Measuring the mediating effect of satisfaction and compatibility on the relationship between podcast features and users' intention of continuous usage and word of mouth

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Abstract

Amid the expanding podcast market, a myriad of podcasters and advertisers have ventured into hosting and endorsements. The paramount objective of this research was to ascertain the moderating roles of satisfaction (SAT) and Compatibility (COM) in the relationship between podcast characteristics and the Continued Use Intention (CUI) of users. To assess the ramifications of podcast attributes—technology affinity (TA), perceived playfulness (PP), multitasking (MT), social presence (SP), SAT, and COM—on Word of Mouth Intention (WOMI) and CUI, a questionnaire was disseminated among seasoned podcast users. From an aggregate of 250 returned questionnaires, 227 were adjudged as valid post invalidation scrutiny, yielding a 90% retention quotient. Employing the Structural Equation Modeling (SEM) approach for data analysis, the findings revealed the following: TA positively influenced both SAT and COM; PP favorably influenced SAT; MT cast a positive impact on COM; SP constructively affected both SAT and COM; COM positively influenced SAT; and WOMI constructively impacted CUI. This research propounds that podcast platforms might metamorphose into voice-anchored social platforms by curating compelling content, interweaving interactive constituents such as inducements or contests, and galvanizing listener engagement. We advocate for listeners' indulgence in classical or ambient music during engagements, without requiring excessive focus on the host's content.

Keywords Podcast · Technology affinity · Multitasking · Social presence · Continuous usage intention

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1 Introduction

1.1 Background and motivation

During the coronavirus disease 2019 (COVID-19) pandemic in 2020, industries and countries faced unprecedented crises, resulting in remote work and home isolation. With people spending more time at home, outdoor entertainment shifted to online streaming platforms. The Global Entertainment & Media Outlook 2022–2026 [1] report projected the global entertainment and media industry to recover in 2022, with an estimated annual revenue growth of 7.3%, reaching US$ 2.9 trillion by 2026 at a 4.6% compound annual growth rate.

Podcasting is a form of digital media distribution, allowing users to subscribe to and automatically download or stream specific audio or video files, which can be listened to or viewed at any time on various devices [2]. In comparison to traditional radio broadcasts, podcasts provide the convenience of on-demand listening and have a more accessible learning curve for listeners, as well as a simplified program planning and design for creators. Chou, Ma, & Britt [3] developed a podcast motivation scale, which identified three factors that explained 54.1% of the total variance (entertainment (21.1%), information-seeking (18.4%), and companionship (14.6%)).

Podcast listeners primarily consist of radio audience, mostly consisting of the elderly; however, podcasts can attract a younger demographic [4]. Podcast listeners lean toward knowledge-based content, while radio ones gravitate toward music and real-time news. Listeners prefer podcasts because they offer opportunities for learning, on-demand listening anytime and anywhere, and ability to multitask while listening. Podcasters present enjoyable content that brings joy to listeners, accompanying the listeners while they are having busy workdays, waiting for transport, or spending their leisure time. In addition, listeners have the freedom to select the content or programs they want to listen to, a service that traditional radio cannot provide.

Traditionally, podcasts have been considered as an innovative technology, and studies have applied models such as the unified theory of acceptance and use of technology or technology acceptance model (TAM) to study user behavior and intention. However, podcasts are not solely an innovative technology because they also serve as digital platforms that extend radio stations, enabling sharing of interesting or valuable radio content through memberships, payments, and promoting ideas. This presents an opportune moment for user value and digital transformations to foster development of innovative services. Currently, search and recommendation systems in the field of podcasts heavily rely on word of mouth (WOMI), lacking significant impact from research and industry players [5].

As an audio-based social media platform, podcasts have gained popularity due to their ability to enable multitasking (MT). This feature allows for listeners to work while enjoying programs, although occasional distractions may occur. However, listeners can easily catch up on missed content without major interruptions. Furthermore, unlike YouTube, podcasts offer a more seamless listening experience without excessive advertisements or visual distractions, making suitable for various work environments of users.

Some podcast listeners do not actively listen to the program, but rather prefer the host's voice accompany them over time, enjoying a sense of companionship. This creates a SP, with the podcaster virtually accompanying the listeners.

In the evolving landscape of podcast media landscape, user engagement and behavior are significantly influenced by satisfaction (SAT), which indicates user content preference, and compatibility (COM), which is the alignment of content with user needs and interests.

SAT influences user engagement with podcasts. Vartakavi and Garg [6] suggested that content diversity in podcasts can challenge content discovery, leading users to invest more time if they find the content satisfying. COM can shape user behavior in podcasts. Benton et al. [7] indicated that user sequential behavior aids podcast recommendations, suggesting that content alignment with user needs promotes continued engagement. We hypothesize that SAT and COM may mediate podcast engagement. This study aims to investigate the potential effect on user behavior.

Podcasts are gaining popularity and are being used in various ways, as highlighted by Wei and Ram [8]. They serve as a tool for learning, marketing, and providing valuable knowledge. In the context of higher education, podcasts offer the advantage of sharing information between students and teachers without geographical or time limitations. Students can conveniently download recorded lessons and review them at their own pace and location, as mentioned by Lin, Zimmer, and Lee [9].

During the COVID-19 pandemic, podcasts rapidly emerged as a popular entertainment alternative. This study aims to explore the key factors that influence listeners' acceptance and continued usage of podcasts. Understanding these factors is crucial for channel creators and advertisers in the podcast industry.

1.2 Research objectives and questions

Podcasts offer diverse messaging capabilities and convenient features along with advantageous features such as redial, adjustable playback speed, and on-the-go multitasking capabilities [10]. This medium caters to versatile needs to its audience, affording listeners the freedom to engage during work, idle moments, or leisure periods. The motivations for underpinning podcast usage include aspects such as social presence (SP), perceived playfulness (PP), education/information, recreation/escapism, habitual consumption, and convenience [11, 12]. Observably, user inclination toward podcast programs increases when the content is deemed engaging. Innovations in technology have enabled podcast creators to curate immersive experiences for their audience.

