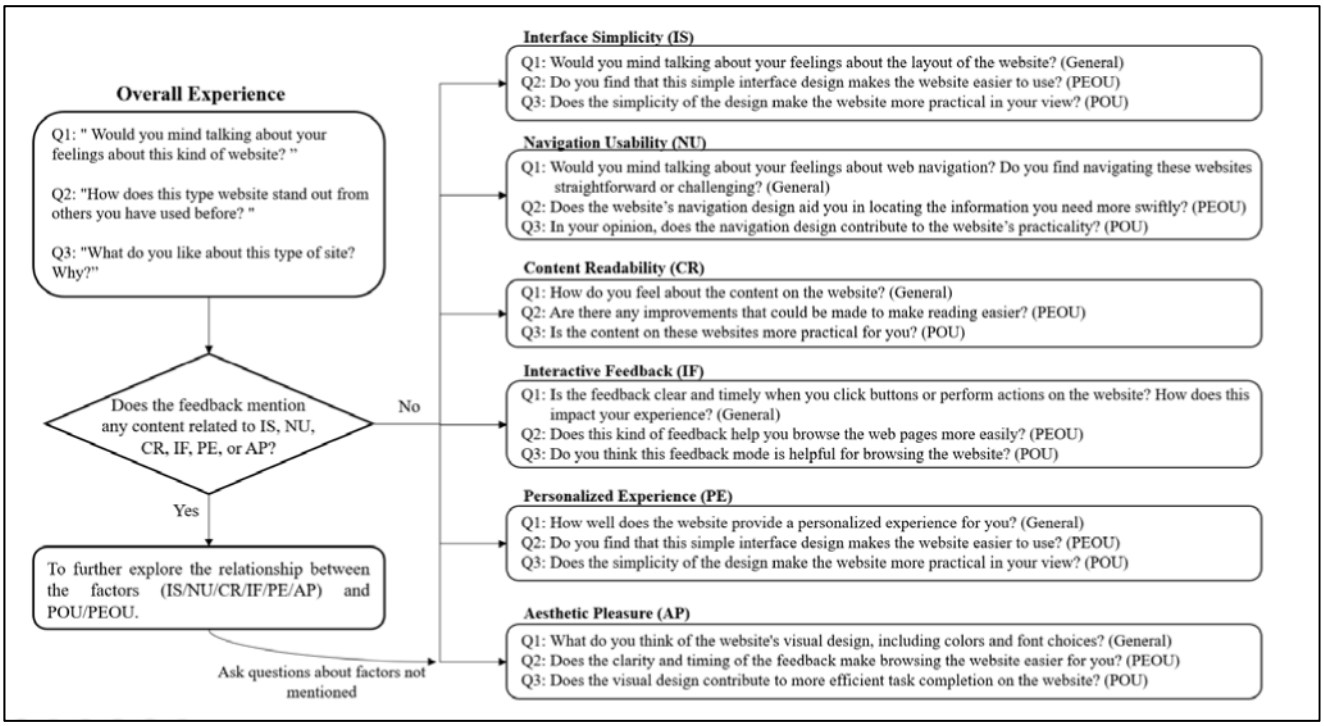

FIGURE 4. The Semi-structured Interview framework.

respondents did not clearly indicate whether their feelings were positive or negative. However, in the Progressive Exploration phase, they began to express more negative views and unpleasant experiences, especially among registered users.

Overall, most respondents provided predominantly positive feedback on the factors. A significant majority addressed specific factors in their responses to the general questions and were willing to share their experiences and perceptions. During the progressive exploration stage, respondents elaborated on more details and continued to provide positive responses regarding IS, CR, and AP. However, attitudes towards NU, IF, and PE varied, particularly for NU and IF. In the Progressive Exploration phase, attitudes of registered users and visitors were even opposite, with their focal points differing. Descriptions of PE were relatively neutral, showing neither clear support nor opposition. This mixed feedback underscores the importance of understanding different user experiences and expectations when designing and optimizing interactive websites.

- ***Feedback on General Questions (Opening)***

As shown in Table 10, the keywords corresponding to different factors exhibit similarities. Specifically, respondents' feedback on IS often included descriptions that also pertained to NU, CR, and AP. For example, VT-02 mentioned that the interactive website's design was very simple, with no unnecessary pop-ups or ads. VT-03 noted that the clean interface made the website seem more professional, and the interesting content and appealing images led VT-03 to bookmark the site. This suggests that visitors are initially attracted to the website's UI, with its clean, tidy, and clear layout being the prominent advantage.