Given the rising prominence of podcasts and their multifaceted role in entertainment, education, and marketing, it is imperative to discern the factors that drive listeners' continued engagement and recommendation behaviors. Consequently, this study delineates the following research objectives and associated questions:

1. What is the impact of a podcast's TA on SAT and COM? To explore the effect of a podcast's TA on SAT and COM, we hypothesize that a higher TA implies more frequent use in daily life via mobile devices, thereby improving the listener's SAT and COM.
2. How does a podcast's PP influence SAT? To explore the effect of a podcast's PP on SAT, we posit that PP positively impacts SAT, i.e., listeners enjoy podcasts and are satisfied with their usage.
3. How does MT in podcasts affect SAT and COM? To explore the effect of a podcast's MT on SAT and COM, we suggest that although MT improves the convenience of consuming podcasts during other activities, it does not necessarily increase SAT. Therefore, the nature of the task performed concurrently with podcast listening can affect the listener's experience.
4. Does a podcast's SP bolster SAT and COM? To explore the effect of a podcast's SP on SAT and COM, we proposed that SP enhances both SAT and COM, suggesting that

podcasts offering interactive experiences can improve the listener's engagement and satisfaction.

5. What is the role of a podcast's COM in determining SAT, WOMI, and Continued Use Intention (CUI)? To explore the effect of a podcast's COM on SAT, WOMI, and CUI.
6. How does a podcast's SAT influence WOMI and CUI? To explore the effect of a podcast's SAT on WOMI and CUI.
7. Finally, how does a podcast's WOMI impact CUI? To explore the effect of a podcast's WOMI on CUI.

2 Literature Review

This research aims to thoroughly investigate the influence of podcast characteristics such as TA, PP, MT, SP, SAT, and COM on WOMI and CUI. By analyzing these determinants, this study aids in understanding the integration of podcasts into daily routines and provides actionable insights for podcast producers and platforms to amplify audience engagement and allegiance. Subsequent sections engage with extant literature pertinent to these determinants, establishing a theoretical bedrock and directing ensuing research methodologies and analyses.

2.1 Technology affinity

TA, as conceptualized by Franke et al. [13], refers to a user's proclivity to actively engage with innovative technologies, reflecting the significance of a system or technology in an individual's life [14]. Ruiz and Sanz [15] posited that network affinity is a pivotal determinant of network dependence and future purchasing intentions. Aldás-Manzano et al. [16] demonstrated that convenience offered by mobile shopping, coupled with affinity for mobile phones, enhances mobile shopping experience. Ruiz et al.'s [17] study on television programs indicated that providing truthful, novel, and engaging content can undoubtedly pique consumers' interest. Ozturk et al. [18] observed that consumers deem TA to be of considerable importance owing to the convenience and time-saving attributes of the self-service environment. Kang and Gretzel [19] contended that podcast affinity is intrinsically linked to familiarity with the web and podcast usage.

Fleming et al. [20] differentiated TA, or the way people feel about a technology, from enterprise TA, which focuses on perceptions of a company's technology. Hazari et al. [21] observed that Pinterest affinity combined user-experienced value, loyalty, and trust. Fleming and Artis [22] suggested that corporate TA should include broader concepts suitable for exploring new TAs, such as self-service innovation.

2.2 Perceived playfulness

Davis et al. [23] suggested that pleasure, an intrinsic motivation, reflects how enjoyable an individual finds something. Mouakket [24] posited that pleasure and perceived usefulness influence continued use of social networking sites, with quality user communication features enhancing customer SAT.

Moon and Kim [25] suggested that PP includes concentration, in which individuals focus on the interaction process; curiosity, which is sensory or cognitive interest; and enjoyment, in which individuals find the interaction intrinsically interesting and engage in

activities for pleasure and not for extrinsic rewards. Moghavvemi et al. [26] proposed that PP on Facebook encompasses the joy of using the platform and the SAT from assisting others.

Lu et al. [27] suggested that incorporating enjoyable features into mobile application design is a business strategy for creating personalized, satisfying content spaces. Van der Heijden [28] and Holdack et al. [29] argued that PP affects usage of the Internet for entertainment and adoption of the augmented reality (AR) technology, respectively, by enhancing the enjoyment. Lee et al. [30] observed that PP in the context of the virtual reality (VR) technology influences not only usage intention but also perceived usefulness, ease of use, and attitude toward usage.

2.3 Multitasking

MT, a term originating from the field of computer science, refers to simultaneous processing of multiple tasks, and in terms of psychology, it describes the human brain dividing attention among multiple tasks [31]. Despite it being a common behavior, Alghamdi et al. [32] noted that MT can increase memory errors due to limited capacity for simultaneously analyzing and processing diverse messages, especially those requiring extensive cognitive processing.

MT involves either simultaneously performing multiple tasks (such as driving while talking on the phone) or quickly switching between tasks (such as alternating between typing and watching a video) [33]. Younger users often subconsciously multitask with digital media [34]. Wiradhany and Koerts [35] suggested that heavy media multitaskers may favor broad attention, preferring to skim large amounts of information rather than deeply processing small amounts, potentially leading to less rigorous cognitive control processes such as thinking and paying attention.

Le Roux and Parry [36] suggested that MT can cause user distraction and user activity disruption due to rapid switching between activities. However, while it may reduce efficiency, comprehension is not always affected and can be compensated with more time [37]. Chen et al. [38] defined media MT as using one or more media, such as newspapers or computers, while engaging in other activities. Höhne et al. [39] observed that on-device media MT is more common among younger, more educated users.

Kenyon and Lyons [40] defined MT as simultaneously performing at least two activities. They noted that the web technology allows users to overcome time–space constraints, enabling participation in multiple activities at once.

2.4 Social presence

SP is defined as the feeling of being with others in a virtual environment [41]. It provides a sense of human and direct communication, creating a level of intimacy and familiarity in a social commerce environment and reducing the distance between buyers and sellers [42]. Live e-commerce is different from traditional online shopping in that it enables a one-to-many interaction model through development of the live-streaming technology, which enables transformation from images to videos and a highly visual interface that enhances the consumer's sense of SP [43].

SP measures the degree to which online customers experience a communication partner as a psychological presence. It depends on the ability of the platform to convey nonverbal cues such as personal and social elements and human warmth, whereas telepresence,

introduced by technology, can create a high level of presence by embedding rich media such as videos, audios, and animations, enhancing the vividness of the website and the immersion of users [44]. Shin et al. [45] suggested that rendering three-dimensional sound in live concerts contributes to the experience of realism and immediacy, which may enhance the sense of SP.

2.5 Satisfaction

SAT, indicating successful collaboration between an information system and users, was redefined by Bhattacherjee [46] through the expectation–confirmation model. This model, a modification of the expectation–confirmation theory and TAM, posits that if user expectations are met and if the technology proves useful, users will likely continue using the technology.

Customer SAT can deteriorate if a company fails to provide quality service, but can increase with timely, accurate, and relevant information [47]. SAT on platforms such as YouTube is often determined by the user's emotional state [48]. Moreover, SAT with instant mobile messaging is not only about user interface interaction but also about the benefits and features of the device itself [49].

2.6 Compatibility

COM, as per Ozturk et al. [18], is the manner in which technology aligns with an individual's lifestyle, needs, and preferred methods. McLean et al. [50] echoed this, suggesting that COM is the congruence between an individual's lifestyle and experiences, based on the task–technology fit theory. Rogers [51] also defined COM in his diffusion of innovation theory as the consistency of innovation with existing values, experiences, and adopters' needs.

Tornatzky and Klein [52] defined COM as value COM, which means alignment with personal values and norms, and practical COM, which means alignment with actions. Consumers are more likely to adopt innovative products that align with their habits and offer value [53].

Higher COM of products or services with users' needs or lifestyles expedites technology adoption and influences CUI [54]. In online learning, COM is the degree to which learning technologies align with students' beliefs, values, and lifestyles [55].

Huang [56] observed that perceived COM on social networking sites significantly impacts perceived usefulness and enjoyment, influencing continued use. Lee et al. [57] demonstrated that artificial intelligence voice assistants, with their features and services, align well with users' lifestyles and meet initial expectations based on past experiences.

2.7 Word of mouth intention

Buttle [58] defined WOMI as not only about brands or services but also about organizations, and argued that it can be incentivized. Its five characteristics are as follows:

1. Valence: WOMI can convey both positive and negative messages.
2. Focus: WOMI aims to foster customer loyalty and convert potential consumers.
3. Timing: WOMI can be shared pre- or post-purchase, serving as important information.

4. Solicitation: WOMI does not always originate from consumers and can be solicited or unsolicited.
5. Intervention: While WOMI can be spontaneous, companies often stimulate and manage it.

Kim [48] observed that during the COVID-19 pandemic, fitness YouTube channel subscribers were more active in terms of WOMI and referrals.

2.8 Continuous usage intention

Yang et al. [59] observed that SAT, expectation–confirmation, perceived usefulness, referent network size, social identity, and perceived interactivity significantly influence CUI on academic social network sites. SAT mediates the effect of these factors on CUI.

Qin et al. [60] observed that while some users prefer continuous use of mobile AR, they may not necessarily purchase related products. Similarly, podcast listeners may enjoy programs without paying for them. However, listener SAT can intensify the intention for continuous podcast usage.

2.9 Literature review and summary of previous studies

To provide a clear perspective and highlight the novelty and distinctions of this study, the main findings of related research are summarized in Table 1. This table intends to aid readers in understanding the achievements of previous studies while emphasizing the novel contributions of our research approach and its contributions to the existing literature.

3 Research methodology

3.1 Research frameworks

To obtain a profound understanding of listener interaction and its consequent benefits, this research examined the salient attributes of podcasts, such as technological affinity (TA), PP, multitasking (MT), and social presence (SP). These attributes were selected based on their empirically evidenced significant influence on the listeners' gratification and experiences, as reported in existing literature. These characteristics influence the listeners' content consumption patterns while delineating the nature and profundity of their engagement with the same.

Moreover, we postulate that satisfaction (SAT) and compatibility (COM) wield a moderating influence in this dynamic, predominantly in their impact on the continuous usage intention (CUI) of the audience. Based on this hypothesis, the research design was meticulously crafted to fathom how these inherent characteristics and intermediary agents synergistically determine the experiences and inclinations of podcast listeners. The research framework is illustrated in Fig. 1.

Table 1 Overview of key findings from previous studies

| Topic	Authors	Year	Key Findings	Differences from This Study
TA	Franke et al. [13]	2019	Users tend to actively engage with innovative technologies	This study combines multiple podcast characteristics
PP	Davis et al. [23]	1992	Pleasure is an intrinsic motivation	This study explores how playfulness affects SAT
MT	Alghamdi et al. [32]	2020	Multitasking may increase memory errors	This study examines how multitasking affects podcast usage
SP	Shin et al. [45]	2019	Three-dimensional sound enhances realism and immediacy	This study examines how SP enhances SAT and COM
SAT	Bhattacherjee [46]	2001	Users are likely to continue using a technology if it proves useful	This study examines how SAT affects CUI
COM	Ozturk et al. [18]	2017	How technology aligns with an individual's lifestyle, needs, and preferences	This study examines how COM affects CUI
WOMI	Buttle [58]	1998	WOMI can be either positive or negative	This study examines how WOMI affects CUI
CUI	Yang et al. [59]	2022	SAT mediates the effect of these factors on CUI	This study examines how SAT affects CUI
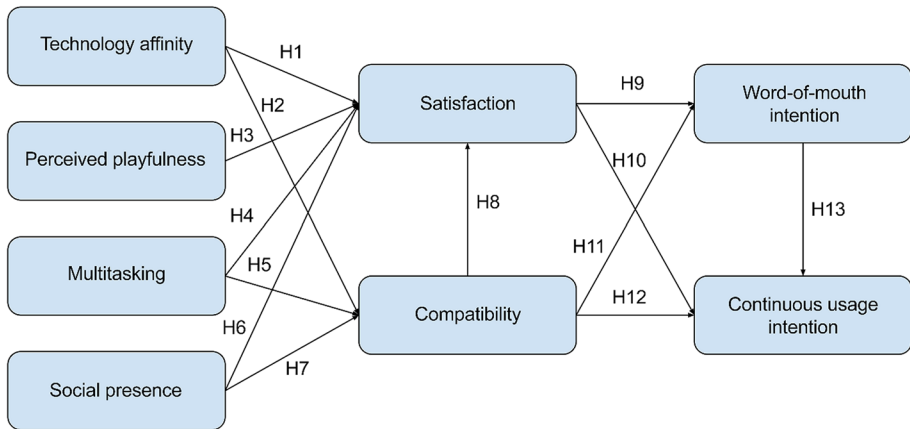
Fig. 1 Research framework

3.2 Hypotheses development

Smartphones, with their superior portability and personal affinity, have revolutionized our daily lives, becoming an integral part of our routines [50]. The affinity toward such technology significantly contributes to SAT. For instance, Xu and Du's [61] research on digital libraries substantiates this, revealing that SAT increases when digital library websites offer reliable, clear, and efficient services that seamlessly integrate into daily lives. Similarly, the usage of the Internet, particularly among older adults, fosters social interaction and enhances SAT with leisure activities [62]. Yang et al. [14] further affirmed this in their study on navigation apps, where they concluded that affinity is a measure of the perceived importance of the app in the user's life. This study extrapolates these findings to podcasts, suggesting that users perceive podcasts as a technology product that aligns with their daily lives, enhancing their SAT. Based on these insights, this study proposes the following hypotheses.