> *VT-02: "My first impression is that it's really modern and clean. A lot of websites have tons of ads and pop-ups that are super annoying, but this one doesn't have any of that. The interface is fresh and tidy. This simple design makes browsing comfortable because I'm not distracted by irrelevant stuff."*
>
> *VT-03: "What struck me was how well-organized it is and the clear fonts. This clean design is pretty attractive and makes me think the site is professional, like there's a serious team behind it. So, I didn't hesitate to bookmark it."*
>
> *RU-01: "Honestly, It is just about looking good. Actually tells me a lot about the company. For example, when I see a site that's designed really well and looks great, I feel like the company is probably very reliable. I think, if they put so much effort into the website, they must care about details and their customers. It makes me trust them more."*

From VT-03's statement, it can be inferred that high-quality UI design can increase trust in the company's or team's capabilities. Similarly, RU-01 remarked that the quality of the website design reflects respect for the customer and indicates the company's strength. This helps explain why IS significantly impacts POU and PEOU in the quantitative analysis.

For CR, respondents generally felt satisfied with the design of the website's text and layout, believing these elements

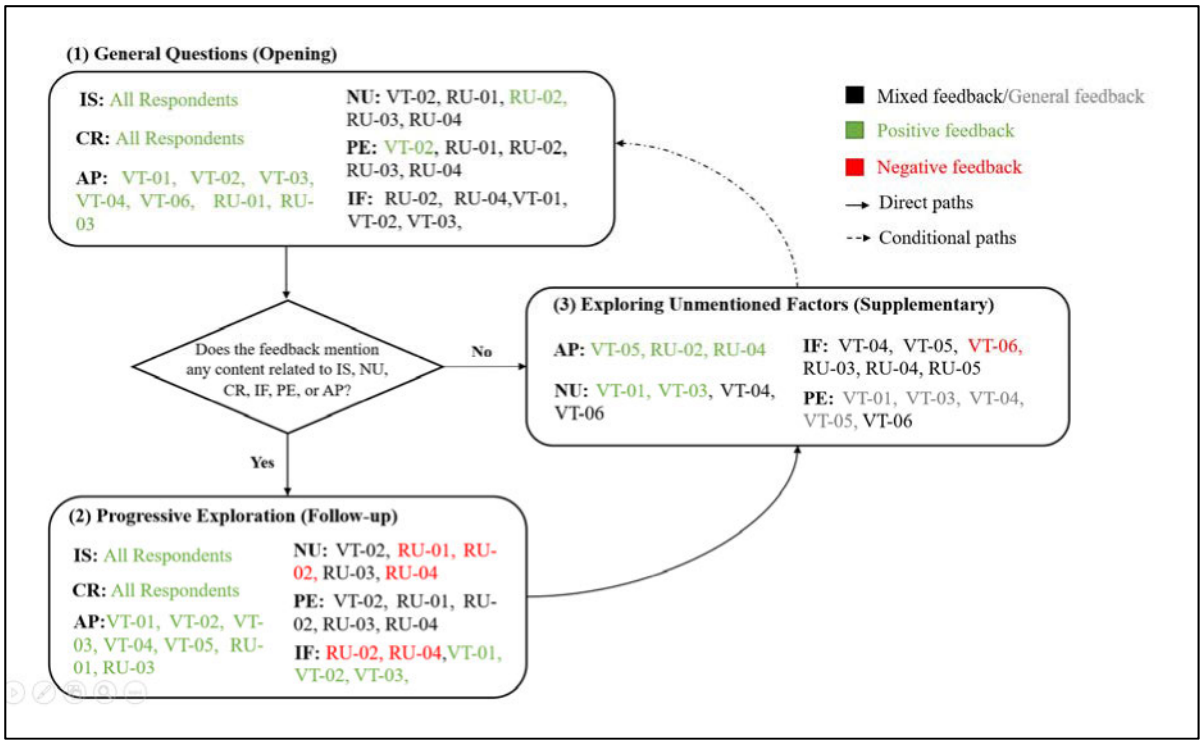

FIGURE 5. Results of Semi-Structured Interviews.