H1: TA positively affects SAT.
H2: TA positively affects COM.

Technology that infuses fun and enjoyment into user experience can considerably enhance users' attitude toward e-learning, providing an intrinsic motivation to adopt it and bolstering their willingness to accept [63]. Digital textbooks, as innovative learning mediums, amalgamate several multimedia elements with traditional textbook formats. Learners with high expectations, PP, and perceived usefulness are more inclined to derive SAT from using digital textbooks [64]. Numerous studies corroborated the positive impact of PP on SAT [27, 47]. Hence, this study proposes the following hypothesis.

H3: PP positively affects SAT.

Endrayana Dharmowijoyo et al. [65] proposed that the ability to multitask in daily routines is an individual's strategy to fulfilling Maslow's higher-level needs, thereby enhancing life SAT. Sun and Zhong [66] contend that the emergence of mobile media

has empowered users to engage in MT, such as enjoying music while jogging or texting while driving, epitomizing traditional MT. This reflects the common scenario in which individuals simultaneously juggle multiple tasks or activities in their professional or personal lives. This study posits that listeners of podcast programs may concurrently manage multiple tasks, such as household chores, professional work, or listening, while commuting. Consequently, this study introduces the following research hypotheses.

H4: MT positively affects SAT.
H5: MT positively affects COM.

Tseng et al. [67] suggested that SP, which fosters feelings of closeness and care, satisfies user needs and boosts SAT. Ogara et al. [49] observed a positive correlation between SP and SAT in mobile instant messaging.

Song et al. [68] observed that in online teaching, students appreciate teachers who self-disclose, owing to the strong SP it creates, enhancing teacher–student relationship SAT. Yilmaz and Keser [69] proposed that podcasts, by facilitating communication, can enhance SP in distance learning. This study posits that podcasts, offering flexible online listening services accessible anytime and anywhere, effectively integrate into daily life. Hence, the following related hypotheses are proposed.

H6: SP positively affects SAT.
H7: SP positively affects COM.

In online learning, user COM considerably impacts SAT [55, 70]. Chen et al. [71] observed that aligning e-magazine users' values and needs boosts SAT. This study posits that integration of podcast listening habits into listeners' work or daily routines fosters heightened SAT from its usage. Consequently, this study confidently advances the following hypothesis.

H8: COM positively affects SAT.

Bhattacherjee [46] suggested that SAT influenced their continued use of an information system. Lee [63] stated that e-learning usage, often recommended by friends, is predicted by SAT. Listeners with positive podcast experiences will have increased SAT, who in turn will be promoting podcast benefits and encouraging continued use. Hence, a related hypothesis is proposed as follows.

H9: SAT positively affects WOMI.
H10: SAT positively affects CUI.

Kaur et al. [72] observed that consumers are more likely to use and recommend mobile wallets that suit their lifestyles. Belanche et al. [73] suggested that habitual app use for various activities indicates COM for continued use, affecting usage intention and WOMI promotion. This study deduces that podcasts, when used for program listening at work or during daily routines, harmonize with work and everyday life. The COM of podcasts with daily life, in turn, impacts listeners' sustained usage intentions and their propensity to spread WOMI about podcasts. Consequently, this study confidently advances the following hypotheses.

H11: COM positively affects WOMI.
H12: COM positively affects CUI.

WOMI considerably influences consumer decisions and is linked to customer loyalty and purchase intention [74]. Farzin et al. [75] observed a positive effect of WOMI on mobile banking usage, as consumer behavior often follows peer recommendations and online reviews. Barreda et al. [76] suggested that positive WOMI effectively drives online marketing and behavioral intentions. This study suggests that positive WOMI about podcasts encourages continued usage, leading to the following hypothesis.

H13: WOMI positively affects CUI.

3.3 Operational definitions and measurements

At the outset, the rationale behind selecting and modifying the questions across all dimensions of this study should be further clarified. The questions selected for each construct were grounded in prior literature and tailored to effectively capture the specific aspects of podcasting. Although certain questions were modified based on the existing literature, the essence and objective of the original questions were preserved. Regardless of the construct, each question serves a distinct purpose—to assess varying facets of the podcast experience. In this preliminary study, all questions across the constructs were provided equal weight. However, note that future research might consider adjusting weights based on factors such as gender, age, and demographics. With this foundational premise, we delve into the specifics of each construct.

This study adopts Yang et al.'s [14] definition of TA, redefining it as the perceived importance of the podcast technology in one's life. The measure, based on Mafé and Blas's [15] affinity question and modified for this research context, includes five questions (Table 2).

This study adopts Lu et al.'s [27] definition of PP, redefining it as the enjoyment derived from podcasts. The measure, based on Lin and Yeh's [77] questions and modified for this research context, includes four questions (Table 3).

This study adopts Zhong's [78] definition of MT, redefining it as a user's ability to simultaneously perform multiple tasks. The measure, based on Perks et al.'s [79] questions and modified for this research context, is presented in Table 4.

This study adopts Wang's [43] definition of SP, redefining it as the perceived level of social interaction and closeness with a podcaster. The measure, based on Wang's [43] questions and modified for this research context, is presented in Table 5.