TABLE 10. Summary of feedback on general questions.

Factors	Description (Key words)	Positive feedback	Negative feedback
IS	Streamlined, minimal, efficient, clear fonts, accessible, appealing, well-organized, modern design, Easy to read,	Clearness, reduces distractions, easier navigation	NA
NU	Intuitive, accessible, complex for advanced tasks	Easy to use	Sometimes overwhelming or confusing.
CR	Clear fonts, well-organized, high contrast, Easy to read, quickly finding information, interesting knowledge, accessible	Enhancing reading experience	NA
IF	Timely feedback, subtle indicators, excessive animations	Clear feedback, Appreciated	too many animations cause distractions
PE	Targeted content, privacy concerns, customization options, Complexity	Relevant content is useful	feeling intrusive and over-customized, be misunderstood
AP	Visually appealing, clear, professional ，modern design, engaging, design, Easy to read	Improves user engagement ，overall satisfaction	NA

significantly enhanced their reading experience. For example, VT-01 mentioned that the font size was appropriate, the text was clear, and the contrast between the background and text colors was well-balanced, making it comfortable to read for extended periods without eye strain. The layout was well-organized, with important information easily noticeable, allowing users to quickly grasp key points. Similarly, RU-03 emphasized the neatness of the website's typography, noting that all content was systematically arranged, with primary information centrally located and secondary information on the sides, making the reading process smoother. Likewise, VT-06 appreciated the thoughtful design of the text and layout, finding it easy to read without feeling fatigued and highlighting that important information was easy to find.

VT-01: "The font size is just right, and the text is clear. The contrast between the background and text colors is well-done, so even when I read for a long time, my eyes don't get tired. The layout is well-organized, with important content easy to spot. This way, I can quickly catch the main points without struggling through a wall of text."

RU-03: "The website's layout is really neat. Everything is arranged in an orderly way, with the main information in the center and secondary info on the sides, so it's not confusing to read. There's also plenty of white space between sections, making it comfortable to read. The headings and subheadings are well-designed,

with each chapter clearly titled and the font size larger than the body text, making it easy to see what each section is about. Plus, the use of images and charts adds layers to the content, making it easier to understand."

VT-06: "Overall, it feels like a lot of thought went into the text and layout design of this website. It's easy to read without getting tired, and finding important information is really straightforward."

Feedback on AP was positive and closely related to IS and CR, covering aspects like UI design, website navigation, attractive images, and clean layouts. Some respondents mentioned their dislike for commercial push notifications on traditional websites, noting that clean, well-designed interactive websites without obvious commercial elements earn their trust and preference more easily.

For instance, RU-01 said that complex or overly commercial websites feel like they are just trying to sell something rather than provide real value, which makes them seem less human and personalized. This suggests that aesthetic design affects both the visual experience and users' perceptions of the website's purpose and credibility.

VT-04 highlighted the harmonious use of colors, noting that well-coordinated colors are comfortable to look at. Attention to details like button colors and highlighted links adds to the professional and attractive appearance of the site. This careful color design enhances visual pleasure, making the website more appealing and professional. Such feedback indicates that good aesthetic design can boost trust and willingness to use the website, explaining why AP significantly impacts PEOU and POU.

RU-01: "Some websites I've browsed before are too complex or too commercial. They feel like they're just trying to sell something, not offer real value. They lack a human touch and personalization, which makes me hesitant to trust them. In contrast, these interactive websites are much more straightforward and user-friendly."

VT-04: "Gotta say, the colors are really well-coordinated, not too harsh or too dull. The combos are just right, pretty harmonious and comfortable. And the little details, like button colors and highlighted links, are spot on. They make the whole page look super professional and attractive."

Unlike IS, CR, and AP, feedback on NU, IF, and PE was mixed, especially among registered users and heavy users of interactive websites. Specifically, RU-02's description of NU was negative, while RU-01, RU-03, and RU-04's descriptions were neutral. Similarly, visitors' descriptions of these factors were neutral, with no clear inclination. Apart from VT-02, other visitors barely mentioned NU. It appears that visitors who interact less frequently with these websites do not pay much attention to navigation. In contrast, long-term registered users, who use the sites more frequently, have a deeper perception of NU.