Table 2 TA measurement questions	Questions
	TA1 Listening to podcasts is one of my main daily activities
	TA2 If a podcast ceases to exist or permanently stops, I will miss it
	TA3 Podcast is important in my life
	TA4 I can listen to podcasts for several days in a row
	TA5 I would be lost without a podcast

Table 3 PP measurement questions	Questions
	PP1. It is fun to use podcasts
	PP2. I know it is enjoyable to use podcasts
	PP3. Using podcasts can make me happy
	PP4. I use podcasts to feel pleasant

Table 4 MT measurement questions	Questions
	MT1. I usually complete several tasks at the same time
	MT2. I usually work on several things at once
	MT3. I like to do more than one thing at a time

Table 5 SP measurement questions	Questions
	SP1. I am interacting with podcaster
	SP2. Podcaster is communicating with me
	SP3. I feel accompanied by podcaster

Table 6 SAT measurement questions	Questions
	SAT1. My experience with podcasts has been very satisfactory
	SAT2. My experience with podcasts has been very pleasant
	SAT3. My experience with podcasts was a quite fulfilling
	SAT4. My experience with podcasts has been enjoyable

Table 7 COM measurement questions	Questions
	COM1. Using podcasts suits my lifestyle well
	COM2. Using podcasts fits my lifestyle
	COM3. Using podcasts is compatible with my lifestyle

This study adopts Kumar et al.'s [80] definition of SAT, redefining it as overall perception of podcast users. The measure, based on Mouakket's [24] questions and modified for this research context, includes four questions (Table 6).

This study adopts Belanche et al.'s [73] definition of COM, redefining it as an extent to which podcasts fit into daily life. The measure, based on Belanche et al.'s [73] questions and modified for this research context, is presented in Table 7.

Table 8 WOMI measurement questions	Questions
	WOMI1. If someone asked me about podcasts, I would give a positive opinion
	WOMI2. If I had the opportunity, I would explain the advantages of podcasts
	WOMI3. I would recommend podcasts

Table 9 CUI measurement questions	Questions
	CUI1. I plan to reuse podcast
	CUI2. I will always try to use podcasts
	CUI3. I intend to regularly use podcasts

This study adopts Seo et al.'s [81] definition of WOMI, redefining it as listeners' readiness to share or recommend a podcast. The measure, based on Belanche et al.'s [73] questions and modified for this research context, includes three questions (Table 8).

This study adopts Lu et al.'s [82] definition of CUI, redefining it as listeners' likelihood of repeated podcast listening. The measure, based on Talwar et al.'s [74] questions and modified for this research context, includes three questions (Table 9).

3.4 Study design and test subjects

The questionnaire was bifurcated into two sections, with one section encompassing 28 queries and the other section consisting of six demographic factors. A 5-point Likert scale was employed, in which responses ranged from "strongly disagree" (1) to "strongly agree" (5). No ethics committee or institutional review board approval was required.

4 Data analysis

The study, conducted via convenience sampling in early 2022, among the 250 surveys received, 227 were deemed valid after screening the invalid responses, resulting in a 90% retention rate. The data was analyzed using the software SmartPLS 3.0, assessing the model's validity through outer and inner models. Analysis methods included statistical narrative, reliability testing, validity checking, and regression analysis.

4.1 Narrative statistical analysis

Descriptive statistical analysis, as presented in Table 10, provided basic information including gender, marital status, educational attainment, age, occupation, and top five programs, using count numbers and percentages to understand the sample structure.

Table 10 Demographic data

Factor	Options	Count	Percentage
Gender	Male	158	69.6
	Female	69	30.4
Marital status	Single	140	61.7
	Married	87	38.3
Educational attainment	High school/vocational	24	10.6
	College/university	170	74.9
	Graduate school or above	33	14.5
Age	Under 20 years	56	24.7
	21–30 years	66	29.1
	31–40 years	33	14.5
	41–50 years	19	8.4
	51 years and above	53	23.3
Occupation	Labor	22	9.7
	Public education	25	11.0
	Student	84	37.0
	Service industry	24	10.6
	Commerce	36	15.8
	Others	36	15.8
Most favorite programs	Mandarin pop songs led	104	11.6
	News reports	84	9.4
	Light music	82	9.2
	Western pop songs	67	7.5
	Shopping and food	63	7.0

4.2 Confidence analysis

Following Hulland's [83] suggestion for an outer loading value above 0.7, this study's values ranged from 0.735 to 0.897 (Table 11), indicating satisfactory reliability and stability of the used scale.

This study used Cronbach's alpha (CA) and composite reliability (CR) as reliability indicators. Hair et al. [84] suggested values above 0.7 for high reliability. All dimensions exceeded this threshold, with CA ranging from 0.744 (MT) to 0.874 (TA), and CR from 0.853 (MT) to 0.918 (CUI), as presented in Table 12.

4.3 Validity analysis

The scales in this study were adapted from the literature to the study context, and therefore, have some degree of content validity. Therefore, convergent validity and discriminant validity were used to examine whether the constructs met the validity indicators suggested by scholars. Convergent validity refers to the degree of correlation between variables of the same construct. In this study, the average variance extraction (AVE) was used to determine the convergent validity among the variables. Fornell and Larcker [85] and Bagozzi and Yi

Table 11 Factor loadings (outer loading) analysis

	TA	PP	MT	SP	SAT	COM	WOMI	CUI
TA1	0.841							
TA2	0.862							
TA3	0.845							
TA4	0.788							
TA5	0.736							
PP1		0.788						
PP2		0.871						
PP3		0.803						
PP4		0.884						
MT1			0.850					
MT2			0.802					
MT3			0.782					
SP1				0.861				
SP2				0.852				
SP3				0.808				
SAT1					0.739			
SAT2					0.735			
SAT3					0.822			
SAT4					0.842			
COM1						0.859		
COM2						0.840		
COM3						0.789		
WOMI1							0.774	
WOMI2							0.877	
WOMI3							0.831	
CUI1								0.877
CUI2								0.897
CUI3								0.891

Table 12 Confidence analysis

Dimension	Cronbach's α (CA)	CR
TA	0.874	0.908
PP	0.857	0.904
Multitasking (MT)	0.744	0.853
SP	0.793	0.879
Compatibility (COM)	0.773	0.869
Satisfactory (SAT)	0.793	0.866
WOMI	0.772	0.868
CUI	0.867	0.918

Table 13 Validity analysis

Construct	Convergent validity		Discriminant validity							
	Cronbach's α	AVE	TA	PP	MT	SP	COM	SAT	WOMI	CUI
TA	0.874	0.665	0.816							
PP	0.857	0.701	0.779	0.837						
MT	0.744	0.659	0.613	0.529	0.812					
SP	0.793	0.707	0.657	0.634	0.533	0.841				
COM	0.773	0.688	0.706	0.697	0.582	0.589	0.830			
SAT	0.793	0.618	0.733	0.758	0.57	0.639	0.708	0.786		
WOMI	0.772	0.687	0.681	0.712	0.541	0.542	0.678	0.709	0.829	
CUI	0.867	0.789	0.773	0.777	0.534	0.567	0.66	0.747	0.72	0.888

[41] suggested that the AVE for each construct should be greater than 0.5 for the measured variables to have satisfactory convergent validity for a construct. The AVE values for each construct in this study are presented in Table 13, and they are all higher than the recommended value of 0.5, with the highest value of 0.789 for continuous use intention and the lowest value of 0.618 for SAT.