RU-02: "Even though the features are easy to find, I still feel like, um……, using this website isn't that simple or practical. For example, some functions are easy to locate, but, uh, they're not intuitive to use. I need to read a lot of guides to use them correctly. So, while the navigation itself is good, it doesn't make the whole experience easier. I still need time to, like, adapt and learn how to use this site effectively."

VT-02: "I usually look for the 'about us' section at the top, but, uh, I couldn't find it here, which was really frustrating. It took me a long time to locate it, and it turned out to be, like, right next to where I was looking."

RU-02 noted that although the features are easy to find, the operations are not intuitive and require consulting multiple guides. This indicates that users might experience a high cognitive load during use, which can negatively affect the user experience. High cognitive load can lead to confusion and fatigue, reducing efficiency (Souchet et al., 2022). Importantly, users form expectations based on their previous experiences, and when the actual operation deviates from these expectations, they feel confused and dissatisfied (Wang, Zhou & Zhang, 2020). Therefore, based on VT-02's response, it can be identified as a mismatch issue, where the user's expectations do not align with their actual experience.

Additionally, there were noticeable differences in feedback on PE, particularly between registered users and visitors, due to their varying usage frequencies and expectations. Overall, registered users had more specific opinions about the accuracy of personalized recommendations and the impact of interface customization options, whereas visitors rarely mentioned these aspects.

For example, RU-02 noted that after occasionally viewing a product, the website kept recommending similar items while ignoring other frequently browsed content, making the user feel misunderstood and reducing their interest. Similarly, RU-04 found excessive personalization settings distracting when trying to quickly find information or read the latest articles. However, some participants had positive feedback on PE. RU-03 felt that personalized recommendations made the website seem more attuned to their interests, providing more attractive content and enhancing the overall user experience and satisfaction.

RU-02: "When I log in, it shows me content based on my browsing history. While.. it pretty good, but sometimes those recommendations are off, even a bit ridiculous. I might look at one product once, and then the site keeps pushing similar products, ignoring what I usually browse. ……makes me feel misunderstood and less interested in using the site……I have to search for what I want instead of relying on its."

RU-03: "Every time I log in, the homepage is tailored to my browsing history and interests. . . . . if I looked at some graphic design tutorials. . . Next time, it suggests more of that. It makes me feel like the site understands me and offers more appealing content."

RU-04: "Honestly. . . um. . . some websites just go way overboard. They throw in too many customization options, and all the flashy features on the interface just distract me. Sometimes, I just want to quickly find some info or read the latest articles, but I end up getting sidetracked by all these personalized settings. It's like, chill out with the bells and whistles, you know?"

Unlike registered users, visitors tend to focus more on IF, while registered users do not emphasize this aspect as much. Some respondents feel that timely feedback increases their confidence and certainty in using the site. For instance, VT-01 mentioned that seeing a progress bar and waiting indicator, followed by a ''submission successful'' message when submitting a share, reassures them that the action is complete. However, VT-01 also noted that sometimes the feedback is delayed, or a page refresh is needed to see the updates, leading to uncertainty and discomfort.

Other respondents feel that the feedback mechanism is not always reliable. VT-03 pointed out that while most of the time clicking a button shows a loading icon indicating the action is being processed, this doesn't always happen. This inconsistency can negatively impact the user experience.

VT-01: "It like submitting a share when I perform an action, there's a progress bar and a waiting indicator before the 'submission successful' message appears. That's really helpful because I know the action is complete. While, sometimes the feedback is delayed, or I have to refresh the page to see the update, which makes me feel uncertain."

VT-03: "Most of the time, when I click a button, a little loading icon pops up to show it's working, but sometimes it just doesn't show up."

These feedbacks indicate that while timely and clear interactive feedback can enhance the user experience, delayed or inconsistent feedback can cause confusion and uncertainty. This also explains why the relationship between IF and both POU and PEOU is relatively ambiguous and not significant.

C. PROGRESSIVE EXPLORATION (FOLLOW-UP)

Based on the responses to the General Questions, researchers conducted in-depth follow-up probes and found that for IS, CR, and AP, some participants simply provided more detailed descriptions without changing their overall attitude. However, for NU, IF, and PE, participants were more inclined to express negative feelings. Additionally, as shown in Table, there is some overlap in the keywords for NU and IF, while the descriptions for PE are relatively distinct.