Discriminant validity assesses the degree of discrimination and differentiation between different constructs. In this study, three methods were separately examined. The first method was proposed by Fornell et al. [85], in which the square root of AVE in the cross-loading matrix was higher than the correlation coefficient between the construct and other constructs. The square root of AVE of each construct in this study is higher than the correlation coefficient between the construct and the other constructs (Table 13), and hence each construct in this study has satisfactory discriminant validity.

The diagonal represents the square root value of AVE, and the lower triangle represents the Pearson correlation of the construct.

To pass the second discriminant validity test, the cross-factor loadings of the construct must be greater than the factor loadings of the other constructs; in addition, the factor loadings should be greater than 0.7 for satisfactory convergent validity [86, 87]. Table 14 presents the cross-load matrices of the constructs in this study. All the constructs meet the criteria, indicating that they have sufficient discriminant validity.

The third method to assess discriminant validity is the Heterotrait–Monotrait ratio (HTMT), and Kline [88] suggested that all HTMT values should be less than 0.85. Most HTML values in this study were smaller than 0.85, and a few HTMT values were slightly greater than 0.85 (Table 15); therefore, most constructs had discriminant validity.

4.4 Model and hypothesis testing

In this study, the structural model (inner model) was validated using the software Smart-PLS3.0. The parameters were estimated by bootstrapping for resampling. The collected sample size was resampled to check the significance estimates on the path. The number of resamples was set to 5,000 as recommended by Chin [86] for partial least squares (PLS). The resulting structural model validation is shown in Fig. 2. Finally, the coefficient of determination (R^2) and path coefficient were used to measure the model structure. The

Table 14 Cross-loading matrix for each structure

	TA	PP	MT	SP	SAT	COM	WOMI	CUI
TA1	0.841	0.72	0.528	0.566	0.598	0.685	0.642	0.705
TA2	0.862	0.724	0.516	0.582	0.634	0.676	0.595	0.659
TA3	0.845	0.644	0.527	0.558	0.636	0.617	0.600	0.656
TA4	0.788	0.558	0.459	0.483	0.520	0.503	0.475	0.592
TA5	0.736	0.491	0.462	0.478	0.468	0.468	0.428	0.516
PP1	0.653	0.788	0.377	0.431	0.495	0.545	0.527	0.582
PP2	0.682	0.871	0.447	0.514	0.613	0.665	0.597	0.677
PP3	0.581	0.803	0.370	0.554	0.551	0.613	0.577	0.621
PP4	0.693	0.884	0.558	0.609	0.661	0.701	0.673	0.714
MT1	0.580	0.514	0.850	0.516	0.530	0.556	0.502	0.500
MT2	0.435	0.383	0.802	0.330	0.422	0.371	0.331	0.381
MT3	0.456	0.371	0.782	0.426	0.450	0.435	0.463	0.402
SP1	0.631	0.590	0.521	0.861	0.569	0.571	0.521	0.504
SP2	0.536	0.479	0.430	0.852	0.425	0.487	0.446	0.449
SP3	0.481	0.517	0.381	0.808	0.477	0.545	0.391	0.471
SAT1	0.610	0.596	0.499	0.495	0.859	0.652	0.612	0.574
SAT2	0.613	0.600	0.502	0.518	0.840	0.584	0.539	0.569
SAT3	0.532	0.538	0.444	0.452	0.789	0.519	0.535	0.495
SAT4	0.527	0.537	0.432	0.520	0.493	0.739	0.456	0.511
COM1	0.529	0.554	0.368	0.421	0.447	0.735	0.487	0.560
COM2	0.593	0.610	0.492	0.521	0.588	0.822	0.588	0.620
COM3	0.645	0.669	0.49	0.544	0.673	0.842	0.672	0.647
WOMI1	0.514	0.521	0.443	0.365	0.546	0.478	0.774	0.514
WOMI2	0.596	0.630	0.483	0.524	0.587	0.633	0.877	0.644
WOMI3	0.579	0.612	0.420	0.445	0.554	0.639	0.831	0.622
CUI1	0.643	0.651	0.407	0.477	0.540	0.638	0.617	0.877
CUI2	0.667	0.722	0.454	0.450	0.596	0.665	0.652	0.897
CUI3	0.746	0.698	0.556	0.580	0.621	0.688	0.649	0.891

Table 15 HTMT values

	TA	PP	MT	SP	COM	SAT	WOMI	CUI
TA								
PP	0.889							
MT	0.748	0.645						
SP	0.780	0.757	0.674					
COM	0.850	0.850	0.757	0.744				
SAT	0.865	0.910	0.723	0.799	0.890			
WOMI	0.816	0.869	0.703	0.682	0.878	0.889		
CUI	0.880	0.898	0.653	0.679	0.803	0.897	0.875	

Technology affinity 0.172**

0.468**

Perceived playfulness 0.338***

0.084

Multitasking 0.202**

0.136**

Social presence 0.174**

Satisfaction
R² = 0.674
0.222***

Compatibility
R² = 0.551

Word-of-mouth intention
R² = 0.565
0.331***

Continuous usage intention
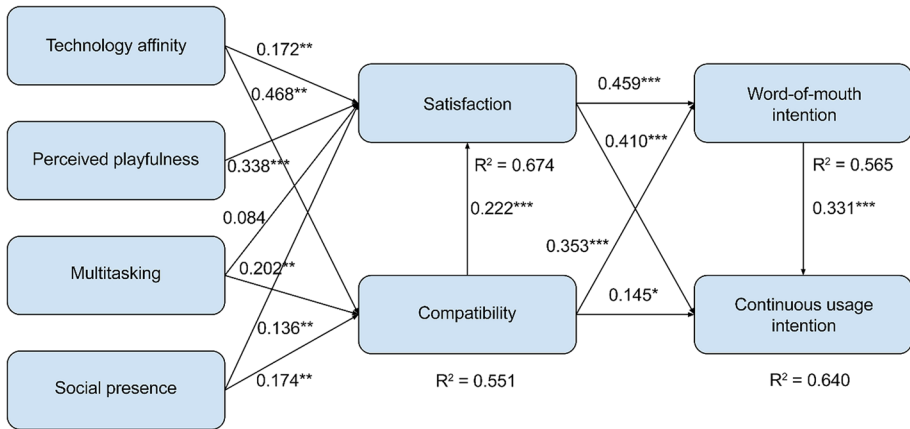R² = 0.640

0.459***

0.410***

0.353***

0.145*

Fig. 2 Research model validation

value of R^2 is between 0 and 1, and the higher the coefficient of determination, the higher is the explanatory power of the model [85].