During the Progressive Exploration phase, participants' feedback on NU became more specific, revealing additional usage issues and inconveniences. For instance, RU-02 pointed out page loading delays and the negative impact of dynamic feedback. Similarly, RU-04 mentioned that the pop-up design of the search box covers the main page or darkens it, hindering the ability to reference webpage content simultaneously. This indicates that while certain designs aim to enhance user experience, they can actually disrupt the continuity and efficiency of user operations. Additionally, RU-04 noted that although there are sometimes animations or prompts, these feedbacks are often not noticeable, especially when the page contains a lot of content. Loading icons or progress bars inform users that the system is processing, but when the loading time is too long, it can become frustrating.

RU-02: "I've gotten used to it, but the navigation still isn't easy. Scrolling down the page, it takes a while for the content to load. Many interactive websites have this issue. Some dynamic feedback is cool, but if you're trying to find something specific, it doesn't help."

RU-04: "So, you hit the search box, and bam, a separate search page pops up, covering or darkening the main page, sometimes with a little animation. It's such a hassle because I still wanna see the main page content while I'm searching. It's like, seriously, why make it so complicated?"

RU-04: "This feedback isn't doing it for me. I click a button, and sure, sometimes there's a little animation or a prompt, but these things are so easy to miss, especially if the page is packed with content. Half the time, I don't even see them. And those loading icons or progress bars? They show the system's working, but if they take too long, it just makes me extremely frustrated."

Participants' negative attitudes towards NU are closely linked to issues with IF. Researchers found that users frequently encountered feedback delays and inconsistencies, which impacted operational smoothness and overall satisfaction. For instance, RU-02 noted that while the system usually displays a ''submission successful'' message with a progress bar, feedback can sometimes be delayed, causing uncertainty. Similarly, RU-04 mentioned slow button response times, leading to confusion about whether the action was registered. If feedback were prompted, the user experience would be smoother. Additionally, RU-04 highlighted that animations or prompts are often not noticeable when the page is crowded with content, and prolonged loading times can be frustrating.

These findings indicate that timely and clear interactive feedback is crucial for enhancing user experience, while delays and inconsistencies can cause confusion and frustration. This helps explain why the relationship between IF and both POU and PEOU is relatively ambiguous and insignificant.

RU-02: "Most of the time, when I do something like submit a share, there's a progress bar and a 'submission successful' message. That's great because I know it's done. But sometimes, the feedback is delayed, or I have to refresh the page to see the update, which is a bit uncertain."

RU-04: "Sometimes the feedback is slow. You click a button, and it takes a few seconds to respond. It makes me wonder if I clicked it right or if the system is stuck. If there was instant feedback after every action, it would be a lot smoother."

Overall, registered users provided more detailed feedback on PE, offering specific suggestions for improvement, whereas visitors seemed indifferent, focusing more on the website's overall appeal and content quality. For instance, RU-04 suggested allowing users to clearly set their preferences and dislikes so that the website can provide more accurate content based on this detailed input. Conversely, VT-02 mentioned that compared to PE, they care more about the website's quality and interesting content.

RU-04: "So, um, I think the website could do a lot better with its personalized services. The algorithms, like, need some serious tweaking to really understand what users are into and what they're not. For example, if the site had a survey feature where users could clearly set their preferences and dislikes, it would be way better at giving us content that actually fits our needs."

VT-02: "Yeah, I found out later that you can customize the page, but honestly, I don't care about that. I'm more interested in whether the website is fun and if the content is worth checking out."

In summary, while certain aspects of the interface design received positive feedback, there remains significant room for improvement in navigation usability (NU), interactive feedback (IF), and personalized experience (PE). Regarding NU, participants mentioned negative impacts from page load delays and dynamic content layouts, particularly when quickly searching for information. The design of pop-up search boxes covering the main page was also seen as disrupting the continuity of the workflow. These issues indicate that, although navigation design aims to enhance user experience, it can sometimes cause inconvenience in practice.

For IF, the primary issues were feedback delays and inconsistencies. Participants expressed a desire for timely and clear feedback after actions to confirm success. Delayed or unclear feedback increases cognitive load and reduces operational fluidity and satisfaction.