This study observed the following: H1 is supported because TA significantly affects SAT (β = 0.172, t = 2.728, $p < 0.01$); H2 is supported because TA significantly affects COM (β = 0.468, t = 7.694, $p < 0.001$). H3 is supported because PP significantly affects SAT (β = 0.338, t = 4.499, $p < 0.001$); H4 is not supported because MT does not significantly affect SAT (β = 0.084, t = 1.798, $p > 0.05$); H5 is supported because MT significantly affects COM (β = 0.202, t = 3.220, $p < 0.01$). H6 is supported because SP significantly affects SAT (β = 0.136, t = 2.603, $p < 0.01$). H7 is supported because SP significantly affects COM (β = 0.174, t = 2.832, $p < 0.01$). H8 is supported because COM significantly affects SAT (β = 0.222, t = 3.370, $p < 0.001$). H9 is supported because SAT significantly affects WOMI (β = 0.459, t = 6.682, $p < 0.001$). H10 is supported because SAT significantly affects CUI (β = 0.410, t = 6.466, $p < 0.001$). H11 is supported because COM significantly affects WOMI (β = 0.353, t = 5.318, $p < 0.001$). H12 is supported because COM significantly affects CUI (β = 0.145, t = 2.187, $p < 0.05$). H13 is supported because WOMI significantly affects CUI (β = 0.331, t = 4.664, $p < 0.001$).

The explanatory power of SAT is $R^2 = 0.674$; COM is $R^2 = 0.551$; WOMI is $R^2 = 0.565$; and CUI is $R^2 = 0.640$. Therefore, this research methodology exhibits some explanatory power within the overarching model.

SmartPLS provides model fit metrics, in which the standardized root mean square residual (SRMR) can be used to evaluate the fit of a research model with a value between 0 and 1, and values closer to zero mean a good model fit. According to Hu and Bentler [89], an SRMR of less than 0.08 is an acceptable value [90]. In this study, an SRMR value of 0.060 for the saturated model and 0.076 for the estimated model were in accordance with the recommended values.

Goodness-of-Fit (GoF) values of 0.02, 0.15, and 0.35 represent low, medium, and high effects, respectively [91]. From Table 16, it can be seen that the GoF value for this study was 0.647, showing that this study has a high predictive correlation of effect and that the model fits well.

Although PLS minimizes collinearity in estimation, it does not mean that collinearity does not affect parameter estimation; accordingly, Kock and Lynn [92] suggested that the

Table 16 PLS result of GoF index

	AVE	R square
TA	0.665	
PP	0.701	
MT	0.659	
SP	0.707	
COM	0.688	0.551
SAT	0.618	0.674
WOMI	0.687	0.565
CUI	0.789	0.640
Average AVE & R square	0.689	0.608
Average AVE * Average R square		0.419
Square Root of Average AVE * Average R square		0.647

Table 17 Collinearity (inner VIF values)

	TA	PP	MT	SP	COM	SAT	WOMI	CUI
TA					2.119	3.35		
PP						2.972		
MT					1.681	1.772		
SP					1.848	1.992		
COM						2.423	2.007	2.293
SAT							2.007	2.491
WOMI								2.299
CUI								

Table 18 Results of f^2 determination

	TA	PP	MT	SP	COM	SAT	WOMI	CUI
TA					0.23	0.027		
PP						0.118		
MT					0.054	0.012		
SP					0.036	0.029		
COM						0.062	0.143	0.026
SAT							0.242	0.187
WOMI								0.132
CUI								

variational inflation factor (VIF) should be less than 3.3. The VIF of each construct in this study is presented in Table 17, and the VIF values are less than 3.3, which can confirm that no collinearity exists in the regression model.

According to Cohen [93], f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effect sizes, respectively. Table 18 presents the results of f^2 determination in this

study, except for MT, which has a low f^2 of 0.012 for SAT, and the others have low or medium effect size.

In addition, a cross-validated, nonparametric validation method, the Stone–Geisser Q2 validation, was used to measure the predictive validity of the PLS model [94]. The Stone–Geisser Q2 validation uses the blindfolding model to calculate predictive relevance and other potential variables to predict observed variables to assess the quality of the model. Two measures of Stone–Geisser Q2 were used as the criteria for evaluating the model, cv-communality for cross-evaluating the commonality of measurement models, and cv-redundancy for cross-evaluating the redundancy of the structural model. Q2 values of 0.02, 0.15, and 0.35 mean low, medium, and high degrees of efficiency, respectively [95]. Table 19 presents the results of the Q2 validation in this study, except for MT (0.317), which is moderate predictive correlation, and the remaining are greater than 0.35, showing a high predictive correlation.

5 Discussion and conclusion

This study explores the manner in which podcast characteristics (TA, PP, MT, and SP), SAT, and COM affect WOMI and CUI.

5.1 Effect of technology affinity

This study supports hypothesis H1: TA positively impacts SAT, aligning with Xu and Du's [61] findings. Furthermore, Xu and Du [96] observed that graduate students, who viewed digital library search as a crucial daily activity, were more satisfied than university students. As reported in Ref. [97], a strong relationship was observed between digital leadership, especially technology affinity, and employee satisfaction in the current digital age.

Similarly, this study observed that podcasts, being a part of listeners' daily activities, provide important content that users are satisfied with.

Hypothesis H2 is supported: TA positively affects COM, suggesting that users become more dependent on and familiar with technology products they have a high affinity for, making them easier to use [14]. Thus, a higher TA for podcasts implies more frequent use in daily life via mobile devices.