Regarding PE, registered users suggested improving personalization algorithms to better predict user needs and provide relevant content. In contrast, visitors were less concerned with personalization, focusing more on the website's overall appeal and content quality. This indicates that personalized services should be further optimized in terms of accuracy and practicality to meet the needs of different user groups.

TABLE 11. Summary of feedback in progressive exploration.

Factors	Description (Key words)	Positive feedback	Negative feedback
NU	Search box, submenu, dynamic feedback, reaction time, animation , cover	Interesting, easy, comfortable	Impatient, inconvenient, impractical
IF	Delay, reaction time, dynamic feedback, mini animation, Fluency, stutter,	Reassuring , Fun/ interesting, attractive, novelty	Impatient, inconvenient, impractical , drives me nuts
PE	Irrelevant Recommendations, Complexity in Customization , No respect for privacy	Original/ novelty	misunderstand , do not care, uncomfortable

D. EXPLORING UNMENTIONED FACTORS (SUPPLEMENTARY)

During the interviews, researchers introduced relevant questions to explore the predetermined factors that participants had not mentioned. As shown in Table 12, even for respondents who did not explicitly mention AP, their attitudes towards AP were still positive. This indicates that AP contributes positively to user experience, even if not directly mentioned. In contrast, feedback on NU and IF was mixed. For PE, a significant portion of participants did not notice it, and their responses were rather neutral.

VT-05: "I think you're talking about aesthetics like colors, layout, and typography, right? That's how I see it. Anyway, my first impression of this site is that it's really well-designed. It looks professional and fresh, something I haven't seen much before."

RU-02: "The visuals are really appealing. It's different from other websites. The designer's got great taste, giving it a fresh look. When I see a site with such a good design and layout, I tend to stick around longer."

Regarding the follow-up questions about AP, participants' perceptions of aesthetics included elements like colors, layout, and typography, all of which enhanced the visual appeal and professionalism of the website. They also agreed that the novel UI design of interactive websites gives a sense of professionalism, thereby increasing trust. This feedback aligns with what participants mentioned under

VT-01: "Navigation…? Well…I think the navigation system on these types of websites is usually pretty intuitive. …Like, when you scroll the page, it keeps the important navigation buttons fixed at the top or side.

TABLE 12. Summary of feedback in the exploring unmentioned factors stage.

Factors	Description (Key words)	Positive feedback	Negative feedback
AP	Professional, colors, layout novelty, visually appealing, clear, modern design, well-designed exquisite design,	Improves user engagement and overall satisfaction ,	NA
NU	Search box, sub-menu, dynamic feedback, response time, small animations, operations complex	Interesting, intuitive, convenient	Annoying, inconvenient, repetitive operations
IF	Delays, interesting, response time, dynamic feedback, lag	Interesting, Reassuring	Unnecessary, annoying, inconvenient
PE	Feed, big data, recording	Fail to noticed	

So, no matter what page you're on, you can quickly return to the homepage or access other key features. This design feels super convenient, no need to search around."

Regarding NU, it was primarily visitors who mentioned it during the Exploring Unmentioned Factors phase, indicating that visitors, unlike registered users, don't immediately consider NU as part of their first impression of the website. However, most visitors had a positive view of NU, particularly appreciating its clear functionality, logical layout, quick operations, and visual friendliness. The significant variations in NU across different interactive websites suggest that optimizing this aspect could greatly enhance user experience. Websites can achieve this by simplifying the complexity of information retrieval, reducing the need for multiple clicks and inputs, and ensuring that hidden menu designs are intuitive and user-friendly. These improvements can significantly boost overall user satisfaction and experience.

Follow-up questions about Interactive Feedback (IF) revealed that feedback timeliness varies significantly across different websites. Some participants mentioned that slow feedback increased their frustration and uncertainty, while others felt that smooth feedback significantly enhanced their user experience. Additionally, the clarity of feedback is crucial. Clear and precise feedback, such as confirmation messages and specific error information, helps users understand the outcome of their actions, preventing repeated actions and confusion.

Detailed interactive design, like button changes and page animations, can boost users' confidence and operational efficiency. Moreover, the impact of network conditions cannot be overlooked; timely feedback becomes even more critical in poor network conditions, reducing user irritation. While websites have made progress in interactive feedback, improvements are still needed in timeliness and clarity. By optimizing feedback mechanisms to ensure that results are promptly and accurately communicated to users, overall user satisfaction and experience can be significantly enhanced.

Finally, regarding PE, although most visitors did not notice the related features, VT-06 provided detailed feedback. He acknowledged the value of personalized recommendations, especially content suggestions based on user habits, but noted that the personalized settings and customizable layout were not widely appreciated. Additionally, VT-06 emphasized the need to optimize personalized content to better meet users' actual needs. He found the personalized homepage settings and flexible layout features unnecessary since these interactive websites are primarily used for finding materials or reading articles, not for social networking.

E. SUMMARY OF INTERVIEW FINDING

The study conducted structured interviews with 10 participants to explore the underlying mechanisms affecting perceived usefulness (POU) and perceived ease of use (PEOU). The findings reveal that Interface Simplicity (IS), Content Readability (CR), and Aesthetic Pleasure (AP) have a direct positive impact on the willingness to use interactive websites. Both registered users and visitors provided similar feedback on these factors. While registered users focused more on the practicality of the website, visitors were more attracted to the visual elements.

All participants spontaneously mentioned IS and CR without any prompts, indicating that interface simplicity and content readability are the most immediate and primary concerns when evaluating interactive websites. Importantly, a simple interface design not only enhances visual pleasure but also increases users' perceptions of the website's professionalism and credibility. This aligns with previous quantitative analysis results, demonstrating that IS significantly enhances both POU and PEOU.

Regarding PE, the push algorithm often relies too heavily on users' short-term behaviors, overlooking their long-term interests or current situational needs. Criticisms of interface personalization mainly focus on its potential to complicate website usage. Some registered users find that frequently changing interface layouts and functionalities make adaptation difficult, especially when these changes do not noticeably improve efficiency or provide additional value. However, visitors did not seem to notice the personalized interface features.

Regarding PE, the push algorithm often relies too heavily on users' short-term behaviors, overlooking their long-term interests or current situational needs. Criticisms of interface personalization mainly focus on its potential to complicate website usage. Some registered users find that frequently changing interface layouts and functionalities make adaptation difficult, especially when these changes do not noticeably improve efficiency or provide additional value. However, visitors did not seem to notice the personalized interface features.

Interactive Feedback (IF) theoretically should enhance perceived ease of use (PEOU). However, in practice, due to inconsistent execution and technical limitations, its actual impact on PEOU might not be significant. To improve this, it is essential to enhance the consistency, accuracy, and timeliness of feedback, ensuring that users receive clear and reliable responses after every interaction, thereby positively affecting their perception of the website's ease of use.

There were notable differences in feedback regarding NU, which can be explained by the frequency and purpose of use. Light users (visitors) generally have a positive attitude towards the ease of navigation, as their use is mostly for casual browsing without frequent interaction or the need to find specific complex features. These users are more likely to appreciate the basic layout and aesthetic design of the site, paying less attention to its deeper functionalities. In contrast, heavy users (registered users), especially those using the site for work-related tasks, often rate the navigation usability lower. Their needs are more complex and specific, such as submitting work, finding particular information, or completing specific tasks, requiring more precise and efficient navigation support. When the site's navigation system fails to meet these demands, these users feel frustrated as cumbersome or unintuitive navigation hinders their workflow, adding extra time costs.

VI. DISCUSSION

The majority of the study's hypotheses found empirical support, notably that Interface Simplicity (IS), Content Readability (CR), and Aesthetic Pleasure (AP) exert a significantly positive influence on both perceived ease of use and perceived usefulness, thereby augmenting users' intentions to engage with technology. Conversely, certain design elements, such as Navigation Usability (NU), Interactive Feedback (IF), and Personalized Experience (PE), did not positively impact perceived ease of use and usefulness as anticipated.

A. INFLUENCE OF IS, CR, AND AP

Quantitative analysis indicates that IS, CR, and AP are crucial in shaping user engagement. All participants, regardless of being registered users or visitors, highlighted these factors without prompts. This suggests that simplicity in interface design, readability of content, and aesthetic pleasure are intuitive and primary concerns for users. These aspects not only enhance visual appeal but also instill a sense of professionalism and trust in the website, aligning with previous research that highlights the importance of first impressions and sustained satisfaction in interface design [72].