Table 19 Results of Q^2	cv-redundancy	cv-communality
TA		0.498
PP		0.497
MT		0.317
SP		0.403
COM	0.368	0.374
SAT	0.406	0.368
WOMI	0.383	0.372
CUI	0.498	0.549

5.2 Effect of perceived playfulness

Hypothesis H3 is confirmed: PP positively impacts SAT, consistent with previous studies [27, 47, 98]. Based on a previous study [99], PP directly influences users' CUI of short video apps. Additionally, perceived usefulness and social influence enhance user satisfaction, which consequently promotes their CUI.

This indicates that listeners enjoy podcasts and are satisfied with their use, appreciating the flexibility to select programs that suit their mood or work rhythm, unlike traditional radio.

5.3 Effect of multitasking

Hypothesis H4, which proposes that MT enhances SAT, is not substantiated. This reveals that when listeners juggle other tasks while consuming podcasts, their SAT does not significantly increase. A study by Wood et al. [100] demonstrated that MT, such as using laptops in class, led to lower academic performance due to distractions. Their study suggested that the act of listening to podcasts could be a distraction when one is engaged in a task that required a high level of attention. Alternatively, listeners might be so engrossed in their tasks that they overlook the podcast content, necessitating a second listen.

Another study by Sana et al. [101] echoed these findings, showing that MT impacts learning performance. They simulated typical classroom behaviors, such as students alternating between attending lectures and checking emails, Facebook, or instant messaging. The study concluded that even casual web browsing could negatively affect classroom performance.

While numerous studies suggested that podcasts can be listened to during activities such as driving or performing household chores, this study affirms that listeners might become indifferent to the podcast content when engaged in a task, focusing primarily on the task at hand. This indicates that even though podcasts can be integrated into daily life when listeners multitask, they often overlook the podcast content when engrossed in tasks. Overfocusing on the podcast might even disrupt or slow down their tasks. Consequently, listeners tend not to derive SAT from podcasts when MT, owing to their lack of focus on the content.

Hypothesis H5 is supported: MT positively affects COM. Sun and Zhong [66] observed that mobile media enables MT. This indicates that podcasts, offering convenience by allowing for anytime listening during leisure or work, are compatible with daily life.

5.4 Effect of social presence

Hypothesis H6, which suggests that SP positively impacts SAT, is supported. This aligns with Ogara et al.'s [49] findings. Based on the study [102], both engagement and SP in online courses bear a positive association with student satisfaction. Specifically, if students exhibited a high level of engagement, a low SP was observed, corresponding to a low satisfaction level with emergency remote teaching. The findings underscore the significance of integrating SP strategies to promote satisfaction in online courses. The study indicates that listeners who feel as if they are interacting with the podcaster in the same space derive SAT from podcasts.

Hypothesis H7, which suggests that SP positively impacts COM, is supported. This aligns with Yilmaz and Keser's [69] and Choi et al.'s [103] findings. The study indicates that podcasts, offering interactive experiences with podcasters on mobile devices anytime, anywhere, enhance SP and SAT, particularly in educational settings.

5.5　Effect of compatibility and satisfaction

Hypothesis H8, which suggests that COM positively impacts SAT, is supported. This aligns with Sebetci's [104] findings on health information system use. The study indicates that podcast features, being compatible with listeners' daily lives and allowing for anytime listening, enhance listener SAT.

Hypothesis H9, which suggests that SAT positively impacts WOMI, is supported. This aligns with Duarte et al.'s [105] findings that satisfied online consumers are likely to recommend products. The study indicates that satisfied podcast listeners tend to recommend the podcast to others.

Hypothesis H10, which asserts that SAT positively influences CUI, is substantiated. This resonates with Duarte et al.'s [105] findings that consumers satisfied with online purchases are inclined to reuse online services. The study reveals that podcast listeners, when satisfied, persist in their usage.

Hypothesis H11, which proposed that COM positively influences WOMI, is validated. This is in line with Kaur et al.'s [72] findings that the use COM of mobile wallets is linked to recommendation intention. The study suggests that the COM of podcasts with everyday life, such as the convenience of listening anytime, makes them more likely to be recommended by users. Furthermore, the alignment of podcasts with prior experiences and potential needs, similar to that for mobile wallets, may increase their usage frequency and WOMI recommendations.

Hypothesis H12, which suggests that COM positively impacts CUI, is supported, and it aligns with Belanche et al.'s [73] findings on food delivery apps. The study indicates that the functional benefits of podcasts likely encourage listeners to continue their use.

5.6　Effect of word of mouth intention and continuous usage intention

Hypothesis H13, which suggests that WOMI positively impacts CUI, is supported. This aligns with findings from Barreda et al. [76], Talwar et al. [74], and Farzin et al. [75]. This indicates that listeners, influenced by positive podcast WOMI, are likely to share, recommend, and revisit interesting podcast content.

This study suggests that "SAT" and "COM" may have a mediating effect on user engagement with podcasts. SAT, which reflects the degree of user preference for podcast content, and COM, which indicates the extent to which the content aligns with user needs and interests, appear to influence user behavior toward podcasts [6, 7].

However, the exact nature and extent of this mediating effect require further investigation. Future research could delve deeper into the mechanisms through which SAT and COM influence user behavior. For instance, studies could explore whether high SAT and COM could lead to increased user loyalty or whether they affect the types of podcasts users choose to engage with. Moreover, future research could also consider other potential mediating factors, such as the role of podcast format or length, influence of user demographics, or impact of social media on podcast engagement.

Although our sample size is smaller, we ensured its representativeness and employed appropriate statistical methods to analyze the data. We recognize that the sample size might affect the statistical power of the results; nonetheless, our findings hold preliminary significance and provide direction for future research.

This study revealed that TA and PP enhance SAT with podcasts, which are easily integrated into daily life. Voice games and social platforms are suggested for the development of the podcast platform. Topical content, such as weekly listener-voted topics or sweepstakes, can increase listener engagement. However, MT, such as working while listening to podcasts, does not improve SAT. This study advises to listen to classical or light music to alleviate work stress without causing distraction. The rapidly evolving nature of this potential mediating effect of SAT and COM in the context of podcasts field ushers a multitude of opportunities for further investigation and discovery.

Data availability The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Conflicts of interest The authors declare that they have no conflicts of interest regarding the publication of this manuscript.

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