B. NAVIGATION USABILITY (NU)

Analysis revealed that NU did not positively predict a website's PEOU and had a negative impact on PU. This contradicts the conventional belief that easy navigation is essential for user experience enhancement. It suggests that as users become more accustomed to complex digital interfaces, their expectations for navigation evolve. Overly intricate navigation, despite its intended functionality, might deter user convenience and thus reduce its perceived utility. This finding echoes the notion that user efficiency and satisfaction may hinge on the balance between navigational simplicity and functionality [74].

C. PERSONALIZED EXPERIENCE (PE)

PE negatively affected PEOU, likely due to the ''choice overload'' phenomenon, where too many customization options complicate the user experience and create interface inconsistency. Registered users often found the frequent changes in interface and functionality disorienting, particularly when these adjustments did not yield evident improvements in efficiency or added value. This highlights the importance of refining personalized algorithms to balance user preferences without overwhelming them [12].

D. PERCEIVED EASE OF USE (PEOU) VS. PERCEIVED USEFULNESS (PU)

Unexpectedly, PEOU did not significantly affect PU in the context of interactive websites, contrary to the findings of some studies [75]. This suggests that users may assess a tool's practicality independently of its ease of use. Users might focus on whether a platform effectively supports their specific tasks and goals, regardless of its user-friendliness. This finding challenges the traditional Technology Acceptance Model (TAM) and suggests a need for its adaptation to different technological contexts and user groups [8].

E. OVERALL DISCUSSION

Users perceive interactive websites differently from traditional ones. Feedback shows that interactive websites offer design inspiration and artistic content, serving as expressions of design and art. For casual users and visitors, these sites provide visual and creative inspiration, with the simplicity of the interface being particularly striking. This minimalist design embodies the ''less is more'' philosophy and leaves a lasting impression [76]. Thus, when navigation, personalized experience, or interactive feedback becomes more complex, it clashes with the site's overall tone, resulting in negative perceptions.

However, oversimplifying navigation and interactive systems can make the website less functional. This may lead users to find the site monotonous and lacking in exploratory value, affecting their perception of its usefulness. Therefore, striking a balance is crucial for maintaining user engagement and ensuring the site's functionality. Designers face the challenge of creating a rich user experience without overcomplicating the site.

For registered users, the interface needs to offer customization while maintaining a clean and consistent layout to avoid causing stress or confusion. It is essential to provide timely and accurate feedback, enhancing the user's sense of control and trust. By continuously collecting user feedback and iteratively improving the design, the site can stay fresh and

relevant. The quantitative results and qualitative findings suggest that the main shift from casual to power users involves focusing more on functionality than aesthetics. However, even power users appreciate content readability, interface simplicity, and the aesthetic pleasure of the layout.

In conclusion, successful interactive website design requires deep user insights and keen aesthetic sensibilities to create sites that are both beautiful and functional, meeting users' evolving expectations and needs. Through careful design, interactive websites can become platforms that inspire, provide value, and foster deep user engagement.

VII. CONCLUSION

The study comprehensively analyzed the impact of various elements on user browsing intentions on interactive websites using the Technology Acceptance Model (TAM). The findings reveal that Interface Simplicity (IS), Content Readability (CR), and Aesthetic Pleasure (AP) significantly enhance users' perceived ease of use and usefulness, thereby increasing their browsing intentions. However, Navigation Usability (NU), Interactive Feedback (IF), and Personalized Experience (PE) did not consistently produce the expected positive impacts, underscoring the complex relationship between design factors and user perceptions.

Employing a rigorous mixed method, including questionnaire surveys, Structural Equation Modeling (SEM), and semi-structured interviews, this research provides a robust framework for understanding the nuanced dynamics of website interaction. It highlights the importance of balancing simplicity with functionality to effectively cater to both casual and power users.

The study's insights indicate that while simple and aesthetically pleasing interfaces attract and retain users, navigation and personalization must align with this simplicity. Excessive functionality options may diminish the user experience. Therefore, designers must strike a balance to create websites that are both functional and engaging. Future research should further explore these relationships, considering the rapidly evolving digital landscape and shifting user expectations, to refine website design strategies for improved user engagement and satisfaction.

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